

LCCMR - MEMBER 2019 PROPOSAL SELECTION RANKINGS COMPILED (Hi to Low by Category)

Line #	ID #	Project Title	\$ Amount Requested	Project Summary	Organization	Project Manager	Member Selection Compiled	Conflict of Interest	Staff Score (Based on evaluation criteria)	Proposal Notes Include: 1. Possible ineligible activities per Constitution, M.S. 116P, funding priority exceptions in RFP p. 3- 5. 2. Generally ineligible costs per RFP p. 7 that may require additional justification and would require explicit LCCMR approval at work plan stage 3. Out of state personnel, stipends/honoraria, incentives that may require additional justification and approval at work plan stage
3	A. Foundational Natural Resource Data and Information (RECEIVED: 27 Proposals / Subtotal = \$20,279,405)									
4	001-A	Minnesota Biological Survey – Continuation	\$2,987,000	MBS proposes baseline biological field surveys in three northern counties; targeted field surveys of sensitive plant species, pollinators, and plant communities; digital maps; book drafts; technical guidance; and data management.	MN DNR	Carlson, Bruce	12		92	-DNR direct and necessary expenses -Possible reinvestment of revenue from book sales
5	002-A	Minnesota Geological Survey Geologic Atlases for Water Resource Management	\$4,121,625	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	Lusardi, Barbara	11		90	
6	003-A	Restoring Native Mussels in Streams and Lakes	\$735,981	Restore native freshwater mussel assemblages in the Mississippi, Cedar, and Canon rivers to provide necessary ecosystem services, expand imperiled species populations, and inform the public on mussels and their conservation.	MN DNR	Davis, Mike	8		89	-DNR direct and necessary expenses
7	010-A	A Better System for Wetland Inventory Data Stewardship	\$291,000	The state spent \$7 million to update the wetland inventory for Minnesota. We propose to develop a cost-effective system to streamline ongoing data maintenance and avoid another expensive future overhaul.	MN DNR	Kloiber, Steve	7		75	
8	014-A	Minnesota Trumpeter Swan Migration Ecology and Conservation	\$414,372	We propose to radio-mark and monitor movements of Minnesota trumpeter swans to provide foundational information necessary for management and conservation.	U of MN	Andersen, David	7		73	Cell phone and data fees- need add'l info
9	004-A	Minnesotas Ecological Monitoring Network - Continuation	\$696,004	The project will expand upon the statewide network of permanent ecological monitoring plots developed in 2017 to track long-term status and trends in Minnesotas prairies, forests and wetlands.	MN DNR	Texler, Hannah	6		89	-DNR direct and necessary expenses
10	005-A	Mercury and PFAS Risk to Minnesota Raptors	\$282,093	We will quantify exposure to two contaminants for 12 Minnesota raptors. Polyfluoralkyl substances (PFAS) and methylmercury (Hg) are bioaccumulative toxicants that cause reproductive failure in birds.	Hawk Ridge Bird Observatory	Etterson, Matthew	6		82	

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11	015-A	Minnesotas Imperiled Bats - Protecting the Survivors	\$208,331	Winter and summer roost sites, supporting bat species that have been impacted by White-nose Syndrome, will be inventoried and evaluated for their importance to bats surviving WNS.	MN DNR	Nordquist, Gerda	6		70	-DNR direct and necessary expenses
12	018-A	Next Step in Helping Minnesota's Moose: Understand Brainworm Transmission to Find Solutions	\$434,186	A 2017 workshop determined we don't know enough about brainworm transmission to moose and what mitigation strategies are optimal. We've assembled a multidisciplinary team to tackle the highest research priorities.	U of MN	Wolf, Tiffany	6		67	-Out of state travel expenses- need add'l info
13	006-A	Optimizing Minnesotas Forest Products and Ecosystem Services	\$789,649	To ensure a healthy forest industry we will provide data and tools to help identify the optimal uses of forest resources, considering both goods (bioproducts) and services (habitat, clean water).	U of MN - Duluth	Johnson, Lucinda	5		77	
14	007-A	Wild Bee Surveys in Minnesotas Forest Habitats	\$636,044	Wild bee surveys will extend into the coniferous-deciduous forest region of Minnesota. Information will augment the state list of wild bees documented from the prairie and broadleaf forest regions.	MN DNR	Nordquist, Gerda	5		76	-DNR direct and necessary expenses
15	008-A	Phase-II: Enhancing Understanding of the Minnesota River Ecosystem	\$598,241	Phase-II will build upon and expand efforts of phase-I to enhance understanding of plankton, Paddlefish, spawning success, backwater habitats, and more in the Minnesota River.	MN DNR	Sindt, Tony	5		76	-DNR direct and necessary expenses
16	021-A	Grasslands, Grazing, and Greater Prairie-chickens: Testing Trade-offs	\$392,065	Our study will determine whether grazing to meet conservation objectives has trade-offs for ground-nesting birds, like Greater Prairie-chickens, that should be considered in planning and implementation.	MN DNR	Roy, Charlotte	5		64	-DNR direct and necessary expenses
17	012-A	Conserving Lake Trout in Minnesota	\$782,549	Determine long-term causes of fish loss and develop management recommendations for rehabilitation of coldwater fisheries in hundreds of lakes. A collaboration with the MNDNR to enhance the sentinel lakes program.	U of MN - Duluth	Reavie, Euan	4		74	Purchase of computers and storage- need add'l info
18	016-A	Spruce Grouse: Sentinels for Boreal Forest Connectivity	\$361,630	Our primary objective is to understand how to harvest timber in the boreal forest in a way that enables species with limited movements to thrive in a changing landscape.	U of MN The Raptor Center	Ponder, Julia	4		70	

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19	025-A	Mapping Habitat Use and Disease of Urban Carnivores	\$657,159	We will map habitat and diseases of urban foxes and coyotes to understand what they need to live and risks posed to people and pets, thereby demystifying them for residents.	U of MN	McCann, Nicholas	4		59	
20	027-A	Accelerated Aggregate Resource Mapping	\$1,380,979	To map the aggregate resource potential of 6 counties. Each county has passed a county board resolution requesting this work to be completed.	MN DNR	Arends, Heather	4		48	-DNR proposed direct and necessary expenses
21	024-A	Wild Rice Conservation: Building a Genetic Resource Database	\$296,000	This project aims to build a foundational genetic resource to be routinely used for wild rice conservation. This database will become increasingly powerful with new additional environmental and trait data.	U of MN	Kimball, Jennifer	3		59	
22	013-A	Conserving Minnesotas Nine Species of Freshwater Turtles	\$333,000	The Minnesota Zoo will improve the long-term viability of Minnesotas imperiled turtle populations by researching threats, implementing mechanisms to reduce mortality, and creating educational materials for use throughout the state.	Minnesota Zoo Conservation	Stapleton, Seth	2		73	
23	009-A	An Integrated Statewide Forest Monitoring System for Minnesota	\$371,000	Minnesota's forests face many challenges. We propose a system of regular "check-ups" to track forest health over time, detect distress signals, and correct course through active management.	The Nature Conservancy Minnesota	Cornett, Meredith	1		75	
24	011-A	Conserving Monarch Butterflies: Habitat Assessment and Citizen Engagement	\$380,067	Across Minnesota, MJV will assess monarchs, their habitat, and pollinator project success; we will engage broad stakeholders through rural outreach and field demonstrations as well as volunteer monitoring training.	U of MN	Rao, Sujaya	1		75	
25	019-A	Tagged Trout Explain if Beaver Dams Stop Fish	\$389,874	We will determine when/how Beaver dams affect tagged Brook Trout movement. This will allow managers to make decisions based on knowledge, rather than opinion, of how Beaver and trout interact.	U of MN - Duluth	Dumke, Josh	1		66	
26	022-A	Mapping Climate and Insect Threats for Minnesota Pines	\$339,474	Pine trees in Minnesota are increasingly threatened by droughts and insect attacks. The proposed statewide vulnerability map will identify where pine trees are most "at-risk" from changing future conditions.	U of MN	Feng, Xue	1		61	-Possible out of state travel for pest workshop- need statement this is to present findings

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27	023-A	Malaria in Migrant and Resident Birds of Minnesota	\$417,544	New, harmful strains of avian malaria are spreading. Currently, there are no data on the occurrence of malaria in Minnesotan birds. This project will provide the first such data.	U of MN	Barker, Keith	1		60	
28	017-A	Community Tree Canopy Assessment and Diversity Survey	\$914,447	This project will provide canopy assessments, statistically sampled tree surveys, and an analysis of community tree benefits for 350-400 communities statewide.	MN DNR	McClannah, Valerie	0		69	-DNR direct and necessary expenses
29	020-A	Data Visualization Tool for Minnesota Riverbed Habitat	\$509,231	The data visualization tool is an interactive web map that displays distribution and diversity of riverbed habitat helping resource managers better understand underwater features critical to effective management and restoration.	National Park Service	Duncan, Nancy	0		65	
30	026-A	RRB Seamless Foundational Geospatial Data Initiative	\$559,860	Complete a seamless hydro-conditioned digital elevation model (h3DEM) to develop foundational geospatial data for the MN Red River Basin.	International Water Institute	Fritz, Charles	0		54	

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31	A. Foundational Natural Resource Data and Information									
32	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 20 Proposals / Subtotal - \$3,443,394)									
33	034-AH	Red-headed Woodpeckers: Indicators of Oak Savanna Health	\$171,000	Red-headed woodpeckers are a flagship species of threatened oak savannas in Minnesota. We aim to better understand red-headed woodpecker population ecology and develop a unified management plan for restoration.	U of MN	Andersen, David	8		67	-Out of state personnel expenses- need add'l info
34	031-AH	Walleye Habitat Status to Guide and Prioritize Management	\$198,784	To guide walleye management, we will quantify walleye habitat, evaluate walleye population status relative to habitat potential, and assess sensitivity to changing water clarity and temperature in 1,400 walleye lakes.	MN DNR	Hansen, Gretchen	7		75	-Conference expenses- need add'l info
35	029-AH	Protecting Minnesota's Cold-Water Fish into the Future	\$168,760	Cold-water fish are threatened by low oxygen and warming waters across Minnesota lakes. Warming cannot be stopped, but nutrient runoff that contributes to oxygen depletion can be improved.	USGS	Smith, Erik	5		78	-DNR proposed direct and necessary expenses
36	030-AH	City Bats and Country Bats - Whats the difference?	\$200,000	Urban and suburban bat populations may be larger than generally thought. We will use acoustic detectors and telemetry to improve knowledge about bat populations and benefits to human society.	U of MN	Moen, Ron	5		76	
37	038-AH	Aquatic Habitats for Moose and Enhanced Lake Foodwebs	\$199,600	Data is needed about which aquatic habitats moose prefer and how moose can potentially enhance nearshore lake foodwebs. This project will map critical aquatic habitats and measure lake foodweb effects.	U of MN	Bump, Joseph	5		60	-Capital equipment: Sonde \$17k
38	046-AH	Improving Statewide GIS Data by Restoring the PLS	\$135,250	Restoring the Public Land Survey (PLS) will improve foundational GIS data that resource managers and citizens utilize on ENRTF projects and conservation easements.	Minnesota Association of County Surveyors Grant County	Veraguth, Patrick	5		33	
39	035-AH	Implementing Conservation Plans for Avian Species of Concern	\$124,500	Establishing monitoring sites to implement Conservation Plans for selected focal species using information from the statewide marshbird survey and the Breeding Bird Atlas focused within existing Important Bird Areas	Audubon Minnesota	Hall, Kristin	3		63	

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40	036-AH	Use Existing Data on Beaver Populations to Improve Management Outcomes in Minnesota	\$196,900	We will conduct analyses from existing databases of beaver population dynamics in Voyageurs National Park to increase efficiency and improve management outcomes associated with beaver-human conflicts in Minnesota.	Voyageurs National Park	Windels, Steve	3		62	-Office supplies- need add'l info
41	039-AH	Foundational Ecological Information for Tribal Fire Management	\$182,860	The collection and development of tree-ring records for traditional Ojibwe lands to inform long-term adaptive management of 7.5 million acres of fire-dependent forests in Minnesota.	U of MN	Kipfmueller, Kurt	3		58	
42	033-AH	Influences of Glacial Sediment Chemistry on Water Quality	\$199,244	Glacial sediments cover much of Minnesota, but little is known about their chemistry. Our project will assess their role as sources of natural contaminants such as arsenic, sulfate, and phosphorous.	Minnesota State University - Mankato	Wittkop, Chad	1		67	-Conference expenses- need statement this is to present findings
43	037-AH	Finding Fawns Based on GPS-Collared Deer Movement	\$138,540	Locating deer birth sites is important to understanding fawn survival (key to management), but current methods are inefficient. We will develop a method to find fawns remotely using GPS-collared deer.	U of MN	Severud, William	1		60	
44	041-AH	Comprehensive Environmental Building Site Design Using GIS Mapping	\$195,000	This proposal seeks to enhance the environmental performance of building sites, by creating a web application that streamlines compliance with the B3 Guidelines, and helps complete the Environmental Assessment Worksheet.	U of MN	Mosiman, Garrett	1		54	
45	042-AH	Data Foundations to Enable Open Research at Itasca	\$140,000	The University of Minnesota recently committed to building research capacity and data resources at Itasca Biological Station. Our project would leverage this investment, at its outset, for sustained region-wide benefit.	U of MN	Schilling, Jonathan	1		52	
46	044-AH	Understanding Recreational Access: Lower St. Croix Pilot	\$141,000	Through GIS analysis and community engagement, this pilot project will improve understanding of recreational 'supply and demand' identifying needed recreational opportunities in the Lower St. Croix.	The Trust for Public Land	Forbes, DJ	1		50	
47	040-AH	Characterizing St. Louis River Estuary Aquatic Habitats	\$198,000	This project will characterize and map aquatic habitats in the St. Louis River estuary to advance restoration planning, and inform conservation of fish and wildlife habitats and critical species populations.	U of MN - Duluth	Reschke, Carol	0		55	

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48	043-AH	Assessing the Legacy of Minnesotan Urban Ecosystem Services	\$72,675	We are proposing a complete assessment of urban green space legacies on their soil-related ecosystem services and bacterial communities using soil extraction techniques, molecular and metagenomic analysis	U of MN	Sessoms, Florence	0		52	
49	045-AH	Aircraft Noise Pollution MN Valley National Wildlife Refuge	\$192,544	Accurately measure aircraft noise pollution levels to provide insight into what changes should be implemented to preserve and protect the home of waterfowl, migratory birds, fish, and resident wildlife.	Minnesota State University - Mankato	Swanson, Jacob	0		43	-Capital equipment: \$75k for noise monitoring systems (\$5k x 15)
50	047-AH	Mapping and Mitigation of Strong Winds in Cities	\$198,839	We will collect data of wind in street canyons with high winds, develop models for forecasting wind speed, and make executable plan to mitigate high winds in streets.	U of MN	Yang, Zixuan	0		26	

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51	B. Water Resources (RECEIVED: 52 Proposals / Subtotal = \$25,281,282)									
52	048-B	Neonicotinoid Insecticides: Occurrence And Influence on Algal Blooms	\$356,000	The potential of neonicotinoid insecticides to initiate algal blooms will be tested by measuring the occurrence of neonicotinoids and their breakdown products in Minnesota's surface and ground waters.	U of MN	Arnold, William	14		95	
53	050-B	Wastewater Nutrient Reduction through Industrial Source Reduction Assistance	\$278,000	Provide industrial, source reduction technical assistance to reduce nutrient discharge to wastewater treatment facilities through industrial process optimization. Document impact of nutrient reduction on wastewater operations and discharge quality.	U of MN	Babcock, Laura	13		88	
54	052-B	Outstate Wastewater: Improving Nitrogen Removal in Treatment Ponds	\$402,033	This research will help the State of Minnesota understand how to improve the nitrogen removal of wastewater treatment ponds when needed, protecting outstate surface water quality and groundwater safety.	U of MN	Novak, Paige	12		84	
55	076-B	Farm-Ready Cover Crops for Protecting Water Quality	\$741,184	We will implement an economically-viable, farm-based strategy to protect water quality across more than 100,000 acres of vulnerable wellhead protection regions using cover crops in corn-soybean rotation.	Central Lakes College	Olander, Keith	10		70	
56	049-B	Benign Design: Environmental Studies Leading to Sustainable Pharmaceuticals	\$415,300	We will identify wastewater treatment and natural processes that prevent the formation of highly toxic byproducts from fluoro-pharmaceuticals. This will lead to improved treatment and rules for better pharmaceutical design.	U of MN	Arnold, William	9		92	
57	053-B	Stimulating Bacteria to Degrade Chlorinated Industrial Contaminants	\$252,884	Sites contaminated with chlorinated industrial pollutants are a significant problem in Minnesota. We will determine the best way to stimulate bacteria for faster and more complete pollutant dechlorination.	U of MN Civil	Novak, Paige	9		80	
58	063-B	Removing Phosphorous from Drantile Water Discharge-Phase II	\$398,000	In our previous LCCMR project, a metal modified char effectively removed phosphorous from water at laboratory scale. Phase II scale-up, in collaboration with NRRI, will culminate with a field trial.	U of MN	Valentas, Kenneth	9		77	

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59	072-B	Accelerating Perennial Crop Production to Prevent Nitrate Leaching	\$448,905	Reducing nitrate leaching on sandy soils of central Minnesota by developing water-efficient production methods, supply chains, and end-use markets for three profitable perennial crops: Kernza, prairie, and alfalfa.	Stearns County Soil and Water Conservation District	Fuchs, Dennis	9		72	
60	055-B	Protecting Minnesota Waters by Removing Contaminants from Wastewater	\$345,877	Wastewater contains many environmental contaminants including pharmaceuticals, personal-care products, PFAS and micro-plastics. They are not removed by treatment plants. We propose to remove them using commercially available drinking water coagulants.	U of MN	Simcik, Matt	8		79	
61	062-B	Phytoremediation for Extracting Deicing Salt from Roadside Soils	\$360,231	We propose to study native plants that can adsorb salts to be planted on the roadside to address the environmental concerns over deicing road salts.	U of MN	Hu, Bo	8		77	
62	067-B	Eliminating Nitrate in Drain Tile Runoff	\$398,623	To develop a technology to convert nitrate from drain tile discharge to nitrogen gas, thus providing low-cost treatment and helping the farm community protect water resources.	U of MN	Gulliver, John	7		75	-Conference expenses- need add'l info
63	051-B	Quantifying Microplastics in Minnesotas Inland Aquatic Ecosystems	\$277,419	We propose to quantify the amount, type, and source of microplastics in the water, sediment, and fishes of a range of Minnesota lakes in collaboration with MN DNR.	U of MN - Duluth	Schreiner, Kathryn	6		84	
64	057-B	Harnessing Minnesota's Biological Resources for Cleaner Waters	\$388,000	We propose to harness the potential of newly discovered proteins from Minnesota ecosystems that turns environmental, toxic pollutants into harmless compounds to protect our state waters quality.	U of MN	Elias, Mikael	6		78	
65	061-B	Membranes for Removing Toxic Metals from Mining Wastewater	\$449,203	We will develop, test, and implement new highly-selective membranes for the removal of toxic metals in mining wastewater treatment facilities to help ensure long-term safety of Minnesota mining operations.	U of MN	Hillmyer, Marc	6		77	
66	066-B	Improving Wetland and Groundwater Management Through Hydrologic Monitoring	\$573,661	This project will acquire and install the equipment needed for a long-term wetland hydrology monitoring network to improve understanding of wetland hydrology and groundwater interaction, leading to improved management.	MN DNR	Norris, Doug	6		75	-DNR direct and necessary expenses -Possible capital expenditures: \$375k (\$7.5k/station x 50 stations)

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67	097-B	Reducing Nitrate Harm in the Red River Basin	\$225,749	RRB subsurface drainage has increased along with toxic surface water nitrate concentrations. BMPs using 2-stage ditches, cattail harvest applied back to fields will reduce water quality impacts, improve soil health.	Red River Basin Commission	Goehring, Julie	6		53	-Single source contract- need add'l info
68	054-B	Improving Drinking Water for Minnesotans through Pollution Prevention	\$345,778	This research will reduce exposure of Minnesotans to toxic, cancer-causing chemicals by identifying and curbing key pollutant sources in the Upper Mississippi River watershed and improving drinking water treatment.	U of MN	Hozalski, Raymond	5		79	
69	058-B	Reducing Municipal Wastewater Mercury Pollution to Lake Superior	\$297,000	This technology transfer project helps the municipal wastewater plants in the Lake Superior basin reduce mercury pollution and save money.	Minnesota Pollution Control Agency	Kyser, Scott	5		77	
70	064-B	Transformation of Plastic Waste into a Valued Resource	\$308,000	We will develop technologies that utilize indigenous microbes to convert waste plastics into useful chemical compounds and fuels, lowering the likelihood that these materials end up in our environment.	U of MN	Barney, Brett	5		76	
71	059-B	Understanding Groundwater Flow, Central Arrowhead, County Geologic Atlas	\$435,966	Complete and sample approximately 20 observation wells and borings to help understand groundwater flow characteristics In the Central Arrowhead – County Geologic Atlas area, for wise management of groundwater resources.	MN DNR	Berg, Jim	4		77	-DNR proposed direct and necessary expenses -Out of state contract expenses- need add'l info
72	065-B	Outstate Wastewater: Low-Cost and Efficient Nutrient Removal Technology	\$275,000	This project will develop an innovative wastewater treatment technology for low-cost and highly efficient nutrient removal. This technology is particularly suitable for the treatment of outstate wastewater.	U of MN	Ishii, Satoshi	4		76	-Capital Expenditures: \$10k bioreactors (2 x \$5k)
73	073-B	A Rapid, Mobile Vertical Groundwater Nitrate Sampling System	\$297,900	We will combine new sampling technologies to rapidly measure vertical groundwater nitrate profiles. This alternative monitoring method can be applied statewide for understanding groundwater quality improvements from land management changes.	USGS	Trost, Jared	4		72	

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74	085-B	The Future of Groundwater Supply	\$280,000	Future groundwater supply -- crucial for sustaining Minnesota's lakes, streams, and drinking water -- will be forecast for a region of east-central Minnesota sensitive to groundwater inputs.	Science Museum of Minnesota St. Croix Watershed Research Station	Almendinger, James	4		64	-Conference expenses- need add'l info
75	094-B	Southeast Minnesota Cover Crop and Soil Health Implementation	\$806,540	This project will expand implementation of cover crops in Southeastern Minnesota, expand its economic framework, outreach, educational efforts, coordinate with other groups and involve agriculture youth organizations.	SE SWCD Technical Support Joint Powers Board	Roberson, Glen	4		55	-Includes incentive payments to FFA groups for soil health projects
76	095-B	Maintaining Supply of Clean Water from Working Forests	\$288,000	Concentrated forest disturbance can degrade water quality but thresholds are unknown. We will identify configurations of disturbance where water quality is degraded, and identify watersheds where potential impacts are greatest.	U of MN	Slesak, Robert	4		54	
77	056-B	Satellite Tracking of Harmful Algal Blooms in Lakes	\$466,987	Harmful algal blooms (HABs) are becoming increasingly toxic and spreading north. We will use satellite imagery to create a web-based HAB tracking system to help protect Minnesotans from HAB toxins.	U of MN - Duluth	Filstrup, Christopher	3		79	-Capital Expenditures: \$12k Spectroradiometer -Food for workshop participants-- need add'l info -Stipends- need add'l info
78	079-B	Converting Concentrated Wastewaters to Fertilizers and Clean Water	\$842,000	To develop and demonstrate innovative and sustainable technologies to convert concentrated animal wastewaters to clean water and at the same time produce methane energy, fertilizers, and valuable biomass.	U of MN	Ruan, Roger	3		66	Capital Expenditures: \$90k demonstration facility
79	082-B	Evaluating Long-Term Success of Wetland Hydrology Restoration	\$294,662	An evaluation of the long-term sustainability of twenty wetlands restored through RIM and wetland banking in Southern Minnesota by assessing the current hydrologic condition against a planned and reference condition.	Board of Water and Soil Resources Wetlands Section	Smith, Tim	3		66	

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80	083-B	Assessment of Toxic-Algae/Phosphorus/E. coli Entering Minneopa State Park	\$327,253	Water ENTERING Minneopa Park has problems with toxic-algae and E. coli (16 times the stream standard). Due to health concerns we will assess levels/sources and potential controls for these agents.	Minnesota State University - Mankato	Proctor, Beth	3		65	
81	084-B	Protecting Water Quality with Comprehensive, Integrated Nutrient Planning	\$1,721,159	The University of Minnesota will join the 21st century by creating user-friendly, web-based tools for fertilizer and manure management planning to help farmers save money and protect water quality.	U of MN	Wilson, Melissa	3		65	
82	068-B	Evaluating Public and Private Benefits of Ag-Water Certification	\$349,486	We will provide evidence on the environmental and economic impacts of Minnesota's Agricultural Water Quality Certification Program from the farm, watershed, and broader supply chain perspectives.	World Wildlife Fund, Inc.	Pennington, Derric	2		75	
83	069-B	Harnessing What's Within: Minimizing Nitrogen Pollution through Localization	\$290,000	The goal of this project is to construct sustainable biofertilizers with minimal-runoff potential by utilizing natural strains of nitrogen-fixing microbes found living inside the leaves and stems of plants.	U of MN	Barney, Brett	2		74	
84	075-B	Combatting Antibiotic Resistance Through Bacterial Signal Manipulation	\$444,865	This project will investigate a novel solution to stop the spread of antibiotic resistance at wastewater treatment plants by thwarting bacterial signaling, thus protecting the health of Minnesotans.	University of St. Thomas	Donato, Justin	2		70	
85	090-B	Sustainable, Integrated Food Waste Treatment and Utilization	\$1,076,000	Develop and demonstrate an integrated scalable systems for converting food waste into renewable energy, feed, food, and clean wastewater	U of MN	Current, Dean	2		61	-Capital Expenditures: \$150k demonstration facility + \$80k anaerobic digestion system
86	060-B	Dangers of Nanoparticles on Aquatic Health	\$494,075	We will determine the dangers of nanoparticles to aquatic bacteria and fish health, enabling us to provide recommendations about safe levels and to predict how new nanomaterials might affect aquatic species.	U of MN	Carlson, Erin	1		77	
87	071-B	Enriching Native Fungi to Control Aquatic Phosphorus Pollution	\$356,000	This project proposes to use novel fungi from Minnesota agricultural fields that can uptake, store, and transfer P to plants to reduce P fertilizers and P pollution from agricultural runoff.	U of MN	Bushley, Kathryn	1		73	

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88	074-B	Storing Sulfide Safely at MN Mining Sites	\$536,161	Sulfate in mining wastewater is a major concern in Minnesota. We propose to process biproducts of sulfate remediation to produce bricks for safe storage of sulfur at MN mining sites.	U of MN	Penn, Lee	1		71	-Capital Expenditures: \$12k kiln
89	077-B	Setting Realistic Nitrate BMP Goals in Southeast Minnesota	\$444,000	Advanced tools are needed which provide critical timelag and feedback information for making environmental policy decisions, as Minnesota prepares to launch the Groundwater Protection Rule and nutrient reduction strategies.	U of MN	Nieber, John	1		68	
90	080-B	Small Sensor Networks for Water Monitoring (Phase II)	\$980,758	This project is to develop small sensor networks based on sensors in Phase I, a very cheap and highly efficient approach for pollutants monitoring in lakes and rivers in Minnesota.	U of MN	Cui, Tianhong	1		66	
91	081-B	Testing Filter Removal of Microfibers for Water Quality	\$320,936	This project will determine the effectiveness of low-cost filters to reduce microfibers from laundry discharge to increase longevity of septic systems and enhance performance of WWTPs for improved water quality.	U of MN	Heger, Sara	1		66	
92	087-B	Sustaining Fresh Water Resources while Producing Healthy Crops	\$496,988	Minnesota leads production of sweet corn, peas, and potatoes, which are increasingly groundwater-irrigated. This project identifies hydrologic, agronomic, and economic tradeoffs to inform water management and policy during future droughts.	U of MN	Twine, Tracy	1		63	-Capital expenditures: \$12k spectroradiometer -Out of state contract expenses- need add'l info
93	088-B	Pathways of Human Impact in Lake Superior	\$568,470	Watershed impact on Lake Superior is not evenly distributed. This project will establish zones of heavy human influence in western Lake Superior to further assessments of many kinds.	U of MN - Duluth	Sterner, Robert	1		62	
94	089-B	Assessing Algal Toxins in Fish from Minnesota Lakes	\$350,000	Determining concentrations of several algal toxins in fish and water samples from Minnesota lakes will fill current data gaps and raise awareness about potential hazards to ecosystems and human health.	USGS Upper	Ziegeweid, Jeffrey	1		61	
95	093-B	Rapid Detection of Algal Toxins in Minnesota Lakes	\$599,051	In this project we will use novel environmental genomics techniques, coupled with citizen science sampling in order to develop a statewide rapid-alert system for harmful algae blooms.	U of MN - Duluth	Bramburger, Andrew	1		56	-Capital Expenditures: \$19,560 Sonde

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96	096-B	Protecting Ground Water from Nitrogen in Potato Production	\$798,070	Complementary approaches to limiting nitrogen leaching into ground water from potato production: 1. integrate potato into a rotation with a deep rooted perennial 2. breed potatoes which require less nitrogen.	U of MN	Shannon, Laura	1		54	- Capital Expenditures: \$8k lysimeter
97	070-B	Forecasting Lake Superior Water Level and Community Security	\$329,687	Lake Superior's water level is changing in unpredictable ways threatening important fisheries, parks, and North Shore environments. We will find how to predict level to sustain environmental and recreational quality.	U of MN - Duluth	Downing, John	0		73	
98	078-B	Enhanced Nitrogen Removal in Minnesota's Watersheds	\$408,277	We will use GIS and satellite data to develop tools to enhance nitrogen removal in Minnesota watersheds	U of MN	Hondzo, Miki	0		67	
99	086-B	Double Trouble: Blooms, Invasive Mussels and Lake Health	\$576,279	This study will compare microbiomes in healthy MN lakes to those impacted by HABs and invasive mussels to inform management strategies to mitigate the compounding effects of HABs and mussels.	U of MN	Hamilton, Trinity	0		64	-Capital Expenditures: \$20k Sonde
100	091-B	Quantifying Water Exchange Between Groundwater and Surface Water	\$478,276	We will develop a critical tool for accurately quantifying and predicting water exchange between groundwater and surface water. Water exchange will be effectively visualized to aid sustainable water resources management.	U of MN	Kang, Peter	0		60	
101	092-B	Mobilizing Minnesota Communities to Fight Proliferating Toxic Harmful Algal Blooms (HABs)	\$513,179	This project will create seven tools to mobilize Minnesota communities to fight, detect and mitigate the impending toxic harmful algal blooms using drones and assisted by citizen science volunteers.	U of MN	Missaghi, Shahram	0		56	-Capital Equipment: \$12k Drone and \$26.5k Camera -Single source contract- need add'l info
102	098-B	Minnesota River Basin: Point-Nonpoint Water Quality Trading	\$399,634	A feasibility study and stakeholder engagement process to evaluate a point-nonpoint water quality trading program in the Minnesota River Basin, a cost-effective strategy to achieve nutrient reduction.	Minnesota State University - Mankato	Musser, Kimberly	0		48	
103	099-B	State Park Waste Water Systems Condition Assessments	\$1,173,776	The project will result in an inventory and functional assessment of septic and waste water systems located in state parks and a 10-year Construction Improvement Plan (CIP) which will be used to guide future capital investment decisions.	MN DNR	Johnson, David	0		46	-DNR direct and necessary expenses -Capital Expenditures: \$290k Cartegraph OMS hosting and data migration

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104	B. Water Resources									
105	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 19 Proposals / Subtotal - \$3,447,370)									
106	102-BH	Minnesota Spring Inventory Final Phase	\$71,000	The project will complete the Minnesota Spring Inventory, identifying, cataloging and assisting in the protection of important water springs threatened by overuse of groundwater, development, land-use changes, and changing climate.	MN DNR	Putzier, Paul	9		71	'-DNR direct and necessary expenses
107	101-BH	Evaluating Locally-Sourced Sanding Materials for Road Salt Reduction	\$162,445	The project will evaluate the effectiveness and benefits/impacts of locally sourced woodchip, corncob, and iron-bearing minerals as alternative effective abrasive materials to lower salt use for protecting Minnesotas water resources.	U of MN - Duluth	Chun, Chanlan	8		71	
108	106-BH	Citizen-Aided Carp Management: Overcoming Roadblocks to Lake Restoration	\$106,151	Citizens will be enlisted to field-test a new method of managing carp to restore an impaired lake. Water quality & cost-effectiveness will be quantified to inform statewide implementation.	Carver County Water Management Organization (CCWMO) Public Services Division	Dickhart, Andrew	7		64	-Sole source contract- need add'l info -Addresses gaps in realistic N and P reductions possible from carp removal as a water quality improvement tool. Not a fit for MAISRC.
109	100-BH	Repurposing Unprofitable Cropland: Water and Wildlife's Silver Bullet?	\$199,618	We propose conducting the first statewide analysis mapping the extent of Minnesota's unprofitable cropland and estimating both the water-quality and habitat benefits of converting these lands to perennial crops/vegetation.	Science Museum of Minnesota, St. Croix Watershed Research Station	Ulrich, Jason	6		73	
110	103-BH	Using Local Iron Byproducts to Remove Surface-water Phosphorus	\$195,216	We will use local iron byproducts to remove phosphorus from agricultural drainage, lakes, and streams exhibiting eutrophication. Project results will identify cost-effective materials for water treatment applications.	U of MN - Duluth	Cai, Meijun	6		68	

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111	110-BH	Plastic Debris Remediation in the Great Lakes	\$199,979	The objective of this project is to improve the health of the Great Lakes by devising an engineering solution to extract the floating plastic debris that infiltrates our food chain.	U of MN	Lee, Sungyon	4		62	
112	116-BH	Spring Biological Nitrate Removal to Protect Drinking Water	\$175,000	Fairmont's drinking water safety is threatened by high springtime nitrate levels. Fairmont intends to build an experimental passive biological treatment system to reduce nitrates that enter its source water supply.	City of Fairmont	Nemmers, Troy	4		45	-Capital expenditures: \$58k bioreactor
113	107-BH	Identifying Grassland Plant Mixes to Reduce Nitrate Pollution	\$197,646	We contribute to Minnesota's land management efforts by identifying which mixtures of grassland plant species best remove nitrates in vulnerable soils, using a series of long term species mixture plots.	U of MN	Gutknecht, Jessica	3		64	
114	105-BH	New Technology for Removing Mercury from Minnesota Waters	\$199,000	We will demonstrate that minnows equipped with two genes from environmental bacteria will be able to detoxify mercury in our aquatic ecosystems, making game-fish safer to eat.	U of MN	Smanski, Michael	2		65	
115	111-BH	Warmer Winter Effects on Water Quality and Fish	\$177,911	This project will determine the importance of warm winter and spring conditions in controlling harmful cyanobacteria, phosphorus cycling, oxygen distribution, and suitable coldwater fish habitat in Minnesota lakes.	U of MN	Knoll, Lesley	1		60	-Sole source contract- need add'l info -Computer and monitors- need add'l info
116	112-BH	Are Metal Concentrations in Kawishiwi Waters Above Standards?	\$174,268	Metal concentrations in some waters of the south Kawishiwi watershed are above aquatic life and recreation standards. This project assesses effects of exposed mineralized bedrock on metal concentrations in waters.	USGS	Jones, Perry	1		58	-Administrative expenses- need clarification this is for actual hours spent on the project
117	114-BH	Minnesota Weather Smart Irrigation System for Water Conservation	\$198,766	The goal is to advance science for developing a next generation of weather smart irrigation systems for urban and agricultural water conservation.	U of MN	Ebtehaj, Ardeshir	1		53	
118	118-BH	Electrochemical Process to Protect Sewer System from Sulfide	\$199,924	We want to develop an electrochemical system to protect sewage wastewater transportation and handling facilities and septic tanks from sulfide corrosion and reduce odor emissions	U of MN	Hu, Bo	1		33	

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119	104-BH	Fake Food: Man-made Materials in Aquatic Food Webs	\$199,698	We will assess sources and impacts of anthropogenic "fake food" in aquatic food webs including effects of bioaccumulation in phytoplankton, zooplankton, fish, and Common Tern; a threatened species in Minnesota.	U of MN - Duluth	Bramburger, Andrew	0		67	
120	108-BH	Shallow Waters: Road Salt Impairment and Mitigation Potential	\$196,720	We will determine the extent of road salt accumulation and its impairment of dissolved oxygen in Minnesota's numerous shallow waters, and evaluate pond features that could impact chloride mitigation.	U of MN St.	Janke, Benjamin	0		63	
121	109-BH	Assessing Chloride Hot spots near native mussel beds	\$200,000	This project will gather information about the movement and mixing of salt in Minnesota rivers and investigate the impacts of salt on sensitive aquatic organisms: native freshwater mussels.	U of MN	Kozarek, Jessica	0		63	-Capital expenditures: \$16,224 Sondes x 2 -Conference expenses- need add'l info
122	113-BH	Simulating and Exploring Drought Scenarios at Reduced Scale	\$199,640	Water evaporation from differently saturated soil will be reproduced in a wind tunnel to better model the effect of wind, terrain roughness and solar radiation under controlled laboratory conditions.	U of MN	Guala, Michele	0		54	-Capital expenditures: \$10k infrared camera and radiation lamp
123	115-BH	Map and Monitor Turbidity in Minnesota Water Bodies	\$197,012	We will use laboratory experiments and simulations to investigate how water movements spread turbidity to help control and reduce the turbidity pollution in 371 impaired water bodies in Minnesota.	U of MN	Shen, Lian	0		53	
124	117-BH	Reducing Nitrogen Inputs and Loss in Minnesota Lawns	\$197,376	The purpose of this project is to quantify the amount of fertilizer applied to Minnesota lawns and to create appropriate fertilizer recommendations to ultimately reduce the amount of fertilizer applied.	U of MN	Trappe, Jon	0		43	

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125	C. Environmental Education (RECEIVED: 17 Proposals / Subtotal = \$8,771,388)									
126	124-C	Connecting Over 11,000 Students to the Boundary Waters	\$783,135	This project will connect over 11,000 students to the Boundary Waters through classroom education and wilderness canoe experiences, targeting diverse and underserved populations across Minnesota.	Friends of the Boundary Waters Wilderness	Knopf, Chris	9		65	- Includes scholarships for 600 students
127	120-C	GreenStep Schools: Statewide Program, 20 School District Pilot	\$992,959	Minnesota GreenStep Schools Program gets students, school staff and communities learning about the environment as they explore their school's built and natural infrastructure while saving energy, water, waste, and habitat.	U of MN	Mercer-Taylor, Beth	8		75	
128	123-C	Increasing Diversity in Environmental Careers: Fellowships, Internships, Mentorships	\$250,000	This project provides a college to workforce pathway for under-represented students to successfully complete STEM based education and obtain environmental employment by reducing and eliminating barriers.	MN DNR	Legato, Denise	8		67	
129	119-C	Water Lab: Engaging Minnesotans in Water Quality Challenges	\$830,000	Water Lab would enable the Science Museum's 600,000 annual Minnesota visitors to conduct hands-on water analyses, learn about citizen water monitoring opportunities, and access near real-time statewide water quality information.	Science Museum of Minnesota	Hamilton, Patrick	7		77	-Possible capital expenditure: \$180k including for computers and monitors -Need better breakdown of equip and supplies budget items
130	122-C	Camp Sunrise: Respect Self, Others and the Environment	\$237,000	Camp Sunrise is an integrated environmental education program for economically disadvantaged youth. This innovative camp experience allows children a hands-on program to understand their impact on the environment and nature.	YouthCARE MN	Jones, Isiah	7		67	
131	121-C	Environmental Learning by Bicycle for Ages 8-80	\$393,000	Environmental Learning by Bicycle will teach 5,000 children and adults to safely bicycle in their communities while exploring local trails, learning about natural resources, and appreciating nearby parks.	Bicycle Alliance of Minnesota	Grilley, Dorian	5		74	-Food expenses for participants-- need add'l info -Includes liability insurance
132	125-C	Plugging Knowledge Gaps for Sustainable Forest Management	\$300,000	There are knowledge gaps in forest management. The gaps may be because research doesn't exist or because research exists but isn't reaching managers. We plan to "plug" the gaps.	U of MN	Fleischman, Forrest	2		63	

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133	126-C	Enhancing Water Quality Education with Inquiry and Research	\$279,684	Educational curricula are most effectively delivered through hands-on, real-world experience. Involving students and citizens in gathering and interpreting information at the Bell Museum, this project will enliven water quality education.	U of MN	Finlay, Jacques	2		61	
134	127-C	1000 Citizen Scientists Collect Phenological Data Statewide	\$224,000	Students lack real data to make STEM learning relevant. Partnering with nature centers and schools, this project expands a network of 1000 student citizen science observer's using local phenology data.	U of MN	Carlson, Stephan	2		60	-Includes non-employee travel expenses- need add'l info
135	128-C	Driven to Discover: Implementing Citizen Science in Classrooms	\$262,314	Driven to Discover will improve science education and increase knowledge about Minnesota's natural resources by helping teachers implement curriculum for citizen science projects focused on birds, phenology, dragonflies, and pollinators.	U of MN	Blair, Robert	1		58	-Includes \$96k for stipends-- need add'l info
136	130-C	YMCA BOLD & GOLD Youth Leadership Environmental Education	\$507,990	Increase capacity of Bold & Gold to serve 720 additional youth who will gain leadership skills, learn teamwork and perseverance and an understanding of conservation, preservation, positive citizenship and community leading to a sustained caring and awareness that will ensure their protection of Minn	YMCA of the Greater Twin Cities	Simer, Kurt	1		57	
137	134-C	Northwest Minnesota Partners Unite to Grow Eco-system Stewards	\$214,840	The Tamarac Nature Connection unites natural resource partners and is organized for the purpose of providing regional school districts with hands-on, water ecosystem education, which focuses on sustainability and stewardship.	Friends of Tamarac NWR	Henke, Bill	1		43	-Administrative expenses- need clarification this is for actual hours spent on project
138	129-C	Incubating Citizen Science at the University of Minnesota	\$1,706,203	Incubating Citizen Science will develop Best Practices that enable expansion of citizen science capacity in Minnesota by launching three natural-resource demonstration projects related to monitoring mammals, phenology, and invasive species.	U of MN	Blair, Robert	0		57	
139	131-C	Connecting All Minnesotans with Science and Scientists	\$277,800	We will connect Minnesotans to science and scientists by bringing MN research to farmer's markets and fairs throughout the state and developing hands-on activities to start lively science conversations.	U of MN	Briscoe Runquist, Ryan	0		55	-Food expenses for participants-- need add'l info

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140	132-C	Neighborhoods Sustained: Multimodal Education in Metro Suburbs	\$756,793	TLC-Smart Trips will engage suburban residents, increasing their knowledge and skills to live more sustainably through walking, bicycling, and transit use and reducing the environmental impact of cars.	Transit for Livable Communities and St. Paul Smart Trips	Pachuta, Emma	0		47	-Food expenses for community event- need add'l info -\$120k for "partnership with organizations" —need add'l info
141	133-C	Race 2 Reduce: A Minnesota Water Resource Education Curriculum	\$205,670	Race 2 Reduce, a water resource education curriculum, seeks funding to complete modules that teaches students about water resources and empowers them to take action through advocacy and civic engagement.	H2O for Life	Onufer, Judy	0		45	-Sole source contracts- need add'l info -Includes curriculum development-- ineligible
142	135-C	Green Sustainability Walk - St. Anthony Village	\$550,000	Green Sustainability Walk - St. Anthony Village Develop a Two Mile Sustainability Educational Walking Tour that engages all senses through the use of Augmented Reality, Mobile Applications and Kiosks	City of St. Anthony Village	Hartman, Jay	0		42	

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143	C. Environmental Education									
144	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 24 Proposals / Subtotal - \$3,272,656)									
145	143-CH	Mississippi National River & Recreation Area Forest Restoration	\$199,500	This is a forest restoration project within the Mississippi National River and Recreation Area to address the loss of ash trees to EAB and plant 15,000 native trees and plants.	Mississippi Park Connection	Hammes, Mary	5		54	
146	142-CH	A Farm Laboratory for Environmental Studies	\$199,900	This project gives undergraduate students unique opportunities to interact with working farmers, state agencies, and others as they conduct research on agricultural productivity and ecosystem resilience.	Cannon River Watershed Partnership	Kraus, Alan	4		55	-Single source contract- need add'l info
147	154-CH	Discover the Prairie Outreach Campaign	\$190,100	Our most endangered ecosystem is native prairie. This outreach campaign develops a much needed hub of prairie information to help our citizens discover the prairie and build their appreciation.	Becker SWCD	Doll, Phil	4		42	
148	157-CH	Establish an Environmental Education Activity Center in Coleraine	\$81,800	Renovate building and playground to establish a center for environmental education and outdoor recreation including a STEAM based outdoor water play area, natural playground, and flexible use indoor classroom space.	ISD 316	Berg, Christa	4		40	-Potential reinvestment of revenue from sales and rental of the center and equipment purchased
149	149-CH	Middle Fork Crow River: Appreciate, Clean, Learn, Connect	\$12,968	We will develop and carry out 3 annual events for 3 years aimed at connecting 1,050 people through paddling, cleaning up, and studying the Middle Fork Crow River.	Middle Fork Crow River Watershed District	Johnson, Margaret	3		51	
150	151-CH	1,000 Trees for Frogtown: Restoring Inner City Canopy	\$88,350	In St Pauls most diverse neighborhood, resident volunteers seek support to grow and plant hundreds of trees, tackling Frogtowns deficient urban tree canopy while demonstrating innovative tree nursery technology.	Frogtown Green	Ohmans, Patricia	3		45	-Includes tree planing on private land -Includes incentive payments to landlords for tree maintenance
151	152-CH	Owatonna ESTEM Middle School: Makoce Ohoda Outdoor Classroom	\$26,475	The funding requested is to support the creation of an interactive, outdoor classroom for over 1,100 students in grades 6-8 at Owatonna ESTEM Middle School.	Owatonna Public Schools	Meagher, Thomas	3		45	

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152	136-CH	A North Shore Community-Engaged Forest Landscape Laboratory	\$199,000	This project engages North Shore landowners, business owners, natural resource managers and visitors in identifying, designing, and testing forest management strategies within a public Landscape Laboratory at Tettegouche State Park.	U of MN	Lutsky, Karen	2		63	
153	140-CH	Youth Conservation and Stewardship Training Lab	\$198,478	This project engages underserved youth in the development of interactive learning stations, based on themes of water, urban restoration and pollinators, encouraging all park visitors to engage in citizen science.	Urban Roots	Woods, David	2		58	
154	144-CH	4-H and Renewable Energy: Growing Young Leaders	\$199,950	Windustry will work with rural and urban staff, leadership and youth participants of Minnesota 4-H to grow opportunities to learn about wind, solar and other renewable energy resources.	Windustry	Daniels, Lisa	2		53	
155	146-CH	Citizen-Based Boulevard Bioswales Installation during Ash Tree Replacement	\$198,600	Installing Boulevard Bioswales during Ash Tree Replacement engages citizens losing their tree canopy due to Emerald Ash Borer in a clean water, pollinator habitat, environmental justice, and green workforce opportunity.	Metro Blooms	Scholl, Laura	2		52	-Includes tree removal and planting on private (and public) land
156	153-CH	Environmental Education Through the Generations Ages 5-105	\$199,908	To teach healthy and sustainable lifelong skills to K-12 students within our economically disadvantaged school and surrounding communities with multiple benefits to nature's pollinators, and humans while incorporating multigenerational opportunities.	Mesabi East Schools ISD 2711	Allen, Gregg	2		44	
157	137-CH	Teaching Sustainability through an Economics Lens	\$138,552	Stage 2 pilot of Teaching Sustainability through an Economics Lens, an already-developed high-school curriculum, includes teacher trainings, classroom implementation, and Sustainability Summits, attracting student projects from around the state.	Minnesota Council on Economic Education	Liu, Donald	1		60	-Includes prizes-- ineligible expense, needs to be removed -Honoraria- need add'l info -Includes substitute teacher pay while teachers attend trainings
158	139-CH	Water-Focused Education Across Rural and Urban Communities	\$190,000	Combine the expertise of two established Minnesotan science education entities to provide paired hands-on classroom/outdoor experiences that build a water-focused conservation ethic for 8500 urban and rural students and teachers.	U of MN - Cedar Creek Ecosystem Science Reserve	Potter, Caitlin	1		59	-Capital expenditures: \$12k fluorometer

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159	147-CH	Watershed: Arts-Based Education in Minnesota's State Parks	\$84,926	The Watershed program will use creative performance in 20 State Parks to teach families about water stewardship. The audience will then become "Minnesota's Water Heroes" in a follow-up documentary film.	U of MN	Pedely, Mark	1		51	Single source contract- need add'l info
160	148-CH	Inventing Tools and Technologies to Improve Water Quality	\$136,433	Momentum leading up to and encompassing an aqua-hackathon will unite programmers, engineers, technology professionals and water experts. Outcome: Solutions to state water quality challenges and potential for an annual event.	U of MN - Duluth	Moen, Sharon	1		51	Single source contract- need add'l info
161	159-CH	'Solarize your House' Modeling Activities for K12	\$29,960	Project will implement 3D solar energy modeling curriculum in K12. Engagement will be increased because students will model their home and the return-on-investment of each solar-panel installation will be determined.	Minnesota State University - Mankato	Swanson, Jacob	1		40	
162	138-CH	The Natural Resources Literacy Initiative	\$194,485	A cross-disciplinary team of scientists will reach out and engage with the public throughout Minnesota in a series of interactive, give-and-take, outreach forums called the "The Natural Resources Literacy Initiative."	U of MN - Duluth	Zanko, Lawrence	0		60	
163	141-CH	Minnesota Master Naturalist at the Bell Museum	\$173,422	The Minnesota Master Naturalist program and the Bell Museum collaborate to teach adults about Minnesota's rich natural history so that they can volunteer and spread that knowledge to public audiences.	U of MN	Blair, Robert	0		57	
164	145-CH	Slow the Flow in the Minnesota River Basin	\$160,318	A "Slow the Flow in the Minnesota River" media campaign and website will increase education about water storage practices and programs that reduce water flow and improve water quality.	Minnesota State University - Mankato	Musser, Kimberly	0		52	-Food expenses for steering committee meetings- need add'l info
165	150-CH	Converting UMN's Sustainable-Electricity Course for Two-Year Community Colleges	\$96,956	Develop free-to-use resources so that an established course (Sustainable-Electricity Supply) at UMN can be taught in two-year community colleges statewide to build a robust pipeline of students to 4-year colleges/universities.	U of MN	Mohan, Ned	0		47	

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166	155-CH	Urban Food Habitat Signs and Curriculum Delivery	\$53,175	TCALT will coordinate a program developing attractive signs explaining to passersby the several ways that food production sites using regenerative agriculture practices are contributing to environmental and community health.	Twin Cities Community Agricultural Land Trust	Cadieux, Valentine	0		41	
167	156-CH	Introducing Minnesotas Resource Professionals to Global Pest Experts	\$19,400	This proposal brings the next global gathering of IUFRO (forest pest experts) to Minnesota to exchange knowledge with local resource professionals (e.g., tree care providers, park and rec workers, etc.).	U of MN	Aukema, Brian	0		41	\$5k online registration system-- need add'l info
168	158-CH	Expanding Minnesota Clean Marina Initiative to Protect Waters	\$200,000	Aligned with more than 30 other states with clean water programs, MCM aims to create partnerships with marinas and their boaters to protect natural resources and promote economic growth.	Minnesota Clean Marina	Chapman, Rick	0		40	

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169	D. Aquatic and Terrestrial Invasive Species (RECEIVED: 8 Proposals / Subtotal = \$17,805,123)									
170	160-D	Building Knowledge and Capacity to Solve AIS Problems	\$5,000,000	MAISRC will launch 12-16 new or continuation projects aimed at solving Minnesota's AIS problems using a competitive RFP process, informed by an annual research needs assessment and stakeholder consultation.	U of MN	Phelps, Nicholas	9		85	
171	161-D	Elimination of Target Invasive Plant Species Transition Phase	\$772,871	To prevent environmental and economic damage, we will: 1) Train people to find target invasives; 2) Engage communities and 3) Survey for and control these species before they spread.	Minnesota Department of Agriculture	Chandler, Monika	8		76	- Not research/not UMN/not a fit for MITPPC
172	162-D	Invasive Carp Acoustic Deterrence Field Trial at Lock19	\$300,000	This project will support the installation, monitoring, and evaluation of an acoustic deterrence system at Lock and Dam 19 on the Mississippi River to prevent upstream movement of invasive carp.	MN DNR	Frohnauer, Nick	5		75	-Capital expenditures \$300k -Installation would be in Keokuk, Iowa -Fit with MAISRC not clear.
173	164-D	Boat Cleaning Stations and Education Prevent AIS Spread	\$7,378,575	Deploying watercraft cleaning stations on infested waters along with regional Clean Drain Dry public awareness will reduce the spread of AIS and empower social behaviors for sustainable aquatic resources.	Wildlife Forever Clean Drain Dry Initiative	Huinker, Dane	3		65	-Cap equipment \$2.82 million for 125 stations @\$22.5k each; \$900k for 60 hiway awareness signs @ \$5k -Not research/not a fit for MAISRC.
174	163-D	Communities and Citizens Manage Ash for EAB	\$3,246,610	This project will reduce EAB through community developed management (inventory, management plan, removal, non-neonicotinoid treatment) and improve their community forest by involving citizens and planting a diversity of trees.	MN DNR	McClannah, Valerie	2		74	-DNR direct and necessary expenses -Includes forestry activities on private (and public) lands -Not research/not UMN/not a fit for MITPPC
175	166-D	Ecological Coatings to Mitigate Proliferation and Spread of Invasive Species	\$401,000	We propose to develop innovative coatings containing a revolutionary antifouling ecological molecule: these coatings will contribute to stop the proliferation and the spread of aquatic invasive species.	U of MN	Elias, Mikael	2		62	-"Coupons-" need add'l info - Recommend they apply to MAISRC Fall '18 RFP for proper vetting per LCCMR requirement that "All UMN proposals and others should apply to the Centers..."

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176	165-D	Genetic Analysis of Spiny Water Flea Invasion Sources	\$337,942	This project uses genetic and genomic methods to determine the source water bodies from which spiny water fleas were carried to infest MN lakes.	U of MN	McCartney, Michael	1		62	- Recommend they apply to MAISRC Fall '18 RFP for proper vetting and oversight per LCCMR requirement that "All UMN proposals and others should apply to the Centers..."
177	167-D	Zebra Mussel Genetic Biocontrol: Methods and Public Engagement	\$368,125	We develop techniques for precise genetic modification of zebra mussels, and at the same time engage the public in decisions on whether and how to apply these for biocontrol.	U of MN	McCartney, Michael	1		62	-Out state contract expenses- need add'l info -Honoraria expenses-- need add'l info - Recommend they apply to MAISRC Fall '18 RFP for proper vetting and oversight per LCCMR requirement that "All UMN proposals and others should apply to the Centers..."

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178	D. Aquatic and Terrestrial Invasive Species									
179	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 6 Proposals / Subtotal - \$960,072)									
180	168-DH	Brown Marmorated Stink Bug Phase2: Monitoring & Biocontrol	\$188,707	Brown marmorated stink bug is increasing in Minnesota. This project will expand monitoring to identify areas of spread and establishment, gather data on native parasitoids and begin biocontrol implementation.	Minnesota Department of Agriculture	Ambourn, Angie	6		71	-Not UMN/not a fit for MITPPC
181	169-DH	Suppressing Reed Canary Grass with Native Plants	\$191,000	Build on current ENTRF project by testing whether cover crops of native plants suppress recolonizing reed canary grass and foster floodplain forest tree regeneration while creating pollinator habitat	U of MN	Montgomery, Rebecca	6		68	-Focus is largely on forest restoration and is continuation of previously funding LCCMR project. Fit with MITPPC is not clear.
182	173-DH	Oak Wilt Suppression at Northern Edge	\$100,000	Eradicate identified oak wilt at these northern most locations on nine private properties by mechanical means to stop the invasiveness before it spreads to healthy state forests affecting habitat.	Morrison Soil & Water Conservation District	McLennan, Helen	6		44	-Includes treatment of trees on private lands -“Legal notices-” need add'l info -Need correct budget form -Not research/not UMN/not a fit for MITPPC
183	170-DH	Using Artificial Intelligence for Noxious Weed Detection	\$89,005	Modify and automate an existing mobile plant identification application to allow for early detection and rapid response to noxious weed invasions (Palmer amaranth) for local weed inspectors, producers and public.	Stearns County	Dunning, Robert	4		51	-Capital expenditures: \$5k computer server-- need add'l info -Purchase of mobile data devices (5)- need add'l info -Not research/not UMN/not a fit for MITPPC
184	171-DH	Cook County Invasive Species Project	\$200,000	The project will work towards the goal of preventing and limiting the impacts of terrestrial invasive species in Cook County through a coordinator position.	Cook SWCD	Hansel, Ilena	1		50	-Administrative expenses- need clarification this is for actual hours spent on the project -Not research/not UMN/not a fit for MITPPC
185	172-DH	Mitigating Non-Native Plant Encroachment in Minnesota’s Prairie Grasslands	\$191,360	This project will quantify, identify, and remediate non-native and noxious species in Minnesotas grasslands. We will utilize a standard drone platform developing methods for rapid assessment prior to remediation.	Minnesota State University - Moorhead	Kramar, David	1		45	- Professional contracts- need add'l info -Not research/not UMN/not a fit for MITPPC
186	E. Air Quality, Climate Change, and Renewable Energy (RECEIVED: 16 Proposals / Subtotal = \$11,944,279)									

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187	174-E	When the Dust Settles: Pristine Lakes are Changing	\$696,667	Minnesota's most protected lakes are changing without an obvious source of pollution. We need to know if windblown dust is carrying the nutrients that turn these once pristine lakes green.	Science Museum of Minnesota St. Croix Watershed Research Station	Edlund, Mark	7		79	-Capital expenditures: \$20k sonde, \$25k deposition samplers (5@ \$5k)
188	176-E	Development of Clean Energy Storage Systems for Farms	\$994,224	Energy storage systems for farms will be developed using wind-generated ammonia. Novel ammonia fuel systems will be tested in a farm grain dryer and engine generator displacing fossil fuels.	U of MN	Reese, Michael	6	Reese	70	-Capital expenditures: \$141k energy storage systems,
189	186-E	White Earth Nation Community Solar for Community Action	\$572,702	Project goals include installation of a 200-kW White Earth community-owned solar garden reducing GHG emissions, increasing economic development through environmental education and solar workforce training, and improving energy resilience.	Rural Renewable Energy Alliance	ODay, Vicki	6		48	-Capital expenditures: \$327k solar array -Includes guarded access \$40K -Includes indirect expenses-- ineligible, needs to be removed
190	178-E	Grid-Scale Geologic Energy Storage in MN: Earth Battery	\$315,250	The project will test an innovative power system and model a site in southern Minnesota, the initial steps to bring grid-scale, cost-effective geologic energy storage to Minnesota.	TerraCOH, Inc	Randolph, Jimmy	4		69	
191	184-E	Harvesting Hidden Clean Energy from Wastewater Systems	\$408,694	Existing technologies capable of harvesting hidden clean energy from wastewater streams will be studied to determine their effectiveness in moving the state toward an increasingly clean energy future.	U of MN - Morris	Goodnough, Troy	4		54	
192	175-E	Cheap Efficient Reactor to Remove Toxic Organic Compounds	\$728,365	This project is to develop a new reactor to remove toxic organic compounds from vehicles and chimneys. The technology is very cheap and highly efficient to improve Minnesota air quality.	U of MN	Cui, Tianhong	3		70	Capital expenditures: \$10k machine shop, \$15k CSE shop
193	180-E	Practical, Inexpensive, and Non-Toxic Solar Cells	\$479,409	Unique partnership with Natural Resources Research Institute (UMN-Duluth) to integrate life-cycle assessment and toxicology analyses into the early-stage design of non-toxic materials for construction of inexpensive and efficient solar cells.	U of MN	Holmes, Russell	3		63	Capital expenditures: \$60k expanded perskovite deposition system

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194	182-E	Optimization of a Net-Zero Dairy System	\$876,706	This project will develop and optimize energy efficient lighting and thermal energy storage systems at the WCROC in Morris, MN.	U of MN West Central Research and Outreach Center	Heins, Bradley	3	Reese	55	Capital expenditures: \$95k energy meters, lighting systems, data loggers
195	187-E	Using Solar Resources to Create Student Scholarship Funds	\$1,800,000	The MN Coalition of Residential Environmental Learning Centers proposes to create statewide scholarships for 550-650 economically underprivileged students, annually, through LCCMR funded solar array expansions at six environmental centers.	Minnesota Coalition of Residential Environmental Learning Centers/Mounds View Public Schools	Brown, Karl	3	Moody	47	Capital expenditures: \$1,800,000 solar arrays (6)
196	189-E	Advancing Renewable Energy through Education and Community Engagement	\$860,520	Minnesota is in the midst of a shift in electric generation to renewable energy. Rural energy discussions will educate and enable an orderly transition to meet Minnesota's clean energy goals.	Wind on the Wires	Soholt, Beth	3	Reese	36	-Need budget details
197	179-E	Community-Scale Energy Storage Guide for Renewable Energy	\$637,305	This project proposes to expand community-based, locally-produced renewable energy by increasing access to effective energy storage.	U of MN	Anderson, Ellen	2		63	-Capital expenditures: \$300k energy storage systems (3) -Office supplies expenses- need add'l info
198	181-E	Fugitive Mineral Dust Baseline Air Quality Project	\$600,000	Better baseline air quality data are needed for projects that generate fugitive dust. Lake sediment and air will be sampled and characterized at locations representing past, present and future impacts.	U of MN - Duluth	Monson Geerts, Stephen	2		61	-Sole source contracts (3)-- need add'l info
199	177-E	Plastics from Unused Lignin in Plants and Trees	\$998,000	Profitable conversion of cellulose to fuels and chemicals has not been achieved from lignocellulose in forest and agricultural residues. Now, plastics composed almost entirely of lignin will provide necessary revenue.	U of MN	Sarkanen, Simo	1		70	-Capital expenditures: \$111k compounder, \$55k centrifuge, \$43k testing system, \$36k impact test machine, \$76k dynamic mechanical analyzer

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200	183-E	Instant On-Demand Nitrogen Fixation (iONF) from Air	\$1,352,000	To develop and demonstrate innovative instant on-demand nitrogen fixation (iONF) process and system to convert air nitrogen and water to nitrogen fertilizer rich water for direct cropland applications.	U of MN	Ruan, Roger	1	Reese	55	-Capital expenditures: \$15k high voltage power, \$24k plasma analyzer, \$32k plasma jet system, and \$125k for equipment for lab scale reactors
201	185-E	Support Tools for Facilitating Renewable Energy Choice	\$243,232	Develop and pilot decision support tools for Minnesota's municipal and cooperative utilities to help the 40% of Minnesotans served by these utilities make individual choices to deploy more renewable energy	U of MN	Chan, Gabriel	0		50	-Conference expenses- need add'l info -Includes out of state travel expenses- need add'l info
202	188-E	Self-Cleaning Solar Cell Coatings in Minnesota	\$381,205	This project will study the performance of new coatings designed to enhance the performance of solar cells to determine if they are appropriate for the Minnesota climate.	Minnesota State University - Mankato	Sleezer, Robert	0		36	-Need a budget

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203	E. Air Quality, Climate Change, and Renewable Energy									
204	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 9 Proposals / Subtotal - \$1,459,944)									
205	190-EH	Sustainable Solar Energy from Agricultural Plant Byproducts	\$185,018	Producing new materials from regional plant byproducts for renewable solar energy. This project engages many students in environmental research; this homegrown technology will ultimately provide affordable energy to Minnesota families.	U of MN - Morris	Pappenfus, Ted	6		61	Capital expenditures: \$21k ball mills (2 at \$10,590 ea)
206	196-EH	Modeling Energy and Environmental Roadmaps for Minnesota Communities	\$199,995	The City of Morris and several partners will develop a model community for energy and environmental stewardship which will serve as a roadmap for other small communities across the state.	City of Morris Administration	Hill, Blaine	5	Reese	44	-Purchase of computer- need add'l info
207	197-EH	Diverting Prepared Food from Landfills, Reducing Greenhouse Gases	\$65,000	This project will build the capacity of our Prepared Foods Donation Program, which will collect food from restaurants and prevent food from going to landfills, thereby reducing greenhouse gas emissions.	Second Harvest Heartland	Rog, April	4		44	
208	191-EH	Novel Combined Solar Thermal-Geothermal Heat Pump System	\$168,000	The project will conduct numerical modeling and field testing of a novel combined solar-thermal geothermal heat pump system, an efficient and affordable renewable heating/cooling approach.	Juneberry	Randolph, Jimmy	3		61	-Single source contract- need add'l info
209	194-EH	Enhancing Renewables Utilizing Generators of Retiring Coal Powerplants	\$183,301	Increasing penetration of renewables by retiring coal/gas powerplants affects grid stability. We will research retaining generators of retiring powerplants, supplemented by a small amount of battery storage, to maintain stability.	U of MN	Mohan, Ned	3		50	-Single source contract- need add'l info
210	192-EH	Showcasing Carbon-Neutral, Energy-Positive Transformation of an Occupied House	\$66,532	Showcase carbon-neutral and energy-positive transformation of an occupied house that becomes a model for the entire state, where utility pays homeowners for electricity while they significantly reduce their carbon footprint.	U of MN	Mohan, Ned	1		55	-Single source contracts (2)- need add'l info -Possible ineligible payment to a board director
211	193-EH	Associations Between Extreme Weather and Harmful Vector Populations	\$199,531	Minnesota boasts extensive outdoor recreation, but harmful vectors present risk. Relationships between extreme weather and vectors will be quantified, while risk communication will inform public safety and insect-control strategies.	U of MN	Berman, Jesse	0		52	

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212	195-EH	Wind Plants Interaction with Local Climate in Minnesota	\$199,584	This project will develop a cutting-edge tool to assess potential environmental costs/benefits of wind plants through an interdisciplinary fusion of laboratory- and field-scale studies as well as computer simulations.	U of MN St.	Park, Sung Goon	0		47	
213	198-EH	Clean Air Assistance Project (CAAP)	\$192,983	The Clean Air Assistance Project connects businesses with financial and technical resources to voluntarily reduce air pollution.	Environmental Initiative	Droessler, Bill	0		40	- Includes \$100,000 in incentive payments to small businesses for specific emissions reducing activities

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214	F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (RECEIVED: 32 Proposals / Subtotal = \$32,371,852)									
215	199-F	Eastern Larch Beetle is Decimating Minnesotas Tamarack Forests	\$382,000	Eastern larch beetle is decimating Minnesota's tamarack forests. This proposal focuses on devising insect management techniques and determining how bad this problem may remain in the future.	U of MN	Aukema, Brian	10		77	-Cap equipment \$20k rearing chambers - Native species/ not a fit for MITPPC
216	210-F	Forest Regeneration: Right Seed in the Right Place?	\$476,336	Minnesota forest ecosystems are maintained by continual reforestation efforts. This project will help the DNR determine the best sources of seeds to plant in the diverse habitats of our state.	U of MN - Duluth	Etterson, Julie	10		62	
217	200-F	Evaluating Forestry Tools for Conserving Minnesota's Tamarack Forest	\$864,436	Over 440,000 of Minnesota's 1.1 million acres of tamarack forests have been damaged by eastern larch beetle. We will implement and evaluate forestry tools to restore and conserve tamarack forests.	MN DNR	Reinikainen, Mike	8		75	-DNR direct and necessary expenses -Includes restoration on private (and public) lands - Native species/ not a fit for MITPPC
218	204-F	Ensuring High-Quality Restoration Outcomes in Minnesota	\$529,102	This project seeks to improve Minnesota restoration quality by 1) designing certification standards for project/organizational excellence, 2) developing guidance for volunteer involvement, and 3) address training gaps in project planning/management.	U of MN	Galatowitsch, Susan	8		70	
219	205-F	Restoring the Upper Mississippi River at Lake Pepin	\$525,000	Leveraging \$15 million federal dollars to implement a program to improve Lake Pepin's gamefish and waterfowl production by restoring 100 acres of terrestrial habitat and 1,000 acres of aquatic habitat.	Lake Pepin Legacy Alliance	Main, Rylee	8		66	-Includes work on land/water that is in Wisconsin
220	202-F	Saving Endangered Pollinators through Data-Driven Prairie Restoration	\$977,813	Minnesota Zoo, Parks, and TNC will use prairie restorations and Endangered Dakota skipper reintroductions to study factors supporting butterflies and develop foundational habitat management recommendations for Minnesota's imperiled prairie butterflies.	Minnesota Zoo	Runquist, Erik	6		70	-Includes DNR direct and necessary expenses
221	212-F	Conserving Minnesota's Best Prairie Habitats and Rarest Species	\$1,261,500	The project will accelerate management on 30,000 acres of "Biologically Significant" prairie, conduct monitoring of rare prairie species, and develop a comprehensive database of management practices and their impacts.	The Nature Conservancy	Feeken, Neal	6		60	

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222	225-F	Sauk River Dam Removal and Rock Rapids Replacement	\$2,768,000	This project consists of habitat restoration, water quality and fish passage improvements through the removal of the existing fixed elevation dam, construction of rock arch rapids and in-stream habitat restoration.	City of Melrose	Brethorst, Michael	6		46	
223	207-F	Comparison of Burning and Haying for Prairie Restoration	\$338,111	This project will test how the frequency and timing of haying, used alone or combined with prescribed burning, can promote biodiversity and pollinator habitat in prairie.	Carleton College	Hernandez, Daniel	5		64	
224	213-F	Promoting and Restoring Oak Savanna Using Silvopasture	\$1,270,910	Oak savanna is imperiled and threatened ecosystem with only 0.2% remaining of historically 5.5 million acres in Minnesota. This project will demonstrate the use of silvopasture to restore this ecosystem.	U of MN	Zamora, Diomy	5		59	
225	203-F	Evaluating Ecological Benefits of Prairie Plan Restorations	\$534,468	Evaluating ecological outcomes of prairie restorations under the Minnesota Prairie Conservation Plan by spatially tracking accomplishments, monitoring indicators of ecosystem functioning, and creating metrics of success to improve future restorations.	MN DNR	Petersen, Jessica	4		70	-DNR direct and necessary expenses
226	222-F	Woodland Restoration Project	\$227,000	Belwin Conservancy will restore 72 acres of Belwin's nearly 1400 acres. This woodland restoration project is in a beautiful area that will be open to the public in the future.	The Belwin Conservancy	Sykora, Justin	4	Gibson	49	
227	223-F	Restoring 430 acres of the Panicum Prairie WMA	\$650,000	Restoring the Panicum Prairie WMA will reconnect a fragmented flyway and provide critical nesting and stopover habitat for migratory waterfowl in a safe and efficient manner.	Shell Rock River Watershed District	Christenson, Scott	4		48	Capital expenditure: \$6k water control structures; \$171k utility vehicle; \$36k pump controls (2); \$80k pump and piping
228	226-F	Serving Community Forests by Assisting Low-Income Homeowners	\$415,024	75% of Minnesota's land is private, requiring citizens to depend on their trees and neighbors' for benefits. The DNR with Habitat for Humanity will help low-income landowners care for trees.	MN DNR Division of Forestry	McClannahan, Valerie	4		46	-DNR direct and necessary expenses -Includes grants to private landowners to help manage and maintain trees
229	201-F	Sustaining One Million Acres of Minnesota Pine Forest	\$420,000	We will produce guidelines to maintain and maximize healthy and diverse pine forests with sustained growth and productivity of our state tree, the red pine, during seasonal and periodic drought.	U of MN	Montgomery, Rebecca	3		72	
230	206-F	Minnesota Rare Plant Salvage Anoka Sand Plain Pilot	\$357,788	In Minnesota, permitted take of endangered/threatened plants allows for destruction, but does not provide for salvage. This project will create a pilot program to salvage and relocate these plants.	Anoka Conservation District	Taylor, Carrie	3		66	

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231	211-F	Does Native Seed Farming Reduce Prairie Restoration Success?	\$449,962	Prairie restorations use native plant seeds produced in agricultural conditions. Has this altered traits required for survival, thereby undermining restoration success? Our experimental and genetic studies will answer this question.	U of MN - Duluth	Haines, Dustin	3		62	
232	218-F	Piping Plovers and Common Terns: Critical Habitat Restoration	\$1,243,500	This project will restore critical habitat for threatened and endangered bird species lost due to recent sustained high water levels on Interstate Island in the St. Louis River estuary.	Minnesota Land Trust	Peterson, Daryl	3		55	-Includes admin expenses- need clarification this is for actual hours spent on the project
233	224-F	State of the Prairies: Assessing Public-Private Land Management	\$337,055	We propose to survey Central and Southern Minnesota prairies to develop assessments measuring the success of prairie restorations and correlate management practices that promote high quality functions.	Minnesota State University - Mankato	Kaproth, Matthew	3		48	
234	216-F	Protecting Drinking Water Sources: 2,000ac in Mississippi Headwaters	\$1,396,950	To improve critical ecological services in drinking water source and well-head protection areas by restoring and enhancing 2,000 acres on private land easements in the Camp Ripley Sentinel Landscape (CRSL).	Great River Greening	Huckett, Steven	2		56	-Includes admin expenses- need clarification this is for actual hours spent on the project
235	217-F	Protecting Minnesota Birch by Sustainable Chaga Cultivation	\$385,232	Development of methods to cultivate medicinal chaga fungus to protect birch trees from unsustainable harvesting and damage and to provide access to a valuable Minnesota commodity	U of MN	Salomon, Christine	2		55	
236	220-F	Stony Creek Stream and Habitat Restoration Project	\$1,750,000	Over 4.5 miles of Stony Creek restoration, improving water quality to State standards and providing 100 acres of permanently protected expanded riparian habitat along this prairie stream in northwest Minnesota.	Buffalo-Red River Watershed District	Albright, Bruce	2		53	
237	221-F	Elm Creek Stream Restoration Phase IV Final	\$858,650	The final phase of Elm Creek Stream Restoration, includes 1.4 miles of habitat & stream restoration which, flows through the Elm Creek Preservation Area upgradient of the Mill Ponds.	City of Champlin Engineering	Tuominen, Todd	2		52	
238	229-F	Restoration of Norway Brook Connectivity to the Pine River by Removal of Norway Lake Dam.	\$2,200,000	The project will restore and enhance habitat and fish passage and accessibility to the river by removing an existing dam and replacing it with a rock riffle pool structure.	City of Pine River	Drown, Bryan	2		42	

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239	208-F	Minnesota By-products Recycled to Sustainable Designed Soil	\$448,964	Characterize and blend undervalued regional by-products (dredge sediment, mineral tailings, wood waste, and biochar) creating productive soil, smarter recycling/reuse practices for site restoration providing environmental and economic benefit to Minnesota.	U of MN - Duluth	Patelke, Marsha	1		63	
240	209-F	Restoration, Engagement, Soil Health: St Cloud, Twin Cities	\$2,180,000	Restore 830ac, 0.5mi shoreline, engage 3150 restoration volunteers 1) in St. Cloud for the first time, and 2) sustaining/expanding in Twin Cities; assessment of soil health will inform restorations.	Great River Greening	Buck, Wiley	1		62	
241	219-F	Use Floating Mini-Islands for Wetland Restoration	\$312,228	We propose a new method of wetland restoration using floating mini-islands. We will deploy mini-islands to collect data, develop model to predict wetland growth, and demonstrate the strategy in practice.	U of MN	Shen, Lian	1		54	
242	230-F	Water Quality Mitigation Project	\$7,104,000	Restoration of 90 acres of wetland and buffer with channel naturalization for stormwater storage, groundwater recharge, habitat and nutrient uptake reducing TP 18% and TSS 33%	City of Mankato	McCarty, Michael	1		40	Includes \$567k fee title land acquisition for wetland restoration
243	214-F	Innovative Strategies to Re-Introduce Wood into Driftless Area Streams	\$317,300	This project will install innovative large wood structures in a Driftless Area stream and identify scaling-up strategies. The site will be monitored for post-project and used for demonstration purposes.	The Nature Conservancy Minnesota Field Office	Lenhart, Christian	0		59	
244	215-F	Evaluation and Improvement of Aeration in Lakes	\$312,228	We will measure concentrations of oxygen and nutrients in lakes with/without aeration, develop prediction model, and propose strategies on the proper deployment and use of aerators to improve lake ecosystems.	U of MN	Shen, Lian	0		57	
245	227-F	Mississippi Gorge Restoration Study	\$503,295	American Rivers seeks funding to conduct a detailed study to remove two dams in the 8-mile Mississippi River Gorge between St Anthony Falls and the Minnesota River confluence.	American Rivers	Dorothy, Olivia	0		44	

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246	228-F	Using Economic Analysis to Repair the Sunrise River	\$575,000	The Comfort Lake-Forest Lake Watershed District will perform diagnostic subwatershed monitoring of the impaired Sunrise River in southern Chisago County to identify, then implement, the most cost-effective pollutant reduction project(s).	Comfort Lake-Forest Lake Watershed District	Kinney, Mike	0		43	Single source contract- need add'l info

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247	F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat									
248	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 16 Proposals / Subtotal - \$2,511,544)									
249	232-FH	Conservation and Monitoring of Minnesota's Rare Arctic Plants	\$135,541	The North Shore houses completely unique plant communities that are in danger of decline. This project will provide critical monitoring and invasive removal to conserve these rare and endangered plants.	U of MN - Duluth	Zlonis, Katharine	6		63	
250	231-FH	Supporting Pollinators and Prairie Restorations with Beneficial Fungi	\$187,362	We will help managers improve habitat quality of reconstructed prairies for imperiled Monarch butterflies and other declining pollinators by increasing plant access to soil resources via beneficial fungi.	U of MN	Jordan, Nicholas	5		74	-Includes out of state personnel expenses- need add'l info
251	237-FH	Combating Woody Encroachment with Grazing after Mechanical Clearing	\$199,704	We will evaluate the potential for cattle grazing to reduce woody vegetation regrowth following mechanical clearing and to enhance biodiversity of grassland species in the Agassiz Beach Ridge core area.	Minnesota State University - Moorhead	Merkord, Christopher	5		57	
252	234-FH	Cost-Effective Environmental Protection by Predicting Land Use Change	\$199,420	Cost-effective environmental protection requires reliable predictions of which natural land will be lost without protection. We will produce statewide maps that quantify the likelihood of future conversion for every parcel.	U of MN	Noe, Ryan	4		61	
253	233-FH	Develop Forest Management Methods that Enhance Bird Habitat	\$197,337	Develop, publish, and promote guidebooks on forestry methods that enhance breeding bird habitat while engaging landowners in forest stewardship and encourage the sustainable production of Minnesota forest products.	Forest Stewards Guild	Lynch, Michael	3		63	
254	240-FH	Friends of Tamarac National Wildlife Refuge Wetland Restorations	\$80,500	To fully restore and permanently protect the natural hydrology to 119 wetland basins within the Clearwater watershed for the significant and measurable benefits to wildlife, water quality and flood reduction.	Friends of Tamarac	LaBarre, Tom	2		45	
255	243-FH	City of Staples Street Sweeper Mitigate Wetlands Contamination	\$191,775	Road salt is proven to harm natural resources. The City of Staples proposes to greatly lessen salt impact with an enhanced Street Sweeper that reduces chemicals left on streets.	City of Staples	Bendorf, Doug	2		33	-Capital expenditures: \$190k street sweeper

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256	244-FH	Restoring Tree Cover and Diversity to Houston Streets	\$83,080	We are seeking funds to plant 120 trees from multiple genera to replace those lost to Emerald Ash Borer. Assistance for current property owners will benefit future generations.	City of Houston, MN	Wiegrefe, Susan	2		31	
257	246-FH	Keep Usable Building Materials Out of Minnesota Landfills	\$192,000	Keep usable building materials and supplies out of landfills via Habitat for Humanity ReStores. This grant will purchase three vehicles to pick up hundreds of tons of items annually.	Twin Cities Habitat for Humanity, Inc.	OKeefe, Pete	2		25	-Capital expenditures: \$160k 2 trucks and 1 van
258	236-FH	Integrated Research and Restoration in Prairie and Forest	\$150,583	Comparisons of two methods of restoration both in forest and prairie habitat to provide land managers with evidence-based choices for ecological and cost effective restoration solutions.	Friends of the Mississippi River Land Conservation	Daub, Betsy	1		59	-Includes admin expense- need clarification this is for actual hours spent on the project
259	238-FH	Farming for Water Quality: Implementation, Education, & Documentation	\$97,321	This project will protect and enhance water quality through implementation, education, and documentation of regenerative farming practices within the Middle Fork Crow River Watershed and all water bodies downstream.	Middle Fork Crow River Watershed District	Johnson, Margaret	1		51	-Includes \$15k compensation for event speakers for 3 events-- need add'l info
260	239-FH	Improving Stream Restoration Designs to Prevent Project Failures	\$140,000	Costly river restorations can fail without an objective review process. We will develop methods to test and review designs before construction and will provide finalized methods for future projects.	South St. Louis Soil and Water Conservation District	Thompson, Ann	1		49	
261	235-FH	Cooperatively Improving Minnesotas Remnant Prairies through Adaptive Management	\$199,038	This project leverages an existing partnership of managers to improve the quality of Minnesota's native plant communities on remnant prairie, by providing cost-effective management recommendations and public access to data.	U of MN	Dee, Laura	0		61	
262	241-FH	Shoreline Erosion Control Using Aquatic Plants	\$199,019	We will conduct experiments to monitor shoreline evolution corresponding to various aquatic plants, streams, and wave conditions, develop prediction model, and provide guidelines on using aquatic plants for shoreline protection.	U of MN	Yang, Zixuan	0		44	
263	242-FH	Promoting Environmental Urban Agriculture	\$59,280	This project surveys policy and practical barriers that prevent conservation efforts in metropolitan farming, analyzes alternatives, and assists urban farmers to share knowledge that can effectively promote conservation in farming.	Hamline University	Cadieux, Valentine	0		38	-Stipends- need add'l info

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264	245-FH	Prediction of Ice Shove in Lakes in Minnesota	\$199,584	A prediction model and an alert system of ice shove will be developed based on the data collected from field experiments and numerical simulations to prevent damages.	U of MN	Deng, Bingqing	0		30	

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265	G. Land Acquisition for Habitat and Recreation (RECEIVED: 25 Proposals / Subtotal = \$59,448,660)									
266	249-G	Minnesota State Parks and State Trails In-Holdings	\$5,000,000	Acquire high priority State Park, Recreation Area and Trail in-holding parcels from willing sellers to protect Minnesotas natural and cultural heritage, enhance outdoor recreation and promote tourism.	MN DNR	Christie, Jennifer	12		80	- Does not include/not subject to direct and necessary
267	248-G	Grants for Local Parks, Trails and Natural Areas	\$3,000,000	Provide approximately 25 matching grants for local parks, acquisition of locally significant natural areas and trails to connect people safety to desirable community locations and regional or state facilities.	MN DNR	Mularie, Audrey	11		82	-DNR direct and necessary expenses
268	247-G	DNR Scientific and Natural Areas	\$5,758,000	Scientific and Natural Area (SNA) habitat restoration and improvements (1100+ acres), increased public involvement and strategic acquisition (500+ acres) will conserve Minnesota's most unique and rare resources for everyone's benefit.	MN DNR	Schulte, Judy	10		84	-DNR direct and necessary expenses - Includes cons. easement stewardship expenses
269	254-G	Mesabi Trail Extensions	\$5,150,000	Complete the Mesabi Trail by constructing the four remaining trail segments where further described within the Main Proposal.	St. Louis and Lake Counties Regional Railroad Authority	Manzoline, Robert	10		62	
270	258-G	Turning Back to Rivers: Creating Recreation Opportunities	\$4,792,500	This project will protect land through fee title acquisition along Minnesota's Big Rivers (the Mississippi, St. Croix, and Minnesota) increasing public opportunity for outdoor recreation.	The Trust for Public Land	Forbes, DJ	10		56	
271	252-G	National Loon Center: State Bird Survival and Protection	\$4,000,000	National Loon Center dedicated to survival of loon, habitat protection, recreation, and environmental research establishing Minnesota as the premiere destination to experience the freshwater ecosystem we share with native wildlife.	National Loon Center Foundation	Heggerston, Leah	8		68	- Need budget details -Possible \$4m capital expenditures - Fundraising expenses- ineligible, needs to be removed

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272	250-G	Native Prairie Bank Conservation Easements and Landowner Assistance	\$3,828,000	Native Prairie Bank will provide prairie technical assistance, restore and enhance 1,170 acres, and acquire 300 acres through permanent conservation easements and 300 acres through 15-year agreements from willing sellers.	MN DNR	Schulte, Judy	7		77	-DNR direct and necessary expenses -Cons easement stewardship expenses -Restoration on private land with 15 year lease (pilot)
273	251-G	Minnesota State Trails Development	\$8,750,000	This project fulfills legislative direction to expand recreational opportunities on Minnesota State Trails through the development of new trail segments; and the rehabilitation and enhancement of existing State Trails.	MN DNR	Skaar, Kent	7		74	-DNR direct and necessary expenses
274	257-G	Preserving the Avon Hills with Reverse-Bidding Easements	\$2,410,500	Utilize proven cost-saving MMAPLE reverse-bid conservation easement ranking system to permanently protect 650 acres and restore/enhance 400 acres of priority private lands already protected in the Avon Hills.	Saint Johns University	Geissler, John	7		56	-Includes cons. easement stewardship expenses
275	253-G	Accessible Fishing Piers	\$320,000	Provide 7-8 accessible fishing piers in locations that have a high potential to serve new angling communities, undeserved populations and anglers with physical disabilities.	MN DNR	Stewart, Nancy	6		66	-DNR direct and necessary expenses -Capital expenditures: \$276k fishing piers @ \$34k each
276	256-G	Britton Peak to Lutsen Mountains Mountain Bike Trail	\$350,000	Sustainably built singletrack mountain bike trail connecting trail clusters that draws new visitors and becomes part of the NE Minnesota efforts to become a national destination for mountain biking.	Superior Cycling Association	Kennedy, Tim	6		59	- Need budget details
277	259-G	Restoration of Winona's Prairie Island	\$352,201	The City of Winona aims to improve ecosystem health and provide quality recreation at Prairie Island Park through prairie restoration, tree planting, storm water management, and redesigned access.	City of Winona	Greedy, Ross	6		56	-Capital expenditure: \$29,250 AIS decontamination station
278	266-G	Vergas Long Lake Trail	\$291,111	Long Lake is a community asset for Vergas, enjoyed by residents and visitors alike. This project will construct a trail bordering Long Lake, maintaining public access and restoring the shoreline.	City of Vergas	Lammers, Julie	6		44	
279	269-G	Glacial Edge Trail and Downtown Pedestrian Bridge	\$602,918	The project proposes a .48 mile trail along the Otter Tail River in downtown Fergus Falls as well as a 125 ft. long bicycle and pedestrian bridge crossing the river.	City of Fergus Falls	Miller, Ryan	6		41	

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280	270-G	Winona's 1st Recreation Bridge over Highway 61	\$3,375,000	Winona's 1st Recreation Bridge over Highway 61 offers safe passage and connects the Mississippi River Trail and downtown bike trails to Bluffs Park and Richard J. Dorer Memorial Hardwood Forest.	City of Winona	DeFrang, Brian	6		37	
281	271-G	Crane Lake to Vermilion Falls Trail	\$455,000	This project consists of designating and improving a 5.6 mile wooded trail from Crane Lake to the Vermilion Falls to accommodate ATV and Snowmobile users.	Voyageur Country ATV	Beste, Bruce	5		34	
282	261-G	Lake Vermilion Trail Phase 1: Tower Connection	\$1,814,000	Design and construct a 4.6 mile paved, non-motorized recreational trail between Tower and the Hwy 169/CR 77 Intersection as Phase 1 of the planned 40-mile Lake Vermilion Trail.	Lake Vermilion Trail Joint Powers Board	Lantry, Tom	4		51	
283	264-G	Birch Lake Recreation Area Campground	\$700,000	This project consists of expanding the existing Birch Lake Recreation Area to add a new 22 acre campground that will include 49 campsites for recreational vehicles and tent campers.	City of Babbitt	Bissonette, Cathy	4		46	-Potential reinvestment of revenue from campground user fees
284	268-G	Construct Bicycle/Pedestrian Bridge Near Pennington, MN	\$600,000	Construction of bicycle/pedestrian bridge over the Mississippi River on Lady Slipper Scenic Byway / Great River Road near Pennington Minnesota, for increased safety and enhanced recreation.	Beltrami County & Lady Slipper Scenic Byway, Inc.	Hasbargen, Bruce	4		43	
285	255-G	Reviving a Camp for North Minneapolis Youth	\$1,373,000	A conservation easement on the Phyllis Wheatley Community Center's Camp Katherine Parsons property will protect habitat, water quality, and provide outdoor education and recreation opportunities for North Minneapolis youth.	Minnesota Land Trust	Perry, Vanessa	2		62	-Includes cons. easement stewardship expenses
286	260-G	Sauk River Watershed Habitat Protection and Wetland Restoration	\$2,247,520	This project aims to protect and restore sensitive areas from urban and agricultural encroachment for the betterment of surface water, groundwater and drinking source water.	Sauk River Watershed District	Henderson, Scott	2		53	-Includes cons. easement stewardship expenses
287	262-G	Rainy Lake Recreational Access and Boat Wash Station	\$511,710	To enhance and increase public access to Rainy Lake by providing an adequate ADA compliant recreational parking lot, ADA compliant public restroom and AIS boat wash station.	City of Ranier	Gautreaux, Sherril	2		47	-Capital expenditure: \$150k boat wash station, \$250 parking lot and road, \$10k electric, \$10k kiosk and sign
288	265-G	Bailey Lake Trail and Fishing Pier	\$681,000	This project consists of the reconstruction of the existing Bailey Lake Trail and construction of a new fishing pier on Bailey Lake.	City of Virginia	See-Benes, Britt	2		46	

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289	267-G	Cannon Valley Trail Erosion Control/Water Quality Improvements	\$1,586,200	The project improves Cannon Valley Trail water conveyance infrastructure to reduce sediments entering wetlands and the Cannon River. Improvements include erosion control, repair of failing slopes, and improved sediment capture.	Cannon Valley Trail Joint Powers Board	Roepke, Scott	1		44	-Includes erosion control on private land
290	263-G	Purchasing 316 acres for Conservation and Agriculture Education	\$1,500,000	The Food Group requests funding to purchase 316 acres of farmland and diverse habitat in the Wilder Forest in Washington County to demonstrate sustainable farming, and undertake ecological management.	The Food Group	Berg, Anita	0		47	

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291	G. Land Acquisition for Habitat and Recreation									
292	H. Proposals seeking \$200,000 or less in funding (RECEIVED: 1 Proposal / Subtotal - \$191,000)									
293	72-G	Making the SHTs Big Bad Five Beautiful Again	\$191,000	To renew the most damaged parts of five sections of the Superior Hiking Trail, and to return the Trail to an abandoned route.	Superior Hiking Trail Association	Caneff, Denny	6		67	Proposal Notes Include: 1. Possible ineligible activities per Constitution, M.S. 116P, funding priority exceptions in RFP p. 3- 5. 2. Generally ineligible costs per RFP p. 7 that may require additional justification and would require explicit LCCMR approval at work plan stage 3. Out of state personnel, stipends/honoraria, incentives that may require additional justification and approval at work plan stage
294	I. Other (RECEIVED: 1 Proposal / Subtotal = \$135,000)									
295	273-I	Contract Agreement Reimbursement	\$135,000	Provide continued contract management and customer service to ENRTF pass-through appropriation recipients. Ensure funds are expended in compliance with appropriation law, state statute, grants policies, and approved work plans.	MN DNR	Sherman-Hoehn, Katherine	NA		NA	