2017 - LCCMR Member Presentation Selection Rankings: Environment and Natural Resources Trust Fund Proposals

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Line #	ID #	Member Scoring Compiled (Out of 16)	# Members Reporting Conflict	Staff Ranking	Project Title	$ Requested	Project Summary (30 words)	Organization	Project Manager	Member Notes	Staff Notes
1	**A. FOUNDATIONAL NATURAL RESOURCE DATA AND INFORMATION (32 Proposals / Subtotal $24,746,469)**										
2	001-A	**14**		**90**	Minnesota Geological Survey Geologic Atlases for Water Management	$3,784,700	Continued acceleration of Part A Geologic Atlases to support water management. The atlas products describe the distribution of earth materials that define aquifers and control surface and groundwater movement.	U of MN - Minnesota Geological Survey	Setterholm, Dale		-Continuation -Budget includes transport vehicle for bore hole drilling $34,000 -M.L. 2015 "County Geologic Atlases - Part A" $2,040,000 thru 6/30/2018 -M.L. 2013 "County Geologic Atlases - Part A" $1,200,000 thru 6/30/2016
3	002-A	**14**		**78**	What are the Public Benefits of Protecting Sourcewater?	$320,000	Updated maps and data quantifying sourcewater risks, ecosystem service valuation of clean water, and analyses of equity and community capacity will improve decisions about the protection and management of sourcewater.	U of MN	Keeler, Bonnie		-Ecosystem Services-Drinking Water -M.L. 2015 "Understanding Water Scarcity, Threats, and Values to Improve Management" $234,936 thru 6/30/2018
4	017-A	**13**		**60**	Effects of Wolves on Beavers, Moose, and Deer	$293,000	Project will assess wolf hunting behavior on beavers, moose, and deer in the Border Lakes region to understand how availability of beavers can influence wolf predation on moose and deer.	Voyageurs National Park	Windels, Steve		-Wildlife Research- Wolf -Includes approximately $176,000 non-state other funds secured
5	003-A	**12**		**73**	Minnesota Trumpeter Swan Migration Ecology and Conservation	$462,433	Obtain information essential to managing Minnesota trumpeter swans, using GPS-GSM satellite transmitters to delineate migration patterns and survival, and year-round habitat use and selection.	U of MN	Andersen, David		-Wildlife Research- Swans -Equipment includes costs of $156,00 for 60 GPS transmitters
6	004-A	**12**		**73**	Healthy Prairies II: Preserving MN Prairie Plant Diversity	$938,000	We will collect and preserve germplasm of plants throughout Minnesotas prairie region, study microbial effects on them, and discover the scale of local adaptation and rate of ongoing adaptation.	U of MN	Shaw, Ruth	- Didn't BWSR get $18 million from legislature?	-Continuation -M.L. 2014 "Prairie Sustainability through Seed Storage, Beneficial Microbes, and Adaptation" $600,000 thru 6/30/2017
7	007-A	**12**		**70**	Continue Expansion of the Minnesota Wildflowers Online Botanical Reference	$270,470	Minnesota Wildflowers Information educates both the public and professionals on Minnesota flora (native and invasive) with an innovative comprehensive image-rich online field guide. Funding accelerates the number of species profiled.	Minnesota Wildflowers Information	Chayka, Catherine	- Is the $1.6 million remaining allocated but unspent. - Not full amount?	-Continuation -M.L. 2014 "Expansion of Minnesota Wildflowers Online Botanical Reference" $150,000 thru 6/30/2017
8	006-A	**11**		**70**	Minnesota Biological Survey	$2,955,861	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		-Continuation - Budget includes $179,861 for "DNR Direct and Necessary Expenses" -M.L. 2015 ENRTF $2,450,000 thru 6/30/2017 with $1,620,399 remaining -M.L. 2013 ENRTF $2,650,000 completed 6/30/2015 -M.L. 2011 ENRTF $2,250,000 completed 6/30/2013

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9	015-A	**11**		**64**	Non-Invasive Moose Calf Surveys and Ecosystem Monitoring	$348,151	Unmanned aerial vehicles will assist natural resource managers in providing better monitoring of ecosystems and non-invasively monitoring our moose population while reducing costs and safety risks relative to manned flights.	U of MN	Ditmer, Mark		-Wildlife Research-Moose -Equipment includes a drone for $18,000
10	005-A	**10**		**72**	Enhancing Targeted and Measureable Watershed Restoration and Protection	$2,802,000	Enhancing comprehensive watershed planning and implementation by creating data that accurately shows how water flows from one point on the land to another such as a lake, stream or ditch.	Board of Water and Soil Resources	Thomas, Doug		-Budget includes contract with Iowa State University for $400,000 -Proposal consist of 3 contracts, MN DNR $50,000, Iowa State University $400,000, and UMN $2,200,000, that BSWR proposes $150,000 to manage. -Clean Water Fund funding?
11	011-A	**9**		**68**	Drainage Records Modernization – Phase II, Cost-Share	$540,000	2014 LCCCMR 05c project Phase 1 developed GIS database and guidance tools for public drainage records modernization. This Phase 2 project provides cost-share to drainage authorities, requiring minimum 1:1 match.	Board of Water and Soil Resources	Gillette, Timothy		-Continuation -The number of grants is unknown and dollar amount for grants is unknown -M.L. 2014 "Drainage Records Modernization and Statewide Geographic Information System Database" $230,000 -2014 appropriation was to establish tools for development of a regular budget item for the grants
12	012-A	**9**		**68**	Mapping Groundwater Contamination: Accessible Data to Protect Resources	$480,000	Throughout Minnesota chemical spills have created groundwater contamination. MPCA will share groundwater contamination areas in a web-based interactive map; improving data accessibility to protect our largest source of drinking water.	MPCA	Neve, Hans		-Superfund funding?
13	016-A	**8**		**60**	Cascading Effects of Wolf Recolonization	$398,000	Investigating costs and benefits of a new wolf pack recolonizing Cedar Creeks well-studied ecosystems near the Metro by tracking wolves and testing their impacts on wildlife, biodiversity, and ecosystem	U of MN - Cedar Creek Ecosystem Science Reserve	Isbell, Forest		-Wildlife Research- Wolf
14	009-A	**7**		**69**	Promoting Wild Rice Restoration Success by Examining Microbes	$334,035	This project will evaluate the microbial communities and nutrients associated with wild rice and competing vegetation, with the goal of promoting restoration success to increase the abundance of wild rice.	U of MN - Duluth NRRI	Chun, Chanlan	- Why not University of MN related staff to do work?	-Budget includes conference costs $2,289
15	020-A	**7**		**57**	Lowland Conifer Ecosystems: Holistic Assessment for Adaptive Management	$763,702	Lowland conifer forests are predicted to be especially vulnerable to future threats. This project would provide foundational knowledge on forest productivity, hydrology, and wildlife use, informing and improving sustainable management.	U of MN	Windmuller-Campione, Marcella		

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16	010-A	**5**		**69**	Contaminants in Urban Soils: Understanding the Urban Environment	$1,000,000	Urban soil chemistry profiles of ambient concentrations of chemicals of concern will be established. These will provide valuable tools to stakeholders striving to maintain the environmental health of their communities.	U. S. Geological Survey	Elliott, Sarah	- How does this relate to other moose studies?	
17	031-A	**5**		**39**	Minnesota's Freshwater Sponges: Mapping Taxonomy and Environmental Toxicology	$258,000	Data on sponges in Minnesota are scarce despite their vital role in aquatic ecosystems. This project will determine sponge distribution, identify and quantify accumulated pollutants, strengthen undergraduate research and education.	U of MN - Crookston	Mukku, Venugopal		
18	013-A	**4**		**67**	Landslide Hazards and Impacts on Minnesota's Natural Environment	$672,408	We will create landslide susceptibility maps using a landslide inventory and quantitative analysis of LiDAR to provide tools and data for land managers to make sound mitigation and restoration decisions.	U of MN - Duluth	Gran, Karen		-Budget includes funding for University of North Dakota staff $67,875 and University of Wisconsin staff $6,674
19	008-A	**3**		**70**	Scientific Data Deli: Serving Data for Environmental Innovation	$324,159	The Scientific Data Deli will provide faster, easier access and use of DNR's scientific datasets to support innovative research and inform better natural resource decisions.	MN DNR	Holdsworth, Andrew		-Budget includes $17,659 for "DNR Direct and Necessary Expenses"
20	018-A	**3**		**59**	NE Minnesota Environmental Atlas: Turning Data into Information	$617,632	NRRI will develop an on-line environmental atlas and database for NE Minnesota with data summary, visualization, and analysis tools tailored to the needs of decision makers and natural resource managers.	U of MN - Duluth NRRI	Axler, Richard		
21	024-A	**3**		**48**	Development of Comprehensive Wetland Restoration Planning Framework	$600,000	Development of a statewide framework for prioritizing wetland restoration resulting in a prioritization tool based on natural resource data at a watershed scale.	Board of Water and Soil Resources	Lemm, Les		-Limited information in the proposal to describe the proposed project
22	025-A	**3**		**47**	Healthy Forests and Healthy Deer Populations in Minnesota	$195,800	We seek to determine the economic and ecological impacts of white-tailed deer populations on the health and productivity of Minnesota's forests.	U of MN	Russell, Matthew		-Wildlife Research-Deer/Forestry -DNR Game and Fish Fund? -Deer Management Report from OLA not available yet
23	022-A	**2**		**52**	Advancing the Forest Bio-Economy in Minnesota	$834,015	Proposed work provides information and decision making tools to attract advanced wood products and bio-economy industry to Minnesota; fostering economic growth, ensuring forest harvest, sustaining industry and environmental needs.	U of MN - Duluth NRRI	Singsaas, Eric		-Ecosystem Services-Forestry -Budget includes conference costs $4,300 -Budget includes personnel from University of Iowa $34,728

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24	019-A	**1**		**59**	Mapping Heavy Metal Contamination Using Geophysics and Chemistry	$91,945	This pilot project uses field-based geophysics and chemistry to create high-resolution maps of heavy metal abundances in urban soils. Analysis of microbial communities will determine remediation potential for contaminated sites.	U of MN	Feinberg, Joshua		
25	021-A	**1**		**55**	Including Wildlife Benefits in Forest Planning Models	$397,750	A collaborative team of experts will identify, test and demonstrate ways of integrating important wildlife habitat considerations into forest planning models used to better understand multi-resource trade-offs and opportunities.	U of MN	Hoganson, Howard		-Budget includes contract with Louisiana Tech University for $10,000
26	027-A	**1**		**46**	Decision Support Tool for Prioritizing Shallow Lake Management	$110,347	To confront deteriorating water quality, we will develop a decision-support tool to prioritize shallow lakes for management: lakes to protect, actively manage, and lakes where restoration will be costly.	U of MN	Fieberg, John		
27	028-A	**1**		**42**	Airborne Particulate Characterization Survey: Future Mining's Historic Reference	$398,967	Collect and characterize ambient air samples where near-term non-ferrous mineral resource development potential is greatest, and create a foundational airborne mineral particulate dataset and archive of samples for future reference.	U of MN - Duluth NRRI	Monson Geerts, Stephen		
28	029-A	**1**		**41**	Geospatial Airborne Sensor Survey to Manage Water Resources	$3,126,779	The Project will capture real time geospatial sensor data; actively manage specific watershed projects; optimize water quality; and minimize pollution attributable to ditch construction using unmanned/manned Lidar equipped aircraft.	Northland Aerospace Foundation	Hammerback, Rex		-Budget includes a helicopter lease for $150,000 -Includes drone and sensors
29	014-A	**0**		**65**	Quantifying Color and Fluorescence in Minnesota Waters	$370,000	Color and fluorescence of natural waters provide highly specific tools for the analysis of lake and river waters. New analytical tools and correlated satellite data can assess Minnesota water quality.	U of MN	Alexander, Scott		
30	023-A	**0**		**49**	Tracking Minnesota Plant Life below Winter Snow	$380,000	This project will combine automated measurements of conditions below snow and plant photosynthesis to develop a model of Minnesota plant activity during the winter.	U of MN	Stanton, Daniel		-Includes sensors
31	026-A	**0**		**46**	Assessing Risks to Public Benefits from Minnesota Forests	$338,000	Assess and communicate risks to public benefits from forests (e.g., from land-use change, fires), by economically valuing timber, carbon storage, clean water, and recreation. Inform forward-looking management to mitigate risks.	U of MN	Dee, Laura		-Ecosystems Services- Forestry -Budget includes publication costs $4,000 -Budget includes conference costs $700

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32	030-A	**0**		**41**	Waterfowl Vital Rates in Transition Habitats of Minnesota	$141,120	This project will evaluate vital rates of waterfowl in a unique breeding region of Minnesota. Unlike other prairie habitats, almost no information exists to manage this savanna-like system.	U.S. Geological Survey - South Dakota Coop Unit and SDSU	Stafford, Joshua		-Wildlife Research-Waterfowl -DNR Fish and Game Fund? -Budget includes funding for USGS South Dakota and SDSU funding amount unclear -Budget appears to includes $80,000 for South Dakota State University student -Proposal had three pages, third page removed
33	032-A	**0**		**32**	Beetle Status in Old-Growth and Early Successional Habitats	$199,195	We will assess the status of beetles relevant to conservation of biodiversity, forest health, and pollination, and develop conservation and monitoring recommendations.	U of WI - Lake Superior Research Institute	Steffens, Wayne		
34	**B.Water Resources (46 Proposals / Subtotal $35,369,884)**										
35	035-B	**15**		**76**	Rearing Native Mussels and Building Water Quality Awareness	$591,925	The Minnesota Zoo will accelerate the reintroduction of native mussels into Minnesota rivers and streams through expanded mussel rearing, research, and state-wide educational activities promoting mussel conservation and water quality.	Minnesota Zoo	Maguire, Allan		-Wildlife Research-Mussels -Expands capacity beyond existing collaboration with DNR on mussel rearing from 2016 DNR ENRTF recommendation M.L. 2016 "Restoring Native Mussels in Streams and Lakes" $600,000 pending thru 6/30/2019 -Equipment includes a mussel research and rearing pod $130,000
36	042-B	**14**		**70**	Restoring Agricultural Lakes and Watersheds by Managing Carp	$967,100	Whole-lake experiments, surveys, and modeling to show when and where carp management is the most effective and economical approach for improving water quality in lakes and streams across south-central Minnesota.	U of MN	Bajer, Przemyslaw		-Budget includes publication costs $5,000
37	034-B	**13**		**82**	Innovative Nitrogen Removal Technology to Protect Water Quality	$476,100	Ammonia and nitrate in wastewater cause fish toxicity and harmful algal blooms, but removal is expensive and energy intensive. We will develop a technology for inexpensive, low-energy wastewater nitrogen removal.	U of MN	Novak, Paige	- Just provided money for this purpose in ML 2016 project - how does this relate?	-Project is included in 2017 proposal 052-B "The Minnesota Center for Water Treatment Technology Innovation" $10,306,899 -See Water Center (052-B) response to staff questions (pending)
38	033-B	**12**		**83**	Household Chemicals as Water Pollutants and Toxic Precursors	$236,000	Environmental levels of household chemical and herbicide ingredients will be quantified in Minnesota rivers and lakes and their potential to form toxic byproducts will be assessed.	U of MN	Arnold, William		-Budget includes publication costs $3,000 -Project is included in 2017 proposal 052-B "The Minnesota Center for Water Treatment Technology Innovation" $10,306,899 -See Water Center (052-B) response to staff questions (pending)
39	038-B	**9**		**74**	Removing Plastic Particle Pollution from Minnesota Water Bodies	$359,540	We tackle the problem of plastic particles polluting water bodies in Minnesota. Our goals are to monitor the particle motion, forecast their pathway, and remove them effectively and inexpensively.	U of MN	Coletti, Filippo		-St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities

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40	044-B	**9**		**69**	Responsive Water Quality Monitoring: Southeastern Minnesota Trout Streams	$583,980	Automated stream samplers, citizen scientists, and biological monitoring will be used to develop an improved, more responsive system to protect valuable at-risk trout streams in southeastern Minnesota from polluted run-off.	Winona State University	Mundahl, Neal		-Equipment includes 9 gauging stations $180,000 -Equipment includes Smith-Root LR-24 electrofisher $9,780 -Includes sensors
41	045-B	**9**		**68**	Buffer Gap Analysis	$1,390,656	We will determine the water-quality effects of Minnesota's 50-foot buffer initiative including gaps in continuity, such as tile drains, alternate practices, and width differences.	Board of Water and Soil Resources	Mohring, Eric		-Budget includes conferences and printing $21,000 -Equipment includes hydrologic instrumentation and gaging stations $300,000 -5 year project -Includes drones
42	048-B	**9**		**67**	Reassessing Toxicity of Petroleum Spills with New Technologies	$423,189	Reassess the toxicology of groundwater and associated surface water impacted by petroleum spills using new technologies. Past toxicity assessments are based on incomplete chemical knowledge and inadequate biological effects data.	University of St. Thomas	Martinovic-Weigelt, Dalma		-Qualifications had 2 pages, 2nd page removed
43	036-B	**8**		**75**	Rural Industrial Water Efficiency Impact on Drinking Water	$282,000	We will assess regions in greater Minnesota where groundwater pumping likely affects water quality and work with industrial groundwater users to reduce their water footprint, thereby improving local groundwater resources.	U of MN	Brauman, Kate		-Budget includes publication costs $2,000
44	055-B	**8**		**65**	Maximizing the Benefits of Water Reuse	$148,000	The goal of this project is to provide pathogen data needed to maximize the benefits to groundwater resources and surface water quality by eliminating barriers to water reuse.	U of MN	Ishii, Satoshi		
45	052-B	**7**		**66**	The Minnesota Center for Water Treatment Technology Innovation	$10,306,899	Due to aging / inadequate drinking water, wastewater, and stormwater infrastructure, Minnesota's citizens and water resources are at risk. The center will address these problems through research and technology development.	U of MN	Hozalski, Raymond		-Need competitive process for center directors -Includes fudning for director and associate director -$700,000 in equipment and $729,626 for lab supplies before RFP for projects -6 year project -Outcomes not clear with narrative -See response to staff questions (pending) -Staff were anticipating fewer director and overhead staff and more of a coordinator for projects and center to get it going -Proposal includes 2017 proposals William Arnold 033-B "Household Chemicals as Water Pollutants and Toxic Precursors" $236,000, Paige Novak 034-B "Innovation Nitrogen Removal Technology to Protect Water Quality" $476,100, and Sebastian Behrens "New Self-Sustaining Nitrate and Pesticide Removal Biotechnology" $318,162

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46	066-B	**7**		**55**	Continuous Nitrate Pollution Monitoring at the Kitchen Sink	$276,590	Provide citizens with an inexpensive, automated, in-home method to instantly test their water for dangerous nitrate levels, and help them to provide these data to state agencies and decision-makers.	U of MN	Wickert, Andrew		-Is this product testing for a private company? -Includes sensors -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities)
47	046-B	**6**		**68**	How Rapidly can Groundwater Quality be Improved?	$672,000	Aquifers in southeastern Minnesota have continually received excessive doses of anthropomorphic chemicals such as nitrates since WWII. We will estimate how long it will take to make them clean again.	U of MN	Nieber, John	-Deleted Mulla project much better.	
48	058-B	**6**		**59**	Sulfate and Metal Removal from Northeast Minnesota Waters	$298,325	A sustainable, cost-efficient, and commercially competitive water treatment technology will be developed to remove sulfate and heavy metals from mining-impacted waters in Northeast Minnesota, using real-time sensing and on-site treatment.	U of MN	Dutcher, Cari		-Relationship to similar 2016 project unknown? -Equipment budget not very well broken down
49	059-B	**6**		**59**	Chemicals of Emerging Concern in Minnesota Fish	$436,922	Identification of chemicals of emerging concern (CECs) and metals from fish, water, and sediments from 30 waterbodies in NE MN that are most used for subsistence harvest and MN recreation.	Grand Portage Band of Lake Superior Chippewa	Moore, Seth		-Qualifications had two pages, 2nd page removed -See response to staff questions (pending)
50	039-B	**5**		**74**	Developing Sensors for River-Flow Turbidity and Sediment-Transport	$311,367	The development of a low-cost automated sensor measuring bedload and suspended sediment load in Minnesota rivers is proposed, aiming to extend monitoring and reduce turbidity in the river network.	U of MN - St. Anthony Falls Laboratory	Guala, Michele		-Equipment costs for an Acoustic Doppler Velocimeter $25,000 -Sensor development -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
51	050-B	**5**		**66**	Phosphorus/Nitrate Recapture through Biofilms for Agricultural Application	$773,000	We propose to build, operate and demonstrate the effectiveness of modular algal biofilm reactor systems for on-site treatment of impaired waters, removing phosphorus and nitrates to restore these waters.	U of MN	Barney, Brett		-Equipment costs include an Ion Chromatography System $25,000 -Budget includes publication costs $5,000
52	051-B	**5**		**66**	New Self-Sustaining Nitrate and Pesticides Removal Biotechnology	$318,162	In this project we will develop, demonstrate, and apply an efficient, cost-effective, and self-sustaining biofilter technology to remove nitrate and pesticides from contaminated groundwater in Minnesota.	U of MN	Behrens, Sebastian		-Project is included in 2017 proposal 052-B"The Minnesota Center for Water Treatment Technology Innovation" $10,306,899 -Budget includes conference costs $3,045 -See Water Center (052-B) response to staff questions (pending)
53	054-B	**5**		**66**	Preventing Fish Kills by Increasing Understanding	$699,905	We will 1)map the risk of fish kills in Minnesota lakes and streams and 2)increase knowledge of water quality in southeastern Minnesota through real-time, background and storm event monitoring.	MN DNR	Rantala, Heidi		-Wildlife Research- Fish -Budget includes $4,490 for "DNR Direct and Necessary Expenses" -Equipment includes Data loggers and automated samplers $147,000 -Budget personnel includes Minnesota Department of Agriculture $333,000 for water sampling

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54	069-B	**5**		**50**	Shrinking Lake Superior: Water Levels and Community Resilience	$324,425	Lake Superiors water level is critical to Minnesotas economy. We will provide science to make level predictions, determine critical knowledge gaps, and prepare communities and industries for water level change.	U of MN - Duluth - Sea Grant Program	Downing, John	- No more centers but should encourage departments to cordinate for 1/10th of funding. - Not for a center but for working with Health and PCA on identifying needed research for more efficient and up-to-date waste waters treatment, for improvements in protecting drinking water sources, and up-to-date science that ensures safe drinking water--the cost should be less than a half million.	-Budget includes refreshments costs $7,500 -Budget includes conference costs $2,700
55	074-B	**5**		**41**	Measuring Reductions in Nitrate Pollution from Precision Agriculture	$159,833	Our project will quantify nitrate losses for corn production in drain-tiled fields, comparing next-generation precision agriculture to conventional management methods.	University of St. Thomas	Small, Gaston		-Budget includes $32,908 in equipment for sensors, $4,974 for a camera, and $1,980 for loggers -Includes sensors
56	037-B	**4**		**75**	Antibiotic Resistance Assessment in St. Louis River Watershed	$254,576	This project will determine the fate of antibiotic resistance from sources through sewer systems, wastewater treatment, and finally into environment for prioritization of their source control in St. Louis Watershed.	U of MN - Duluth NRRI	Chun, Chanlan	- Not full amount?	-Budget includes conference costs $2,289
57	040-B	**4**		**74**	Preventing Phosphorus Pollution from Stormwater Ponds	$497,460	Stormwater ponds can lose their benefits over time and lead to unintended pollution of downstream environments by phosphorus. This project will develop tools to predict phosphorus release from stormwater ponds.	U of MN	Gulliver, John		-St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
58	041-B	**4**		**73**	Green Technology for Harmful Algal Bloom Remediation	$549,967	We propose to develop a novel green technology based on electrical discharge plasma in water to simultaneously inactivate harmful blue-green algal blooms and their toxins without non-target effects.	U of MN	Bruggeman, Peter		-Equipment cost of $60,000 for High voltage pulsed power supply and materials -Pontoon is the size of a recreational pontoon
59	043-B	**4**		**70**	Sediment and Storm-Water Effects on Lake Superior	$428,859	UMD scientists will quantify effects of storm inflows on Lake Superior's water quality and ecology (plankton and fish productivity), sharing these results with resource managers to refine stormwater mitigation strategies.	U of MN - Duluth Large Lakes Observatory	Minor, Elizabeth		-Budget includes 16 days of Blue Heron research vessel time $168,000 -Includes drones

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60	057-B	**4**		**62**	Predicting Hidden Groundwater Connections Between Land and Lakes	$408,455	Assess baseline groundwater influence on four representative lakes; Develop groundwater models that predict land-use impacts on lake levels and contamination; Assess scenarios of crop-conversions, irrigation, and fertilization.	U of MN	Ng, Gene-Hua Crystal		-Budget includes 10 ground water monitoring wells $45,000 -Have not started M.L. 2016 "Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge" $212,000 project -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities)
61	061-B	**4**		**58**	Snowpack-Driven Groundwater Recharge across Minnesota	$453,386	Snowmelt provides up to 80% of Minnesotas groundwater recharge. We will measure this statewide, build spring recharge forecasts, and find solutions where climate and land-use change impact snowmelt water resources.	U of MN	Wickert, Andrew		-Equipment costs include Data loggers etc. $63,294 -Includes sensors -Proposal says Gene-Hua Crystal Ng's M.L. 2016 "Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge" project could provide data ($212,000) -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
62	076-B	**4**		**39**	Impacts of Water Quality on Yearling Walleye Survival	$178,000	Minnesota's walleye fishery is dependent on the survival of juvenile fish. Our study determines the impacts of contaminants on juvenile walleyes, and establishes landscape-based tools for predicting population vulnerability.	St. Cloud State University	Ward, Jessica		-Wildlife Research- Walleye -DNR Game and Fish Fund?
63	049-B	**3**		**67**	Agricultural Water Remediation Using Novel Woodchip Bioreactor Technology	$567,000	We will evaluate the effectiveness of nutrient reduction strategies from drainage water using microbiologically-optimized woodchip bioreactors, which will alleviate the adverse effects associated with eutrophication, hypoxia and harmful algal blooms.	U of MN	Rosen, Carl		-Equipment cost of $68,000 for automated water sampler -Budget includes publication costs $2,000
64	077-B	**3**		**37**	Addressing Emerging Threats to Coldwater Fish Production	$1,243,059	The goal of this project is to protect hatchery fish raised for stocking in Minnesota's waters, by increasing biosecurity at Crystal Springs State Fish Hatchery.	MN DNR	Phelps, Paula	- There seem to be multiple strategies here. We need to figure out which one is best. The need is clearly there.	-Budget includes $19,554 for "DNR Direct and Necessary Expenses" -2016 Bonding Proposal? -Bonding and Capital Infrastructure?
65	053-B	**2**		**66**	Enhancing Septic Tank Performance by Temperature Control	$397,000	This project will study the temperature control methods and their effects on the septic tank performance in microbial degradation of organic solids and utilization of carbon, nitrogen and phosphorus.	U of MN	Hu, Bo		
66	062-B	**2**		**58**	Environment-Friendly Nanosensors to Detect Nutrients in Water	$455,026	Excessive nutrients in water can trigger harmful algal blooms and cause serious environmental problems. We propose to develop environment-friendly nanosensor arrays for simultaneous detection of multiple nutrients in lakes/rivers.	U of MN	Yang, Rusen		-Sensors development -Why isn't Tianhong Cui's M.L. 2016 "Development of Innovative Sensor Technologies for Water Monitoring" $509,000 sufficient for sensor based research? -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities

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67	063-B	**2**		**57**	Development of a Household Decentralized Wastewater Treatment System	$322,000	This project will study the application of high-rate activated sludge (HRAS) technology to treat the decentralized household wastewater in order to provide better treatment and energy recovery.	U of MN	Hu, Bo		-Equipment includes $16,000 for reactors, one lab scale and one prototype -Budget includes publication costs $3,000 -Results of previous project M.L. 2014 "Next Generation Large-Scale Septic Tank Systems" $258,000 are not yet known
68	068-B	**2**		**54**	Underwater Robots for Hazard Monitoring in Minnesota Lakes	$442,877	Based on existing underwater robotic technology, the project aims at developing an autonomous system specialized in monitoring Minnesota lake waters for early identification of potential chemical and biological hazards.	U of MN	Hong, Jiarong		-Equipment includes $33,000 for 3 robots -St. Anthony Falls Laboratory -See response to staff questions (pending)
69	073-B	**2**		**42**	Smart Water Resource System for Sauk River Watershed	$214,260	Common, integrated, system for Sauk River Watershed, to gather real-time meteorological and hydrological data, predict water quantity and quality, and provide up-to-date information and decision support for water resource management.	St. Cloud State University	Sarnath, Ramnath		-Budget includes conference costs $3,000 -Includes sensors and drones
70	075-B	**2**		**40**	Crystal Lake Watershed Nutrient Removal Practices	$996,500	This water quality project includes a nutrient removal wetland, woodchip bioreactor, and an iron-sand filter to remove sediment, nitrogen, and phosphorus from an impaired public water and lake.	Blue Earth County Drainage Authority	Austinson, Craig		-Easement Acquisition for $143,750 for 11.5 acres of agricultural land -Proposal addresses TMDL's and is potentially ineligible per RFP -Project includes capital costs, for infrastructure such as constructed wetland, bioreactor, and iron-sand filter $713,850, which are potentially ineligible per RFP
71	047-B	**1**		**67**	Quantifying Depth-Dependent Permeability of Fractured Rock	$296,739	Fracture permeability will be measured and related to depth below the surface, and this information is essential to protect groundwater from landfills, septic tanks, and other pollution sources.	U of MN	Guzina, Bojan		-Equipment cost for a Syringe Pump $27,000
72	060-B	**1**		**58**	Monitoring Minnesota's Water with Continuous GPS Stations	$437,316	Using a network of existing GPS stations, Minnesotas total water storage will be estimated, monitored, and predicted to quantify how and where it is changing.	St. Cloud State University	Ahlgren, Kevin		-Budget includes conference costs $5,724
73	064-B	**1**		**57**	Assessing Legacy Waters with Advanced Sensors	$1,568,000	Installing advanced water quality sensors on Minnesotas main rivers and tributaries, along with an associated econometric analysis on agricultural BMP adoption, will inform Minnesota decision-makers if conservation expenditures are effective.	U of MN - Water Resources Center	Peterson, Jeff		-Equipment includes 5 "LiquID" water quality units $325,000 -Clean Water Fund funding? -Includes sensors
74	065-B	**1**		**56**	Enhancing DNRs Mineland Water Quality Impact Research, Hibbing	$442,346	The proposed research will guide mine regulatory decisions to protect state waters by providing valuable information on leachate from regional mine waste materials and improved local climate information.	MN DNR	Kelly, Megan		-Budget includes $155,000 equipment costs (including weather station and data logger $15k and liquid isotope analyzer $90k) -Budget includes $25,364 for "DNR Direct and Necessary Expenses" -Minerals Management Account?

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75	070-B	1		46	Impact of Migratory Birds on Minnesota Water Quality	$272,000	We will clarify the impact of waterfowls on biological water quality, and construct a model to predict concentrations of pathogens based on the geese counts and other environmental parameters.	U of MN	Ishii, Satoshi		-DNR Game and Fish Fund?
76	072-B	1		43	Phosphorus Behavior in Northern Minnesota Watersheds	$274,059	Phosphorus loads to and cycling in Northern Minnesota watersheds is poorly understood. Differences in phosphorus cycling and loading will be determined in lakes where the phosphorus behavior significantly differs.	Bemidji State University	Isaacson, Carl		-Equipment budget includes $153,544 for a Phosphate Analyzer
77	078-B	1		35	Little Sioux Flood Mitigation - Wetlands and Channel Storage	$2,787,990	Construct wetland storage basins with low-flow rate control structures, and in-channel storage to provide water treatment and storage for improved water quality and reduced flooding to protect communities downstream.	Jackson County Public Works	Stahl, Tim		-Construction of hydrological channels -$395,000 for easement acquisition -Clean Water Fund funding?
78	056-B	0		63	Continuous Data to Guide Nitrate Reduction Strategy	$385,241	Inform Minnesota's strategy to reduce nitrate with analysis of continuously captured data in the Minnesota River Basin so that the strategy can utilize most cost-effective management options.	U of MN - St. Anthony Falls Laboratory	Hansen, Amy		-Budget includes $75,000 for 3 nitrate samplers -Budget includes $56,042 for University of Florida staff -Budget includes $87,888 for USGS contract -Budget includes conference costs $5,000 -Includes sensors -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
79	067-B	0		54	How Will Changes in Evaporation Impact Our Lakes?	$1,197,450	Lake levels in many Northeastern Twin Cities Metropolitan Area Lakes have been at historic low levels. This project examines how evaporation (present/future) impacts lake levels and water resources.	U of MN	Griffis, Timothy		-2016 proposed legislative funding from general fund to do lake sustainabilty study in North East Metro area -Budget includes funding for USGS $640,000
80	071-B	0		46	Alum's Critical Role in Controlling Algae and Phosphorus	$264,400	Algal bloom reduction requires control of phosphorus accumulated in lakes. Alum is critical to phosphorus control. We will deliver cost benefit, guidance, and outreach on controlling phosphorus through alum treatment.	Barr Engineering Co.	Pilgrim, Keith		-Budget includes 40% overhead on 5 staff salaries
81	**C. Environmental Education (27 Proposals / Subtotal $9,684,681)**										
82	079-C	14		68	Floating Classroom: Connecting 20,000 Youth to Minnesota Waterways	$1,240,730	Floating Classroom reaches 20,000 diverse students statewide on 30+ waterways, engaging them in environmental science education, campsite restoration, data collection and dissemination to earn a resume-building outdoor science certificate.	Wilderness Inquiry	Lais, Greg		-Continuation -M.L. 2014 "Urban Environmental Education Engaging Students in Local Resources" $1,093,000 thru 6/30/2017 -M.L. 2013 "Youth Outdoors: Mississippi River Education and Employment Opportunities" $450,000 completed 6/30/2015

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83	082-C	**11**		**63**	Increasing Diversity in Environmental Careers: Fellowships, Internships, Mentorships	$1,487,519	Provides comprehensive, continued support to ensure successful pursuit of STEM educations and careers by underrepresented students who will diversify Minnesotas workforce and benefit our natural environemnt for generations to come.	MN DNR	Getchell, Vikki	- Is the $378k to Conservation Corps to adminster the project or is it paying for more Conservation Corps students to be involved in projects?	-$650,000 or more for DNR and Conservation Corps Minnesota and Iowa administration -Budget includes $90,480 for "DNR Direct and Necessary Expenses" -See response to staff questions (pending)
84	083-C	**9**		**63**	Minnesota Water Stories Told in Digital Planetariums	$622,000	The Bell Museum will create an interactive planetarium program on water reaching over 400,000 citizens in Duluth, Marshall, Mankato, Minneapolis, Moorhead, Rochester, St. Paul and statewide though portable systems.	U of MN - Bell Museum of Natural History	Weiblen, George		-Budget includes $114,000 for video equipment -Includes drones
85	084-C	**9**		**61**	Bridging Classroom and Outdoor Learning by Studying Birds	$270,740	We integrate two established educational tools, Raptor Lab and Driven to Discover/Birds, blending classroom learning with outdoor science, to empower teachers to create outdoor learning environments that foster exploration.	U of MN	Ponder, Julia	- Not full amount? Outcomes unclear?	-Curriculum development or adaptation of existing material? -Outcomes are unclear? -It is unclear what the demonstrations are? -M.L. 2014 "Raptor Lab Integrating Online and Outdoor Learning Environments" $186,000 thru 6/30/2016
86	081-C	**8**		**64**	Youth Convening Minnesota	$310,008	Climate Generations Youth Convening Minnesota (YCM) will partner with 10 communities with youth clubs to engage 5,000 youth with the recognition that their voices are powerful motivators in community conservation.	Climate Generation: A Will Steger Legacy	Poppleton, Kristen		-M.L. 2014 "Educating Minnesotans about Potential Impacts of Changing Climate" $325,000 thru 6/30/2016
87	101-C	**8**		**41**	Providing Residential Environmental Learning Experiences to Under-Served Students	$130,000	We wish to provide scholarships to serve a minimum of 1,000 under-served Minnesota students for 2-night, 3-day residential environmental learning experiences at the Audubon Center of the North Woods.	Audubon Center of the North Woods	Wood, Bryan	- Need more clarity and details on the specific outcomes.	-How much does it cost per student?
88	087-C	**7**		**56**	Market Science: Connecting Minnesotans to Environmental Research	$132,000	This project will support University of Minnesota researchers to bring interactive science activities to farmers markets and classrooms to promote excitement and knowledge of current environmental research.	U of MN	Tiffin, Peter		
89	092-C	**6**		**50**	Bird City - Education for Lasting Conservation	$280,000	Through Bird City Minnesota, Audubon Minnesota will engage up to 60 communities, at least 400 staff and elected officials and 400,000 citizens to improve habitat and protect birds by 2020.	Audubon Minnesota	Eckles, Joanna		
90	085-C	**5**		**59**	Students Use Local Phenology to Understand Climate Variability	$240,000	We will partner with nature centers to engage 50 teachers, 1000 youth and 10 communities in recording phenology, e.g. budburst, to understand species vulnerability and devise local climate adaptation strategies.	U of MN	Carlson, Stephan		-Why is there nature center room rental charges? -How will they choose the 10 nature centers?

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91	089-C	**5**		**55**	Establish a Minnesota River Basin-Wide RiverWatch Program	$285,500	Create a River Watch program on the Minnesota River through which high school based teams will conduct Water Quality monitoring (and other environmental learning) in accordance with MN-PCA protocols.	Friends of the Minnesota Valley	Suss, Ted		
92	090-C	**5**		**52**	Pollinator and Clean Water Stewardship through Community Engagement	$252,864	This project will promote native plantings, increase the capacity of businesses to supply relevant material and expertise, and create a map of pollinator-friendly stormwater best management practices to support research.	Metro Blooms	Bly, John		-Appears to be funding for organizational development -Budget includes $50,000 for "Native Plant Incentive Programs" for a $50 reimbursement to the first 1,000 plantings -What encompasses a "Planting"? -What is the role of St. Anthony Falls Laboratory? Consultation
93	105-C	**5**		**34**	Northeast Minneapolis Sustainability Incubator	$235,000	NE Incubator will engage, educate, and empower our diverse community creatively surrounding the causes and impacts of climate change and water quality issues, while also building community resilience.	Holland Neighborhood Improvement Association	Koski, Adelheid		
94	088-C	**4**		**55**	Educational Game about Water Quality in Minnesota Lakes	$313,000	University of Minnesota faculty and Andamio Games will collaborate to create “Lake Doc,” a collaborative and educational game for high-school students and museum-going members of the general public.	U of MN	Cotner, Sehoya		-$200,000 for a private company without an RFP -Project includes potentially ineligible curriculum development per RFP
95	102-C	**4**		**40**	Restoring Resilient Long-Lived Conifer Stands through Experiential Learning	$126,840	We propose the development of an experiential learning case study which will enhance the existing curriculum in silviculture at the University of Minnesota and Itasca Community College.	U of MN	Windmuller-Campione, Marcella		-Appears to be academic course development -Budget, activities and outcomes are unclear
96	104-C	**4**		**35**	Minnesota Bison Conservation Herd Film	$103,852	A film documenting the history, state-of-the-art science and human connections involved in Minnesota’s attempt to save bison as a wildlife species before it’s too late.	MN DNR	Watson, Alexander		-Budget and activity budgets do not add up -Not sure length of the film, audience, or purpose -No DNR match or other funding to make film -Budget includes $3,825 for "DNR Direct and Necessary Expenses"
97	080-C	**2**		**64**	Diversifying Involvement in the Natural Resources Community II	$791,825	540 diverse high school-aged youth and families throughout the state participate in outdoor recreation and natural resource experiences and youth are provided with intensive college and career guidance.	MN DNR	Bonsignore, Gina		-Budget includes $378,055 for Conservation Corps Minnesota and Iowa to administer the program -Budget includes money for buses $12,600 -Budget includes $14,000 for snacks -Only $140,000 goes to youth crew employment -Budget includes $6,079 for "DNR Direct and Necessary Expenses" -M.L. 2014 "Diversifying Involvement in the Natural Resources Community" $419,000 thru 6/30/2017

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98	086-C	**2**		**59**	Sustainability Immersion Institute for Diverse Pre-University Students	$323,000	This intensive sustainability summer program engages culturally diverse high school and community college students, teachers, and undergraduate mentors to develop youth-relevant communication of sustainability issues and inspire future career choices.	Institute on the Environment, University of Minnesota	Oldham, Mary	- Start the ML 2016 pilot project to see how it goes before coming back for more funding.	-Budget includes money for buses $13,000 -Budget includes costs for MEA workshops unspecified amount -Budget and outcomes are unclear -How are they recruiting or getting schools, teachers, youth? -What is the relationship between this project and M.L. 2017 Gina Bonsignore "Diversifying Involvement in the Natural Resources Community II"= $791,825 and M.L. 2014 Diversifying Involvement in the Natural Resources Community $416,000 or Vikki Getchell "Increasing Diversity in Environmental Careers: Fellowships, Internships, Mentorships" $1,487,519
99	091-C	**2**		**51**	Connecting Minnesota's Youth to Voyageurs National Park	$90,600	This project addresses the lack of access to and awareness of Minnesotas Voyageurs National Park through an integrated suite of distance learning, classroom and park-based environmental education programs.	Voyageurs National Park Association	Hausman, Christina		-Budget includes Wilderness Inquiry staff $3,167 -Appears to supplant Federal funding
100	103-C	**2**		**39**	North Minneapolis Blooming Alleys: Resilient Neighborhoods, Clean Water	$313,289	We improve water quality, create habitat, and transform alleys into usable community space by engaging North Minneapolis residents and students to install and monitor raingardens, permeable pavement, and native plantings.	Cleveland Neighborhood Association	Scholl, Laura		-Project addresses TMDLS and is potentially ineligible per RFP -4 year project
101	095-C	**1**		**48**	Preparing Wildlife Champions Program Model for Statewide Expansion	$150,325	The Zoo will continue its work with high schools to analyze and improve student-led prairie conservation projects for greatest conservation impact and refine the student engagement model for statewide expansion.	Minnesota Zoo	Strecker, Carol		-The current project recommendation, M.L. 2016 "WIldlife adn Habitat Conservation Education for Southwest Minnesota High Schools" = $147,000 thru 6/30/2018, was supposed to be a pilot and the project has not started -Staff ranked low because pilot has not started yet -This project would be double funded in 2018
102	096-C	**1**		**45**	Engaging Communities with K-12 Smart Energy Solutions	$543,700	Innovative renewable energy charging stations, energy audits, educator trainings and hands-on activities in 12 communities across the state will reduce consumption and accelerate connections addressing air quality and climate impacts.	Windustry	Daniels, Lisa		-Equipment includes $128,000 for Hybrid lighting and charging stations for school parking lots
103	100-C	**1**		**43**	Developing Watershed Stewardship in Northwest Minnesota Youth	$71,861	Headwaters Science Center will implement an inquiry-based multi-year environmental science club for 20 middle school students focused on water quality, watershed evaluation, and aquatic invasive species in Northwestern Minnesota.	Headwaters Science Center	Joy, Susan		-Budget and outcomes are not clear -Project needs fiscal agent

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104	093-C	**0**		**50**	Where are the "Jumping Worms"?	$92,559	Assessing invasive earthworm distribution across the state through environmental education and public participation in authentic data collection to inform state invasive species policy. Current knowledge on distribution is limited.	U of MN - Duluth NRRI	Hueffmeier, Ryan		-TIS (Terrestrial invasive species)- Worms -Project is appears not to be coordinated with agencies
105	094-C	**0**		**49**	Developing Scientific and Intellectual Infrastructure for Clean Waters	$476,000	We will develop tools for answering questions that will help use better manage wetlands and lakes in Minnesota. We will also build a water quality database for students and scientists.	U of MN	Cotner, James		-It is not clear where the funding for facility is coming from -Who are partner schools? -Appears to be funding for a class
106	097-C	**0**		**45**	Soil Kitchen-Minnesota	$218,814	Soil Kitchen-Minnesota builds a mobile framework for on-site screening of soil lead and soil quality. Experts and citizens create datasets and implement improved recommendations for food production and public health.	U of MN	Jelinski, Nicolas		-Equipment includes $18,500 for "materials for Build-out of Mobile Soil Kitchen"
107	098-C	**0**		**44**	Implementing Identified Climate Adaptation Priorities in Rural Minnesota	$319,735	We will implement previously-identified climate adaptation projects in Morris, Grand Rapids and Winona, and create tools for more rural communities in Minnesota to develop and implement community-driven climate adaptation plans.	Institute for Agriculture and Trade Policy	Claussen, Anna	- Could they use Legacy funds?	-No information about what projects might be funded -Lacks definition of projects and inputs -How will $30,000 in each community be spent?
108	099-C	**0**		**43**	Race 2 Reduce-Water Conservation for Youth	$262,920	Race 2 Reduce will reduce personal water use for youth by 20% over a 3 year period. Students will become educated citizens and stewards of water resources.	H2O for Life	Collins, Abby		-Time frame is inconsistent -Budget includes teacher stipends for curriculum training $24,570 -Budget includes White Bear Lake school instructor salary $95,000 - Received $300,000 supplemental K-12 education budget.
109	**D. Aquatic and Terrestrial Invasive Species (21 Proposals / Subtotal $14,876,263)**										
110	107-D	**12**		**76**	Implementing Biological Control of Garlic Mustard	$421,987	Gain approval and implement release of a crown-mining weevil for biological control of garlic mustard in Minnesota; complete testing of a seed–feeding weevil for additional control of garlic mustard.	U of MN	Becker, Roger		-TIS-Garlic Mustard -Continuation -M.L. 2007 "Biological Control of European Buckthorn and Garlic Mustard" $300,000 6/30/2010 -M.L. 2013 "Biological Control of Garlic Mustard" $140,000 thru 6/30/2016 -See TIS Center response to staff questions (pending)
111	122-D	**11**		**48**	Tactical Invasive Plant Management Plan Development	$296,832	Develop regional priorities and an action plan for invasive plant management to protect and promote habitat and native species.	Minnesota Department of Agriculture	Chandler, Monika		-TIS- Plants -Why is this not already done and what plan have they been using? -See TIS Center response to staff questions (pending)

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112	106-D	**9**		**85**	Using Science to Solve Minnesota's AIS problems - Phase II	$6,100,000	10-14 competitive research projects or rapid assessments will be launched to find solutions to Minnesota's top AIS problems through control, prevention, and early detection of existing and emerging AIS threats.	U of MN	Galatowitsch, Susan		-AIS -Continuation -This is the Minnesota Aquatic Invasive Species Resource Center funding for reseach projects based on center priorities -See AIS Center response to staff questions (pending)
113	109-D	**9**		**71**	Quantifying Spiny Waterflea Threats to Minnesota Walleye Lakes	$1,690,320	The proposed project will quantify the threats posed by established populations of spiny waterflea (Bythotrephes longimanus) to the sustainability of aquatic ecosystems in vulnerable Minnesota walleye lakes.	U. S. Geological Survey	Kiesling, Richard		-AIS-Spiny Waterflea -The AIS Center is going to fund a risk assessment on fish from spiny water flea but is not funding this research -Budget includes $120,000 Portland State software development contract -Budget includes potentially ineligible general office supplies $2,500 per RFP -Budget includes $910,900 for 8 USGS staff salary -See AIS Center response to staff questions (pending)
114	108-D	**7**		**73**	EAB Biocontrol Phase III: Assessment and Citizen Engagement	$729,540	Biocontrol is the best landscape level management option for EAB. We will implement biocontrol using a newly approved parasitic wasp, assess impact of the statewide program and engage citizen volunteers.	Minnesota Department of Agriculture	Osthus, Jonathan	- But not emerald ash borer.	-TIS-Emerald Ash Borer -Continuation -M.L. 2014 "Biosurveillance and Biocontrol of Emerald Ash Borer - Phase 2" = $447,000 thru 6/30/2017 -M.L. 2011 "Emerald Ash Borer Biocontrol Research and Implementation" $500,000 completed 6/30/2014 -See TIS Center response to staff questions (pending)
115	112-D	**7**		**69**	Mountain Pine Beetle Phase II: Protecting Minnesota	$384,838	Phase I found that mountain pine beetle can kill every species of pine in Minnesota. This insect attacks in numbers. Now we extend surveys and determine minimum number for survival.	U of MN	Aukema, Brian		-TIS- Mountain Pine Beetle -Continuation -M.L. 2014 "Mountain Pine Beetle Invasive Threat to Minnesota's Pines" $250,000 -See TIS Center response to staff questions (pending)
116	119-D	**7**		**50**	Adapting Stream Barriers to Remove Invasive Fish	$381,150	Field tests at existing barrier sites and laboratory experiments to adapt a recently developed technology to remove invasive carp from streams during their spawning migrations in Minnesota.	U of MN	Bajer, Przemyslaw		-AIS- Common Carp -Equipment rental for $105,000 for what appears to be the "Whooshh" system created by Whoosh Innovations -Budget includes publication costs $4,000 -See AIS Center response to staff questions (pending)
117	111-D	**6**		**70**	New Technology to Control Invasive Carp	$389,000	We developed a new technology that can significantly reduce or eradicate an invasive species with no harm to native species. We will apply this to control invasive carp.	U of MN	Smanski, Michael		-AIS-Common Carp -See AIS Center response to staff questions (pending)

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118	117-D	6		62	Acquiring Key Information for a Carp Deterrent System at Lock and Dam #5	$284,000	We complete an approach to stop invasive carp by perfecting a sound deterrent system while helping the DNR with feasibility studies and the US Army Corps with improving gate operations.	U of MN	Sorensen, Peter		-Continuation-AIS- Carp -Score reflects past ENRTF funding still available -It is not clear if there is not already sufficient funding under current funding to do this project? -What is relationship to Messinger projects? -Equipment includes $20,000 for fish tracking system with computer -M.L. 2014 "Blocking Bighead, Silver, and Other Invasive Carp by Optimizing Lock and Dams" $853,000 thru 2017 -M.L. 2013 ENRTF "AIS Research Center Sub-Project 03: Reducing and Controlling AIS: Developing Effective Tools to Attract and Locate Aggregations of Invasive Carp" $753,000 thru 2019 -M.L. 2012 "Aquatic Invasive Species Cooperative Research Center" $981,000 thru 2018 -M.L. 2008 "Accelerating Plans for Integrated Control of the Common Carp" $550,000 completed 2011 -M.L. 2005 "Integrated and Pheromonal Control of Common Carp" $550,000 completed 2008 -M.L. 2003 "Developing Pheromones for Use in Carp Control" $100,000 thru -See AIS Center response to staff questions (pending)
119	113-D	5		67	Bioacoustics to Deter and Eliminate Invasive Bigheaded Carp	$399,934	The next generation of sound based deterent barriers and herding/capture technolgy will be developed, tested and deployed to deter, control and/or eliminate invasive silver and bighead carp.	U of MN - Duluth	Mensinger, Allen		-AIS- Invasive Bigheaded Carp -Continuation -Budget includes work in Illinois travel costs $45,000 -M.L. 2014 "Bioacoustics to Detect, Deter and Eliminate Silver Carp" $262,000 thru 6/30/2017 -M.L. 2010 "Bioacoustic Traps for Management of Round Goby" $175,500 completed 6/30/2013 -See AIS Center response to staff questions (pending)
120	114-D	5		67	Continuation of Invasive Carp and Native Fish Evaluation	$739,064	Minnesota DNR will continue Invasive Carp monitoring in the Mississippi River and tributaries, employ advanced acoustic telemetry, and assess food chains to determine how native species prevent Invasive Carp establishment.	MN DNR	Parsons, Bradford		-AIS- Invasive Bigheaded Carp -Continuation -Budget includes $34,157 for "DNR Direct and Necessary Expenses" -M.L. 2013 "Detection and Monitoring of Asian Carp Populations" $540,000 -DNR Game and Fish Fund? -See AIS Center response to staff questions (pending)
121	118-D	5		52	Conserving Trees and Biodiversity with Strategic EAB Management	$708,500	EAB is spreading but most of Minnesota is not yet affected. We will measure impacts of tree removal and treatments on EAB populations and non-target organisms to improve management strategies.	Minnesota Department of Agriculture	Abrahamson, Mark		-TIS-Emerald Ash Borer -M.L. 2013 "Improving Emerald Ash Borer Detection Efficacy for Control" $600,000 thru 6/30/2016 -See TIS Center response to staff questions (pending)

2017 - LCCMR Member Presentation Selection Rankings: Environment and Natural Resources Trust Fund Proposals

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122	115-D	**4**		**66**	Impact of Zebra Mussels on Mercury in Fish	$211,437	Invasive zebra mussels have the potential to impact concentrations on toxic mercury in Minnesota's fish. We will study these effects of zebra mussels, helping understand their impact on Minnesota's resources.	U of MN - Duluth	Ozersky, Tedy		-AIS-Zebra Mussels -Budget includes $15,000 in capital equipment -Budget includes international conference $4,000 -See AIS Center response to staff questions (pending)
123	123-D	**4**		**40**	Maximize Value of Water Impoundments to Wildlife	$195,000	Water impoundments function as important artificial wetlands for many migrating and breeding birds. We propose to control invasive hybrid cattail which reduces the habitat quality and functionality of these impoundments.	Audubon Minnesota	Hall, Kristin		-AIS-Cattails -Proposal appears to include potentially ineligible standard maintenance and management per RFP -Land located in Agassiz Valley Impoundment owned by the Middle-Snake-Tamarac Rivers Watershed District -See AIS Center response to staff questions (pending)
124	110-D	**3**		**71**	Natural Products for Protecting Minnesota Natural Resources	$247,000	We will develop, demonstrate, and disseminate methods to replace the use broad-spectrum pesticides that kill many insects by using natural products that eradicate only undesirable, invasive species insects.	U of MN	Wackett, Lawrence		-Target species Emerald Ash Borer, Gypsy Moth and agricultural insect pests -See TIS Center response to staff questions (pending)
125	116-D	**2**		**63**	Will the Invasive Alga Didymosphenia Degrade Minnesota Waters?	$207,213	This project assesses the extent of the invasive alga Didymosphenia in Minnesota waters, examines bloom triggers and foodweb implications to lead to prevention and control measures, and includes outreach components.	St. Catherine University	Furey, Paula		-AIS-Algae -Equipment includes $10,000 for microscope objective and camera -Budget includes funding for University of Wisconsin Bob Pillsbury $33,933 -Budget includes Water conference $745 and publication fees $1,314 -Budget unclear as to what costs are going to what institution -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities -See AIS Center response to staff questions (pending)
126	120-D	**2**		**49**	Microbial Associates of the Emerald Ash Borer	$400,000	This project will investigate microbes associated with the invasive Emerald Ash Borer with the goal of identifying strain or chemical compounds that can be used for biological control.	U of MN	Bushley, Kathryn	- Do they not already have priorities and an action plan?	-TIS-Emerald Ash Borer -How does this knowledge help beyond providing very early research? -See TIS Center response to staff questions (pending)
127	124-D	**2**		**35**	Preventing the Spread of AIS with Decontamination Units	$455,000	Seven decontamination units would be deployed to prevent the spread of aquatic invasive species on Forest Lake (3), Square Lake, Big Marine Lake, Lake Elmo, and the Saint Croix River.	Washington County	Kelly, Colin		-AIS-decontamination -Budget includes 7 decontamination stations for $147,000 -Budget includes hiring and train 7 Inspectors -See AIS Center response to staff questions (pending)

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128	125-D	**2**		**32**	A Native Biocontrol for Invasive Hybrid Cattails	$306,728	Our project will quantify the impact of invasive hybrid cattails on MN wetlands and investigate the effectiveness of reintroduced muskrat populations as a potential native biocontrol.	Kansas State University	Ahlers, Adam		-AIS-Cattails -Project takes place in Voyagers National Park -Budget includes $28,570 in equipment (100 live traps, 60 VHS transmitters, 2 radio telemetry receivers, 4 antennae, surgical transmitter implants, and trap platforms) -Budget includes publication costs $2,000 -Budget appears to include tuition for Kansas State University students? -Budget appears to includes money for Kansas State University staff and students?
129	126-D	**1**		**32**	Commercial Fisheries Management Project	$115,720	In Minnesota, no harvest quotas exist for commercial fish. Working with the DNR, this 3 year project will determine harvest levels, establish conservation practices, and assist in Asian Carp removal.	Aquatic Research & Conservation Society, Inc.	Waters, Amy		-How will this project be completed and what is the environmental benefit? -Equipment appears to be building lab? -Science and need are not clear
130	121-D	**0**		**49**	Northward Expansion of Ecologically Damaging Species	$213,000	This work will predict the future Northern expansion of two species (American bullfrogs and Red-eared slider turtles) that have great potential to negatively alter the fish communities of Minnesota's lakes and streams.	U of MN	McGaugh, Susanne		-AIS-Red-Eared Slider turtle and American Bullfrog -See AIS Center response to staff questions (pending)
131	**E. Air Quality, Climate Change, and Renewable Energy (25 Proposals / Subtotal $15,424,082)**										
132	127-E	**11**		**77**	Managing for "Climate Smart" Trees and Forests	$385,000	We'll fill a knowledge gap by identifying trees likely to be 'winners' under future conditions; and use that knowledge to manage forests favoring trees likely to thrive in the future.	U of MN	Reich, Peter		-Climate-Forestry -Budget includes room rentals and refreshments $7,000 -Budget includes website development $22,000 -M.L. 2014 "Assessing Species Vulnerability to Climate Change Using Phenology" $175,000 thru 6/30/2017 -M.L. 2010 "Healthy Forests to Resist Invasion" $359,000 completed 6/30/2013 -M.L. 2008 "Impacts of Climate Change and CO2 on Prairie and Forest Production" $330,000 completed 6/30/2011
133	128-E	**10**		**74**	Cheap Solar Energy from Simple Roll-to-Roll Manufacturing	$388,852	This project is to develop cheap clean solar energy by simple roll-to-roll manufacturing. Perovskite is a new photovoltaic material, very economical while maintaining high power conversion efficiency.	U of MN	Cui, Tianhong		-Energy-Solar -Renewable Development Fund? -Resubmission of M.L. 2016 "Solar Cells Manufacturing Research" $388,000 proposal

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134	150-E	9		Not Evaluated	District Heating with Renewable Biomass at Camp Ripley Training Center	$1,969,988	This project will facilitate the effective implementation of clean energy technology for the Camp Ripley Training Center, reduce net CO2 emissions by approximately 740 metric tons.	Department of Military Affairs	Pennington, Josh		-Energy-Biomass -Proposal is for capital per RFP ineligible and not scored -Budget includes $922,600 in ineligible capital for biomass combustion unit, hot water boiler, and thermal storage tank -Installation of heating plant for a military facility -Renewable Development Fund? -Capital Bonding?
135	129-E	9		71	Community-Scale Energy Storage Guide for Clean Energy	$625,478	Create user-friendly, research-based energy storage guide and decision tools (print and web-based) for community-scale sites with renewable energy and do three geographically dispersed battery storage demonstration projects, through broad stakeholder.	U of MN	Anderson, Ellen		-Energy-Storage -Budget includes $300,000 for 3 energy storage systems -Budget includes office supplies $3,040 -Renewable Development Fund?
136	132-E	9		63	Deploying New Technology to Understand Urban Air Pollution	$981,564	This project will operate a network of 250 sensors at 50 sites to monitor 5 pollutants in each of the metro zip codes to understand urban air pollution variability.	MPCA	Vadali, Monika		-Air Quality -Sensor development -Renewable Development Fund?
137	131-E	6		68	Enabling Extraction of Solar Thermal Energy in Minnesota	$351,040	This project will develop new Solar Particle Receivers, a low-cost, high-efficiency and clean technology to absorb, store, and utilize solar thermal energy, and show its viability at Minnesotas latitudes.	U of MN	Coletti, Filippo	- Might shed some little on environmental justice issue	-Energy-Solar -Renewable Development Fund? -St. Anthony Falls Laboratory -See response to staff questions (pending)
138	137-E	5		51	Forest Regeneration: Maximizing the Value of Our Investment	$732,046	Minnesota invests heavily in forest regeneration. But are we planting seeds that maximize the future returns on our investment? Our statewide planting trials and genetic research will answer this question.	U of MN - Duluth	Etterson, Julie		-Budget includes $101,000 to DNR for Deer fencing
139	151-E	4		Not Evaluated	Renewable Energy Production from Municipal Organic Waste	$1,687,500	Renewable energy production fueled by municipal organic will reduce landfill waste and provide electrical power for 25 homes and reduce pollution while being a site for undergraduate and faculty research.	Minnesota Energy Center (MNEC)	Waite-Altringer, Melanie		-Energy-Biomass -Proposal is for capital per RFP ineligible and not scored -Waste Management Inc. -Budget includes $935,000 in ineligible capital for a BIOFerms Energy System's EUCOlino Anaerobic Digester for local municipality -Renewable Development Fund? -Capital Bonding?
140	149-E	4		34	Climate-Smart Cities: Helping Cities Make Smarter Land-Use Decisions	$288,800	Develop a decision-support tool which allows cities and watershed-districts to identify and plan land-use responses at the parcel-level to address climate adaptation and green infrastructure needs in Minneapolis/Saint Paul.	The Trust for Public Land	Forbes, DJ		-Budget includes potentially ineligible unidentified office related expenses $30,000 -Qualifications and organization description had three pages, two pages removed

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141	130-E	**3**		**70**	Harnessing Natural Nitrogen Fixation to Replace Industrial Production	$847,000	This project will leverage recent success in optimizing a nitrogen-fixing bacterium to construct a sustainable route to cheap biofertilizers by utilizing agricultural residues and waste steams or direct microbial electrosynthesis.	U of MN	Barney, Brett		-Budget includes large equipment costs $80,000 for biomass reactor and $40,000 for electrodes -Budget includes publications costs $3,000 -Renewable Development Fund? -West Central Research and Outreach Center (WCROC)
142	140-E	**3**		**47**	Low Cost and Efficient Biomass Based Electricity Generation	$450,000	The objective of this project is to provide a new low cost and efficient technology for generating electricity from biomass feedstocks in the state of Minnesota.	U of MN	Sun, Zongxuan		-Energy-Biomass -Needs better break down for equipment and supplies -Renewable Development Fund?
143	141-E	**3**		**46**	Feed Additive for Reducing Climate-Damaging Methane Emissions from Cattle	$372,485	A valuable central Minnesota collaborative project that reduces greenhouse gas emissions from Minnesota cattle will have far reaching impacts on climate in Minnesota and beyond.	St. Cloud State University	Kvaal, Chris		-Air Quality -Budget includes funding for Private Company, Sartec $210,000
144	134-E	**2**		**59**	Energy Storage Panels for Home and Office Upgrade	$687,746	Proposed: Wall panel for home and office energy efficiency upgrade, holding energy storage material to exchange heat with the room during daily cycle. Novelty: fabrication using plate and roll-to-roll technology.	U of MN	Simon, Terrence		-Energy-Storage -Budget includes conference costs $9,000 -Renewable Development Fund?
145	136-E	**2**		**53**	Development of Efficient and Reliable Wind Turbine Transmission	$414,839	A reliable and efficient hydrostatic wind power transmission with advanced controls and energy storage will be tested at the University of Minnesota.The design will ultimately be demonstrated at Morris.	U of MN	Stelson, Kim		-Energy- Wind -Building a more efficient and longer lasting transmission to harness wind energy -Renewable Development Fund?
146	143-E	**2**		**44**	Active Wind Turbine Skin for Wind Energy Harvesting	$302,621	This project will develop and test an actuation technology to actively change the shape of a wind turbine blade to produce maximum power over a range of atmospheric conditions.	U of MN	Abel, Julianna		-Energy-Wind -Renewable Development Fund? -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
147	144-E	**2**		**42**	Developing Bank-Protection Energy-Converter Systems for Minnesota Rivers	$622,000	A new device able to prevent side-bank erosion while extracting energy will be designed, tested and deployed in Minnesota rivers. The material included is being evaluated for a provisional patent.	U of MN - St. Anthony Falls Laboratory	Guala, Michele		-Energy-Hydroelectric -Budget includes conference costs $3,000 -Equipment budget includes $60,000 for turbine prototype and $25,000 for velocimeter -Question whether this would be permitted and what impacts it will have on aquatic life? -Renewable Development Fund? -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities

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148	145-E	**2**		**42**	Novel Nanocomposite Materials for Thermal Management and Energy Conversion/Storage	$256,112	This proposal focuses on fabricating novel nanocomposite materials for better thermal management in operating devices, as an enabling technique that will improve the efficiency for energy conversion and storage.	U of MN	Wang, Xiaojia		-Energy-Storage -Budget includes conference costs $3,000 -3M is included as partner but not contributing any funding -Basic scientific foundation and commercialization of product -Renewable Development Fund? -Proposal had three pages, third page removed
149	147-E	**2**		**37**	Generation, Storage, and Utilization of Solar Energy	$795,500	This project will develop and demonstrate an integrated facility to generate electricity, shade dairy cattle, and provide energy storage and utilization from solar technologies at the WCROC in Morris, MN.	U of MN - Morris	Heins, Bradley	- How does this relate to 013-A? Does it relate?	-Energy -Proposal includes potentially ineligible capital DC fast charging station $$60,000, Smart level II charging station with 3 Tesla batteris $15,000 and 2 Recoil iS 100% Electric ATV's $30,000 -Budget includes $15,000 to lease a Nissan Leaf (automobile) -Appears to be the very similar to Mike Reese's M.L. 2014 "Transitioning Minnesota Farms to Local Energy" $500,000 thru 6/30/2017 and Joel Tallaksen's M.L. 2014 "Life Cycle Energy of Renewably Produced Nitrogen Fertilizers" $250,000 thru 6/30/2017 -Renewable Development Fund?
150	133-E	**1**		**59**	Compressed Air Energy Storage for Renewable Energies	$712,392	This project will develop a novel compressed air energy storage system for renewable energies that will solve the increasing challenge of integrating these intermittent energy sources into the electrical grid.	U of MN	Li, Perry		-Energy-Storage -Proposal includes potentially ineligible capital equipment $100,000 per RFP -Prototype development -Renewable Development Fund?
151	135-E	**1**		**56**	Clean Electricity from Cheap Luminescent Solar Concentrators	$627,149	Cheap luminescent solar concentrators are a disruptive photovoltaic technology that virtually invisibly integrates with buildings. This renewable energy technology will increase photovoltaics adoption, reduce air pollution, and ameliorate climate change.	U of MN	Kortshagen, Uwe		-Energy-Solar -Budget includes $40,000 in custom built equipment -Renewable Development Fund?
152	139-E	**1**		**47**	Development of an Early-Warning System for Minnesota Droughts	$265,616	Complete an early-warning system by creating detailed drought risk assessment maps for Minnesota up to six months ahead using projections of ocean currents to effectively plan for regional water scarcity.	U of MN	Liess, Stefan		-Budget includes publication costs $6,000 -Does not include title for project manager in qualifications
153	142-E	**1**		**45**	Engineering Stable Microbes for Biofuels and Biodegradation	$269,000	Microbes grow faster if they lose their engineered traits. Reducing this growth advantage will stabilize them and thus, lower the cost of making butanol and cleaning up polluted sites.	U of MN	Kazlauskas, Romas		-Energy- Biofuels -Equipment includes $40,000 in lab supplies -Budget includes publication costs $5,000 -Is DNR the correct agency to share information from this project and do they want this information? -Renewable Development Fund?

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154	146-E	**1**		**42**	Cheap and Clean Energy from Friction-Induced Static Charges	$422,874	We will develop nanogenerators to harness energy from road vibration, wind, and waves. The device will power a state-wide sensor network and improve the air, water, and safety in Minnesota.	U of MN	Yang, Rusen		-3M is included in partners but not contributing any funding -Renewable Development Fund? -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
155	148-E	**1**		**36**	Air Quality Network Sensing Aircraft Pollution Near MSP	$571,210	Design, build, and deploy an air quality sensor network to determine the impact of aircraft pollution in neighborhoods near MSP. Conclusions will inform decisions about changes needed in flight patterns.	Minnesota State University, Mankato	Swanson, Jacob		-Air Quality -Sensor development -Budget includes $300,000 for 200 sensors
156	138-E	**0**		**48**	Wind-loading Study for Environmental Management and Engineering Innovation	$397,270	We will utilize a unique facility of wind research station to study wind loading for environmental management and engineering innovation, with a focus on wind turbines, solar arrays, and infrastructures.	U of MN	Shen, Lian		-Energy-Wind -Proposal does not clearly communicate need for this study? -Renewable Development Fund? -St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities
157	**F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (17 Proposals / Subtotal $8,598,558)**										
158	154-F	**12**		**74**	Restoring and Preserving Savanna Using Bison	$388,000	Restoration of Minnesota's oak savanna, of which < 1% remains, has been problematic. Our research would determine if some combination of bison grazing and fire can restore this threatened ecosystem.	U of MN - Cedar Creek Ecosystem Science Reserve	Tilman, David	- Is this scalable?	
159	157-F	**11**		**67**	Roadside Prairie Prescribed Fire	$345,000	This project will protect biodiversity and enhance pollinator habitat on roadsides by helping to create a self-sufficient prescribed fire program at the Minnesota Department of Transportation.	Minnesota Department of Transportation	Graeve, Ken	- Why do we need to use USDA lab in North Carolina? How does this relate to ML 2014 project? Is it a continuation?	
160	162-F	**11**		**47**	Precision Conservation and Agriculture: Growing Green2 Together	$508,370	Demonstrating a new economic approach to precision conservation by incorporating return on investment (ROI). Identify revenue negative acres with ~200 farmers to source ~10,000 acres for conservation implementation.	Pheasants Forever	Bruse, Tanner		-Land owners are each being charged $1,000 for the analysis and that money goes to a private company
161	153-F	**10**		**76**	Promoting Conservation Biocontrol of Beneficial Insects	$399,000	Research ways to conserve beneficial insects (bees, butterflies, predators, and parasitoids) in landscapes and restoration projects thru conservation biocontrol, cultural management, and biorational insecticides.	U of MN	Krischik, Vera	- This should always be done	-Services using USDA AMS Lab in North Carolina chemical analysis $60,000 -M.L. 2014 "Understanding Systemic Insecticides as Protection Strategy for Bees" $326,000 6/30/2017 -M.L. 2010 "Mitigating Pollinator Decline in Minnesota" $297,000 completed 6/30/2016

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162	155-F	**8**		**73**	State Parks for Monarchs and Other Native Pollinators	$672,159	Restores 520 acres of Monarch/native pollinator habitat at 7 state parks in MN Prairie Plan core areas. Establishes pollinator plantings with multi-sensory, ADA-accessible interpretive exhibits at 10 state park locations.	MN DNR	Quinn, Edward		-Budget includes "DNR Direct and Necessary" $22,159
163	152-F	**7**		**77**	Optimizing the Nutrition of Roadside Plants for Pollinators	$815,000	This research will produce site-specific recommendations for roadside plantings in Minnesota to maximize the nutritional health of native bees and monarch butterflies that rely on such habitats as conservation corridors.	U of MN	Snell-Rood, Emilie		-Budget includes publication costs $8,000
164	161-F	**7**		**48**	Restoring Our Metro Lands and Waters: MeCC 10	$524,400	We will restore 250 acres of critical habitat, engage 530 volunteers, improve restoration practices, foster partnerships, promote community stewardship of urban natural resources, and leverage $132,000 in non-state dollars.	Great River Greening	Buck, Wiley		-Continuation -M.L. 2016 "Restoring Our Metro Lands and Waters: MeCC 10" $524,400 Pending -M.L. 2015 "Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation" $400,000 thru 6/30/2018 -M.L. 2014 "Upland and Shoreline Restoration in Greater Metropolitan Area" $300,000 thru 6/30/2017 -M.L. 2013" Metropolitan Conservation Corridors (MeCC) - Phase VII: 2.3: Restoring Our Lands and Waters " $208,000 thru 6/30/2016
165	156-F	**6**		**70**	Prioritizing Shoreline Habitat Restoration in Minnesota Lakes	$294,913	This project will enhance efforts to increase natural reproduction of fish in Minnesota lakes by assembling easily accessible information on wave energy and near-shore spawning habitat.	U of MN - St. Anthony Falls Laboratory	Herb, William		-St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities)
166	158-F	**6**		**54**	MN Honey Bee & Monarch Butterfly Partnership	$732,162	This proposal contributes to the recovery of monarch butterflies and native pollinators by working cooperatively on 75-100 sites to enhance 800-acres of permanently protected habitat in priority Minnesota landscapes.	Pheasants Forever	Holland, Matt		-$915 per acre to enhance 800-acres of prairie on approximateely 75-100 sites -Includes RIM conservation plans and updates 100 plans for $30,000 -Buses and workshops $4,500 -Where are projects taking place? private or public land? -How are they deciding who will get work done?
167	160-F	**6**		**50**	Restoring 83-acres of Prairie, Savanna & Forest Habitat	$213,450	Friends of the Mississippi River is proposing to increase and improve 83 acres of habitat at 7 sites along the Mississippi and Vermillion river corridors.	Friends of the Mississippi River	Lewanski, Tom		-Continuation -M.L. 2015 "Metro Conservation Corridors Phase VIII - Prairie, Forest, and Savanna Restoration in Greater Metropolitan Area" $276,000 thru 6/30/2018 -M.L. 2014 "Prairie, Forest, and Savanna Restoration in Greater Metropolitan Area" $200,000 thru 6/30/2017

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168	164-F	**6**		**45**	Identifying Optimal Soil Conditions for Sustainable Forest Management	$415,000	Quantify factors that control soil operability with historic data and experimental manipulations. Develop strategies and tools to identify conditions that minimize impacts to soil and promote regeneration of diverse forests.	U of MN	Slesak, Robert		-Equipment includes $15,000 for 100 sensors, $10,000 for 25 data loggers, and $25,000 for a mobile soil pressure apparatus -Includes sensors
169	167-F	**5**		**40**	Mississippi River Habitat Restoration at Halls Island	$1,451,500	A large-scale project to restore lost Mississippi River habitat by re-creating Halls Island in Minneapolis, through construction activities based in sound restoration science.	Minneapolis Park and Recreation Board	Arvidson, Adam		-Funding match comes from Met Council and State Bonding -Project is part of Metro Regional Park system -It is not clear if funding is for restoration or construction of the island -M.L. 2010 $6,467,000 as amended by M.L. 2013 as amended by M.L. 2015 with further amendment pending M.L. 2016
170	165-F	**2**		**43**	Methods for Removing Problematic Pesticides from Minnesota Waters	$344,000	We will develop, demonstrate, and disseminate, a simple, effective, innovative and inexpensive technology to remove toxic pesticides from Minnesota waters, increasing safety for Minnesotans health and environmental quality.	U of MN	Elias, Mikael		-It is not clear what is being developed or made? -Creates a laboratory scale proof of concept
171	168-F	**2**		**26**	Promoting Active Management of Privately Owned Woodlands	$484,100	Promote active management of privately owned woodlands which account for one third of Minnesotas 17 million acres of forestland. Benefits will accrue to the environment, wildlife and industry.	Minnesota Forestry Association	Oreilly, John		-Proposal had three pages, third page removed
172	159-F	**1**		**51**	Mississippi River Gorge Restoration Planning and Assessment	$130,000	Restoration of the Mississippi River Gorge would have great ecological and recreational benefits. With increasing opportunity for restoration, a feasibility assessment is needed to guide future restoration and management actions.	U of MN	Lenhart, Christian		-There is current long term Federal Energy Regulatory Commission (FERC) license on the Ford dam -St. Anthony Falls Laboratory -See response to staff questions (pending)
173	163-F	**0**		**47**	Variable Winter Thermal Regimes and Managing Trout Streams	$583,000	Trout streams in Minnesota are important economic and recreational resources. We will investigate and model how groundwater input improves conditions for trout in winter for developing management plans for streams.	U of MN	Ferrington, Leonard		-Wildlife Research- Invertabrates -Continuation -Budget includes publication costs $6,000 -Equipment includes $19,591 for 40 temperature recording devices -M.L. 2010 "Trout Streams Assessment" $300,000 completed 6/30/2010 -Includes sensors
174	166-F	**0**		**42**	Modeling/Measurement of Wetland Processes for Habitat Protection	$298,504	We will measure/model water and sediment/nutrients motions in wetlands for accurate description of habitat environment, and will develop predictive tools for vegetation landscape evolution for wetland restoration and habitat protection.	U of MN	Shen, Lian		-St. Anthony Falls Laboratory (SAFL) -See response to staff questions (pending) about SAFL priorities)

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175	**G. Land Acquisition for Habitat and Recreation (12 Proposals / Subtotal $33,307,890)**										
176	172-G	**13**		**67**	Native Prairie Stewardship and Prairie Bank Easement Acquisition	$5,185,457	Native prairie will be permanently protected and conservation actions by prairie landowners will be increased through a suite of tools offered by the DNR Scientific and Natural Area (SNA) Program.	MN DNR	Schulte, Judy	- Not full amount	-Conservation Easements and Restoration -Continuation -Budget includes for $200,000 Easement Stewardship Account -Proposal states it needs $10,000,000 per biennium for next ten years? -2016 Bonding request $2,000,000 -MNIT Services for Prairie Tax Exemption Database for county assessor access $30,000? -Budget includes $124,457 for "DNR Direct and Necessary Expenses" -$5,553 per acre for 600 acres of easements -$1,284 per acre to restore and enhace 900 acres of native prairie -$2,700,000 for easements and transaction costs -Payment is determined by criteria set in Minnesota Statute -M.L. 2015 "Native Prairie Stewardship and Prairie Bank Easement Acquisition" $3,325,000 thru 6/30/2018 -M.L. 2013 "Native Prairie Stewardship and Prairie Bank Easement Acquisition" $750,000 thru 6/30/2016
177	170-G	**12**		**73**	SNA Acquisition, Restoration, Citizen Science and Engagement	$6,022,220	The SCIENCE in state Scientific and Natural Areas (SNAs) will be strengthened through strategic acquisition and land protection, monitoring-based restoration and improvements, and citizen science-based action and outreach.	MN DNR	Booth, Margaret (Peggy)	- Not full amount	-Fee Title Acquisition and Restoration -Continuation -No other state dollars listed -2016 Bonding Request $1,000,000 -LCCMR staff recommend 3-4 years to spend based on previous spending not 2 as requested -Budget includes "DNR Direct and Necessary" $213,270 -M.L. 2016 ENRTF $4,000,000 pending -M.L. 2015 ENRTF $4,000,000 thru 6/30/2018 -M.L. 2014 ENRTF $2,540,000 thru 6/30/2017 -M.L. 2013 ENRTF $1,500,000 thru 6/30/2016
178	174-G	**11**		**60**	Leech Lake Natural Resource Multi-Benefit Conservation Acquisition	$1,500,000	Acquisition and protection of 45.27 acres, 0.67 miles of shoreline of high quality aquatic and wildlife habitat and the historic meeting place between Henry Schoolcraft and Anishinabe people.	Leech Lake Division of Resource Management	Brown, Levi		-Fee Title Acquisition -Approximately $33,000 per acre for 42.5 acres
179	169-G	**10**		**74**	Metropolitan Regional Parks System Land Acquisition	$2,400,000	This project will acquire 369 acres of high-quality wooded land and wetlands and three miles of shoreline for the Metropolitan Regional Parks System (MRPS) with $2.4 million from ENRTF.	Metropolitan Council	Streets Jensen, Deborah	- Not full amount?	-Fee Title Acquisition -Continuation -M.L. 2015 "Metropolitan Regional Park System Land Acquisition Phase 4 " $1,000,000 thru 6/30/2018 -M.L. 2014 "Metropolitan Regional Park System Acquisition" $1,500,000 thru 6/30/2017

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180	171-G	**8**		**72**	Minnesota State Parks and State Trails Land Acquisition	$1,500,000	Minnesota State Parks and State Trails land acquisition proposes to acquire the highest priority parcels with critical natural and cultural resources attributes to protect, preserve and enhance Minnesotas environmental stewardship.	MN DNR	Christie, Jennifer		-Fee Title Acquisition -Continuation -2016 Bonding Request $2,000,000 -M.L. 2016 ENRTF $2,455,000 pending _M.L. 2015 ENRTF $1,500,000 thru 6/30/2018 -M.L. 2013 ENRTF $1,000,000 thru 6/30/2016 -M.L. 2011 ENRTF $3,000,000 completed 6/30/2015 -M.L. 2009 ENRTF $2,200,00 completed 6/30/2012 M.L. 2008 ENRTF $1,590,00 completed 6/30/2010 -M.L. 2007 ENRTF $750,000 completed 6/30/2010
181	173-G	**4**		**64**	Dakota County Natural Area Protection and Restoration	$600,000	Achieving Dakota County's land conservation vision continues, with focus on land acquisition, water resource protection and restoration projects, guided by approved plans, extensive land cover data, successful programs and partnerships.	Dakota County	West, Lisa		-Fee Title Acquisition, Conservationand Easements and Restoration -Continuation -Specific breakdown of what funds are going to restoration is unknown -M.L. 2013 "MeCC VII - 2.6 & 3.7: Dakota County Lakeshore and Riparian Protection" $368,000 thru 6/30/2016 -M.L. 2011 "MeCC VI - Dakota County Riparian and Lakeshore Protection (2.7 / 3.7)" $1,035,000 completed 2015 -M.L. 2008 "Vermillion River Corridor Acquisition and Restoration in Dakota County" $509,965 completed 2011
182	176-G	**4**		**54**	Mesabi Trail, Wetland Crossing and Bridge Rehab	$1,231,500	This project is needed to complete the TH 135 to Embarrass segment of the Mesabi Trail. Work needed is specific to constructing a 4,000 LF floating dock over a wetland and rehabilitating a bridge (circa 1928) over the Embarrass River. Costs for construct.	St Louis and Lake Counties Regional Railroad Authority	Manzoline, Robert		-Continuation -To complete the trail segment from TH 135 to Embarrass -DNR owned bridge in a WMA -See DNR response to staff questions (pending) -M.L. 2016 "Mesabi Trail, Wetland Crossing and Bridge Rehab" $1,231,500 pending TH 135 to Embarrass segment -M.L. 2015 "Mesabi Trail Development Soudan to Ely-Phase II" $1,000,000 (completed 6/30/2018) 7 miles between Soudan and Ely -M.L. 2014 "Mesabi Trail Development Soudan to Ely-Phase" $1,000,000 (completed 6/30/2017) 11 miles of trail segments near Vermillion State Park -Capital Bonding?
183	178-G	**3**		**50**	Swedish Immigrant Regional Trail, Interstate State Park Connection	$1,785,000	A paved trail and bridge within Interstate State Park providing connections to internal trails, a trail head and providing accessibility and a logical terminus for a developing regional trail.	Chisago County	Schneider, Kurt		-Proposal includes a bridge for $850,000 -Budget includes funding for DNR to design trail within state park -Proposal included multiple maps, additional maps removed and description reduced to conform to RFP -Needs County Board Resolution -Capital Bonding? -See DNR response to staff questions (pending)

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184	180-G	3		39	Tower Trailhead Boat Landing and Habitat Improvement	$983,448	The City of Tower is requesting funding for the construction of a trailhead/parking lot, access road, boat landing and for the construction of a vegetative habitat area.	City of Tower	Keith, Linda		-DNR Water Recreation Account? -DNR recently built public access less than a mile away -M.L. 2016 Tower Historic Harbor Tower Trail ENRTF $679,000 pending -Capital Bonding? -See DNR response to staff questions (pending)
185	179-G	2		46	Wolverton Creek Land Acquisition and Stream Habitat Restoration	$9,550,000	Project to acquire land, restore and expand fish and wildlife habitat, improve water quality, reduce flooding and protect the natural resources of Wolverton Creek located in west central Minnesota.	Buffalo-Red River Watershed District	Albright, Bruce		-Proposal addresses TMDLs and is potentially ineligible per RFP -Conservation Easements or Fee Title not clear -Approximately $12,905 per acre for activities in proposal -Capital Bonding and Flood Mitigation Grants?
186	175-G	1		58	Mississippi Blufflands State Trail Red Wing River Walk	$1,840,000	Design and construction of a three-quarter mile segment of the Mississippi Blufflands State Trail from Barn Bluff Park to Colvill Park in Red Wing.	City of Red Wing	Owens, Jay		-DNR State Trail Grant Program? -Local trail segment connecting to state and county trails -Budgets do not line up -Capital Bonding? -See DNR response to staff questions (pending)
187	177-G	1		52	Experiential Nature Play at Whitewater State Park	$710,265	Nature play areas provide children opportunities to engage the natural world through independent play, a component of outdoor recreation, which creates long-lasting conservation values into the next generation.	MN DNR	Smith, Stacy		-Budget includes $10,265 "DNR Direct and Necessary"
188	**H. OTHER (2 Proposals / $270,250)**										
189	181-H	2		Not Evaluated	Contract Agreement Reimbursement	$135,000	This appropriation would provide continued contract management services (grant agreements, amendments, reimbursements, fiscal monitoring, etc.) to pass-through recipients of ENRTF dollars appropriated to the commissioner of natural	MN DNR	Sherman-Hoehn, Katherine		- For assigned duties as fiscal agent for contracts non-state entity appropriations. - LCCMR staff did not evaluate.
190	**I. Governor Vetoes**										
191	N/A	3		N/A	Aggregate Mapping	$1,500,000	None received.	MN DNR	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.

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192	N/A	**3**		**N/A**	Douglas County Regional Park	$400,000	None received.	Douglas County	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.
193	N/A	**3**		**N/A**	Natural Resources Research Institute	$1,100,000	None received.	U of MN - NRRI	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.
194	N/A	**3**		**N/A**	Pineland Sands Lands and Water Study	$1,500,000	None received.	MN DNR	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.
195	N/A	**3**		**N/A**	Pollinator Highway Demonstration Projects	$2,200,000	None received.	MN DOT	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.
196	N/A	**3**		**N/A**	State Park and Trail Enhancement	$1,228,000	None received.	MN DNR	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.

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197	N/A	**3**		**N/A**	Wildlife Science Center	$500,000	None received.	MN DNR	TBD	- Consider the seven projects vetoed by the Governor - Include all seven projects in SF2963 that were vetoed by the Governor. - Include the 7 projects that Gov. Dayton vetoed.	- No proposal received in response to LCCMR's 2017 RFP.