

## M.L. 2016 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY 2017)

The Legislative-Citizen Commission on Minnesota's Resources (LCCMR) has selected 88 projects totaling \$45.4 million to recommend to the 2016 Minnesota Legislature for funding from the Environment and Natural Resources Trust Fund (ENRTF). The recommendations are the result of the LCCMR's 2016 Request for Proposal (RFP) process, in which 186 proposals requesting a total of approximately \$131 million were received and considered through a competitive, multi-stage evaluation. The recommendations range from full funding for the full proposal and dollar amount requested to partial funding for specific proposal elements and partial dollar amounts requested.

Topic Area	\$ Recommended (\$46,337,000)	Percentage of Total Recommendation
<b>A. Foundational Natural Resource Data and Information</b> 18 Appropriations	\$8,328,000	17.97%
<b>B. Water Resources</b> 25 Appropriations	\$8,349,000	18.02%
<b>C. Environmental Education</b> 11 Appropriations	\$2,562,000	5.53%
<b>D. Aquatic and Terrestrial Invasive Species</b> 7 Appropriations	\$5,860,000	12.65%
<b>E. Air Quality, Climate Change, and Renewable Energy</b> 8 Appropriations	\$3,889,000	8.39%
<b>F. Methods to Protect, Restore, &amp; Enhance Land, Water, &amp; Habitat</b> 9 Appropriations	\$4,515,000	9.74%
<b>G. Land Acquisition, Habitat and Recreation</b> 9 Appropriations	\$12,624,000	27.24%
<b>H. Other</b> 1 Appropriation	\$210,000	0.45%
<b>TOTAL \$ RECOMMENDATION</b>	<b>\$46,337,000</b>	<b>100.00%</b>

Fund Source	\$ Recommended	\$ Remaining for Recommendation
FY 2016 - Environment and Natural Resources Trust Fund (ENRTF)	\$46,337,000	\$0
<b>Total \$ Available = \$46,337,000</b>		

**M.L. 2016 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017)**

Subd.	ENRTF ID	Title	Total LCCMR \$	Program Manager	Affiliation	Region of Impact*
			Recommended ENRTF: FY2017			
<b>Subd. 3 Foundational Natural Resource Data and Information (18 Recommendations - Subtotal = \$8,328,000)</b>						
03a	003-A	Data Driven Pollinator Conservation Strategies	\$520,000	Daniel Cariveau	U of MN	Central, NW, SW
03b	005-A	Native Bee Surveys in Minnesota Prairie and Forest Habitats	\$600,000	Crystal Boyd	MN DNR	Central, Metro, NW, SE, SW
03c	009-A	Prairie Butterfly Conservation, Research and Breeding - Phase 2	\$750,000	Erik Runquist Robert Dana	Minnesota Zoological Garden MN DNR	NW, SW
03d	004-A	A Statewide Monitoring Network for Changing Habitats in Minnesota	\$500,000	Bruce Carlson	MN DNR	Statewide
03e	001-A	Completing the National Wetland Inventory Update for Minnesota	\$1,500,000	Steve Kloiber	MN DNR	NW
03f	002-A	Minnesota Vegetative Buffer Assessment and Prioritization to Protect Water Quality	\$170,000	David Mulla	U of MN	Statewide
03g	011-A	Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge	\$212,000	Gene-Hua (Crystal) Ng	U of MN	Statewide
03h	006-A	Sentinel Lakes Monitoring and Data Synthesis – Phase 3	\$401,000	Melissa Trembl	MN DNR	NE, NW, SE, SW
03i	012-A	State Spring Inventory for Resource Management and Protection - Phase 2	\$370,000	Jim Berg	MN DNR	Statewide
03j	020-A	Enhancing Understanding of the Minnesota River Aquatic Ecosystem	\$500,000	Tony Sindt	MN DNR	Central, Metro, SE, SW
03k	016-A	Improving Brook Trout Stream Habitat through Beaver Management	\$225,000	Andrew Hafs	Minnesota State University - Bemidji	NE
03l	023-A	Evaluate Temperature, Streamflow and Hydrogeology Impact on Brook Trout Habitat	\$115,000	Bob Tipping	Minnesota Geological Survey	SE
03m	007-A	Restoration of Elk to Northeastern Minnesota	\$300,000	James Forester	U of MN	NE
03n	008-A	Game and Non-Game Bird Pesticide Exposure	\$349,000	Julia Ponder	U of MN	Statewide

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03o	013-A	Evaluating Insecticide Exposure Risk for Grassland Wildlife on Public Lands	\$250,000	Nicole Davros	MN DNR	Central, SE, SW
03p	014-A	Development of Innovative Cost-Saving Methodology for Forest Inventory	\$1,000,000	Dennis Kepler	MN DNR	Statewide
03q	026-A	Evaluation of Forest Tree Retention Guidelines Pertaining to Wildlife	\$232,000	Gerald Niemi	U of MN - NRRI	Statewide
03r	015-A	Determine Impacts on Wildlife from Emerald Ash Borer Infection of Black Ash Forests	\$334,000	Gerald Niemi	U of MN - NRRI	Statewide
<b>Foundational Natural Resource Data and Information</b>			<b>\$8,328,000</b>			
<b>Subtotal =</b>						
<b>Subd. 4 Water Resources (25 Recommendations - Subtotal = \$8,349,000)</b>						
04a	037-B	Tracking and Preventing Harmful Algal Blooms	\$500,000	Daniel Engstrom	Science Museum of Minnesota	Statewide
04b	038-B	Assessing the Increasing Harmful Algal Blooms in Minnesota Lakes	\$270,000	Miki Hondzo	U of MN - St. Anthony Falls Laboratory	Statewide
04c	036-B	Restoring Native Mussels for Cleaner Streams and Lakes	\$600,000	Mike Davis	MN DNR	Statewide
04d	053-B	Assessing Technique for Eliminating Contaminants to Protect Native Fish and Mussels	\$287,000	Kristine Wammer	University of St Thomas	Statewide
04e	035-B	Assessing Neonicotinoid Insecticide Effects on Aquatic and Soil Communities	\$400,000	William Arnold	U of MN	Statewide
04f	039-B	Bacterial Assessment of Groundwater Supplies Used for Drinking Water	\$299,000	Raymond Hozalski	U of MN	Statewide
04g	049-B	Understanding Bedrock Fracture Flow to Improve Groundwater Quality	\$183,000	Anthony Runkel	U of MN - MN Geological Survey	Metro, SE
04h	050-B	Protection of State Confined Drinking Water Aquifers	\$433,000	Jared Trots	US Geological Survey	Statewide
04i	018-A	Techniques for Water Storage Estimates in Central Minnesota	\$250,000	John Nieber	U of MN	Statewide
04j	047-B	Assessment of Surface Water Quality With Satellite Sensors	\$345,000	Jacques Finlay	U of MN	Statewide

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Subd.	ENRTF ID	Title	Total LCCMR \$	Program Manager	Affiliation	Region of Impact*
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04k	051-B	Development of Innovative Sensor Technologies for Water Monitoring	\$509,000	Tianhong Cui	U of MN	Statewide
04l	040-B	Wastewater Treatment Process Control Improvements	\$398,000	Timothy LaPara	U of MN	Statewide
04m	043-B	Membrane-Based Process for Decentralized Drinking Water Production	\$191,000	Santiago Romero-Vargas Castrillón	U of MN	Statewide
04n	060-B	Analyzing Alternative for Muncipal Wastewater Treatment	\$180,000	Scott Kyser	Minnesota Pollution Control	Metro
04o	044-B	Understanding Impacts of Salt Usage on Minnesota Lakes, Rivers and Groundwater	\$497,000	John Gulliver	U of MN	Statewide
04p	046-B	Reducing Salt and Metal Removal Costs with Microbes	\$596,000	Daniel Bond	U of MN	Statewide
04q	054-B	Engineered Biofilter for Sulfate and Metal Removal from Mine Waters	\$440,000	Sebastian Behrens	U of MN	NE
04r	073-B	Developing Biosponge Technology for Removal of Nitrates from Minnesota Waters	\$198,000	Lawrence Wackett	U of MN	Statewide
04s	042-B	Morrison County Performance Drainage and Hydrology Management	\$209,000	Helen McLennan	Morrison SWCD	Central
04t	168-F	Agricultural and Urban Runoff Water Quality Treatment Analysis - Phase 2	\$110,000	Craig Austinson	Blue Earth County Drainage Authority	SW
04u	088-B	Surface Water Bacterial Treatment System Pilot Project	\$500,000	Brian Corcoran	Vadnais Lake Area Water Management Organization	Metro
04v	045-B	Assessing Effectiveness of Wetland Restorations for Improved Water Quality	\$420,000	Jacques Finlay	U of MN	Central, NW, SW
04w	070-B	Assessing Climate Change Effects on the Release of Mercury and Sulfur into Aquatic Ecosystems	\$300,000	Ed Nater	U of MN	Statewide
04x	083-B	Integrating Targeted Watershed Planning Tools with Citizen Involvement	\$169,000	Kimberly Musser	Minnesota State University - Mankato	Statewide
04y	186-H	Roseau Lake Watershed Targeted Water Quality Improvement	\$65,000	Henry Van Offelen	MN DNR	NW
<b>Water Resources Subtotal =</b>			<b>\$8,349,000</b>			

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<b>Subd. 5 Environmental Education (11 Recommendations - Subtotal = \$2,562,000)</b>						
05a	090-C	Minnesota Conservation Apprentice Academy	\$433,000	Jenny Gieseke	Board of Water and Soil Resources	Statewide
05b	091-C	School Forests Outdoor Classrooms	\$440,000	Amy Kay Kerber	MN DNR	Statewide
05c	092-C	Youth-Led Sustainability Projects in 50 Minnesota Communities – Phase 3	\$400,000	Shelli-Kae Foster	Prairie Woods Environmental Learning Center	Statewide
05d	101-C	The New Prairie Sportsman Statewide Broadcast Video Project	\$300,000	Patrick Moore	Pioneer Public Television	Statewide
05e	093-C	Workshops and Outreach for Nontoxic Ammunition Alternatives	\$133,000	Julia Ponder	U of MN	Statewide
05f	096-C	Wildlife and Habitat Conservation Education for Southwest Minnesota High Schools	\$147,000	Carol Strecker	Minnesota Zoo	SW
05g	094-C	Standards-Based Dakota Indian Land Stewardship Education	\$197,000	Teresa Peterson	Dakota Wicohan	Statewide
05h	099-C	Wolf Management Education in the Classroom – Phase 2	\$240,000	David Kline	International Wolf Center	Statewide
05i	112-C	Master Water Steward Program Expansion	\$116,000	Peggy Knapp	Freshwater Society	Statewide
05j	105-C	Promoting Water Quality Stewardship through Student Mentoring and River Monitoring	\$39,000	Emily Deaver	Minnesota State University - Southwest	SW
05k	111-C	Analysis of Thermally Modified Wood Nesting Boxes for Birds	\$117,000	Ryan Hueffmeier	U of MN - Duluth NRRI	Statewide
<b>Environmental Education Subtotal =</b>			<b>\$2,562,000</b>			
<b>Subd. 6 Aquatic and Terrestrial Invasive Species (7 Recommendations - Subtotal = \$5,860,000)</b>						
06a	121-D	Minnesota Invasive Terrestrial Plants and Pests Center - Phase 3	\$3,750,000	Robert Venette	U of MN	Statewide
06b	122-D	Developing a Membrane Filtration System to Treat Lake Superior Ballast Water	\$151,000	Santiago Romero-Vargas Castrillón	U of MN	NE
06c	123-D	Advancing Microbial Invasive Species Monitoring from Ballast Discharge	\$368,000	Randall Hicks	U of MN - Duluth	NE

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Subd.	ENRTF ID	Title	Total LCCMR \$	Program Manager	Affiliation	Region of Impact*
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06d	124-D	White Nose Bat Syndrome Biological Control - Phase 2	\$452,000	Christine Salomon	U of MN	Statewide
06e	128-D	Elimination of Target Invasive Plant Species - Phase 2	\$750,000	Monika Chandler Angela Gupta	Minnesota Department of Agriculture U of MN	Statewide
06f	131-D	Dutch Elm Disease Resistance - Phase 2	\$200,000	Robert Blanchette	U of MN	Statewide
06g	134-D	Invasive Carp Management Research in Lake Nokomis Subwatershed	\$189,000	Adam Arvidson	Minneapolis Park and Recreation Board	Metro
<b>Aquatic and Terrestrial Invasive Species Subtotal =</b>			<b>\$5,860,000</b>			
<b>E. Air Quality, Climate Change, and Renewable Energy (8 Recommendations - Subtotal = \$3,889,000)</b>						
07a	140-E	Solar Cells Manufacturing Research	\$388,000	Tianhong Cui	U of MN	Statewide
07b	153-E	Community Solar Garden Installation	\$490,000	BJ Allen	Rural Renewable Energy Alliance	Central
07c	135-E	High Resolution Climate Projections to Aid Local Planning and Implementation Efforts	\$411,000	Peter Snyder	U of MN	Statewide
07d	144-E	Geotargeted Distributed Clean Energy Initiative	\$800,000	Carl Nelson	Center for Energy and Environment	Statewide
07e	151-E	Waste Heat Recovery with Efficient Thermoelectric Energy Generators	\$400,000	Uwe Kortshagen	U of MN	Metro
07f	141-E	Hydrogen Fuel from Wind Produced Renewable Ammonia	\$400,000	William Northrop	U of MN	Metro, NW
07g	148-E	Utilization of Dairy Farm Wastewater for Sustainable Production	\$500,000	Bradley Heins	U of MN	Statewide
07h	149-E	Solar Energy Utilization for Minnesota Swine Farms – Phase 2	\$500,000	Lee Johnston	U of MN - West Central Research and Outreach Center	Central, NW, SE, SW
<b>Air Quality, Climate Change, and Renewable Energy</b>			<b>\$3,889,000</b>			
<b>F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (9 Recommendations - Subtotal = \$4,515,000)</b>						
08a	155-F	Bee Pollinator Habitat Enhancement - Phase 2	\$387,000	Marla Spivak	U of MN	Statewide

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08b	162-F	Measuring Pollen and Seed Dispersal for Prairie Fragment Connectivity	\$556,000	Lauren Sullivan	U of MN	NW
08c	154-F	Establishment of Permanent Habitat Strips Within Row Crops	\$179,000	Shawn Schottler	Science Museum of Minnesota	Statewide
08d	019-A	Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species	\$267,000	Rebecca Montgomery	U of MN	NE
08e	159-F	Controlling Reed Canary Grass to Regenerate Floodplain Forest	\$218,000	Tim Schlagenhaft	Minnesota State Office of National Audubon Society	SE
08f	165-F	Forest Management for Mississippi River Drinking Water Protection	\$300,000	Melissa Barrick	Crow Wing SWCD	Central
08g	166-F	Upland, Wetland and Shoreline Restoration in Greater Metropolitan Area	\$509,000	Wiley Buck	Great River Greening	Metro
08h	169-F	Bluffland Restoration and Monitoring in Winona	\$99,000	Neal Mundahl	Winona State University	SE
08i	173-F	Champlin Mill Pond Shoreland Restoration	\$2,000,000	Todd Tuominen	City of Champlin	Metro
<b>Methods to Protect, Restore, and Enhance Land, Water, and Habitat Subtotal =</b>			<b>\$4,515,000</b>			
<b>G. Land Acquisition for Habitat and Recreation (9 Recommendations - Subtotal = \$12,624,000)</b>						
09a	174-G	State Parks and State Trails Land Acquisitions	\$2,445,000	Jennifer Christie	MN DNR	Statewide
09b	175-G	Scientific and Natural Area Acquisition and Restoration	\$4,000,000	Peggy Booth	MN DNR	Statewide
09c	179-G	Minnesota Point Pine Forest Scientific and Natural Area Acquisition	\$500,000	Tom Werner Peggy Booth	Duluth Airport Authority MN DNR	NE
09d	177-G	Conservation Easements in the Avon Hills -- Phase 3	\$1,300,000	Thomas Kroll	Saint Johns Arboretum and University	Central

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09e	180-G	Wilder Forest Acquisition	\$500,000	Hilary Otey Wold June Mathiowetz	Minnesota Food Association Washington County	Metro
09f	181-G	Lincoln Pipestone Rural Water System Acquisition for Well Head Protection	\$1,500,000	Jason Overby	Lincoln Pipestone Rural Water System	SW
09g	178-G	Mesabi Trail Segment from Highway 135 to the City of Embarrass	\$1,200,000	Bob Manzoline	St. Louis & Lake Counties Regional Railroad Authority	NE
09h	183-G	Tower Historic Harbor Trail Connections	\$679,000	Linda Keith	City of Tower	NE
09i	182-G	Otter Tail River Recreational Trail Acquisition	\$500,000	Gordon Hydukovich	City of Fergus Falls	Central
<b>Land Acquisition for Habitat and Recreation Subtotal =</b>			<b>\$12,624,000</b>			
<b>Subd. 10 Contract Agreement Reimbursement and Grants Management System (2 Recommendations - Subtotal = \$210,000)</b>						
10a	185-H	Contract Agreement Reimbursement	\$135,000	Jason Tidemann	MN DNR	Statewide
10b	n/a	Grants Management System	\$75,000	Susan Thornton	LCCMR	Statewide
<b>Other Subtotal =</b>			<b>\$210,000</b>			
<b>Total \$ Recommended =</b>			<b>\$46,337,000</b>			

\* Region of Impact designated in the State include Statewide, Central, Metro, NE, NW, SE, SW. Metro region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.