

LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES

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Susan Thornton, Director

Date: January 15, 2017

To: Governor Mark Dayton

Chair, Senate Finance Committee, Senator Julie Rosen

Minority Lead, Senate Finance Committee, Senator Richard Cohen

Chair, Senate Environment and Natural Resources Finance, Senator Bill Ingebrigtsen

Minority Lead, Senate Environment and Natural Resources Finance, Senator David Tomassoni

Chair, House Ways and Means Committee, Representative Jim Knobloch

Minority Lead, House Ways and Means Committee, Representative Lyndon Carlson

Chair, House Environment and Natural Resources Policy and Finance Committee,
Representative Dan Fabian

Minority Lead, House Environment and Natural Resources Policy and Finance Committee,
Representative Rick Hansen

Legislative Reference Library

From: Legislative-Citizen Commission on Minnesota Resources (LCCMR)

Subject: Biennial Report required by M.S. 116P.09, Subd. 7

The biennial report as required in M.S. 116P.09, Subd. 7 from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) due January 15, 2017 is available on the LCCMR web site at: <http://www.lccmr.leg.mn>. The report is also available in a CD format or in print upon request and we would be pleased to provide it to you.

This report covers LCCMR actions from Jan. 15, 2015 (date of the previous biennial report) to January 15, 2017, including summaries of past funding accomplishments and new recommendations for funding from the Environment and Natural Resources Trust Fund.

There is \$50,828,000 available for expenditure in each year of the FY18-19 biennium from the Environment and Natural Resources Trust Fund (ENRTF) –biennial total available \$101,656,000. The amount available for expenditure is determined by the MN Constitution which states: “The amount appropriated each year of a biennium....may be up to 5.5% of the market value of the fund on June 30 one year before the start of the biennium”. The value of the ENRTF on June 30, 2016 was \$924,152,297.79.

The LCCMR is making a funding recommendation to the 2017 Legislature totaling \$59,156,000. Of this amount, \$50,728,000 is from the Environment and Natural Resources Trust Fund for FY18 and \$8,428,000 is from the Environment and Natural Resources Trust Fund for FY17. The LCCMR will be making a future additional funding recommendation for FY19 totaling up to \$50,828,000 from the

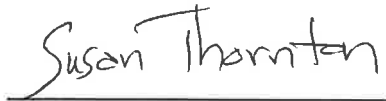
LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES

Environment and Natural Resources Trust Fund to the 2018 Legislature. As stated in M.S. 116P, the LCCMR may make an annual or a biennial funding recommendation.

The list of recommended appropriations totaling \$59,156,000 from the Environment and Natural Resources Trust Fund is provided in "Section V. Recommendations." The funding levels and the proposed legislative bill were adopted by the LCCMR on November 15, 2016.

We look forward to presenting this information and certainly encourage questions and discussion. Thank you for the opportunity to serve the Legislature in this capacity.

Sincerely,

A handwritten signature in cursive script that reads "Susan Thornton". The signature is written in dark ink and is positioned above a horizontal line.

Susan Thornton, Director
On behalf of the LCCMR

cc: LCCMR Members as of December 2016

Legislative-Citizen Commission on Minnesota Resources

Biennial Report
January 15, 2017



Pursuant to: M.S. 116P.09, Subd. 7

Please return this document to the LCCMR office: Room 65 State Office Building

Commission Members

LCCMR Membership January 1, 2015 – January 1, 2017

REPRESENTATIVES

Rep. Tom Hackbarth

Rep. Denny McNamara

Rep. John Persell

Rep. Paul Torkelson*

Rep. Jean Wagenius*

SENATORS

Sen. Gary Dahms*

Sen. Kari Dziedzic

Sen. John Hoffman

Sen. David Tomassoni*

Sen. Torrey Westrom

APPOINTED NON-LEGISLATIVE

MEMBERS

GOVERNOR APPOINTMENTS

William Faber

(appointed: 5/17/2014 - term ends: 1/1/2018)

Nancy Gibson*

(appointed: 6/18/2016 - term ends: 1/6/2020)

Bonnie Harper-Lore

(appointed: 2/10/2013 - term ends: 1/2/2017)

Norm Moody

(appointed: 2/10/2013 - term ends: 1/2/2017)

Della Young

(appointed: 6/30/2014 - term ends: 1/1/2018)

SENATE APPOINTMENTS

Gary Lamppa, Senate appt.

(appointed: 5/14/2014 - term ends: 5/14/2018)

HOUSE OF REPRESENTATIVES APPOINTMENT

Jeff Broberg*, House appt.

(appointed: 12/6/2013 - term ends: 1/1/2018)

*Denotes Executive Committee Members

LCCMR Staff

Susan Thornton, Director

Michael McDonough, Manager Research and Planning

Michael Varien, Project Analyst

Diana Griffith, Commission Assistant

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Legislative-Citizen Commission on Minnesota Resources
Biennial Report to the Legislature, M.S. 116P.09, Subd. 7
January 15, 2017

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"a copy of the current strategic plan;"

A. Six Year Strategic Plan

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"a description of each project receiving money from the trust fund during the preceding biennium;"

Project Abstracts for Laws 2015 and 2016

III. Completed Research Projects

"a summary of any research project completed in the preceding biennium;"

Project Abstracts of all projects completed between January 1, 2015 – December 31, 2016, including research.

IV. Agency Implementation

"recommendations to implement successful projects and programs into a state agency's standard operations;"

V. Recommendations

"to the extent known by the commission, descriptions of the projects anticipated to be supported by the trust fund during the next biennium;"

VI. Revenues and Distributions

"the source and amount of all revenues collected and distributed by the commission, including all administrative and other expenses;"

VII. Assets and Liabilities

"a description of the assets and liabilities of the trust fund;"

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"any findings or recommendations that are deemed proper to assist the legislature in formulating legislation;"

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"a list of all gifts and donations with a value over \$1,000;"

X. Environmental Spending Comparisons

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"a copy of the most recent compliance audit."

APPENDIX A

- Environment and Natural Resources Trust Fund Constitutional Language
- M.S. 116P, The Minnesota Environment and Natural Resources Trust Fund (Trust Fund)
- M.S. 116Q.02, Great Lakes Protection Account



Overview: January 1, 2015—December 31, 2016

During the period between January 1, 2015 and December 31, 2016 the Legislative-Citizen Commission on Minnesota Resources (LCCMR):

- Submitted and received passage of two annual funding recommendations for the Environment and Natural Resources Trust Fund (ENRTF)—one each to the 2015 Legislature and 2016 Legislature—providing a total of \$84.2 million to 142 natural resources projects around the state.
- Issued two Requests for Proposal (RFP) to conduct selection process for funding recommendations to the 2015 and 2016 Legislatures.
- Received, reviewed, and evaluated 338 proposals requesting a combined \$257.3 million in response to the 2015 & 2016 RFPs. 144 proposals were selected for recommendation.
- Finalized recommendations to the 2017 Legislature of \$59.1 million for 69 projects around the state (bill introduction after December 31, 2016), which includes \$8.4 million remaining from the 2016 ENRTF funds.
- Conducted peer review process for 42 research projects recommended for funding to the 2015 Legislature (14) and 2016 Legislature (28).
- Provided administration and oversight for 365 open projects, representing approximately \$233.4 million in appropriations in various stages of their timelines, 77 of which reached completion in 2015-16, including projects begun in 2005 (1), 2010 (2), 2011 (19), 2013 (40), 2014 (13), and 2015 (2).
- Project site visits included several natural resources sites in southeast Minnesota and the Twin Cities metro area, including Kellogg-Weaver Dunes SNA, Gores Pool Wildlife Management Area (WMA), the University of Minnesota Landscape Arboretum and Minnesota Aquatic Invasive Species Research Center; and heard from numerous natural resources experts from both the public and private sector.



Funding for Exhibits at the University of Minnesota Landscape Arboretum, Tashjian Bee and Pollinator Discovery Center.

LCCMR Process

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The LCCMR makes funding recommendations to the MN legislature for special environment and natural resources projects, primarily from the Environment and Natural Resources Trust Fund. These recommendations are the product of a competitive, multi-step proposal and selection process.

Each funding cycle a Request for Proposal (RFP) is issued for funding priorities determined by the Commission based on its 6-year strategic plan and ongoing information gathering activities, including expert-led issue seminars and visits to natural resource sites around the state.

The RFP is open to everyone with innovative ideas for environment and natural resources projects that could provide multiple ecological and other public benefits to Minnesota.

The LCCMR reviews, evaluates,

and ranks all proposals submitted. A selection of the highest ranked proposals are invited to present before the LCCMR. Finally, based on the total dollars available, a subset of the proposals are chosen to recommend to the legislature for funding.

The funding recommendations go before the MN House and Senate in the form of a bill, and upon passage the bill goes to the Governor to be signed into law. Funding becomes available to projects beginning July 1 of the next fiscal year.

The LCCMR has oversight over projects funded. Projects must have a work plan approved, provide ongoing project updates, and deliver a final report upon project completion.

For the recommendations to the 2017 Legislature, a total of 195 proposals requesting a combined \$159.6 million were received in

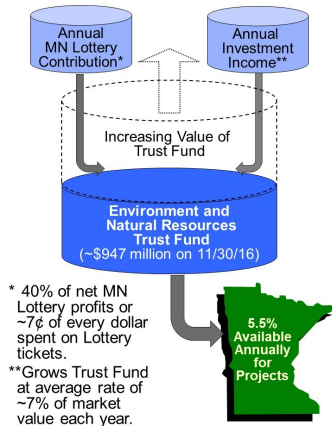
response to the 2017 RFP and, from those, a total of 69 proposals were recommended for some portion of the \$59.1 million being recommended.

The LCCMR is made up of 17 members: 5 Senators, 5 Representatives, 5 citizens appointed by the governor, 1 citizen appointed by the House, and 1 citizen appointed by the Senate.



Funding for ongoing Emerald Ash Borer research and control at the University of Minnesota and Minnesota Department of Agriculture.

About MN's Environment and Natural Resources Trust Fund



The Environment and Natural Resources Trust Fund (ENRTF) is a permanent fund in the state treasury established in the Minnesota Constitution through voter approval in 1988.

It holds assets that can be appropriated by law, "for the public purpose of protection, conservation, preservation, and enhancement of the state's air,

water, land, fish, wildlife, and other natural resources."

The ENRTF was created to provide a long-term, consistent, and stable source of funding for innovative activities directed at protecting and enhancing Minnesota's environment and natural resources.

The money in the ENRTF originates from a combination of

contributions and investment income. Forty percent of the net proceeds from the Minnesota State Lottery, or ~7 cents of every dollar spent playing the lottery, are contributed to the ENRTF each year. Once deposited, contributions become part of the principal balance and are invested in a combination of stocks and bonds to further grow the fund.

ML 2017: Project Recommendations (to begin July 1, 2017)

Approximately \$59.1 million is being recommended to the MN Legislature to fund 69 individual projects around the state.

Natural Resource Research and Analysis: ~\$11.6 million to advance our knowledge and provide strategies and recommendations for addressing issues relating to invasive species, water resources, pollinator, plants, and animal species conservation, habitat restoration, renewable energy, climate change, and chemicals of emerging concern.

Natural Resource Inventory, Monitoring, Mapping, and Planning: ~\$12.4 million to obtain critical information and implementation tools, including continuation of the County Geologic Atlas and Biological Survey, natural resource data

collection, compilation, and management for plants, wildlife, and ecosystems; surveying and conservation efforts for pollinators and biological species; local recreation and conservation planning; and detection and monitoring of invasive species and air quality, and planning for renewable energy.

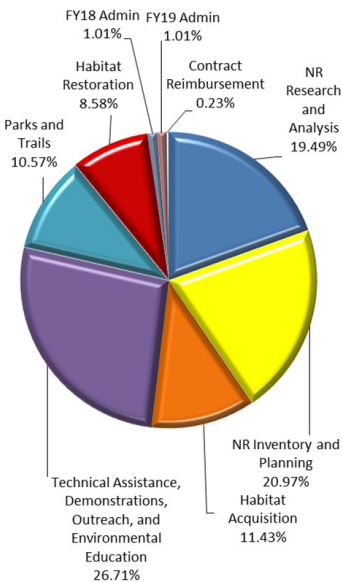
Terrestrial and Aquatic Habitat Acquisition: ~\$6.8 million for acquisition of an estimated 827 acres of habitat in a combination of fee title (492 acres) and prairie conservation easements (335 acres).

Technical Assistance, Demonstrations, Outreach, and Environmental Education: ~\$15.8 million for efforts that will engage and assist Minnesotans on topics including ecology, plants and wildlife, water resources, climate change, renewable energy, resource reuse, and habitat protection and restoration.

Parks and Trails Acquisition and Development: ~\$6.2 million for acquisition of ~404 acres in state and metropolitan regional parks and trails, development of state and local recreational sites, and construction of the Mesabi Trail in northern MN.

Terrestrial and Aquatic Habitat Restoration and Improvement: ~\$5 million for restoration and improvement activities on ~4,002 acres.

Other: ~\$1.3 million for FY 2018 (\$600,000) and FY 2019 (\$600,000) LCCMR administration and DNR contract agreement reimbursement services for projects by non-state entities (\$135,000).



Administration is for biennium and is 1.18% of the biennial dollars available for appropriation.

ML 2016: Projects Funded & Underway (MN Laws 2016, Chapter 186)

Approximately \$37.9 million was appropriated to fund 79 individual projects around the state.

Natural Resource Research and Analysis: ~\$15.8 million to advance our knowledge and provide strategies and recommendations for addressing issues relating to invasive species, water quality and conservation, land management; wastewater treatment, species conservation, agricultural practices, harmful algal blooms, and renewable energy.

Technical Assistance, Demonstrations, Outreach, and Environmental Education: ~\$4.7 million for efforts that will engage and educate Minnesotans on topics including invasive species, climate

change, ecology, plants and wildlife, pollinators, outdoor recreation, natural resource professions, water quality, renewable energy, and conservation.

Parks and Trails Acquisition and Development: ~\$2.5 million for acquisition of ~17 acres to create a new park in the City of Fergus Falls, a new kayak route near the City of Tower, and construction of the Mesabi Trail in northern MN.

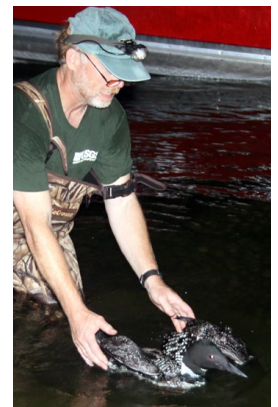
Natural Resource Inventory, Monitoring, Mapping, and Planning: ~\$7.6 million to obtain critical information and guide relevant decisions and efforts, including accelerating state spring inventory; completing the National Wetlands Inventory for Minnesota, surveying for pollinators and other species;

assessments of surface and ground water hydrological process; detection and monitoring of invasive species; and implementation of a variety of local planning efforts.

Terrestrial and Aquatic Habitat Restoration and Improvement: ~\$4 million for restoration and improvement activities on ~1,440 acres and 0.6 miles of shoreline.

Terrestrial and Aquatic Habitat Acquisition: ~\$3.2 million for acquisition of an estimated 210 acres of habitat in fee title and 500 acres of habitat in conservation easements.

Other: ~\$75,000 for ENRTF data management system improvements and \$135,000 for DNR contract agreement reimbursement services for projects by non-state entities.



Funding for loon and white pelican research with Minnesota Department of Natural Resources

ML 2015: Projects Funded & Underway (MN Laws 2015, Chapter 76)

Approximately \$46.3 million was appropriated to fund 65 individual projects around the state.

Natural Resource Research and Analysis: ~\$14.0 million to provide strategies and recommendations for addressing issues relating to invasive species, water resources, species conservation, habitat restoration, agriculture, forestry, renewable energy, climate change, and conservation easements.

Natural Resource Inventory, Monitoring, Mapping, and Planning: ~\$11 million to obtain critical information and guide relevant decisions and efforts, including acceleration of the Biological Survey, County Geologic Atlas, and Wetlands Inventory; natural resource data collection,

surveying and conservation efforts for pollinators; local recreation and conservation planning; and monitoring of invasive species.

Terrestrial and Aquatic Habitat Acquisition: ~\$7.1 million for acquisition of an estimated 1,314 acres of habitat in a combination of fee title (567 acres) and conservation easements (750 acres).

Technical Assistance, Demonstrations, Outreach, and Environmental Education: ~\$5.5 million for efforts that will engage and educate Minnesotans on topics including ecology, plants and wildlife, water resources, agricultural and forestry practices, renewable energy, resource reuse, and habitat protection and restoration.

Parks and Trails Acquisition and Development: ~\$4.4 million for acquisition of ~468 acres in state and metropolitan regional parks and trails, development of state parks and local recreational sites, and construction of the Mesabi Trail in northern MN.

Terrestrial and Aquatic Habitat Restoration and Improvement: ~\$3.2 million for restoration and improvement activities on ~2,663 acres.

Other: ~\$1.2 million for FY 2016 (\$536,000) and FY 2017 (\$536,000) LCCMR administration and DNR contract agreement reimbursement services for projects by non-state entities (\$135,000).



Mesabi Trail recommended 2017, M.L. 2016-09e, M.L. 2015-09j, and M.L. 2005-06m complete.

Projects Completed: January 1, 2015–December 31, 2016

Between January 1, 2015 and December 31, 2016, a total of 77 projects funded by the Environment and Natural Resources Trust Fund reached completion. This includes projects begun in 2005 (1), 2010 (2), 2011 (19), 2013 (40), 2014 (13), and 2015 (2). Major accomplishments resulting from the projects completed include:

Foundational natural resource data acquired and plans developed pertaining to wetlands, soils, groundwater, surface water, microbiology, ecosystem services, restoration evaluations, conservation easements, habitat protection, and ecology and species distributions around the state.

Expansion of parks and other outdoor recreation opportunities throughout the state, including 526 acres added to state parks, regional parks, and local natural areas and various improvements to state parks and 37.5 miles of the Mesabi Trail.

Habitat protection of approximately 2,196 acres of land and habitat through fee title (819 acres) and conservation easement (1,377 acres) acquisition.

Habitat restoration activities performed on over 3,122 acres.

Research and analysis furthering goals for invasive species control, ecosystem health, pollinators, bioenergy, species conservation, understanding climate change impacts, chemicals of emerging concern and water quality protection.

Technical assistance, outreach, and education efforts on habitat restoration, ecology, sustainable natural resource uses and practices, renewable energy and energy conservation, climate change, land conservation and stewardship, invasive species, conservation programs, outdoor recreation, and water resources.



Urban agriculture and park fee title acquisition M.L. 2013-04a complete.

25 Years of Project Highlights from the 25th Anniversary of Minnesota's Environment and Natural Resources Trust Fund

The LCCMR website provides more information about accomplishments highlights at: [25 Years of Project Highlights](#)

- | | | |
|--|--|--|
| 1. Protecting Minnesota's Pollinators | 8. Minnesota State Trails | 18. Restoring Minnesota's Trout Streams |
| 2. Minnesota Wildlife Benefitting from Habitat Corridors Partnership | 9. Research to Protect and Improve Minnesota's Water Quality | 19. Local Initiatives Grants for Minnesota Communities |
| 3. Protecting Minnesota from Invasive Species | 10. Minnesota: a History of the Land | 20. Minnesota Breeding Bird Atlas |
| 4. Engaging Minnesota Students and Families with the Mississippi River | 11. Minnesota County Geologic atlas | 21. Engaging Minnesota Youth in Energy Conservation and Renewable Energy |
| 5. Impact of Deepwater Horizon Oil Spill on Minnesota's Loons and Pelicans | 12. Minnesota Scientific and Natural Areas | 22. Understanding Minnesota's Lake Superior |
| 6. Minnesota Biological Survey | 13. Minnesota Wildlife Benefitting from Metro Conservation Corridors Partnership | 23. Minnesota Conservation Apprentice Academy |
| 7. Minnesota State Parks and Recreation Areas | 14. National Wetlands Inventory for Minnesota | 24. Clean, Renewable Energy for Minnesota's future |
| | 15. Minnesota's Metropolitan Regional Parks | 25. Improved Public Access to Minnesota a Waters |
| | 16. Minnesota Soil Survey | |
| | 17. Research of Unique Organisms in Minnesota's Soudan Underground Mine | |



Legislative-Citizen Commission on Minnesota Resources (LCCMR)

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LCCMR Staff

Susan Thornton—Director
Michael McDonough—Research and Planning Manager
Michael Varien—Project Analyst
Diana Griffith—Commission Assistant

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About LCCMR

The LCCMR is made up of 17 members (5 Senators, 5 Representatives, 5 citizens appointed by governor, 1 citizen appointed by House, and 1 citizen appointed by Senate). The function of the LCCMR is to make funding recommendations to the Minnesota Legislature for special environment and natural resource projects, primarily from the Environment and Natural Resources Trust Fund. These projects help maintain and enhance Minnesota's environment and natural resources. The LCCMR developed from a program initiated in 1963. Since 1963, over \$800 million has been appropriated to more than 1,800 projects recommended by the Commission to protect and enhance Minnesota's environment and natural resources.

Commission Members Serving During 2015-2016

Jeff Broberg (Co-Vice Chair)—Appointed by the House
Sen. Gary Dahms (Co-Vice Chair)
Sen. Kari Dziedzic
William Faber—Appointed by the Governor
Nancy Gibson (Co-Chair)—Appointed by the Governor
Rep. Tom Hackbarth
Bonnie Harper-Lore—Appointed by the Governor
Sen. John Hoffman
Gary Lamppa—Appointed by the Senate
Rep. Denny McNamara
Norman Moody—Appointed by the Governor
Rep. John Persell (Co-Chair)
Sen. David Tomassoni (Co-Chair)
Rep. Paul Torkelson (Co-Vice Chair)
Rep. Jean Wagenius
Sen. Torrey Westrom
Della Young—Appointed by the Governor

Information Gathering: Jan 1, 2015—Dec 31, 2016

In 2015-16, the LCCMR engaged in several activities that informed its priorities for the projects recommended for funding to the Minnesota Legislature. Natural resources sites around the state were visited:

- 2015 included a visit to southeast MN to learn about topics including water quality, invasive species, habitat protection and management, state and local parks, geology, and wildlife.
- 2016 included a visit to the University of Minnesota Arboretum, Tashjian Bee and Pollinator Discovery Center, Bee Research Facility, and Minnesota Aquatic Invasive Species Research Center (MAISRC) to learn about topics including pollinators, bees, and invasive species.

In addition to the presentations heard on site visits and 173 interactive presentations the LCCMR chose to hear on a spectrum of topics from project proposers responding to the RFPs during this period, the LCCMR also heard several presentations and expert-led issue seminars on topics including:

- Aquatic and terrestrial invasive species
- MN Buffer Law
- Moose Research and Avian Flu
- Harmful Algal Blooms
- Water Policy and Planning
- Updates from current and completed projects pertaining to State Parks and Trails, UMN technology transfer and patents, and restoration evaluation methodologies

2018 Request for Proposal

The LCCMR issued its 2018 Request for Proposal (RFP) for funding on December 21, 2016. Proposals are due May 15, 2017.

This is for funding from the Environment and Natural Resources Trust Fund beginning July 1, 2018.

For FY 2019, approximately \$50 million is expected to remain available for project recommendations to the 2018 Minnesota Legislature.

The RFP is available at <http://www.lccmr.leg.mn>.



Outdoor education with Wilderness Inquiry, Recommended 2017, M.L. 2014-09c, and M.L. 2013-07b



United States Army Corps of Engineer Lock and Dam Number 5, Minnesota City, invasive carp research with the University of Minnesota and Minnesota Department of Natural Resources.

I. Strategic Plan / RFP

“a copy of the current strategic plan...”

- A. Six Year Strategic Plan – Revised and Adopted December 10, 2013
- B. Request for Proposal (RFP)
 - 1. RFP adopted December 9, 2014 for FY2016 (funding beginning July 1, 2015)
 - 2. RFP adopted December 10, 2015 for FY2017 (funding beginning July 1, 2016)

LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR)

Six-Year Strategic Plan for Minnesota's Environment and Natural Resources Trust Fund



**Revised and Adopted
December 10, 2013**

Jeff Broberg, Tom Cook, Sen. Gary Dahms, Sen. Kari Dziedzic, William Faber, Rep. Dan Fabian, Nancy Gibson, Bonnie Harper-Lore, John Herman, Sen. John Hoffman, Rep. Leon Lillie, Norman Moody, Rep. John Persell, Sen. David Tomassoni, Rep. Paul Torkelson, Rep. Jean Wagenius, Sen. Torrey Westrom

Six-Year Strategic Plan for Minnesota's Environment and Natural Resources Trust Fund

Legislative-Citizen Commission on Minnesota Resources

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Availability of this Publication

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- This publication can be made available in alternate formats, such as large print or audio formats, upon request. Contact (651) 296-2406 or lccmr@lccmr.leg.mn.

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Six-Year Strategic Plan for Minnesota's Environment and Natural Resources Trust Fund

I. OVERVIEW

The Environment and Natural Resources Trust Fund (ENRTF) is a permanent dedicated fund in the Minnesota state treasury that was established by 77% voter approval of a constitutional amendment in 1988. The amendment directs forty percent of net proceeds from the Minnesota State Lottery, or approximately seven cents of every dollar spent on playing the lottery, into the ENRTF, where the money is then invested by the State Board of Investment for continued growth. The ENRTF is intended to provide a long-term, stable source of funding for innovative and far-sighted activities that protect, conserve, preserve, and enhance the state's air, water, land, fish, wildlife, and other natural resources. Up to 5.5% of the existing market value of the ENRTF can be expended on these types of activities each year.

Under Minnesota Statute (MS) 116P.05, Subdivision 2, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) is tasked with making recommendations to the Minnesota Legislature for expenditures from the ENRTF. As part of that responsibility, per MS 116P.08, Subdivision 3, the LCCMR must develop, adopt, and periodically review and update a strategic plan intended to look ahead and help guide investments of the ENRTF on a six-year basis.

Minnesota Statutes, Chapter 116P. Environment and Natural Resources Trust Fund

116P.08 TRUST FUND EXPENDITURES

Subdivision 3. Strategic plan required.

- (a) The commission shall adopt a strategic plan for making expenditures from the trust fund, including identifying the priority areas for funding for the next six years. The strategic plan must be reviewed every two years. The strategic plan must have clearly stated short- and long-term goals and strategies for trust fund expenditures, must provide measurable outcomes for expenditures, and must determine areas of emphasis for funding.*
- (b) The commission shall consider the long-term strategic plans of agencies with environment and natural resource programs and responsibilities and plans of conservation and environmental organizations during the development and review of the strategic plan.*

This document, *Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund*, was developed through deliberative consensus by the LCCMR and is intended to fulfill the duties indicated in MS 116P.08, Subd. 3. It consists of two main components:

1. This document outlining general goals, strategies, and areas of emphasis for funding from the ENRTF.
2. Request for Proposal (RFP) documents issued on an annual or biennial basis outlining more delineated areas of emphasis. Once issued, RFP documents are appended to and shall be considered an extension of and update to this document.

Additionally, other documents used in developing and updating the plan are appended to this document as supplemental information as needed or appropriate.

Six-Year Strategic Plan for Minnesota's Environment and Natural Resources Trust Fund

II. BACKGROUND

A. Governing Law for Environment and Natural Resources Trust Fund

The Environment and Natural Resources Trust Fund (ENRTF) is governed by Minnesota Constitution Article XI, Section 14, and Minnesota Statute (MS) Chapter 116P.

Minnesota Constitution Article XI, Sec.14

Sec. 14. Environment and Natural Resources Trust Fund. *A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]*

NOTE: The "other natural resources" cited in Article XI, Section 14 of the Minnesota Constitution, as it pertains to the ENRTF, is further defined in MS 116P.02, Subdivision 5, as follows:

116P.02 Definitions

Subdivision 5. Natural resources.

"Natural resources" includes the outdoor recreation system under section 86A.04 and regional recreation open space systems as defined under section 473.351, subdivision 1.

MS 86A.04 Composition of System

The outdoor recreation system shall consist of all state parks; state recreation areas; state trails established pursuant to sections 84.029, subdivision 2, 85.015, 85.0155, and 85.0156; state scientific and natural areas; state wilderness areas; state forests; state wildlife management areas; state aquatic management areas; state water access sites, which include all lands and facilities established by the commissioner of natural resources or the commissioner of transportation to provide public access to water; state wild, scenic, and recreational rivers; state historic sites; state rest areas, which include all facilities established by the commissioner of transportation for the safety, rest, comfort and use of the highway traveler, and shall include all existing facilities designated as rest areas and waysides by the commissioner of transportation; and any other units not listed in this section that are classified under section 86A.05. Each individual state park, state recreation area, and so forth is called a "unit."

MS 473.351 Metropolitan Area Regional Parks Funding

Subdivision 1. Definitions.

(d) "Regional recreation open space systems" means those parks that have been designated by the Metropolitan Council under section 473.145.

Permissible expenditures from the ENRTF are indicated in MS 116P.08, Subdivision 1, and prohibited expenditures are delineated in MS 116P.08, Subdivision 2.

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Minnesota Statutes, Chapter 116P. Environment and Natural Resources Trust Fund

116P.08 TRUST FUND EXPENDITURES

Subdivision 1. Expenditures.

Money in the trust fund may be spent only for:

- (1) the reinvest in Minnesota program as provided in section 84.95, subdivision 2;*
- (2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;*
- (3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;*
- (4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;*
- (5) capital projects for the preservation and protection of unique natural resources;*
- (6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise may be substantially impaired or destroyed in any area of the state;*
- (7) administrative and investment expenses incurred by the State Board of Investment in investing deposits to the trust fund; and*
- (8) administrative expenses subject to the limits in section 116P.09.*

Subdivision 2. Exceptions.

Money from the trust fund may not be spent for:

- (1) purposes of environmental compensation and liability under chapter 115B and response actions under chapter 115C;*
- (2) purposes of municipal water pollution control under the authority of chapters 115 and 116;*
- (3) costs associated with the decommissioning of nuclear power plants;*
- (4) hazardous waste disposal facilities;*
- (5) solid waste disposal facilities; or*
- (6) projects or purposes inconsistent with the strategic plan.*

B. About Minnesota's Environment and Natural Resources Trust Fund

Minnesota's Environment and Natural Resources Trust Fund (ENRTF) is a permanent fund in the state treasury that was established in the Minnesota Constitution (Art. XI, Sec.14) by 77% voter approval of a constitutional amendment in 1988. The ENRTF was created to provide a long-term, consistent, and stable source of funding for innovative activities directed at protecting and enhancing Minnesota's environment and natural resources for the benefit of current citizens and future generations and it holds assets that can be appropriated by law, "for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources." Up to 5.5% of the existing market value of the ENRTF can be expended each year.

The money in the ENRTF originates from a combination of contributions and investment income. Forty percent of the net proceeds from the Minnesota State Lottery, or approximately seven cents of every dollar spent on playing the lottery, are contributed to the ENRTF each year; this source of contribution is guaranteed by the Minnesota Constitution through December 31, 2024. The ENRTF may also receive contributions from other sources, such as private donations. Once deposited into the ENRTF contributions become part of the principal balance and are invested by the State Board of Investment. The income generated from the investments is reinvested back into the ENRTF. Initially, growth of the ENRTF originated primarily from contributions, but as the principal balance of the ENRTF has grown so

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has the income from investing that principal. Eventually annual growth from investment income will equal and then surpass annual growth from contributions.

C. About the Legislative-Citizen Commission on Minnesota Resources

The Legislative-Citizen Commission on Minnesota Resources (LCCMR) is made up of 17 members: five Senators, five Representatives, five citizens appointed by the governor, one citizen appointed by the Senate, and one citizen appointed by the House. Legislative members are appointed by legislative leadership and must include representation from both majority and minority parties. The citizen members appointed must have experience or expertise in the science, policy, or practice of the protection, conservation, preservation, and enhancement of the state's environment and natural resources.

The function of the LCCMR is to make funding recommendations to the Minnesota State Legislature for special environment and natural resource projects, primarily from the Environment and Natural Resources Trust Fund (ENRTF), and to provide oversight over projects funded through this process. The LCCMR developed from a program initiated in 1963. Between 1991 and 2013 nearly \$800 million has been appropriated to approximately 1,800 projects recommended to protect and enhance Minnesota's environment and natural resources.

D. Legislative-Citizen Commission on Minnesota Resources Proposal and Funding Process

The Legislative-Citizen Commission on Minnesota Resources (LCCMR) has a competitive, multi-step proposal and selection process. On an annual or biennial cycle, a Request for Proposal (RFP) is issued for selected funding priorities based upon an adopted strategic plan and ongoing information gathering activities, including expert-led seminars and visits to natural resource sites around the state. All proposals received in response to the RFP are reviewed, evaluated, and ranked by LCCMR members; a selection of high ranking proposals are chosen for further consideration and invited to present before the commission; and a subset of proposals is chosen to recommend to the legislature for funding based on consistency with funding priorities and total dollars available. Funding recommendations go before the legislature for consideration in the form of an appropriations bill and upon passage must be signed into law by the governor.

Funded projects are required to submit a work plan that must be approved by the LCCMR before a project can begin. Work plans provide a detailed description and statement of agreement regarding all work that will be completed and all outcomes that will be achieved with the Environment and Natural Resources Trust Fund (ENRTF) appropriation. During the period that funds are made available project managers are required to provide two status update reports per year to the LCCMR using their approved work plan.

Anyone may respond to the RFP and apply for funds from the ENRTF providing the proposal is consistent with public purposes. Funding recipients have included state agencies, local government units, academic institutions, non-profit organizations, and private corporations. The LCCMR's process is a competitive one and more proposals are generally received than can be funded based on the dollars available.

E. Vision and Mission for Minnesota's Environment and Natural Resources Trust Fund

Environment and Natural Resources Trust Fund Vision Statement

All Minnesotans have an obligation to use and manage our natural resources in a manner that promotes wise stewardship and enhancement of the state's resources for ourselves and future generations. The

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Environment and Natural Resources Trust Fund is a perpetual fund that provides a legacy from one generation of Minnesotans to the many generations to follow. It shall be used to preserve, protect, restore, and enhance all of the bountiful, rare, and threatened natural resources that are the collective heritage of every Minnesotan. It shall also be used to nurture a sense of responsibility by all and to further our understanding of Minnesota's resource base and the consequences of human interaction with the environment.

Environment and Natural Resources Trust Fund Mission Statement

The mission of the Environment and Natural Resources Trust Fund is to ensure a long-term secure source of funding for environmental and natural resource activities whose benefits are realized only over an extended period of time.

III. SIX-YEAR STRATEGIC PLAN FOR THE ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

A. Strategic Plan Development and Implementation

The Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund is to guide the work and process used by the Legislative-Citizen Commission on Minnesota Resources (LCCMR) in making recommendations for expenditures. Specifically, the Six-Year Strategic Plan, as required by MS 116P.08, Subd. 3, is to provide short and long-term goals and strategies for the ENRTF expenditures, require measurable outcomes for the expenditures, and identify areas of emphasis for funding.

The Six-Year Strategic Plan consists of two main components:

1. This document outlining general goals, strategies, and areas of emphasis for funding from the ENRTF.
2. The most recently issued Request for Proposal (RFP) outlining more delineated areas of emphasis.

Additionally, other documents used in developing and updating the plan are appended to this document as supplemental information as appropriate or needed.

In development, and periodic updating, of its Six-Year Strategic Plan the LCCMR has relied on a number of resources to help identify the most pressing natural resource issues facing Minnesota along with the opportunities to address them, particularly:

- The Statewide Conservation and Preservation Plan developed with financial support from the ENRTF by the University of Minnesota Institute on the Environment.
- Information gathered on an ongoing basis from presentations, information requests, and site visits involving technical experts, citizens, state agencies, local units of government, private individuals, and nonprofit organizations.
- Other adopted plans of environment and natural resources organizations.

In implementing its Six-Year Strategic Plan, the LCCMR will identify specific priority areas for funding through each RFP it issues. In selecting the priority areas for funding in each RFP, the LCCMR will maintain a continued awareness of issues identified by the Statewide Conservation and Preservation Plan, public input, the LCCMR's evaluation of natural resource issues, and major funding initiatives identified by the MN legislature. As the most current RFP is issued it shall be appended to this Six-Year Strategic Plan document as an extension and update of the document indicating the most current statement of specific funding priorities for the strategic plan.

B. Key Issues and Strategic Framework for Six-Year Strategic Plan

In initial development of the Strategic Plan, several key issues were identified that are having the most pressing impacts on Minnesota's environment and natural resources:

- Land and water habitat fragmentation, degradation, loss, and conversion
- Land use practices
- Transportation
- Energy production and use
- Resource Consumption
- Invasive species

To most strategically address these key issues the following five core areas of potential action were identified and form the strategic framework for this plan:

- Integrated planning

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- Critical land protection
- Land and water restoration and protection
- Sustainability practices
- Economic incentives for sustainability

C. Funding Priority Areas of the Request for Proposal

The implementation of the Six-Year Strategic Plan occurs through the LCCMR's proposal and funding process for individual funding cycles, which occur on either an annual or biennial basis. Each funding cycle the LCCMR develops a Request for Proposal (RFP) with specific identified funding priority areas. While the RFP can and does vary from year to year, the funding priority areas generally occur in the following seven broader categories with more specificity for each category identified within the actual RFP:

- Air Quality, Climate Change, and Renewable Energy
- Aquatic and Terrestrial Invasive Species
- Environmental Education
- Foundational Natural Resource Data and Information
- Land Acquisition for Habitat and Recreation
- Methods to Protect, Restore, and Enhance Land, Water, and Habitat
- Water Resources

D. Goals of Six-Year Strategic Plan

The five core areas identified as the strategic framework for this plan provide an integrated approach to resource conservation and protection. The following goals address one or more of the strategic framework areas.

Land and Water Protection

- Protect and conserve land and water (surface and ground) resources that are important for overall ecosystem integrity.
- Provide protection to fragile or unique natural resources, such as prairies, shorelands, trout streams, ground water resources, surface water flows, wetlands, fens, and aquatic habitat where further development or neglect could cause irreparable harm or loss.
- Protect land resources such as large contiguous tracts of forests, prairies that are threatened by fragmentation, high quality natural areas such as those listed in the county biological survey, and important habitat areas.
- Protect and promote habitat, native species, and water quality through land protection, acquisition, and land use practices.
- Protect and promote habitat, native species, and water quality through protection from invasive species.
- Protect and promote habitat, native species, and water quality through reduction and elimination of harmful environmental contaminants.

Research, Planning, and Demonstration

- Improve natural resource data management, conservation, and use statewide through the acquisition, management, and distribution of critical natural resource data by funding efforts to generate natural resource "foundation documents" to increase accuracy, efficiency, and ease of access to the data (including maps, inventories, and surveys).

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- Address emerging issues and provide critical information to assist in our understanding and wise management of natural resources.
- Support research, planning, and/or demonstration projects that protect and conserve sensitive lands, surface and ground water resources, and ecologic integrity.
- Support evaluation of climate change impacts and reduction strategies.
- Support community-based conservation planning.

Encourage Participation in Outdoor Recreation, Hunting, and Fishing

- Promote interest and participation in angling, hunting, outdoor recreation, and environmental and natural resource education. Partnerships to accomplish this goal are encouraged.
- Acquire, enhance, construct, manage, and maintain a variety of accessible outdoor recreation opportunities throughout the state.

Evaluation and Selection Criteria

All proposals should strive to maximize efficiency and return on investment for the proposed expenditures. Additionally, the following criteria, as applicable, are considered in evaluating and selecting proposals to recommend for funding :

- **Funding Priorities:** Responds to RFP funding priorities and LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund articulated and adopted by the LCCMR.
- **Multiple Benefits:** Delivers multiple benefits to Minnesota's environment and natural resources.
- **Outcomes:** Identifies clear objectives likely to result in measurable, demonstrated, and meaningful outcomes.
- **Knowledge Base:** Contributes to the knowledge base or disseminates information that will benefit other efforts.
- **Extent of Impacts:** Results in broad, long-term impacts of statewide or regional significance.
- **Innovation:** Employs or demonstrates innovative approaches to more effectively and efficiently solve specific environment and natural resources issues.
- **Scientific/Technical Basis:** Reflects current scientific and technical knowledge, standards, and best practices.
- **Urgency:** Addresses an issue for which immediate future action is necessary and essential to avoid undesirable consequences.
- **Capacity and Readiness:** Demonstrates capacity and readiness for efforts to be managed and completed in a timely, accountable, and effective manner.
- **Leverage:** Leverages collaborative partnerships and additional efforts, resources, and non-state funds.

E. Strategies for Six-Year Strategic Plan

Priority will be given to innovative projects providing multiple ecological and other public benefits to Minnesota's environment and natural resources. More specifically, the Environment and Natural Resources Trust Fund should support efforts that:

- Identify, protect, and enhance strategic land areas that make the largest contribution to multiple benefits for conservation and increase the management of those lands to enhance the conservation, quality, and diversity of natural resources.
- Establish statewide highest value habitat corridors using consistent conservation biology methodology and criteria for habitat, water quality and quantity, and native species.

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- Acquire the most recent and accurate baseline natural resource data on a regular basis – data such as topography, parcel and land cover, soil and geological survey, and ground water quality and quantity.
- Identify and manage lands suited for human activity by using best management conservation practices to minimize the negative effects on natural resources.
- Increase understanding of potential effects of climate change on resources and develop strategies for reducing the impact of climate change on natural resources.
- Increase understanding of effects of contaminants on natural resources, including ground water, and develop strategies for reducing contamination.
- Increase public understanding of the need for better conservation, preservation, and restoration of Minnesota's habitats and landscapes.
- Develop strategies for delivery of environmental education to Minnesota students and residents at school, home, work, and play.
- Develop strategies to prevent introductions and reduce spread of aquatic and terrestrial invasive species and restore or reestablish terrestrial or aquatic habitats impacted by invasive species.
- Develop land use strategies for sustainable, renewable energy production (electricity and fuels) that protect, enhance and restore native species, water quality, habitat, and prairies.
- Evaluate renewable energy options in Minnesota, including energy conservation, based on greenhouse gas and other emissions reductions, surface and ground water use, effects on the economy, and use by the electric and transportation sectors.
- Increase involvement of citizens and communities in scientific efforts pertaining to Minnesota's environment and natural resources.

F. Outcomes for the Environment and Natural Resources Trust Fund

Outcomes for the Environment and Natural Resources Trust Fund (ENRTF) will be specifically defined by the individual work plans of the projects receiving funding recommendations. However there are some broad outcomes that are hoped to be achieved:

- Funding recommendations are consistent with and accelerate implementation of the Statewide Conservation and Preservation Plan and other related environment and natural resource plans, documents, reports, or recommendations. See "Appendix I: Environment and Natural Resources Plans, Documents, and Reports".
- Complete acquisition of baseline natural resource data, including the County Biological Survey, Soil Survey, wetlands inventory, restorable wetlands inventory, and the County Geologic Atlas by 2020.
- Funding recommendations in the aggregate include work in all ecoregions, as defined by the Minnesota Department of Natural Resources.
- To the extent possible, funding recommendations support the creation and continuation of "green jobs" in Minnesota.

G. Relationship of Environment and Natural Resources Trust Fund to Other State Funds and Programs

Overall

Funding from the Environment and Natural Resources Trust Fund (ENRTF) represents only a small portion of total state spending relating to the environment and natural resources. Historically, ENRTF

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appropriations have equaled less than one percent of the total state spending on environment and natural resources. The bulk of spending in these areas comes from the general fund, bonding, and user fees. Additionally, the Legacy Amendment to the Minnesota Constitution (Article XI, Section 15), adopted by voter approval in November 2008, dedicates portions of a state sales tax of three-eighths of one percent to specific types of environment and natural resources projects through June 30, 2034, which has added a significant boost to state spending in these areas.

One aspect of the ENRTF that sets it apart from the bulk of funding for environment and natural resources in Minnesota (i.e., traditional funds: general fund, bonding, and user fees) is that it is intended to be used for "special" efforts. M.S. 116P.03 stipulates that the ENRTF is not to be used as a substitute for traditional sources of funding for the environment and natural resources. This same stipulation, that the funds cannot supplant existing funding, applies to the Legacy Amendment Funds.

116P.03. Trust Fund Not to Supplant Existing Funding; Appropriations.

(a) The trust fund may not be used as a substitute for traditional sources of funding environmental and natural resources activities, but the trust fund shall supplement the traditional sources, including those sources used to support the criteria in section 116P.08, subdivision 1. The trust fund must be used primarily to support activities whose benefits become available only over an extended period of time.

Another aspect of the ENRTF that is unique from other environment and natural resources funding, including Legacy Amendment Funds, is that it is a permanent fund structured like an endowment to provide funding for "special" environment and natural resources efforts in Minnesota in perpetuity. This permanent status can only be altered by an additional amendment to the Minnesota Constitution.

Relationship Between Environment and Natural Resources Trust Fund and Legacy Amendment Funds

There is some overlap between the Environment and Natural Resources Trust Fund (ENRTF) and the Legacy Amendment funds. Three of the four funds created by the Legacy Amendment have purposes directly related to Minnesota's environment and natural resources: Outdoor Heritage Fund, Clean Water Fund, and Parks and Trails Fund. However, there are also differences.

One difference is the purpose of the different funds. The Outdoor Heritage Fund, Clean Water Fund, and Parks and Trails Fund are each all limited to very targeted types of environment and natural resources projects. Whereas the ENRTF has a broader mandate with greater flexibility in the types of projects it can fund.

Another difference between the ENRTF and the Legacy Amendment funds is the revenue stream that generates them in terms of the types of public money each represents and the permanency of these revenue streams as funding sources. Money from the Legacy Amendment funds comes from public tax dollars generated through a state sales tax. The structure of the three funds makes all of the money directly available for expenditure on projects as it becomes available. However, since the sales tax is only in effect until June 30, 2034, the revenue stream is not permanent. The sources of money for the ENRTF fund are not tax generated dollars but a combination of forty percent of net proceeds from the Minnesota State Lottery and income to the state generated from investing those proceeds. In order to provide a permanent source of funds and help these dollars have the greatest impact over time, the ENRTF is structured like an endowment: money is accumulated, it is invested for continued growth, and 5.5% of the compounding principal balance is available for projects each year. Lottery proceeds are only dedicated to the Trust Fund through December 31, 2024. However, at that point the cumulative balance of the Trust Fund is projected to be large enough to ensure self-sustaining growth through investment income while still providing ongoing funding for projects.

IV. MOST RECENT REQUEST FOR PROPOSAL

Environment and Natural Resources Plans, Documents and Reports

The following list and links of materials include major natural resource planning documents for Minnesota and also includes other document and reports that are relevant to the environment and natural resource funding recommendation made by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). While the list is extensive it is not meant to be all inclusive. There are many other sources of information that are useful in helping to understanding the environment and natural resource issues in Minnesota.

*The titles and descriptions of the documents are from the web link associated with the information.
List prepared by LCCMR staff – 12-5-2013.*

Statewide Conservation and Preservation Plan – LCCMR/ENRTF November 2008

http://www.lccmr.leg.mn/documents/scpp/statewide_plan.htm

The Preliminary Plan of the Minnesota Statewide Conservation and Preservation Plan – LCCMR/ENRTF

September 2007 http://www.lccmr.leg.mn/documents/scpp/conservation_and_preservation_plan.html

Minnesota Department of Natural Resources (DNR)

[Conservation Agenda](#)

Strategic Conservation Agenda 2009-2013 Part I: Strategic Directions highlights

Strategic Conservation Agenda 2009-2013 Part II: Performance and Accountability Report

Minnesota Pollution Control Agency (MPCA)

MPCA Strategic Plan 2013 - Vision: Minnesota's clean water supports aquatic ecosystems, healthy communities and a strong economy <http://www.pca.state.mn.us/index.php/view-document.html?gid=19310>

Minnesota Board of Soil and Water Resources (BWSR)

BWSR 2007 Strategic Plan/2012 Update http://www.bwsr.state.mn.us/publications/Strategic_Plan.pdf

Minnesota Department of Transportation Planning (MnDot)

Minnesota GO 50-Year Vision for Transportation - November 2011

<http://www.dot.state.mn.us/minnesotago/docs/minnesotagovision-nov2011.pdf>

The Minnesota Department of Transportation launched the Minnesota GO visioning process to better align the transportation system with what Minnesotans expect for their quality of life, economy and natural environment.

Metropolitan Council

2030 Regional Frame Work - Adopted January 14, 2004, Amended December 14, 2006

<http://www.metrocouncil.org/Planning/Publications-And-Resources/2030-Regional-Development-Framework.aspx> the update to be called “2040 Regional Development Framework” is anticipated to be adopted by the end of 2014.

Appendix I: Environment and Natural Resources Plans, Documents, and Reports

Local Units of Government

There are many plans related to conserving natural resources from Local unit of Government (LUGs) such as county plans, municipal plans, comprehensive plans, watershed plans. These plans are too numerous to list. Any entity receiving an appropriation from the ENRTF that affect a local unit of government is required to look at local plans and coordinate efforts with the affect units of government.

WATER RESOURCES

Minnesota Water Sustainability Framework (Legacy funding – U of MN) - January 2011

<http://wrc.umn.edu/watersustainabilityframework/>

DNR

- Draft strategic planning for the MN DNR groundwater Program October 2013
<http://files.dnr.state.mn.us/waters/gwmp/gwsp-draftplan.pdf>

MPCA

- Minnesota Wetland Program, Plan - May 2012 – PCA, BWSR, DNR, MDA
<http://www.pca.state.mn.us/index.php/view-document.html?gid=18979>
- Minnesota Nonpoint Source Management Program Plan as approved by EPA 2008 and 2013
- <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/water-nonpoint-source-issues/minnesota-nonpoint-source-management-program-plan-nsmpp.html>
- Nitrogen in Minnesota Surface Waters <http://www.pca.state.mn.us/index.php/view-document.html?gid=19622>
- Groundwater in Minnesota <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/groundwater/index.html>
- Pharmaceuticals and Endocrine Active Chemicals in Minnesota Lakes
<http://www.pca.state.mn.us/index.php/view-document.html?gid=19427>
- Feedlots — Nutrient and Manure Management – 2009 – various fact sheets and guidelines
<http://www.pca.state.mn.us/index.php/topics/feedlots/feedlot-nutrient-and-manure-management.html>
- Minnesota's DRAFT Nutrient Reduction Strategy 2013
<http://www.pca.state.mn.us/index.php/view-document.html?gid=20213>
- Draft report on Minnesota's nutrient reduction strategy
<http://www.pca.state.mn.us/index.php/view-document.html?gid=20213>
- Metro Solid Waste Management Policy Plan April 2010-2030
<http://www.pca.state.mn.us/index.php/view-document.html?gid=15714>

Minnesota Department of Agriculture (MDA)

- Minnesota Nitrogen Fertilizer Management Plan Draft Released for Public Comment – Aug. 2013
<http://www.mda.state.mn.us/chemicals/fertilizers/nutrient-mgmt/nitrogenplan/~media/Files/chemicals/nfmp/2013nfmpdraft.ashx>
- Minnesota Pesticide Management Plan - A Plan for the Protection of Groundwater and Surface Water - 2007
<http://www.mda.state.mn.us/Global/MDADocs/protecting/waterprotection/pmp-nov2007.aspx>
- County Water Plans – input from MDA on specific priorities - Agricultural Drainage, Wetlands & Water Retention, Agricultural Chemicals & Nutrients in Ground & Surface Water, Livestock &

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Manure Management, Agricultural Land Management, Targeting BMPs, Aligning Local Plans & Engaging Agriculture

<http://www.mda.state.mn.us/protecting/waterprotection/waterplanning.aspx>

Minnesota Department of Health – (MDH)

Drinking Water Protection - Recommendations and guidance pertaining to the development and implementation of source water protection plans for public water supplies relying on surface waters - 2002 <http://www.health.state.mn.us/divs/eh/water/swp/surfaceguide.pdf>

Environmental Quality Board (EQB)

2010 Minnesota Water Plan http://www.eqb.state.mn.us/documents/2010_Minnesota_Water_Plan.pdf

Metropolitan Council

Water Resources Management Policy Plan - 2005 <http://www.metrocouncil.org/Wastewater-Water/Planning/Water-Resources-Management-Policy-Plan.aspx>

Environmental Protection Agency EPA

Reactive Nitrogen in the United States: An Analysis of Inputs, Flows, Consequences, and Management Options. August 2011

[http://yosemite.epa.gov/sab/sabproduct.nsf/67057225CC780623852578F10059533D/\\$File/EPA-SAB-11-013-unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/67057225CC780623852578F10059533D/$File/EPA-SAB-11-013-unsigned.pdf)

United States Department of Agriculture

Nitrogen in Agricultural Systems: Implications for Conservation Policy - 2011


http://www.ers.usda.gov/publications/err-economic-research-report/err127.aspx#.Up-S_tJDtHg

U of M Water Resources Center/ Freshwater Society

Groundwater Sustainability: Towards a Common Understanding <http://freshwater.org/wp-content/uploads/joomla/PDFs/workshopsummaryandappendix.pdf>

ENVIRONMENTAL EDUCATION

MPCA

- A GreenPrint for Minnesota: State Plan for Environmental Education, Third Edition (2008)
-  [A GreenPrint for Minnesota, Third Edition \(2.5Mb\)](#) State of Minnesota Sustainability Plan – 2011 (Previous plan by the Office of Environmental Assistance)

INVASIVE SPECIES

DNR

- A Minnesota State Management Plan for Invasive Species – 2009 – DNR
http://files.dnr.state.mn.us/natural_resources/invasives/state_invasive_species_plan.pdf

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- Long-Term Funding Needs for Aquatic Invasive Species Programs – 2012 – DNR
http://files.dnr.state.mn.us/aboutdnr/reports/legislative/ais_long_term_funding_leg_report_january_2012.pdf
- Invasive Species of Aquatic Plants and Wild Animals in Minnesota - Annual Report 2012
http://files.dnr.state.mn.us/aboutdnr/reports/legislative/2012_invasive_species_annual_report_final.pdf

AIR QUALITY, CLIMATE CHANGE, AND RENEWABLE ENERGY

Minnesota Pollution Control Agency (PCA)

- Air Monitoring Network Plan - 2014 <http://www.pca.state.mn.us/index.php/view-document.html?gid=19546>
- Implementation Plan for Minnesota's Statewide Mercury Total Maximum Daily Load - 2009
<http://www.pca.state.mn.us/index.php/view-document.html?gid=11481>
- Adapting to Climate Change in Minnesota Preliminary Report - Interagency Climate Adaptation Team 2013 <http://www.pca.state.mn.us/index.php/view-document.html?gid=15414>
- Climate Change 2013: The Physical Science Basis <http://www.climatechange2013.org/>

HABITAT/WILDLIFE

A 25-year framework Minnesota's conservation estate, historic conservation investments and future opportunities - Outdoor Heritage Fund - December 2010

http://www.isohe.leg.mn/25yr_plan/FINAL_25_Year_Framework.pdf (Legacy funding)

DNR- Ecological & Water Resources

- [Tomorrow's Habitat for the Wild and Rare](#) - January 2006 (update is underway - final to be done by end of 2014) A strategic plan focused on managing Minnesota's populations of "species in greatest conservation need."
- Prairie Pothole Joint Venture <http://www.ppjv.org/implement2.htm>, Prairie Pothole Joint Venture Implementation Plan -2005 - USFWS
http://www.ppjv.org/PPJV_presntations/2005_PPJV/1_Upfront_matter_Contents.pdf USFWS
This plan provides a road map for integrating the conservation of all migratory birds under one framework.
- North American Waterfowl Management Plan - 2012 –USFWS
<http://www.nawmprevision.org/sites/default/files/NAWMP-Plan-EN-may23.pdf>
- [Scientific and Natural Areas \(SNA\) Program Long Range Plan](#) - 2004 **PDF** this plan outlines the DNR's goal for the SNA system. The SNA policy set forth guidelines for identification and evaluation, designation and registration, management and uses of SNAs.

DNR- Fish and Wildlife

Fish and wildlife resource and species plans provide a framework for staff and stakeholders to work collaboratively to achieve short- and long-term goals. Although not exhaustive, the following list includes some of the key plans.

- SWAP State Wildlife Action Plans
- WMA Acquisition – The Next 50 Years

Appendix I: Environment and Natural Resources Plans, Documents, and Reports

- Managing Minnesota's Shallow Lakes for Waterfowl and Wildlife
- Prairie Pothole Joint Venture (PPJV) Implementation Plan
- Fisheries Management Long-Range plan
- Upper Mississippi River and Great Lakes Region Projects (UMGLJV)
- Aquatic Management Area Acquisition Plan 2008-2033
- Long-Range Plan for the Ring-Necked Pheasant in Minnesota
- Long-Range Duck Recovery Plan
- Long-Range Plan for Wild Turkey in Minnesota
- Strategic Plan for Coldwater Resources Management in Southeast Minnesota 2004-2015
- Red River of the North Fisheries Management Plan
- Watershed District Plans
- Individual Lake Plans
- Fisheries Management Plan for the Minnesota Waters of Lake Superior
- Midwest Glacial Lakes Partnership
- Driftless Area Restoration Effort
- A Vision for Wildlife and Its Use – Goals and Outcomes 2006-2012
- Wildlife Management Area Guidance documents
- Minnesota Prairie Conservation Plan, July 2013
http://files.dnr.state.mn.us/eco/mcbs/mn_prairie_conservation_plan.pdf

DNR- Forestry

- Minnesota Forests for the Future Report - DNR Forestry - April 2008 [Minnesota Forests for the Future report](#) **PDF**

Minnesota Forest Resource Council <http://mn.gov/frc/index.html>

Six landscapes across the state as listed below. Each area has an oversight committee with related landscape level plans and supporting documents:

[East Central Landscape Committee](#) – Plan 2005; [Northeast Landscape Committee](#) – Plan 2003; [Northern Landscape Committee](#) Plan Amended 2010; [North Central Landscape Committee](#) – Plan 2004; [Southeast Landscape Committee](#) – Plan 2003; [West Central Landscape Committee](#) – Plan March 2004

Pollinators - University of MN - <http://www.entomology.umn.edu/cues/pollinators/>

OUTDOOR RECREATION

DNR- Parks and Trails

- [Trends in Outdoor Recreation](#) (1 page 11K) **PDF** - 2006
Indicators of nature-based outdoor recreation participation changes over the last 10 years for U.S. and MN – MN DNR
- [Division of Parks and Trails Strategic Plan \(2012\)](#) **PDF**
- [Minnesota State Parks and Trails: Directions for the Future \(2011\)](#) **PDF**
- [Summary of visitors to all parks 2000 - 2007](#) (1 page 28K) **PDF**
Total visitors, campers, group campers, and camper cabin guests.

Metropolitan Council Regional Parks

- 2030 Regional Park Policy Plan - Adopted 2004/Amended June 2013
<http://www.metrocouncil.org/getattachment/d03247b7-d5d6-4584-af9b-bf1f15bfe913/.aspx>

B. Request for Proposal (RFP)

1. RFP adopted December 9, 2014 for FY2016
(funding beginning July 1, 2015)



Environment and Natural Resources Trust Fund (ENRTF) 2015 Request for Proposal

Legislative-Citizen Commission on Minnesota Resources (LCCMR)

www.lccmr.leg.mn

Funding Priorities for 2015

- Foundational Natural Resource Data and Information
- Water Resources
- Environmental Education
- Aquatic and Terrestrial Invasive Species
- Air Quality, Climate Change, and Renewable Energy
- Methods to Protect, Restore, and Enhance Land, Water, and Habitat
- Land Acquisition for Habitat and Recreation

Funding Beginning: July 1, 2015

Deadline to Submit: 4:30 PM on Friday, March 28, 2014

- Electronic submission of proposals required.
- Please **carefully review** the full text and **follow the instructions** of this document before submitting a proposal.
- LCCMR staff are available to assist and review draft proposals if submitted by Friday, March 21, 2014. Early submission of drafts is recommended to receive the most detailed guidance.

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www.facebook.com/mnenrtf
www.twitter.com/mnenrtf

Issued December 2013



FUNDING AVAILABILITY:

- The LCCMR makes recommendations to the MN Legislature for project funding appropriations of up to 5.5% per year of the existing value of the Minnesota Environment and Natural Resources Trust Fund (ENRTF).
- This Request for Proposal (RFP) is for funds available beginning July 1, 2015. For that period, approximately \$44 million from the ENRTF is projected to be available for project funding.
- Through this RFP the LCCMR intends to make funding recommendations to the 2015 Minnesota Legislature.
- This RFP is part of an annual cycle and the next RFP is expected to be issued in January 2015 for funds available July 1, 2016.

Minnesota's Environment and Natural Resources Trust Fund:

Minnesota Constitution Art. XI, Sec.14: "The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources."

BACKGROUND INFORMATION

LCCMR MEMBERS

Jeff Broberg
Tom Cook
Sen. Gary Dahms
Sen. Kari Dziedzic
William Faber
Rep. Dan Fabian
Nancy Gibson
Bonnie Harper-Lore
John Herman
Sen. John Hoffman
Rep. Leon Lillie
Norman Moody
Rep. John Persell
Sen. David Tomassoni
Rep. Paul Torkelson
Rep. Jean Wagenius
Sen. Torrey Westrom

Co-Chairs

Nancy Gibson
Sen. David Tomassoni
Rep. Jean Wagenius

Co-Vice Chairs

Jeff Broberg
Sen. Gary Dahms
Rep. Paul Torkelson

The LCCMR is an Americans with Disabilities Act (ADA) Equal Opportunity Employer (EOE).

PLEASE CAREFULLY REVIEW THE FULL TEXT AND FOLLOW THE INSTRUCTIONS OF THIS DOCUMENT BEFORE SUBMITTING A PROPOSAL

ELIGIBILITY—OPEN TO ALL:

The spirit and intent of the LCCMR is to provide access to EVERYONE for **innovative** ideas for environmental or natural resource projects that could provide multiple ecological and other public benefits to Minnesota and are consistent with the LCCMR's Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund and the adopted funding priorities described in this RFP.

LCCMR staff are available to review drafts and assist in proposal development.

Lobbying or professional grant-writing experience is not necessary for success.

AMOUNT OF REQUEST

There is no minimum or maximum amount that can be requested. Small funding requests will be equally considered for funding. Final recommendation amounts are determined by the dollars available and an aim to create a balanced package of projects addressing a variety of issue areas around the state.

DEADLINE FOR SUBMISSION:

4:30 PM, Friday, March 28, 2014
THIS IS A FIRM DEADLINE.

SUBMIT PROPOSAL:

Online Submission of Proposals Required*.

Go to: www.lccmr.leg.mn and select "2015 LCCMR Proposal Submission Form".

Save a copy of your submission for your records. **Upon receipt, all submitted proposals and budgets will be posted on the web for the public to view.**

*Contact LCCMR staff if unable to use the online proposal submission form.

PROJECT IMPLEMENTATION:

Funding for selected projects will be available beginning July 1, 2015, following appropriation of funds by the legislature and work plan approval by the LCCMR. Funds for non-state entities are awarded on a reimbursement basis.

EXPENSE ELIGIBILITY:

See p. 13 for guidance on allowable expenses.

PROPOSAL ASSISTANCE:

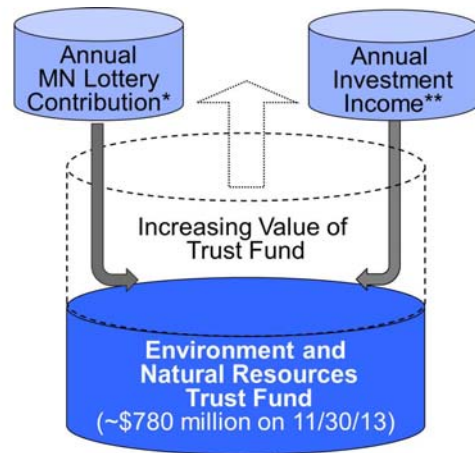
LCCMR staff are available to provide assistance, answer questions, or review and provide feedback on drafts of proposals. **Proposers are encouraged to submit proposal drafts to help ensure proposals are focused, clear, and contain all necessary information.** Drafts must be received by Friday, March 21, 2014, to allow adequate time for staff review. Early submission of drafts is recommended to receive the most detailed guidance.

If you have questions or would like proposal assistance, including direction on other state funding opportunities that may be appropriate for a project, contact LCCMR staff:

Phone: (651) 296-2406

Email: lccmr@lccmr.leg.mn

Address: Room 65 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd
St. Paul, MN 55155



* 40% of net MN Lottery profits or ~7¢ of every dollar spent on Lottery tickets.

**Grows Trust Fund at average rate of ~6% of market value each year.



2015 PROPOSAL AND FUNDING PROCESS

DECEMBER 2013-MARCH 2014

- LCCMR determines funding priorities and adopts 2015 Request for Proposal (RFP).
- 2015 RFP issued.
- LCCMR staff available to review and provide feedback on any draft proposals submitted by March 21, 2014.

MARCH 2014

- Friday, March 21, 2014: Last day to submit draft proposals for LCCMR staff review.
- **Friday, March 28, 2014: Final Proposal Submission Deadline at 4:30 PM.**

SPRING/SUMMER 2014

- All proposals are reviewed and evaluated using the criteria on page 7 of this RFP.
- Based on the evaluations a subset of proposals is selected for further consideration (expected in early June) and those proposers are invited in to give presentations before the LCCMR (planned for late June).
- After presentations final selection is made by LCCMR of proposals to be recommended to 2015 Minnesota Legislature for funding.

SCIENTIFIC RESEARCH PROJECTS

Recommended scientific research proposals undergo peer review.

PROJECT WORK PLANS

All recommended proposals submit detailed work plans to the LCCMR.

JANUARY-MAY 2015 (Legislative Session)

- The LCCMR funding recommendations are considered and acted upon by the Minnesota Legislature (House and Senate) and signed into law by the Governor.

JUNE-JULY 2015

- June 2015: LCCMR approves work plans for funded proposals authorizing projects to begin July 1, 2015.
- **July 1, 2015: Money from the Environment and Natural Resources Trust Fund becomes available for projects to begin.**

REPORTING DURING PROJECT PERIOD AND PROJECT COMPLETION

- Projects are required to provide status update reports twice per year, or approximately every six months.
- Projects are required to submit a final report on project outcomes and results approximately 4-6 weeks after a project's designated completion date of June 30 of the year determined by the project's length.

The next RFP for funding beginning July 1, 2016 is expected to be issued in January 2015.

2015 FUNDING PRIORITIES

Projects are sought that provide multiple ecological and other public benefits, are consistent with the LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund (http://www.lccmr.leg.mn/documents/strategic_plan/lccmr_strategic_plan.pdf), and address at least one of the adopted funding priorities detailed below. Projects should be **innovative** and must accelerate or supplement, not supplant, existing efforts.

Note:

- **Project Eligibility:** Projects being done to meet regulatory requirements will not be considered for funding. Additionally, see specific limitations indicated in *italics* within individual funding priorities.
- **Other Funding Opportunities:** As applicable, projects eligible for established, topic-specific state agency grant programs—such as for renewable energy, sustainable agriculture, clean water implementation, local parks and trails, and habitat acquisition and restoration—are encouraged to go directly to the particular state agency grant program as funds may be available in a more timely manner. Contact LCCMR staff for more information and guidance about these other established grant programs.
- As appropriate, projects involving citizen science and community involvement in scientific efforts are encouraged.

Proposals must address one or more of the seven funding priorities detailed below. The order of the priorities below does not indicate a level of priority within the priorities.

A. Foundational Natural Resource Data and Information

Proposals must address one or more of the following:

1. Data acquisition, information management, research, or analysis to develop foundational natural resource or wildlife data and information.
2. Coordination, facilitation, or training pertaining to statewide sharing, distribution, or innovative application of natural resource data (e.g., maps, inventories, and surveys) and information tools (e.g., Geographic Information Systems (GIS), Light Detection and Ranging (LiDAR), and other remote sensing techniques).

B. Water Resources

Proposals must address one or more of the following:

1. Protect or restore water quality by reducing soil erosion, reducing peak water flows, or improving water and land use practices. Projects must include monitoring and evaluation.
2. Research and evaluation to identify the causes of observed changes in the health of fish and wildlife that may pertain to contaminants of emerging concern.
3. Research, technology development, or engineering design to protect the health of humans and aquatic and terrestrial species by i) advancing development or implementation of standards for nitrates or other contaminants; or ii) broadly reducing levels of nitrates, phosphates, estrogenic, pharmaceutical, or other contaminants in ground and surface waters.
4. Research, monitoring, or evaluation pertaining to i) ground and surface water interaction, protection, conservation, and sustainability, or ii) lake ecosystems, including Lake Superior.

2015 FUNDING PRIORITIES

C. Environmental Education

Proposals must address education, information dissemination, and training efforts that will increase the knowledge and skills of students or the public to cultivate a sustainable lifestyle, improve and maintain water quality, reduce and monitor energy and water consumption, or restore and maintain a healthy and biodiverse natural environment. *Funding for capital projects (e.g., buildings) will not be considered.*

Priority will be given to projects that address one or more of the following:

1. Efforts that are locally-led, involve broad-based partnerships, provide outdoor experiences, or are committed to building a long-lasting and action-based conservation ethic in a community.
2. Efforts that deliver and implement existing curriculum, especially integration of environmental education into school curriculum. *Proposals to develop new curriculum will not be considered.*

D. Aquatic and Terrestrial Invasive Species

"Invasive species" includes any plants, animals, insects, and diseases that are non-native, introduced species in the state and that are currently having, or pose a threat to have, significant adverse impacts on Minnesota's native ecosystems and biodiversity. Proposals must address one or more of the following:

1. Prevent introduction or provide early detection of new invasive species.
2. Reduce the spread of invasive species with best management practices along streams, rivers, land transportation routes, and other vectors.
3. Alternative control techniques for containing or suppressing invasive species already present in Minnesota. *Standard control, removal, and maintenance activities of invasive species will not be considered.*
4. Restore lands with native vegetation as practicable following implementation of invasive species control techniques on disturbed lands where a native seed bank no longer exists.
5. Inform and educate landowners about all invasive species threats to their land and offer actions they can take in response.

E. Air Quality, Climate Change, and Renewable Energy

Proposals must address one or more of the following:

1. Innovative approaches to air quality improvement that reduce impacts on human health, the environment, or natural resources.
2. Acquisition of data at a scale appropriate to assess natural resource changes attributable to climate change.
3. Research to help understand how to mitigate, adapt, or make Minnesota's ecosystems more resilient to climate change impacts, including drought and extreme weather events.
4. Implementation of innovative efforts aimed at mitigating, adapting, or making Minnesota's ecosystems more resilient to climate change impacts, including drought and extreme weather events.
5. Evaluation of applicability and/or effective implementation of clean energy technologies (e.g., biofuels, solar, geothermal, wind) or energy conservation in Minnesota. Examples include efforts involving carbon emissions reduction; community-based, locally-produced renewable energy technologies; renewable energy life cycle costs and impacts; or smart energy technologies. *Funding for capital projects will not be considered.*
6. Reduction of greenhouse gas emissions through new and innovative approaches to increasing recycling and composting. *Standard, required, and ongoing efforts will not be considered.*

2015 FUNDING PRIORITIES

F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat

Proposals must address one or more of the following (see p.7 for additional project requirements pertaining to this category):

1. Innovative protection, restoration, or enhancement of lands with high-quality natural resources, habitat, ecological value, or water protection value.
2. Long term preservation of native forest, wetland, or prairie plant genetics and viability.
3. Technical assistance for prairie stewardship, forest stewardship, stewardship of Conservation Reserve Program (CRP) lands and other agricultural lands, or aquatic buffer management to improve water quality.
4. Planning and implementation of community-based efforts to permanently conserve natural resources and reduce habitat fragmentation impacts on natural resources, including the impacts of transportation and other infrastructure.

G. Land Acquisition for Habitat and Recreation

Proposals must address fee title or permanent conservation easement acquisition of strategic lands with high quality natural resources, habitat, ecological value, and/or recreational value, and the greatest capacity to contribute multiple conservation benefits to wildlife, humans, and ground and surface water quality. All lands to be acquired should be part of an adopted state, regional, or local natural resource plan and a restoration/enhancement or management plan for the site must be created. Proposals should provide an explanation as to how such plans will be developed, implemented, and funded.

Priority will be given to projects that address one or more of the following (see p.7 for additional project requirements pertaining to this category):

1. Efforts based on precision conservation methods and analysis that quantifiably identify the lands most critical to acquire. Precision conservation is an emerging practice that considers lands in terms of the interconnected systems of which they are a part. As a practice, precision conservation compiles and integrates multiple types of available data layers and analysis (e.g., terrain analysis, soil productivity, habitat potential, economic analysis, erosion potential, proximity to surface water) to identify and guide efforts that will maximize conservation benefits.
2. Efforts involving Scientific and Natural Areas (SNA) or other areas that aim to protect unique ecosystems, such as native prairie as defined in M.S. 84.02, Subd. 5, or rare, endangered, or threatened species. Areas of these types that may not presently qualify as a priority for other State of Minnesota funds directed toward land acquisition for habitat or recreation are of particular interest.
3. Efforts that enhance habitat connectivity, benefit ground or surface water quality, improve access for natural resource management, or increase public access for recreation, particularly in areas of the state with limited protected public lands.
4. Efforts expanding outdoor recreational opportunities through additions to a state or regional park or trail.

REQUIREMENTS AND EVALUATION CRITERIA

Project Requirements

- Expenditures must strictly adhere to Article XI, Section 14 of the Minnesota Constitution and M.S. 116P.08, the laws governing expenditure of the Environment and Natural Resources Trust Fund (pg. 14).
- Sponsor organizations must have a current external financial audit, or equivalent, with no serious negative findings.
- Funds requested are generally expected to be expended and activities completed within 36 months or less. If additional time is needed, explain in the “Timeline Requirements” section (section III-C) of the main proposal.
- Fee-title and conservation easement acquisition projects have the following additional requirements:
 1. First priority must be given to lands with high quality natural resources that provide multiple benefits and that provide natural buffers to water resources.
 2. Lands should not already be fully or partially protected by state ownership or state funds, per M.S. 116P.18.
 3. Targeted lands must be identified in an adopted state, regional, or local natural resource plan.
 4. Conservation easements must be perpetual and include provisions to perpetually monitor and enforce the conditions of the conservation easements.
 5. Explanation must be provided for how a restoration/enhancement or management plan for the site will be developed, implemented, and funded (through this funding request or other funds).
 6. A list must be provided that identifies proposed acquisitions and restorations by parcel name, geographic coordinates (latitude/longitude), estimated cost, county, ecological significance, activity description, proposed number of acres, proposed shoreline miles, type of landowner, and proposed title/easement holder (if applicable). A list template with instructions is available at www.lccmr.leg.mn.
- Restoration/enhancement projects:
 1. Must occur on public lands or lands that are otherwise permanently protected.
 2. Should refer to MN Board of Water and Soil Resources “Native Vegetation Establishment and Enhancement Guidelines” (http://www.bwsr.state.mn.us/native_vegetation/seeding_guidelines.pdf) for guidance.
- Any royalties, copyrights, patents, or sale of products or assets resulting from a project are subject to revenue sharing requirements outlined in M.S. 116P.10.
- All projects are subject to additional requirements including accessibility, data availability, land acquisition requirements, energy conservation and sustainability guidelines, and recyclable material requirements. Information located at www.lccmr.leg.mn titled “Additional Proposal Requirements”.

Evaluation Criteria

All proposals should strive to maximize efficiency and return on investment for the proposed expenditures. Additionally the following criteria, as applicable, will be considered in evaluating proposals (additional explanation of evaluation criteria is available at www.lccmr.leg.mn titled “Additional Explanation of Evaluation Criteria”):

1. **FUNDING PRIORITIES:** Responds to RFP funding priorities and LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund articulated and adopted by the LCCMR.
2. **MULTIPLE BENEFITS:** Delivers multiple benefits to Minnesota’s environment and natural resources.
3. **OUTCOMES:** Identifies clear objectives likely to result in measurable, demonstrated, and meaningful outcomes.
4. **KNOWLEDGE BASE:** Contributes to the knowledge base or disseminates information that will benefit other efforts.
5. **EXTENT OF IMPACTS:** Results in broad, long-term impacts of statewide or regional significance.
6. **INNOVATION:** Employs or demonstrates innovative approaches to more effectively and efficiently solve specific environment and natural resources issues.
7. **SCIENTIFIC/TECHNICAL BASIS:** Reflects current scientific and technical knowledge, standards, and best practices.
8. **URGENCY:** Addresses an issue for which immediate future action is necessary and essential to avoid undesirable consequences.
9. **CAPACITY AND READINESS:** Demonstrates capacity and readiness for efforts to be managed and completed in a timely, accountable, and effective manner.
10. **LEVERAGE:** Leverages collaborative partnerships and additional efforts, resources, and non-state funds.

PROPOSAL SUBMISSION

FIRM DEADLINE: 4:30 PM ON FRIDAY, MARCH 28, 2014

**ALL FORMS AND TEMPLATES REQUIRED FOR PROPOSAL
SUBMISSION CAN BE FOUND AT www.lccmr.leg.mn**

LCCMR staff are available to review draft proposals if submitted by Friday, March 21, 2014. Early submission of drafts is recommended to receive the most detailed guidance. Submit drafts using the online proposal submission form—indicate DRAFT by entering “Y” in the appropriate field of the submission form.

PROPOSAL SECTIONS CHECKLIST

1	2015 LCCMR Proposal Submission Form: Go to www.lccmr.leg.mn , select “2015 LCCMR Proposal Submission Form” on the Home Page, and provide all requested information, as detailed on p. 9 of this RFP.
Proposal sections 2 through 7 (as applicable) are submitted through the online submission form as individual document attachments. See guidelines for attachments below.	
2	Main Proposal (2-page limit): Download the template (MS-Word) and fill out according to instructions on pages 10-11 of this RFP.
3	Detailed Project Budget (1-page limit): Download the template (MS-Excel) and fill out according to instructions on page 12 of this RFP.
4	Visual or Map (1-page limit): Visual illustration of proposal information or site-specific map (see below).
5	Proposed Acquisition/Restoration List: If applicable (see below). Download the template (MS-Excel) and fill out according to instructions stated in the template.
6	Project Manager Qualifications & Organization Description (1-page limit—total)
7	Letter or Resolution (1-page limit): If applicable (see below).

Guidelines for Attachments

FOR ALL ATTACHMENTS

- 8 1/2” x 11” pages; 11 pt. font minimum, except for “Detailed Project Budget”, which can be 10 pt.
- Proposal title clearly marked on top of each page.
- Blank 1-inch margin on bottom of each page.
- Any information exceeding the page limits indicated will not be reviewed as part of your proposal.

GUIDELINES FOR SPECIFIC ATTACHMENTS

#2: Main Proposal (2-page limit)

Main proposal must provide concise information summarizing proposed project, activities, outcomes, and strategy and timeline. See template instructions (p.10-11).

#3: Detailed Project Budget (1-page limit)

Project budget must clearly account for how all requested funds would be used and explain what (if any) other funds would be used during the project. See template instructions (p.12).

#4: Visual or Map (1-page limit)

- **Proposals NOT INVOLVING land acquisition or restoration:** Provide a graphic, table, photo(s), figure, map, or other visual element that illustrates or elaborates on information in the main proposal.
- **Proposals INVOLVING land acquisition or restoration:** Map of the specific proposed project area is **required**.

Map must be legible as black & white printout, include north arrow and scale, and illustrate **specific site location** within city, county, region, and/or state.

#5: Proposed Acquisition/Restoration List

Proposals INVOLVING land acquisition or restoration: a list is **required** that identifies proposed acquisitions by parcel name, geographic coordinates (latitude/longitude), estimated cost, county, ecological significance, activity description, proposed number of acres, proposed shoreline miles, type of landowner, and proposed title/easement holder (if applicable). See instructions in template.

#6: Project Manager Qualifications & Organization Description (1-page limit—total)

- Include summary of project manager qualifications and responsibilities **pertaining specifically** to project proposal. A complete resume or CV is not requested.
- Organization description should be a simple, concise explanation of organization and its mission.

#7: Letter or Resolution (1-page limit)

Non-profits and local units of government **must submit** a letter or resolution authorizing proposal submission from their governing board. State and federal agencies and colleges/universities do not need a resolution but must have an authorized person submit the proposal.

2015 LCCMR PROPOSAL SUBMISSION FORM INSTRUCTIONS

1. The "2015 LCCMR Proposal Submission Form" is located at www.lccmr.leg.mn — click on "2015 LCCMR Proposal Submission Form" and follow the instructions. **Online submission of proposals is required.** Contact LCCMR staff if unable to use the online submission form.
2. Draft proposals intended for staff review prior to final submission should be submitted using the online proposal submission form. Indicate draft by entering "Y" in the appropriate field. Drafts must be submitted by Friday, March 21, 2014 to receive review. Early submission of drafts is recommended to receive the most detailed guidance.
3. Provide all requested information. The tab key on your keyboard will take you from field to field. **An asterisk (*) denotes a required field for submission.**
4. Attach: Main Proposal, Detailed Project Budget, Visual or Map, Acquisition/Restoration List (if required), Project Manager Qualifications & Organization Description, and Letter or Resolution (if required).
5. Before pressing "SUBMIT" review the information you provided for accuracy and ensure that all necessary attachments have been attached. After you press "SUBMIT" you will be able to review a copy of the information you provided; please save or print this page for your records.

2015 LCCMR PROPOSAL SUBMISSION FORM

***Is this a DRAFT of a proposal intended for staff review?** [Enter "Y" if draft or "N" if final submission.] ____

***Project Title:** [Limit 8 words within the allowable space.] _____

***LCCMR 2015 Funding Priority:** [Select the funding priority to which your proposal most closely responds.] ____

***Environment and Natural Resources Trust Fund \$ Request:** [Dollar request to LCCMR.] \$ _____

***Proposed Project Time Period for the Funding Requested:** [Enter number of years—1, 2, or 3—and start date/end date in format: [#] years, July 2015 to [End Date: Month Year].] _____

Project Manager: *First Name: _____ *Last Name: _____ [List one person only. Project team members can be listed under "Project Team/Partners" (Section III-A) in the Main Proposal.]

***Sponsoring Organization:** _____

Mailing Address: *Street Address: _____

*City: _____ *State: _____ *Zip: _____

***Telephone Number:** (Area Code) _____ - _____ [Provide a reliable phone number, including area code, in case of questions.]

***Email:** _____ [Provide a reliable email address.]

Website: _____ [if available]

Location: [What area will the project impact? Be as specific as possible in terms of region, county, and city/township—see p.15 for a map of MN divided by geographic region. To select multiple, hold "ctrl" while left clicking with the mouse.]

*Region: _____ *County: _____ City/Township: _____

*PROJECT SUMMARY

[The summary is LIMITED TO 30 WORDS within the allowable space and must be a free standing summation of the proposed project. Be specific. Provide a clear, concise summary of the proposed project's activities and outcomes. It is important that the summary be able to stand on its own as a description of the proposal because it will be used along with the project title to refer to the proposal during proposal review.]

***Alternate Text for Visual or Map:** _____ [For accessibility purposes, include a brief description of what is shown in the visual or map being submitted for those not able to view the document.]

ATTACHMENTS [NOTE: Individual attachment files cannot exceed 2 MB each]

Attach :

- *Main Proposal (MS-Word format)
- *Detailed Project Budget (MS-Excel format)
- *Visual or Map
- Proposed Acquisition/Restoration List (if required)
- *Project Manager Qualifications & Organization Description
- Letter or Resolution (if required)

NOTE: An asterisk (*) denotes a required field for submission.



Environment and Natural Resources Trust Fund (ENRTF)

2015 Main Proposal

Project Title: *[Insert "Project Title" here in document header]*

INSTRUCTIONS AND TEMPLATE (2 PAGE LIMIT)

(2-page limit, single-sided, 11 pt. font minimum. Retain bold text and DELETE all instructions typed in italics)

- MS-Word template of the Main Proposal can be downloaded from the LCCMR web page: www.lccmr.leg.mn. Click on "2015 Main Proposal template".
- Attach Main Proposal, in MS-Word format, to your "2015 LCCMR Proposal Submission Form".

PROJECT TITLE:

I. PROJECT STATEMENT

In this section, provide a summarizing overview statement (1/2 page or less) that is very specific to the proposal and clearly and succinctly states:

1. *WHY this project needs to be done (i.e., the context or problem to which it is responding; the opportunity, challenge, issue, or need the project would address).*
2. *Overall GOALS of the project (e.g., reduce forest fragmentation, improve water quality) and the specific, direct OUTCOMES you aim to achieve (e.g., populations served, geographic areas served, resources impacted, species impacted).*
3. *HOW the project will achieve those goals (i.e., the project itself and types of activities involved).*

II. PROJECT ACTIVITIES AND OUTCOMES

In this section break the project into individual activities (i.e., distinct efforts, phases of effort, types/categories of effort) and their outcomes. Be specific. List as many activities as needed using the format indicated below. For each activity:

- *Provide a short, descriptive title for the activity.*
- *Indicate the budget amount intended to be allocated specifically to the activity.*
- *Provide a clear and concise description of the activity indicating specific tasks involved, goals to be achieved, and any explanation of plans for evaluating the activity outcomes.*
- *If an activity involves land acquisition, address the parcels proposed, the criteria used to select those parcels, and the name of the organization or entity who will hold title—be specific.*
- *State specific, measurable outcomes that will be achieved as a result of the activity.*

EXAMPLE:

Activity 1: (Title of Activity) _____

Budget: \$ _____

Include clear and concise description of the activity you are proposing to do here.

Outcome	Completion Date
1. Specific, measureable outcome #1	
2. Specific, measureable outcome #2	
3. Specific, measureable outcome #3	
Etc.	



Environment and Natural Resources Trust Fund (ENRTF)

2015 Main Proposal

Project Title: [Insert "Project Title" here in document header]

Activity 2: (Title of Activity) _____

Budget: \$ _____

Include clear and concise description of the activity you are proposing to do here.

Outcome	Completion Date
1. Specific, measureable outcome #1	
2. Specific, measureable outcome #2	
3. Specific, measureable outcome #3	
Etc.	

ADD ADDITIONAL ACTIVITIES AS NEEDED USING THE SAME FORMAT AS ABOVE. Please mark as Activity 2, 3, 4, etc.

III. PROJECT STRATEGY

A. Project Team/Partners

Describe the project team and partners that will be carrying out the proposed activities. List names and affiliations of team members or partner organizations, and explain the specific role each will play in carrying out the project. Delineate which partners are proposed to receive money from this Environment and Natural Resources Trust Fund request and which partners are proposed to be contributing funds or resources from other sources.

B. Project Impact and Long-Term Strategy

What is the long-term strategy for the proposed project? For example, in terms of its utility to Minnesota's environment and natural resources, dissemination of findings, implementation of results, or ongoing contributions that will derive from it. Additionally, is this proposal a component of a specific, larger, longer-term, or multi-phase project or effort that will require additional investment over time than is being requested here? If so, please explain the broader project/effort (including previous efforts or project phases leading up to this request), identify what sorts of longer-term efforts and investments will be required to make it sustainable, and comment on long-term strategies for ongoing financial support and project progress and/or completion. Be explicit about what other funds are currently secured or have been applied for to support the effort. If additional funding requests for directly related efforts or phases might be submitted to the LCCMR in the future, be very specific as to what is presently anticipated. If your proposal is for additional efforts or phases of a project that has previously received ENRTF support, indicate specific plans for transitioning to other sources of funding or becoming self-sustaining.

C. Timeline Requirements

Explain the timeline requirements specific to the proposed project. Timeline requirements are the project timeline being requested to carry out the project and the rationale, such as any particular conditions or stages required or assumed in order to carry out the project under the timeline (e.g., if project requires a certain number of field seasons under certain conditions). If a proposed project would require more than 36 months to complete, explain here. If a proposed project is a distinct phase of some larger effort and additional funding beyond this request is anticipated to be needed for a future phase, explain in section III-B above.

2015 DETAILED PROJECT BUDGET

Project Title: *[Insert "Project Title" here]*

INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)

MS-Excel template can be downloaded from LCCMR web page: www.lccmr.leg.mn. Click on "2015 Detailed Project Budget template". Attach budget, in MS-Excel format, to your "2015 LCCMR Proposal Submission Form".

(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If budget item row is not applicable put "N/A" or delete it. All of "Other Funds" section must be filled out.)

IV. TOTAL ENRTF REQUEST BUDGET: *[Insert # of years for project]* years

BUDGET ITEM (See "Guidance on Allowable Expenses", p.13)	AMOUNT
Personnel: <i>In this column, list who is getting paid to do what and what is the % of full-time employment for each position. List out by position or position type—one row per position/position type. For each, provide details in this column on the inputs: i.e., % dollars toward salary, % dollars toward benefits, time period for position/position type, and number of people in the position/position type.</i>	\$
Contracts: <i>In this column, list out proposed contracts. Be clear about whom the contract is to be made with and what services will be provided. If a specific contractor is not yet determined, specify the type of contractor sought. List out by contract types/categories—one row per type/category.</i>	\$
Equipment/Tools/Supplies: <i>In this column, list out general descriptions of item(s) or item type(s) and their purpose—one row per item/item type.</i>	\$
Acquisition (Fee Title or Permanent Easements): <i>In this column, indicate the proposed number of acres and name of organization or entity who will hold title.</i>	\$
Travel: <i>Be specific. Generally, only in-state travel essential to completing project activities can be included.</i>	\$
Additional Budget Items: <i>In this column, list any additional budget items that do not fit above categories. List by item(s) or item type(s) and explain how number was reached. One row per type/category.</i>	\$
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$

V. OTHER FUNDS *[This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.]*

SOURCE OF FUNDS	AMOUNT	STATUS
Other Non-State \$ To Be Applied To Project During Project Period: <i>Indicate any additional non-state cash dollars secured or applied for to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.</i>	\$	Indicate: Secured or Pending
Other State \$ To Be Applied To Project During Project Period: <i>Indicate any additional state cash dollars (e.g., bonding, other grants) secured or applied for to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.</i>	\$	Indicate: Secured or Pending
In-kind Services To Be Applied To Project During Project Period: <i>Indicate any additional in-kind service(s) secured or applied for to be spent on the project during the project period. For each type of service, list type of service(s), estimated value, and indicate whether it is secured or pending. In-kind services listed must be specific to the project.</i>	\$	Indicate: Secured or Pending
Funding History: <i>Indicate funding secured but to be expended prior to July 1, 2015, for activities directly relevant to this specific funding request, including past and current ENRTF funds. State specific source(s) of funds and dollar amount.</i>	\$	
Remaining \$ From Current ENRTF Appropriation: <i>Specify dollar amount and year of appropriation from any current ENRTF appropriation for any directly related project of the project manager or organization that remains unspent or not yet legally obligated at the time of proposal submission. Be as specific as possible. Indicate the status of the funds.</i>	\$	Indicate: Unspent? Not Legally Obligated? Other?

GUIDANCE ON ALLOWABLE EXPENSES

ELIGIBLE EXPENSES

Eligible expenses are those expenses **solely** incurred through project activities that are **directly related to and necessary for** producing the project outcomes described in the proposal. **All proposed expenses must be specified in the proposal submitted.** Please note that for non-state entities all funds are awarded on a reimbursement basis, unless otherwise authorized, and all eligible expenses will need to be documented. **Eligible expenses may include:**

- a. Eligible expenditures incurred only after the effective date as approved by LCCMR.
- b. Wages and expenses of salaried Recipient employees if specified, documented, and approved. For State Agencies: use of unclassified staff only OR request approval for the use of classified staff accompanied by an explanation of how the agency will backfill that part of the classified staff salary proposed to be paid for with these funds. This is subject to specific discussion and approval by LCCMR.
- c. Fringe benefit expenses limited to salary, FICA/Medicare, retirement, and health insurance of Recipient's employees if specified.
- d. Professional services specified in the approved Work Plan that are rendered by individuals or organizations not a part of the Recipient;
- e. Materials and supplies specific to the project and incoming freight charges for them.
- f. Capital expenditures for facilities, equipment, and other capital assets as expressly approved. For expenditures greater than \$3,500, the Recipient must provide an explanation as to how all the equipment purchased with the appropriation will continue to be used for the same program through its useful life, or, if the use changes, a commitment to pay back to the Environment and Natural Resources Trust Fund an amount equal to either the cash value received or a residual value approved by the director of the LCCMR if it is not sold.
- g. Publication and printing/copying expenses (including the process of composition, plate-making, press work, binding, and the end products produced) necessary for contract administration, work products production, and semi-annual reports relating to accomplishments.
- h. In-state transportation and travel expenses such as lodging, meals, and mileage of personnel directly involved in the Project in the same manner and in no greater amount than provided for in the current "**Commissioner's Plan**" promulgated by the Commissioner of Management of Budget and as provided by LCCMR or, for University of Minnesota projects, the University of Minnesota plan found at <http://policy.umn.edu/policies/finance/travel/travel.html>. Allowable meal and lodging expenses are for employees only. Purchasing meals for others is not an allowable expense.

GENERALLY INELIGIBLE EXPENSES—UNLESS EXPLICITLY APPROVED

Generally ineligible expenses for reimbursement mean all expenses not defined as eligible expenses, but for which an explicit exception can be sought from LCCMR if the expenses can be **clearly justified and individually documented as directly related to and necessary for** a project. **No broad allocations for costs in either dollars or percentages are allowed.** In deciding whether to seek exception for these costs consider that cash and in-kind leverage are criteria considered in proposal evaluation. **Generally ineligible expenses include but are not limited to:**

- a. General operations, overhead, and other indirect expenses, including office maintenance, office utility expenses, and office materials and supplies.
- b. Office rental fees (including storage space rental).
- c. Communication expenses incurred for telephone calls, web access, postage, and similar services.
- d. Insurance, except title insurance.
- e. Attorney fees, except to acquire and clear title to land.
- f. Purchase of communication devices such as pagers, cell phones, or smart phones.
- g. Purchase of computers or audiovisual equipment.
- h. Generally available food and refreshments, except if explicitly approved for certain types of events.
- i. Conference attendance and associated costs and fees, except if to participate in formal presentation of project findings.
- j. Out of state transportation and travel expenses.

PROHIBITED EXPENSES

Prohibited expenses for reimbursement mean all expenses indicated below, **including but not limited to:**

- a. Any expenses incurred before the project is authorized, before July 1, 2015, or before LCCMR work plan approval—whichever is latest.
- b. Fundraising.
- c. Taxes, except sales tax on goods and services.
- d. Lobbyists or political contributions.
- e. Advertising and marketing expenses.
- f. Loans, grants, or subsidies to persons or entities for development.
- g. Bad debts, late payment fees, finance charges, or contingency funds.
- h. Interest or investment management fees.
- i. Directors or officers salary.
- j. Merit awards and bonuses.
- k. Memberships (including subscriptions and dues).
- l. Publications, periodicals, and subscription fees.
- m. Employee worksite parking.
- n. Entertainment, decorations, gifts, and prizes.

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND: MN CONSTITUTION AND STATUTORY EXPENDITURES

LCCMR Staff:

Susan Thornton
Director

Mike Banker
Assistant Director

Michael McDonough
Research and Planning Manager

Diana Griffith
Commission Assistant

For more information
contact LCCMR:

Legislative-Citizen Commission on Minnesota Resources

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Minnesota Constitution Art. XI, Sec.14: Environment and Natural Resources Trust Fund Established

<http://www.lccmr.leg.mn/about/language-index.html>

A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]

MS 116P.08 Environment and Natural Resources Trust Fund Expenditures and Exceptions

<https://www.revisor.mn.gov/statutes/?id=116P&view=chapter#stat.116P.08>

Subdivision 1. **Expenditures.** Money in the trust fund may be spent ONLY for:

- (1) the reinvest in Minnesota program as provided in section 84.95, subd. 2;
- (2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;
- (3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;
- (4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;
- (5) capital projects for the preservation and protection of unique natural resources;
- (6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise

may be substantially impaired or destroyed in any area of the state;

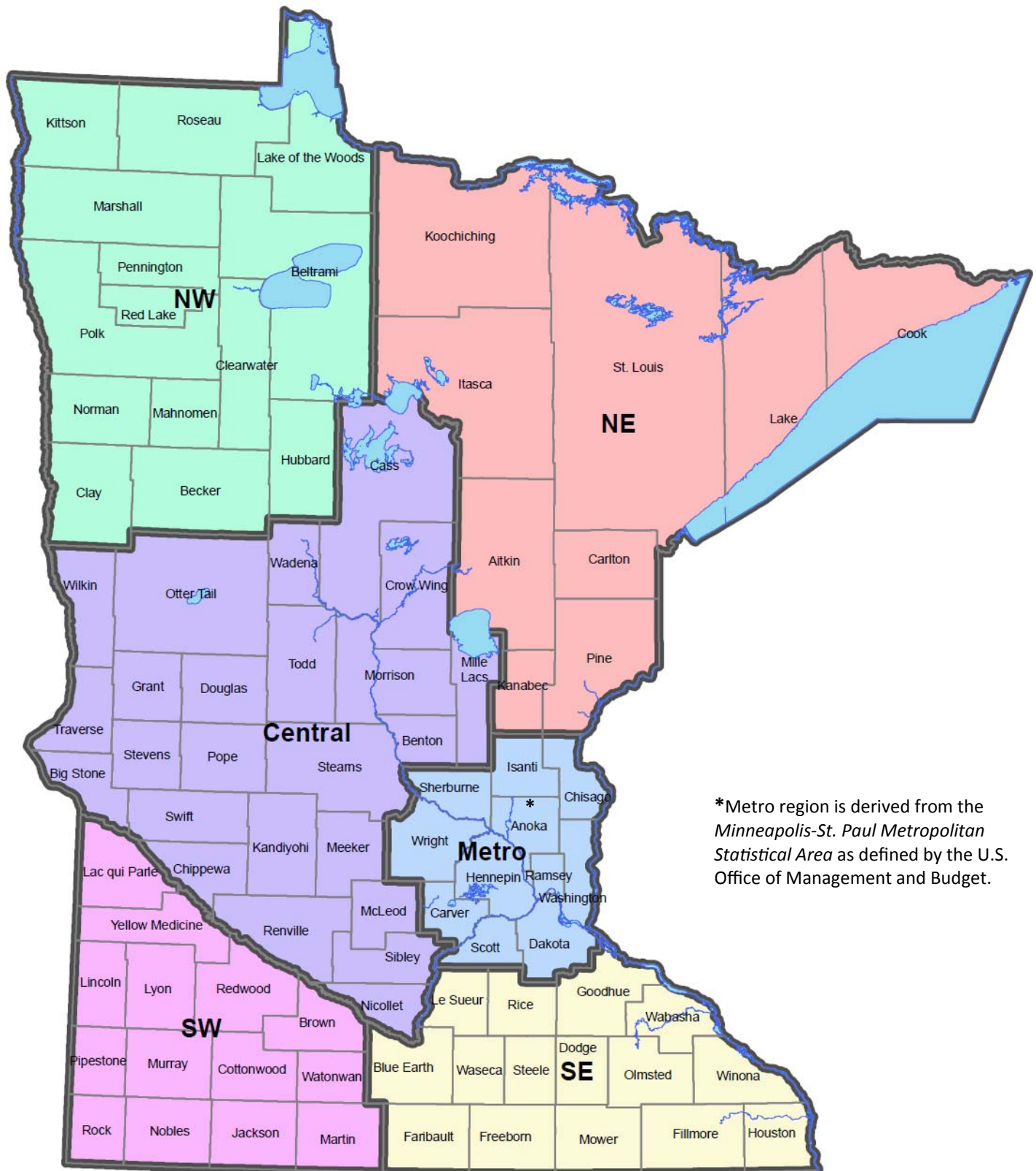
- (7) administrative and investment expenses incurred by the state board of investment in investing deposits to the trust fund; and
- (8) administrative expenses subject to the limits in section 116P.09.

Subdivision 2. **Exceptions.** Money from the trust fund may not be spent for:

- (1) purposes of environmental compensation and liability under chapter 115B and response action under chapter 115C;
- (2) purposes of municipal water pollution control under the authority of chapters 115 and 116;
- (3) costs associated with the decommissioning of nuclear power plants;
- (4) hazardous waste disposal facilities;
- (5) solid waste disposal facilities; or
- (6) projects or purposes inconsistent with the strategic plan.

Minnesota (by geographic region)

Use for determining region location for proposal submission form (see p.9)



B. Request for Proposal (RFP)

2. RFP adopted December 10, 2015 for FY2017
(funding beginning July 1, 2016)



Environment and Natural Resources Trust Fund (ENRTF) 2016 Request for Proposal

Legislative-Citizen Commission on Minnesota Resources (LCCMR)

www.lccmr.leg.mn

Funding Priorities for 2016

- Foundational Natural Resource Data and Information
- Water Resources
- Environmental Education
- Aquatic and Terrestrial Invasive Species
- Air Quality, Climate Change, and Renewable Energy
- Methods to Protect or Restore Land, Water, and Habitat
- Land Acquisition for Habitat and Recreation

Funding Beginning: July 1, 2016

Deadline to Submit: 4:30 PM on Monday, May 11, 2015

- Electronic submission of proposals required.
- Please **carefully review** the full text and **follow the instructions** of this document before submitting a proposal.
- LCCMR staff are available to assist and review draft proposals if submitted by **Friday, May 1, 2015**. Early submission of drafts is recommended to receive the most detailed guidance.

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FUNDING AVAILABILITY:

- The LCCMR makes recommendations to the MN Legislature for project funding appropriations of up to 5.5% per year of the existing value of the Minnesota Environment and Natural Resources Trust Fund (ENRTF) on June 30 one year prior to the start of the next biennium.
- This Request for Proposal (RFP) is for funds available beginning July 1, 2016. For that period, approximately \$46.3 million from the ENRTF is projected to be available for project funding based on an ENRTF value of \$842 million on June 30, 2014.
- Through this RFP the LCCMR intends to make funding recommendations to the 2016 Minnesota Legislature.
- This RFP is part of an annual cycle and the next RFP is expected to be issued in January 2016 for funds available July 1, 2017.

Minnesota's Environment and Natural Resources Trust Fund:

Minnesota Constitution Art. XI, Sec.14: "The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources."

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Issued December 2014

BACKGROUND INFORMATION

LCCMR MEMBERS

(as of 12/31/14)

Jeff Broberg
 Sen. Gary Dahms
 Sen. Kari Dziedzic
 William Faber
 Rep. Dan Fabian
 Nancy Gibson
 Bonnie Harper-Lore
 Sen. John Hoffman
 Gary Lampa
 Rep. Leon Lillie
 Norman Moody
 Rep. John Persell
 Sen. David Tomassoni
 Rep. Paul Torkelson
 Rep. Jean Wagenius
 Sen. Torrey Westrom
 Della Young

Co-Chairs

Nancy Gibson
 Sen. David Tomassoni
 Rep. Jean Wagenius

Co-Vice Chairs

Jeff Broberg
 Sen. Gary Dahms
 Rep. Paul Torkelson

The LCCMR is an Americans with Disabilities Act (ADA) Equal Opportunity Employer (EOE).

PLEASE CAREFULLY REVIEW THE FULL TEXT AND FOLLOW THE INSTRUCTIONS OF THIS DOCUMENT BEFORE SUBMITTING A PROPOSAL

ELIGIBILITY—OPEN TO ALL:

The spirit and intent of the LCCMR is to provide access to EVERYONE for **innovative** ideas for environmental or natural resource projects that could provide multiple ecological and other public benefits to Minnesota and are consistent with the LCCMR's Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund and the adopted funding priorities described in this RFP.

LCCMR staff are available to review drafts and assist in proposal development.

Lobbying or professional grant-writing experience is not necessary for success.

AMOUNT OF REQUEST

There is no minimum or maximum amount that can be requested. Small funding requests will be equally considered for funding. Final recommendation amounts are determined by the dollars available and an aim to create a balanced package of projects addressing a variety of issue areas around the state.

DEADLINE FOR SUBMISSION:

4:30 PM, Monday, May 11, 2015
THIS IS A FIRM DEADLINE.

SUBMIT PROPOSAL:

Online Submission of Proposals Required*.

Go to: www.lccmr.leg.mn and select "2016 LCCMR Proposal Submission Form".

Save a copy of your submission for your records. **Upon receipt, all submitted proposals and budgets will be posted on the web for the public to view.**

*Contact LCCMR staff if unable to use the online proposal submission form.

PROJECT IMPLEMENTATION:

Funding for selected projects will be available beginning July 1, 2016, following appropriation of funds by the legislature and work plan approval by the LCCMR. Funds for non-state entities are awarded on a reimbursement basis.

EXPENSE ELIGIBILITY:

See p. 13 for guidance on allowable expenses.

PROPOSAL ASSISTANCE:

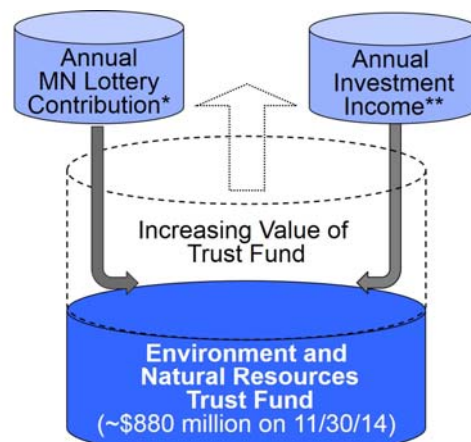
LCCMR staff are available to provide assistance, answer questions, or review and provide feedback on drafts of proposals. **Proposers are encouraged to submit proposal drafts to help ensure proposals are focused, clear, and contain all necessary information.** Drafts must be received by Friday, May 1, 2015, to allow adequate time for staff review. Early submission of drafts is recommended to receive the most detailed guidance.

If you have questions or would like proposal assistance, including direction on other state funding opportunities that may be appropriate for a project, contact LCCMR staff:

Phone: (651) 296-2406

Email: lccmr@lccmr.leg.mn

Address: Room 65 State Office Building
 100 Rev. Dr. Martin Luther King Jr. Blvd
 St. Paul, MN 55155



* 40% of net MN Lottery profits or ~7¢ of every dollar spent on Lottery tickets.

**Grows Trust Fund at average rate of ~6% of market value each year.



2016 PROPOSAL AND FUNDING PROCESS

NOVEMBER 2014-APRIL 2015

- LCCMR determines funding priorities and adopts 2016 Request for Proposal (RFP).
- 2016 RFP issued.
- LCCMR staff available to review and provide feedback on any draft proposals submitted by May 1, 2015.

May 2015

- Friday, May 1, 2015: Last day to submit draft proposals for LCCMR staff review.
- **Monday, May 11, 2015: Final Proposal Submission Deadline at 4:30 PM.**

SUMMER/FALL 2015

- All proposals are reviewed and evaluated using the criteria on page 7 of this RFP.
- Based on the evaluations a subset of proposals is selected for further consideration (expected in late September) and those proposers are invited in to give presentations before the LCCMR (planned for October).
- After presentations final selection is made by LCCMR of proposals to be recommended to 2016 Minnesota Legislature for funding.

SCIENTIFIC RESEARCH PROJECTS

Recommended scientific research proposals undergo peer review.

PROJECT WORK PLANS

All recommended proposals submit detailed work plans to the LCCMR.

JANUARY-MAY 2016 (Legislative Session)

- The LCCMR funding recommendations are considered and acted upon by the Minnesota Legislature (House and Senate) and signed into law by the Governor.

JUNE-JULY 2016

- June 2016: LCCMR approves work plans for funded proposals authorizing projects to begin July 1, 2016.
- **July 1, 2016: Money from the Environment and Natural Resources Trust Fund becomes available for projects to begin.**

REPORTING DURING PROJECT PERIOD AND PROJECT COMPLETION

- Projects are required to provide status update reports twice per year, or approximately every six months.
- Projects are required to submit a final report on project outcomes and results approximately 4-6 weeks after a project's designated completion date of June 30 of the year determined by the project's length.

The next RFP for funding beginning July 1, 2017 is expected to be issued in December 2015.

2016 FUNDING PRIORITIES

Projects are sought that provide multiple ecological and other public benefits, are consistent with the LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund (http://www.lccmr.leg.mn/documents/strategic_plan/lccmr_strategic_plan.pdf), and address at least one of the adopted funding priorities detailed below. Projects should be **innovative** and must accelerate or supplement, not supplant, existing efforts.

Please note:

- Project Eligibility: Projects being done to meet regulatory requirements will not be considered for funding. Additionally, see specific limitations indicated in *italics* within individual funding priorities.
- Other Funding Opportunities: As applicable, projects eligible for established, topic-specific state agency grant programs—such as for renewable energy, sustainable agriculture, clean water implementation, local parks and trails, and habitat acquisition and restoration—are encouraged to go directly to the particular state agency grant program as funds may be available in a more timely manner. Contact LCCMR staff for more information and guidance about these other established grant programs.
- Projects involving citizen science and community involvement in scientific efforts are encouraged, as appropriate.
- Proposals pertaining to new or emerging environmental or natural resource issues not directly addressed in the below priorities, particularly issues that may have been unanticipated or emerged after issuance of this RFP, may also be eligible for consideration by the LCCMR. Proposers should contact LCCMR staff to discuss.

Proposals should address one or more of the seven funding priorities detailed below. The order of the priorities below does not indicate a level of priority within the priorities.

A. Foundational Natural Resource Data and Information

Proposals must address one or more of the following:

1. Data acquisition, information management, research, or analysis to develop foundational natural resource, wildlife, pollinator, or plant data and information.
2. Coordination, facilitation, or training pertaining to statewide sharing, distribution, or innovative application of natural resource data (e.g., maps, inventories, and surveys) and information tools (e.g., Geographic Information Systems (GIS), Light Detection and Ranging (LiDAR), and other remote sensing techniques).

B. Water Resources

Proposals must address one or more of the following:

1. Research, monitoring, or evaluation to increase protection, conservation, and sustainability of the quality, quantity, or function of water resources. This includes, but is not limited to, efforts pertaining to:
 - i. Ground and surface water interaction, including stream flow and groundwater flow;
 - ii. Aquifer recharge;
 - iii. Wetland, river, and lake ecosystems, including Lake Superior;
 - iv. Mitigation of impacts resulting from artificial hydrological modifications in both urban and agricultural areas;
 - v. Effects of climate change on water resources.
2. Research, evaluation, technology development, or engineering design pertaining to regulated, unregulated, or emerging water contaminants, including sources, fates, movements, or effects of these contaminants within ground or surface waters or across ecological communities. Contaminants of interest include, but are not limited to, nitrates, phosphates, estrogenic compounds, pharmaceuticals, personal care products,

2016 FUNDING PRIORITIES

chlorides, PAHs (polycyclic aromatic hydrocarbons), and pesticides. Efforts pertaining to the following are of particular emphasis:

- i. Understanding the impacts of contaminants on the health of humans or terrestrial or aquatic species.
- ii. Preventing or reducing levels of contaminants in ground and surface waters.
- iii. Advancing development or implementation of standards for contaminants.

C. Environmental Education

Proposals must address education, information dissemination, and training efforts that will increase the knowledge and skills of students or the public to cultivate a sustainable lifestyle, improve and maintain water quality, reduce and monitor energy and water consumption, or restore and maintain a healthy and biodiverse natural environment. *Funding for capital projects (e.g., buildings) will not be considered.* Priority will be given to projects that address one or more of the following:

1. Efforts that are locally-led, involve broad-based partnerships, provide outdoor experiences, or are committed to building a long-lasting and action-based conservation ethic in a community.
2. Efforts that deliver and implement existing curriculum, especially integration of environmental education into school curriculum. *Proposals to develop new curriculum will not be considered.*

D. Aquatic and Terrestrial Invasive Species

"Invasive species" includes any plants, animals, worms, insects, microbes, and diseases that are non-native, introduced species in the state and that are currently having, or pose a threat to have, significant adverse impacts on Minnesota's native ecosystems and biodiversity. Proposals must address one or more of the following:

1. Prevent introduction or provide early detection of new invasive species.
2. Reduce the spread of invasive species with best management practices along streams, rivers, land transportation routes, and other vectors.
3. Alternative control techniques—particularly involving biocontrol, integrated pest management, or minimization of non-target effects including pollinators—for containing or suppressing invasive species already present in Minnesota. *Standard control, removal, and maintenance activities of invasive species will not be considered.*
4. Restore lands with native vegetation as practicable following implementation of invasive species control techniques on disturbed lands where a native seed bank no longer exists.
5. Inform and educate landowners about all invasive species threats to their land and offer actions they can take in response.

E. Air Quality, Climate Change, and Renewable Energy

Funding for capital projects will not be considered. Proposals must address one or more of the following:

1. Innovative approaches to air quality improvement that reduce impacts on human health, the environment, or natural resources, such as by reducing and mitigating airborne contaminants including PAHs (polycyclic aromatic hydrocarbons).
2. Acquisition of data at a scale appropriate to assess natural resource changes attributable to climate change.
3. Research to help understand how to mitigate, adapt, or make Minnesota's ecosystems more resilient to climate change impacts, including drought and extreme weather events.
4. Implementation of innovative efforts aimed at mitigating, adapting, or making Minnesota's ecosystems more resilient to climate change impacts, including drought and extreme weather events.
5. Development, evaluation of applicability, or facilitation of effective implementation of clean energy

2016 FUNDING PRIORITIES

technologies (e.g., biofuels, solar, geothermal, wind) or energy conservation in Minnesota. Examples include efforts involving carbon emissions reduction; community-based, locally-produced renewable energy technologies; renewable energy life cycle costs and impacts; or smart energy technologies.

6. Reduction of greenhouse gas emissions through new and innovative approaches to waste reduction or energy efficiency. *Standard, required, and ongoing efforts will not be considered.*

F. Methods to Protect or Restore Land, Water, and Habitat

Activities should utilize native species and proposals must address one or more of the following (see p.7 for additional project requirements pertaining to this category):

1. Innovative protection or restoration of lands with high-quality natural resources, ecological value, water protection value, or habitat, particularly for pollinators.
2. Long term preservation of native forest, wetland, or prairie plant genetics and viability.
3. Technical assistance for stewardship of prairies, forests, wetlands, or other habitat, or technical assistance for agricultural land management in order to protect water quality and aquatic habitat or to improve pollinator habitat.
4. Planning and implementation of community-based efforts to permanently conserve natural resources and reduce habitat fragmentation impacts on natural resources, including the impacts of transportation and other infrastructure.

G. Land Acquisition for Habitat and Recreation

Proposals must address acquisition of strategic lands with:

- i. High quality natural resources, ecological value, recreational value, water protection value, or habitat, particularly for pollinators; and
- ii. The greatest capacity to contribute multiple conservation benefits to wildlife, humans, and ground and surface water quality.

All lands to be acquired should be part of an adopted state, regional, or local natural resource plan and a restoration or management plan for the site must be created. Proposals should provide an explanation as to how such plans will be developed, implemented, and funded. Priority will be given to projects that address one or more of the following (see p.7 for additional project requirements pertaining to this category):

1. Efforts based on precision conservation methods and analysis that quantifiably identify the lands most critical to acquire. Precision conservation is a practice that considers lands in terms of the interconnected systems of which they are a part. As a practice, precision conservation compiles and integrates multiple types of available data layers and analysis (e.g., terrain analysis, soil productivity, habitat potential, economic analysis, erosion potential, proximity to surface water) to identify and guide efforts that will maximize conservation benefits.
2. Efforts involving Scientific and Natural Areas (SNA) or other areas that aim to protect unique ecosystems, such as native prairie as defined in M.S. 84.02, Subd. 5, or rare, endangered, or threatened species. Areas of these types that may not presently qualify as a priority for other State of Minnesota funds directed toward land acquisition for habitat or recreation are of particular interest.
3. Efforts that enhance habitat connectivity, benefit ground or surface water quality, improve access for natural resource management, or increase public access for recreation, particularly in areas of the state with limited protected public lands.
4. Efforts expanding outdoor recreational opportunities through additions to a state or regional park or trail.

REQUIREMENTS AND EVALUATION CRITERIA

Project Requirements

- Expenditures must strictly adhere to Article XI, Section 14 of the Minnesota Constitution and M.S. 116P.08, the laws governing expenditure of the Environment and Natural Resources Trust Fund (pg. 14).
- Applicant organizations must have a current external financial audit, or equivalent, with no serious negative findings, and demonstrate a capability to successfully manage and implement the project being proposed, including having the necessary organizational financial and managerial structures and controls.
- Funds requested are generally expected to be expended and activities completed within 36 months or less. If additional time is needed, explain in the “Timeline Requirements” section (section III-C) of the main proposal.
- Land acquisition projects have the following additional requirements:
 1. First priority must be given to lands with high quality natural resources that provide multiple benefits and that provide natural buffers to water resources.
 2. Lands cannot already be fully or partially protected by state ownership or state funds, per M.S. 116P.18.
 3. Targeted lands should be identified in an adopted state, regional, or local natural resource plan.
 4. Conservation easements must be perpetual. Proposals must provide an explanation of how monitoring and enforcement of the conditions of any conservation easements will be ensured in perpetuity.
 5. Explanation must be provided for how a restoration or management plan for the site will be developed, implemented, and funded (through this funding request or other funds).
 6. A list must be provided that identifies proposed acquisitions and restorations by parcel name, geographic coordinates (latitude/longitude), estimated cost, county, ecological significance, activity description, proposed number of acres, proposed shoreline miles, type of landowner, and proposed title/easement holder (if applicable). A list template with instructions is available at www.lccmr.leg.mn.
- Restoration projects 1) must occur on public lands or lands that are otherwise permanently protected and 2) should refer to MN Board of Water and Soil Resources “Native Vegetation Establishment and Enhancement Guidelines” (http://www.bwsr.state.mn.us/native_vegetation/seeding_guidelines.pdf) for guidance.
- Any royalties, copyrights, patents, or sale of products or assets resulting from a project are subject to revenue sharing requirements outlined in M.S. 116P.10.
- All projects are subject to additional requirements including accessibility, data availability, land acquisition requirements, energy conservation and sustainable building guidelines, and recyclable material requirements. Information located at www.lccmr.leg.mn titled “Additional Proposal Requirements”.

Evaluation Criteria

All proposals should strive to maximize efficiency and return on investment for the proposed expenditures. Additionally the following criteria, as applicable, will be considered in evaluating proposals (additional explanation of evaluation criteria is available at www.lccmr.leg.mn titled “Additional Explanation of Evaluation Criteria”):

1. **FUNDING PRIORITIES:** Responds to RFP funding priorities and LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund articulated and adopted by the LCCMR.
2. **MULTIPLE BENEFITS:** Delivers multiple benefits to Minnesota’s environment and natural resources.
3. **OUTCOMES:** Identifies clear objectives likely to result in measurable, demonstrated, and meaningful outcomes.
4. **KNOWLEDGE BASE:** Contributes to knowledge base or disseminates information that will benefit other efforts.
5. **EXTENT OF IMPACTS:** Results in broad, long-term impacts of statewide or regional significance.
6. **INNOVATION:** Employs or demonstrates innovative approaches to more effectively and efficiently solve specific environment and natural resources issues.
7. **SCIENTIFIC/TECHNICAL BASIS:** Reflects current scientific and technical knowledge, standards, and best practices.
8. **URGENCY:** Addresses an issue for which immediate future action is necessary and essential to avoid undesirable consequences.
9. **CAPACITY AND READINESS:** Demonstrates capacity and readiness for efforts to be managed and completed in a timely, accountable, and effective manner.
10. **LEVERAGE:** Leverages collaborative partnerships and additional efforts, resources, and non-state funds.

PROPOSAL SUBMISSION

FIRM DEADLINE: 4:30 PM ON MONDAY, MAY 11, 2015

ALL FORMS AND TEMPLATES REQUIRED FOR PROPOSAL

SUBMISSION CAN BE FOUND AT www.lccmr.leg.mn

LCCMR staff are available to review draft proposals if submitted by Friday, May 1, 2015. Early submission of drafts is recommended to receive the most detailed guidance. Submit drafts using the online proposal submission form—indicate DRAFT by entering “Y” in the appropriate field of the submission form.

PROPOSAL SECTIONS CHECKLIST

1	2016 LCCMR Proposal Submission Form: Go to www.lccmr.leg.mn , select “2016 LCCMR Proposal Submission Form” on the LCCMR Home Page, and provide all requested information, as detailed on p. 9 of this RFP.
Proposal sections 2 through 7 (as applicable) are submitted through the online submission form as individual document attachments. See guidelines for attachments below.	
2	Main Proposal (2-page limit): Download the template (MS-Word) and fill out according to instructions on pages 10-11 of this RFP.
3	Detailed Project Budget (1-page limit): Download the template (MS-Excel) and fill out according to instructions on page 12 of this RFP.
4	Visual or Map (1-page limit): Visual illustration of proposal information or site-specific map (see below).
5	Proposed Acquisition/Restoration List: If applicable (see below). Download the template (MS-Excel) and fill out according to instructions stated in the template.
6	Project Manager Qualifications & Organization Description (1-page limit—total): Required (see below).
7	Letter or Resolution (1-page limit): If applicable (see below).

Guidelines for Attachments

FOR ALL ATTACHMENTS

- 8 1/2” x 11” pages; 11 pt. font minimum, except for “Detailed Project Budget”, which can be 10 pt.
- Proposal title clearly marked on top of each page.
- Blank 1-inch margin on bottom of each page.
- Any information exceeding the page limits indicated will be not be reviewed as part of your proposal.

GUIDELINES FOR SPECIFIC ATTACHMENTS

#2: Main Proposal (2-page limit)

Main proposal must provide concise information summarizing proposed project, activities, outcomes, and strategy and timeline. See template instructions (p.10-11).

#3: Detailed Project Budget (1-page limit)

Project budget must clearly account for how all requested funds would be used and explain what (if any) other funds would be used during the project. See template instructions (p.12).

#4: Visual or Map (1-page limit)

- **Proposals NOT INVOLVING land acquisition or restoration:** Provide a graphic, table, photo(s), figure, map, or other visual element that illustrates or elaborates on information from the main proposal.
- **Proposals INVOLVING land acquisition or restoration:** Map of the specific proposed project area is **required**. Map must be legible as black & white printout, include

north arrow and scale, and illustrate **specific site location** within city, county, region, and/or state.

#5: Proposed Acquisition/Restoration List

Proposals INVOLVING land acquisition or restoration: a list is **required** that identifies proposed acquisitions by parcel name, geographic coordinates (latitude/longitude), estimated cost, county, ecological significance, activity description, proposed number of acres, proposed shoreline miles, type of landowner, and proposed title/easement holder (if applicable). See instructions in template.

#6: Project Manager Qualifications & Organization Description (1-page limit—total)

- Include summary of project manager qualifications and responsibilities **pertaining specifically** to project proposal. A complete resume or CV is not requested.
- Organization description should be a simple, concise explanation of organization and its mission.

#7: Letter or Resolution (1-page limit)

Non-profits and local units of government **must submit** a letter or resolution authorizing proposal submission from their governing board. State and federal agencies and colleges/universities do not need a resolution but must have an authorized person submit the proposal.

2016 LCCMR PROPOSAL SUBMISSION FORM INSTRUCTIONS

1. The "2016 LCCMR Proposal Submission Form" is located at www.lccmr.leg.mn — click on "2016 LCCMR Proposal Submission Form" and follow the instructions. **Online submission of proposals is required.** Contact LCCMR staff if problems occur in using the online submission form.
2. Draft proposals intended for staff review prior to final submission should be submitted using the online proposal submission form. Indicate draft by entering "Y" in the appropriate field. Drafts must be submitted by Friday, May 1, 2015 to receive review. Early submission of drafts is recommended to receive the most detailed guidance.
3. Provide all requested information. The tab key on your keyboard will take you from field to field. **An asterisk (*) denotes a required field for submission.**
4. Attach: Main Proposal, Detailed Project Budget, Visual or Map, Acquisition/Restoration List (if required), Project Manager Qualifications & Organization Description, and Letter or Resolution (if required).
5. Before pressing "SUBMIT" review the information you provided for accuracy and ensure that all necessary attachments have been attached. After you press "SUBMIT" you will be able to review a copy of the information you provided; please save or print this page for your records.

2016 LCCMR PROPOSAL SUBMISSION FORM

***Is this a DRAFT of a proposal intended for staff review?** [Enter "Y" if draft or "N" if final submission.] ____

***Project Title:** [Limit 8 words within the allowable space.] _____

***LCCMR 2016 Funding Priority:** [Select the funding priority to which your proposal most closely responds.] _____

***Environment and Natural Resources Trust Fund \$ Request:** [Dollar request to LCCMR.] \$ _____

***Proposed Project Time Period for the Funding Requested:** [Enter number of years and start date/end date in format: [#] years, July 2016 to [End Date: Month Year].] _____

Project Manager: *First Name: _____ ***Last Name:** _____ [List one person only. Project team members can be listed under "Project Team/Partners" (Section III-A) in the Main Proposal.]

***Sponsoring Organization:** _____

Mailing Address: *Street Address: _____

***City:** _____ ***State:** _____ ***Zip:** _____

***Telephone Number:** (Area Code) _____ - _____ [Provide a reliable phone number, including area code, in case of questions.]

***Email:** _____ [Provide a reliable email address.]

Website: _____ [if available]

Location: [What area will the project impact? Be as specific as possible in terms of region, county, and city/township—see p.15 for a map of MN divided by geographic region. To select multiple, hold "ctrl" while left clicking with the mouse.]

***Region:** _____ ***County:** _____ **City/Township:** _____

***PROJECT SUMMARY**

[The summary is LIMITED TO 30 WORDS within the allowable space and must be a free standing summation of the proposed project. Be specific. Provide a clear, concise summary of the proposed project's activities and outcomes. It is important that the summary be able to stand on its own as a description of the proposal because it will be used along with the project title to refer to the proposal during proposal review.]

***Alternate Text for Visual or Map:** _____ [For accessibility purposes, include a brief description of what is shown in the visual or map being submitted for those not able to view the document.]

ATTACHMENTS [NOTE: Individual attachment files cannot exceed 20 MB each]

Attach :

- ***Main Proposal (MS-Word format)**
- ***Detailed Project Budget (MS-Excel format)**
- ***Visual or Map**
- **Proposed Acquisition/Restoration List (if required)**
- ***Project Manager Qualifications & Organization Description**
- **Letter or Resolution (if required)**

NOTE: An asterisk (*) denotes a required field for submission.


Environment and Natural Resources Trust Fund (ENRTF)
2016 Main Proposal
Project Title: *[Insert "Project Title" here in document header]*
INSTRUCTIONS AND TEMPLATE (2 PAGE LIMIT)

(2-page limit, single-sided, 11 pt. font minimum. Retain bold text and DELETE all instructions typed in italics)

- MS-Word template of the Main Proposal can be downloaded from the LCCMR web page: www.lccmr.leg.mn. Click on **"2016 Main Proposal template"**.
- Attach Main Proposal, in MS-Word format, to your **"2016 LCCMR Proposal Submission Form"**.

PROJECT TITLE:
I. PROJECT STATEMENT

In this section, provide a summarizing overview statement (1/2 page or less) that is very specific to the proposal and clearly and succinctly states:

1. *WHY this project needs to be done (i.e., the context or problem to which it is responding; the opportunity, challenge, issue, or need the project would address).*
2. *Overall GOALS of the project (e.g., reduce forest fragmentation, improve water quality) and the specific, direct OUTCOMES you aim to achieve (e.g., populations served, geographic areas served, resources impacted, species impacted).*
3. *HOW the project will achieve those goals (i.e., the project itself and types of activities involved).*

**It is recommended that the main concept of the proposal be at least previewed or initially articulated in the first sentence or so of your project statement to facilitate proposal review.*

II. PROJECT ACTIVITIES AND OUTCOMES

In this section break the project into individual activities (i.e., distinct efforts, phases of effort, types/categories of effort) and their outcomes. Be specific. List as many activities as needed using the format indicated below. For each activity:

- *Provide a short, descriptive title for the activity.*
- *Indicate the budget amount intended to be allocated specifically to the activity.*
- *Provide a clear and concise description of the activity indicating specific tasks involved, goals to be achieved, and any explanation of plans for evaluating the activity outcomes.*
- *If an activity involves land acquisition, address the parcels proposed, the criteria used to select those parcels, and the name of the organization or entity who will hold title—be specific.*
- *State specific, measurable outcomes that will be achieved as a result of the activity.*

EXAMPLE:

Activity 1: *(Title of Activity)* _____

Budget: \$ _____

Include clear and concise description of the activity you are proposing to do here.

Outcome	Completion Date
1. <i>Specific, measureable outcome #1</i>	
2. <i>Specific, measureable outcome #2</i>	
3. <i>Specific, measureable outcome #3</i>	
<i>Etc.</i>	



Environment and Natural Resources Trust Fund (ENRTF)

2016 Main Proposal

Project Title: [Insert "Project Title" here in document header]

Activity 2: (Title of Activity) _____

Budget: \$ _____

Include clear and concise description of the activity you are proposing to do here.

Outcome	Completion Date
1. Specific, measureable outcome #1	
2. Specific, measureable outcome #2	
3. Specific, measureable outcome #3	
Etc.	

ADD ADDITIONAL ACTIVITIES AS NEEDED USING THE SAME FORMAT AS ABOVE FOR EACH INDIVIDUAL ACTIVITY. Please mark as Activity 2, 3, 4, etc.

III. PROJECT STRATEGY

A. Project Team/Partners

Describe the project team and partners that will be carrying out the proposed activities. List names and affiliations of team members or partner organizations, and explain the specific role each will play in carrying out the project. Delineate which partners are proposed to receive money from this Environment and Natural Resources Trust Fund request and which partners are proposed to be contributing funds or resources from other sources.

B. Project Impact and Long-Term Strategy

What is the long-term strategy for the proposed project? For example, in terms of its utility to Minnesota's environment and natural resources, dissemination of findings, implementation of results, or ongoing contributions that will derive from it. Additionally, is this proposal a component of a specific, larger, longer-term, or multi-phase project or effort that will require additional investment over time than is being requested here? If so, please explain the broader project/effort (including previous efforts or project phases leading up to this request), identify what sorts of longer-term efforts and investments will be required to make it sustainable, and comment on long-term strategies for ongoing financial support and project progress and/or completion. Be explicit about what other funds are currently secured or have been applied for to support the effort. If additional funding requests for directly related efforts or phases might be submitted to the LCCMR in the future, be very specific as to what is presently anticipated. If your proposal is for additional efforts or phases of a project that has previously received ENRTF support, indicate specific plans for transitioning to other sources of funding or becoming self-sustaining.

C. Timeline Requirements

Explain the timeline requirements specific to the proposed project. Timeline requirements are the project timeline being requested to carry out the project and the rationale, such as any particular conditions or stages required or assumed in order to carry out the project under the timeline (e.g., if project requires a certain number of field seasons under certain conditions). If a proposed project would require more than 36 months to complete, explain here. If a proposed project is a distinct phase of some larger effort and additional funding beyond this request is anticipated to be needed for a future phase, explain in section III-B above.

2016 DETAILED PROJECT BUDGET

Project Title: *[Insert "Project Title" here]*

INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)

MS-Excel template can be downloaded from LCCMR web page: www.lccmr.leg.mn. Click on "2016 Detailed Project Budget template". Attach budget, in MS-Excel format, to your "2016 LCCMR Proposal Submission Form".

(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If budget item row is not applicable put "N/A" or delete it. All of "Other Funds" section must be filled out.)

IV. TOTAL ENRTF REQUEST BUDGET: *[Insert # of years for project] years*

BUDGET ITEM (See "Guidance on Allowable Expenses", p.13)	AMOUNT
Personnel: <i>In this column, list who is getting paid to do what and what is the % of full-time employment for each position. List out by position or position type—one row per position/position type. For each, provide details in this column on the inputs: i.e., % dollars toward salary, % dollars toward benefits, time period for position/position type, and number of people in the position/position type.</i>	\$
Professional/Technical/Service Contracts: <i>In this column, list out proposed contracts. Be clear about whom the contract is to be made with and what services will be provided. If a specific contractor is not yet determined, specify the type of contractor sought. List out by contract types/categories—one row per type/category. If an RFP will be issued, state that.</i>	\$
Equipment/Tools/Supplies: <i>In this column, list out general descriptions of item(s) or item type(s) and their purpose—one row per item/item type.</i>	\$
Acquisition (Fee Title or Permanent Easements): <i>In this column, indicate the proposed number of acres and name of organization or entity who will hold title.</i>	\$
Travel: <i>Be specific. Generally, only in-state travel essential to completing project activities can be included.</i>	\$
Additional Budget Items: <i>In this column, list any additional budget items that do not fit above categories. List by item(s) or item type(s) and explain how number was determined. One row per type/category.</i>	\$
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$

V. OTHER FUNDS *[This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.]*

SOURCE OF FUNDS	AMOUNT	STATUS
Other Non-State \$ To Be Applied To Project During Project Period: <i>Indicate any additional non-state cash dollars secured or applied for to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.</i>	\$	Indicate: Secured or Pending
Other State \$ To Be Applied To Project During Project Period: <i>Indicate any additional state cash dollars (e.g., bonding, other grants) secured or applied for to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.</i>	\$	Indicate: Secured or Pending
In-kind Services To Be Applied To Project During Project Period: <i>Indicate any additional in-kind service(s) secured or applied for to be spent on the project during the funding period. For each type of service, list type of service(s), estimated value, and indicate whether it is secured or pending. In-kind services listed must be specific to the project.</i>	\$	Indicate: Secured or Pending
Funding History: <i>Indicate funding secured but to be expended prior to July 1, 2016, for activities directly relevant to this specific funding request, including past and current ENRTF funds. State specific source(s) of funds and dollar amount.</i>	\$	
Remaining \$ From Current ENRTF Appropriation: <i>Specify dollar amount and year of appropriation from any current ENRTF appropriation for any directly related project of the project manager or organization that remains unspent or not yet legally obligated at the time of proposal submission. Be as specific as possible. Indicate the status of the funds.</i>	\$	Indicate: Unspent? Not Legally Obligated? Other?

GUIDANCE ON ALLOWABLE EXPENSES

ELIGIBLE EXPENSES

Eligible expenses are those expenses **solely** incurred through project activities that are **directly related to and necessary for** producing the project outcomes described in the proposal. **All proposed expenses must be specified in the proposal submitted.** Please note that for non-state entities all funds are awarded on a reimbursement basis, unless otherwise authorized, and all eligible expenses will need to be documented. **Eligible expenses may include:**

- a. Eligible expenditures incurred only after the effective date as approved by LCCMR.
- b. Wages and expenses of salaried Recipient employees if specified, documented, and approved. For State Agencies: use of unclassified staff only OR request approval for the use of classified staff accompanied by an explanation of how the agency will backfill that part of the classified staff salary proposed to be paid for with these funds. This is subject to specific discussion and approval by LCCMR.
- c. Fringe benefit expenses, such as FICA/Medicare, retirement, and health insurance of Recipient's employees, if specified.
- d. Professional and technical services specified in the approved Work Plan that are rendered by individuals or organizations not a part of the Recipient;
- e. Equipment, tools, materials, and supplies specific to the project and incoming freight charges for them.
- f. Capital expenditures for facilities, equipment, and other capital assets as expressly approved. For expenditures greater than \$5,000, the Recipient must provide an explanation as to how all the equipment purchased with the appropriation will continue to be used for the same program through its useful life, or, if the use changes, a commitment to pay back to the Environment and Natural Resources Trust Fund an amount equal to either the cash value received or a residual value approved by the director of the LCCMR if it is not sold.
- g. Publication and printing/copying expenses necessary for contract administration, work products production, and semi-annual reports relating to accomplishments.
- h. In-state transportation and travel expenses such as lodging, meals, and mileage of personnel directly involved in the Project in the same manner and in no greater amount than provided for in the current "**Commissioner's Plan**" promulgated by the Commissioner of Management of Budget and as provided by LCCMR or, for University of Minnesota projects, the University of Minnesota plan found at <http://policy.umn.edu/policies/finance/travel/travel.html>. Allowable meal and lodging expenses are for employees only. Purchasing meals or providing lodging for others is not an allowable expense.

GENERALLY INELIGIBLE EXPENSES—UNLESS EXPLICITLY APPROVED

Generally ineligible expenses for reimbursement mean all expenses not defined as eligible expenses, but for which an explicit exception can be sought from LCCMR if the expenses can be **clearly justified and individually documented** as **directly related to and necessary for** a project. **No broad allocations for costs in either dollars or percentages** are allowed. In deciding whether to seek exception for these costs consider that cash and in-kind leverage are criteria considered in proposal evaluation. **Generally ineligible expenses include but are not limited to:**

- a. General operations, overhead, and other indirect expenses, including office maintenance, office utility expenses, and office materials and supplies.
- b. Office rental fees (including storage space rental).
- c. Communication expenses incurred for telephone calls, web access, postage, and similar services.
- d. Insurance, except title insurance.
- e. Attorney fees, except to acquire and clear title to land.
- f. Purchase of communication devices such as pagers, cell phones, or smart phones.
- g. Purchase of computers, tablets, or audiovisual equipment.
- h. Generally available food and refreshments, except if explicitly approved for certain types of events.
- i. Conference attendance and associated costs and fees, except if to participate in formal presentation of project findings.
- j. Out of state transportation and travel expenses.

PROHIBITED EXPENSES

Prohibited expenses for reimbursement mean all expenses indicated below, **including but not limited to:**

- a. Any expenses incurred before the project is authorized, before July 1, 2016, or before LCCMR work plan approval—whichever is latest.
- b. Fundraising.
- c. Taxes, except sales tax on goods and services.
- d. Lobbyists or political contributions.
- e. Advertising and marketing expenses.
- f. Loans, grants, or subsidies to persons or entities for development.
- g. Bad debts, late payment fees, finance charges, or contingency funds.
- h. Interest or investment management fees.
- i. Directors or officers salary.
- j. Merit awards and bonuses.
- k. Memberships (including subscriptions and dues).
- l. Publications, periodicals, and subscriptions.
- m. Employee workplace parking.
- n. Entertainment, decorations, gifts, and prizes.

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND: MN CONSTITUTION AND STATUTORY EXPENDITURES

LCCMR Staff:

Susan Thornton

Director

Mike Banker

Assistant Director

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For more information
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Legislative-Citizen Commission on Minnesota Resources

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Minnesota Constitution Art. XI, Sec.14: Environment and Natural Resources Trust Fund Established

<http://www.lccmr.leg.mn/about/language-index.html>

A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]

MS 116P.08 Environment and Natural Resources Trust Fund Expenditures and Exceptions

<https://www.revisor.mn.gov/statutes/?id=116P&view=chapter#stat.116P.08>

Subdivision 1. **Expenditures.** Money in the trust fund may be spent ONLY for:

- (1) the reinvest in Minnesota program as provided in section 84.95, subd. 2;
- (2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;
- (3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;
- (4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;
- (5) capital projects for the preservation and protection of unique natural resources;
- (6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise

may be substantially impaired or destroyed in any area of the state;

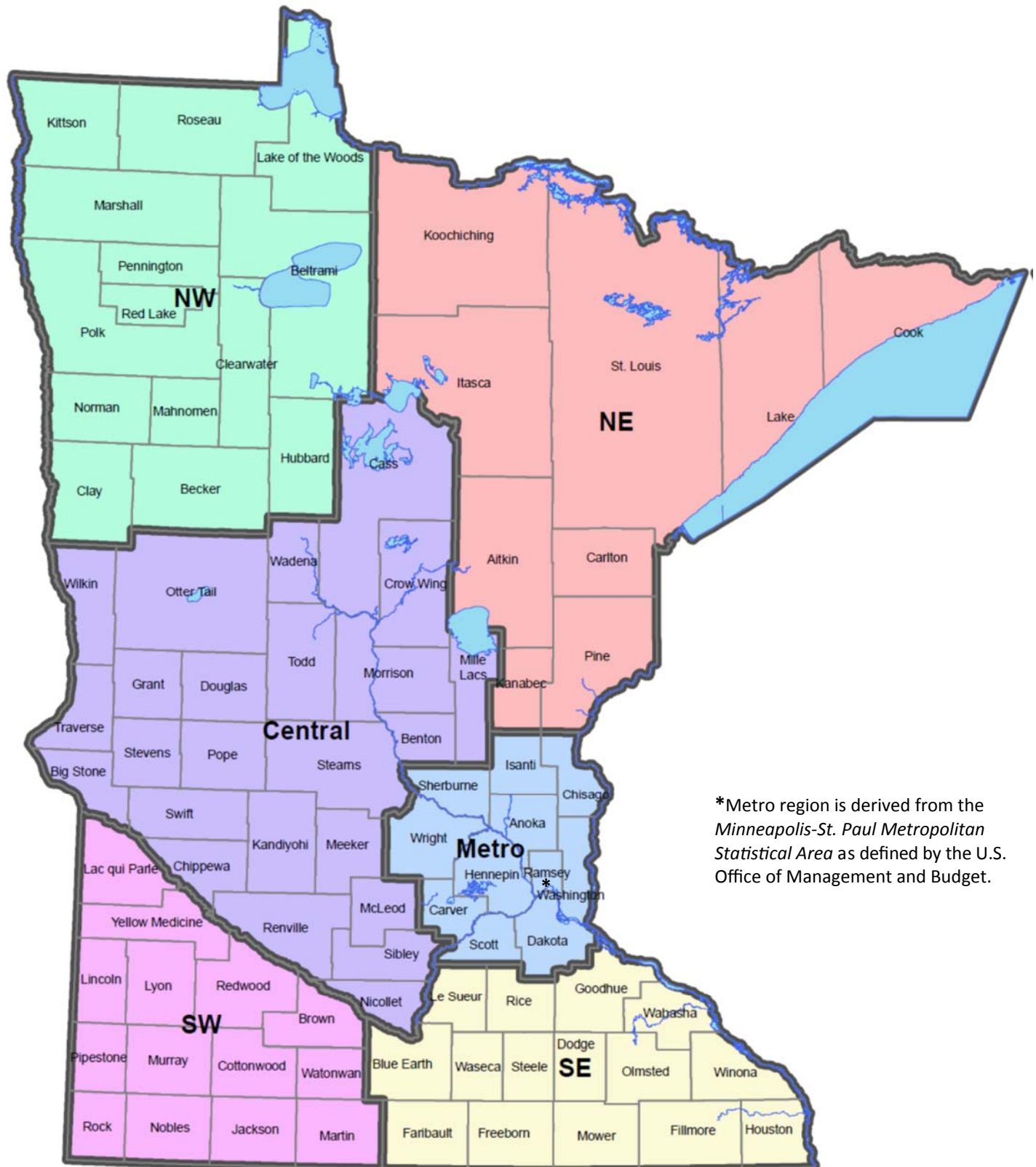
- (7) administrative and investment expenses incurred by the state board of investment in investing deposits to the trust fund; and
- (8) administrative expenses subject to the limits in section 116P.09.

Subdivision 2. **Exceptions.** Money from the trust fund may not be spent for:

- (1) purposes of environmental compensation and liability under chapter 115B and response action under chapter 115C;
- (2) purposes of municipal water pollution control under the authority of chapters 115 and 116;
- (3) costs associated with the decommissioning of nuclear power plants;
- (4) hazardous waste disposal facilities;
- (5) solid waste disposal facilities; or
- (6) projects or purposes inconsistent with the strategic plan.

Minnesota (by geographic region)

Use for determining region location for proposal submission form (see p.9)



II. Projects Funded Preceding Biennium

“a description of each project receiving money from the trust fund during the preceding biennium;”

- The following documents include the adopted appropriation paragraphs describing projects funded in FY2016 (beginning July 1, 2015) and in FY2017 (beginning July 1, 2016).
- Research projects have been marked as such in the description.
- Full work plans are available at the LCCMR, Room 65, State Office Building and on the LCCMR website <http://www.lccmr.leg.mn/> then click on the tab titled “Projects Funded”. The project abstracts are current as of 12/31/2016.
- 144 Projects were funded for a total of \$84,292,000.
- Legal Citations
 1. FY2016 - M.L. 2015, Chapter 76, Sec. 2 (65 projects for a total of \$46,383,000)
 2. FY2017 - M.L. 2016, Chapter 186, Sec. 2 (79 projects for a total of \$37,909,000)

- 1. FY2016 - MN Laws 2015, Chapter 76, Section 2**

2015 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS

M.L. 2015: Chapter 76, Section 2

Process for M.L. 2015 Appropriations

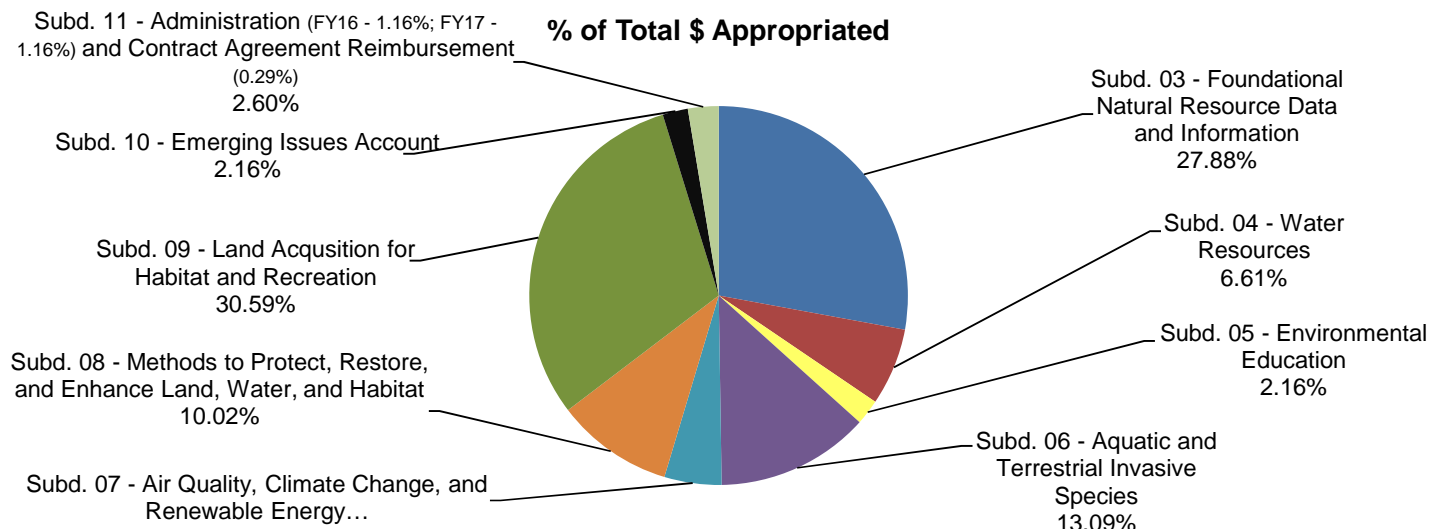
For the FY 2016 and FY 2017 biennium (July 1, 2015 - June 30, 2017), approximately \$46.3 million is available each year (total = \$92,674,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2015 Request for Proposal (RFP) 152 proposals requesting a total of approximately \$126.3 million were received. Through a competitive, multi-step process, 76 of these proposals, requesting a total of \$74.9 million, were chosen to present to the LCCMR and 65 of those proposals were selected to receive a recommendation for funding to the 2015 MN Legislature. The Legislature adopted 63 of these project recommendations and replaced two of them with two new project appropriations on 05/18/15. The project appropriations adopted by the Legislature were signed into law by the Governor on 05/22/15

October 23 & December 10, 2013	2015 Funding Priorities Determined and RFP Adopted
December 16, 2013	2015 RFP Issued
March 28, 2014	2015 RFP Proposal Deadline (Received 152 Proposals totaling \$126,332,461)
June 4, 2014	2015 Selection of Proposals for Presentations
June 17, 18, 19, 24, & 25, 2014	2015 Proposal Presentations (Selected 76 proposals totaling \$74,867,915 to present)
July 10, 2014	2015 Allocations Recommendations
August - December, 2014	Research Projects Recommended Undergo Peer Review
November 19 & December 9, 2014	2015 Appropriation Language Review & Adoption
May 18, 2015	Appropriations adopted by MN Legislature
May 22, 2015	Appropriations signed into law by Governor
June 11, 2015	Project work plans approved by LCCMR
July 1, 2015	Projects can begin

Summary of Appropriations by Subdivision

Subdivision	\$ Appropriated	# Appropriations
Subd. 03 - Foundational Natural Resource Data and Information	\$12,932,000	19
Subd. 04 - Water Resources	\$3,065,000	9
Subd. 05 - Environmental Education	\$1,004,000	5
Subd. 06 - Aquatic and Terrestrial Invasive Species	\$6,071,000	4
Subd. 07 - Air Quality, Climate Change, and Renewable Energy	\$2,268,000	3
Subd. 08 - Methods to Protect, Restore, and Enhance Land, Water, and Habitat	\$4,646,000 *	11
Subd. 09 - Land Acquisition for Habitat and Recreation	\$14,190,000	11
Subd. 10 - Emerging Issues Account	\$1,000,000	1
Subd. 11 - Administration and Contract Agreement Reimbursement	\$1,207,000	2
TOTAL	\$46,383,000	65

*One appropriation in Subd. 8 includes \$59,000 from the Great Lakes Protection Account

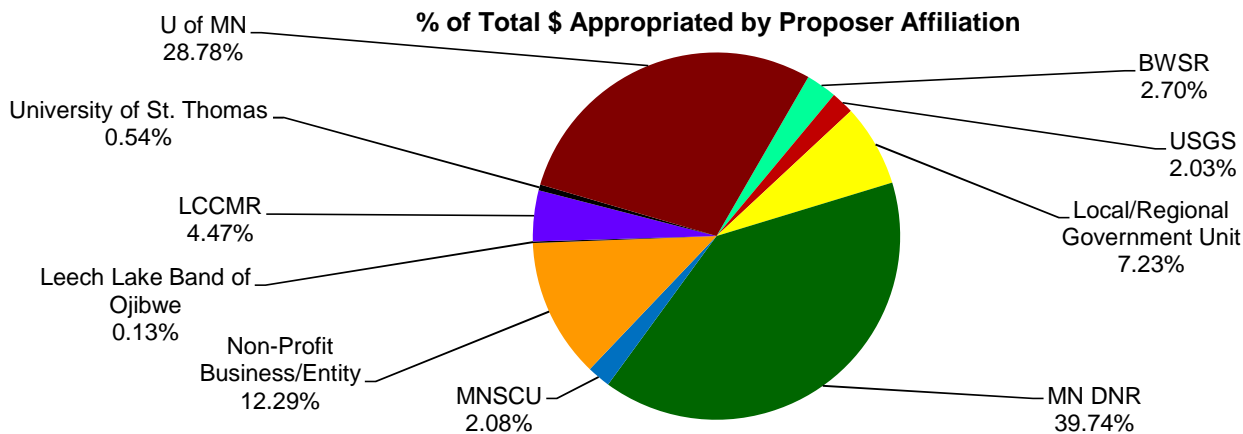


2015 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS
M.L. 2015: Chapter 76, Section 2

Summary of Appropriations by Proposer Affiliation*		
Affiliation Type	\$ Appropriated	# Appropriations
Minnesota Board of Water and Soil Resources (BWSR)	\$1,253,000	2
U.S. Geological Survey (USGS)	\$943,000	2
Local/Regional Government Unit	\$3,355,000	8
Minnesota Department of Natural Resources (MN DNR)	\$18,433,000	12
Minnesota State Colleges and Universities (MNSCU)	\$966,000	3
Non-Profit Business/Entity	\$5,699,000	14
Leech Lake Band of Ojibwe	\$61,000	1
Legislative-Citizen Commission on Minnesota Resources (LCCMR)	\$2,072,000	2
University of St. Thomas	\$250,000	1
University of Minnesota (U of MN)	\$13,351,000 **	20
TOTAL	\$46,383,000	65

*Dollar amounts based on project manager affiliation listed in the proposal; some proposals have multiple partners with multiple affiliations and dollars requested distributed between them.

**One appropriation to the University of Minnesota includes \$59,000 from the Great Lakes Protection Account.

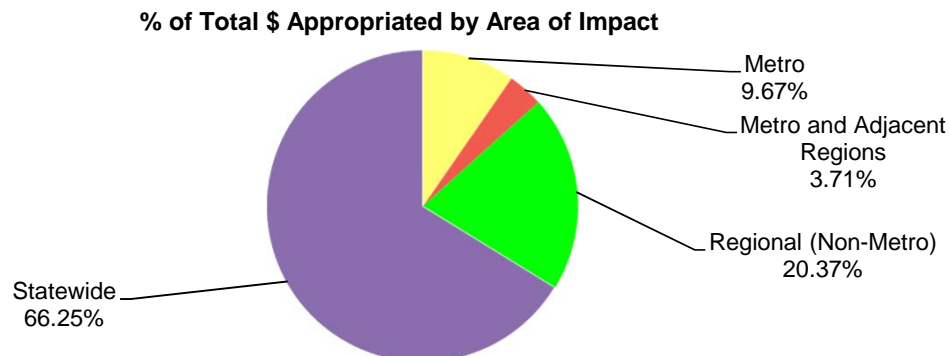


Summary of Appropriations by Area of Impact		
Area of Impact	\$ Appropriated	# Appropriations
Metro*	\$4,485,000	12
Metro and Adjacent Regions	\$1,723,000	3
Regional (Non-Metro)**	\$9,446,000 ***	18
Statewide	\$30,729,000	32
TOTAL	\$46,383,000	65

* "Metro" region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

** "Regional" means area of impact is less than "Statewide" but includes one or more regions of the state ("Northwest", "Northeast", "Central", "Southwest", or "Southeast") other than the 11-county "Metro" region.

*** One appropriation with a "Regional" area of impact contains \$59,000 from the Great Lakes Protection Account.





ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

M.L. 2015 Appropriations: Chapter 76, Section 2

SUMMARY OF ML 2015 APPROPRIATIONS BY SUBDIVISION (\$46,383,000)

SUBD. 3. Foundational Natural Resource Data and Information: \$12,932,000 – 19 Appropriations

- Collection, interpretation, mapping, and dissemination of foundational data and information pertaining to groundwater, wetlands, and distributions of plant and animal species and ecological systems.
- Planning and development of online inventories for data and imagery pertaining to Minnesota wildlife, plant, fungi, and pollinator species
- Surveying and monitoring for distributions and habitat use of pollinators, wetland birds, elk, carnivore species, turtles, goblin fern, and bats in order to guide conservation, management, and mitigation strategies.
- Research and analysis pertaining to conservation grazing, impacts of forest management practices on water resources, and loon and pelican populations impacted by the Deepwater Horizon oil spill.
- Development of Blue Mounds and Minneopa State Parks to assist in the reintroduction and preservation of American bison and provide interpretive learning opportunities.
- Data collection and compilation to improve understanding of forest disturbance impacts and of resulting changes to Mississippi River flow from the St. Anthony Falls lock closure to inform future management.

SUBD. 4. Water Resources: \$3,065,000 – 9 Appropriations

- Modeling, mapping, and assessment to increase understanding of water sustainability issues throughout the state, including the associated economic and ecological risks and costs, in order to inform and improve water management strategies and practices.
- Development of technologies and materials designed to remove pollutants and capture nutrients for recycling from stormwater, agricultural runoff, and polluted water bodies.
- Research and analysis initiatives pertaining to contaminants of emerging concern in Minnesota lakes and to the impacts of agricultural drainage on groundwater recharge and sustainability in southeast Minnesota.
- Monitoring and assessment to improve measurement of suspended sediment in rivers and enhance sediment reduction efforts.
- Outreach, technical assistance, and demonstration initiatives to promote cover crops for soil and water quality protection; to advance irrigation best management practices; and to encourage residential water conservation.

SUBD. 5. Environmental Education: \$1,004,000 – 5 Appropriations

- Grants to local communities for trap shooting sports facilities.
- Development and delivery of hands-on environmental education to engage students and communities on issues relating to water quality and watershed stewardship, including the establishment of six permanent recreational and educational sites located throughout the Zumbro River watershed.

SUBD. 6. Aquatic and Terrestrial Invasive Species: \$6,071,000 – 4 Appropriations

- Establishment, development, and support of a new research center at the University of Minnesota specifically dedicated to developing and implementing new techniques for controlling terrestrial invasive plants, pathogens, and pests, including agricultural weeds and pests.
- Research and analysis to assess the potential impacts of emerald ash borer on Minnesota black ash forests and related ecology; to establish early detection and prevention efforts for an invasive root rot fungus recently discovered in Minnesota; and to develop a biological control for Canada thistle.

SUBD. 7. Air Quality, Climate Change, and Renewable Energy: \$2,268,000 – 3 Appropriations

- Development and demonstration of technologies intended to enable renewable and sustainable production of fertilizer and energy in localized manners, particularly within rural areas.
- Development and testing of a model to make building deconstruction and material reuse a competitively viable alternative to demolition in order to provide a variety of environmental and economic benefits.

SUBD. 8. Methods to Protect/Restore/Enhance Land, Water & Habitat: \$4,646,000 – 11 Appropriations

- Analysis and planning initiatives to inform efforts aimed at sustaining trout fisheries along the north shore and to guide future conservation efforts within the Minnesota River Valley.
- Surveying, collection, and propagation of plant species for prairie restoration and of native orchid species to enable long-term conservation.
- Restoration efforts including forest and prairie restoration in the greater metropolitan area; restoration and monitoring of prairie and riparian habitat near Moorhead; and restoration of Sargent Creek in Duluth.
- Technical assistance to residents, businesses, and governments to promote shoreland conservation and protection along the St. Croix River; to communities around the state for community forestry; and to private landowners for participation in existing land conservation programs.
- Research, analysis, and public engagement to improve restoration techniques in order to create increased resilience against changing climate conditions and to benefit pollinators.

SUBD. 9. Land Acquisition for Habitat and Recreation: \$14,190,000 – 11 Appropriations

- Protection and restoration of priority, high quality, and unique lands within Minnesota's Scientific and Natural Area and Native Prairie Bank systems and outreach and technical assistance to engage the public and assist landowners in relation to these programs and their associated opportunities.
- Expansion of outdoor recreational opportunities through additions to state parks and trails and metropolitan regional parks and trails, and through construction and development of the Mesabi Trail.
- Acquisition in fee title and conservation easement of priority lands to protect prairies, forests, and wetlands and ensure wildlife corridors within the greater metropolitan area and in Crow Wing and Cass counties.
- Research and analysis of existing conservation easements acquired through state expenditures to determine their effectiveness at achieving intended outcomes and guide future investments in conservation easements.

SUBD. 10. Emerging Issues Account: \$1,000,000 – 1 Appropriation

- Funding for emerging issues that come up unexpectedly outside of the LCCMR and legislative processes.

SUBD. 11. Administration and Contract Agreement Reimbursement: \$1,207,000 – 2 Appropriations

- LCCMR administration for FY16-17 and project contract agreement reimbursement for non-state entities.



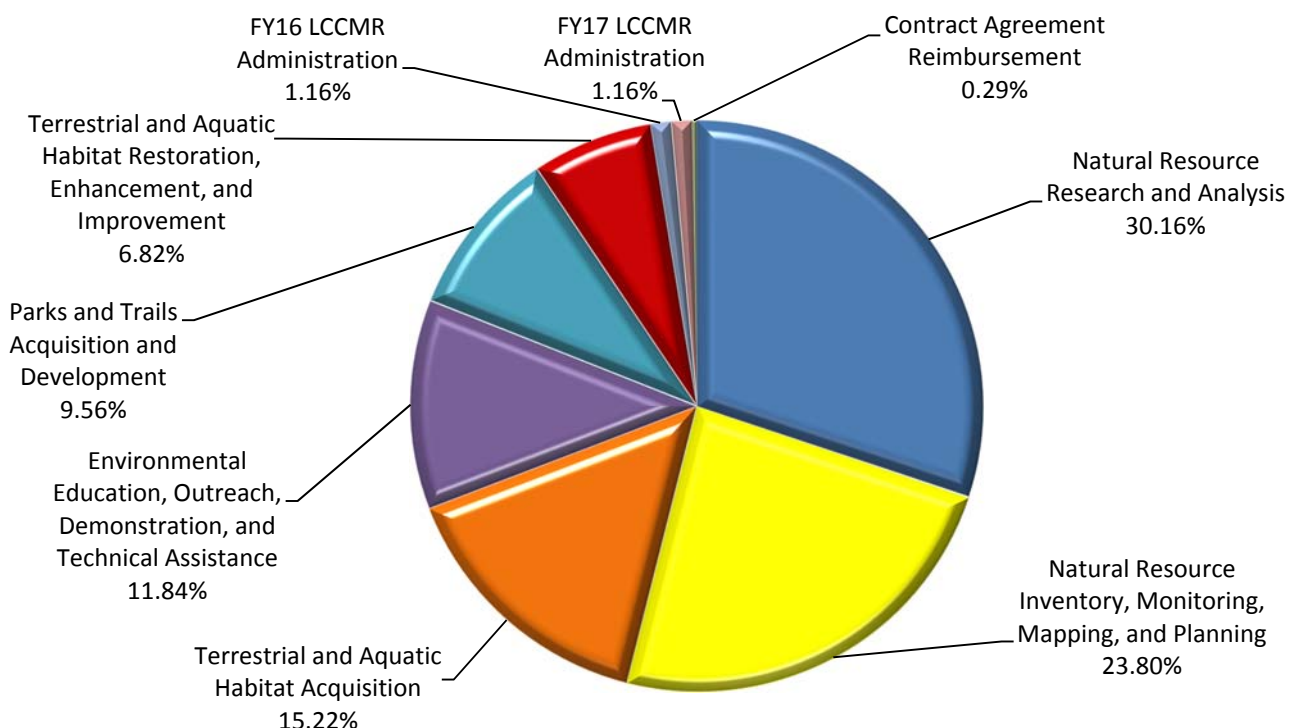
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

M.L. 2015 Appropriations: Chapter 76, Section 2

SUMMARY OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS FOR ~\$46.4 MILLION

- **Natural Resource Research and Analysis: ~\$14.0 million**
Research and analysis projects that will advance our knowledge about and provide strategies and recommendations for addressing issues relating to terrestrial invasive species prevention, control, and mitigation (includes the launch of a new terrestrial invasive species research center); water resources sustainability and protection; plant and animal species protection, management, and recovery; habitat restoration practices; improvement of agricultural and forestry practices; renewable energy; climate change impacts and greenhouse gas reduction; and conservation easement valuation and effectiveness.
- **Natural Resource Inventory, Monitoring, Mapping, and Planning: ~\$11.0 million**
Inventory, monitoring, mapping, and planning efforts to obtain critical information and guide relevant decisions and efforts over time, including acceleration of the Minnesota Biological Survey, Minnesota Geologic Atlas program, and the National Wetlands Inventory update for Minnesota; planning and development of online inventories for data and imagery pertaining to Minnesota wildlife, plant, fungi, and pollinator species; surveying and monitoring for population distributions of pollinators, bats, elk and wetland birds; surveying, collection, and propagation of imperiled plant species; local planning efforts pertaining to recreation and conservation; planning and monitoring for the state's Scientific and Natural Areas program; inventory and mapping of datasets pertaining to the impacts of forest disturbance; baseline data collection to study the future impacts of planned changes to Mississippi River flow; and detection and monitoring of invasive species including emerald ash borer and a pine root rot.
- **Terrestrial and Aquatic Habitat Acquisition: ~\$7.1 million**
Acquisition of an estimated 1,314 acres in a combination of fee title (567 acres and 1.2 miles of shoreline) and conservation easements (750 acres), including donated easements. Permanently protected areas will include forests, prairies, grasslands, blufflands, wetlands, shorelands, and other habitat, including for additions for the Minnesota Scientific and Natural Areas system.
- **Environmental Education, Outreach, Demonstration, and Technical Assistance: ~\$5.5 million**
Environmental education, outreach, demonstration, and technical assistance efforts that will engage and educate Minnesotans on topics including ecology, plant and wildlife species, pollinators, water resources, alternative agricultural practices, and habitat protection and restoration; demonstrate options for water stewardship, renewable energy, and resource reuse; and provide training and technical assistance on community forestry, cover crops, shoreland protection, prairie stewardship, and natural resource conservation and management tools, practices, and options.
- **Parks and Trails Acquisition and Development: ~\$4.4 million**
Acquisition of an estimated 468 acres to expand parks and trails in the State Parks and Trails System and the Metropolitan Regional Parks and Trails System; *development* of two state parks to assist in the reintroduction and preservation of American bison; *development* of at least six local recreational and educational sites along the Zumbro River in southwest Minnesota; and *design and construction* of a Mesabi Trail segment in northern Minnesota and trap shooting sports facilities in the state.
- **Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement ~\$3.2 million**
Restoration, enhancement, and improvement activities on an estimated 2,663 acres. Activities performed will include prescribed burning, soil preparation, seeding, native vegetation installation, woody encroachment removal, invasive species control, and monitoring and evaluation.
- **LCCMR Administration: \$536,000 (FY16) and \$536,000 (FY17)**
FY 2016-2017 LCCMR administration.
- **Contract Agreement Reimbursement: \$135,000**
Administering of contract agreement reimbursement for projects of non-state entities.

% OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS



M.L. 2015 Projects

MN Laws 2015, Chapter 76, Section 2 (beginning July 1, 2015)

For the FY 2016 and FY 2017 biennium (July 1, 2015 - June 30, 2017), approximately \$46.3 million is available each year (total = \$92,674,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2015 Request for Proposal (RFP) 152 proposals requesting a total of approximately \$126.3 million were received. Through a competitive, multi-step process, 76 of these proposals, requesting a total of \$74.9 million, were chosen to present to the LCCMR and 65 of those proposals were selected to receive a recommendation for funding to the 2015 MN Legislature. The Legislature adopted 63 of these project recommendations and replaced two of them with two new project appropriations on 05/18/15. The project appropriations adopted by the Legislature were signed into law by the Governor on 05/22/15.

LINKS TO:

- [Print-ready PDF list](#) of the M.L. 2015 projects adopted by the Legislature and signed by the Governor.
- [Summary](#) of appropriations and expected outcomes
- Additional information on LCCMR's [M.L. 2015 proposal and funding process](#)

NOTE: For all projects, [contact us](#) to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 03 Foundational Natural Resource Data and Information

[03a](#) County Geologic Atlas - Part A

[03b](#) County Geologic Atlas - Part B

[03c](#) Minnesota Biological Survey

[03d](#) Minnesota Biodiversity Atlas for Enhanced Natural Resource Management

[03e](#) Updating the National Wetland Inventory for Minnesota - Phase V

[03f](#) Creating a Statewide Wetland Bird Monitoring Program

[03g](#) Minnesota Native Bee Atlas

[03h](#) Reintroduction and Interpretation of Bison in Minnesota State Parks

[03i](#) Endangered Bats, White-Nose Syndrome, and Forest Habitat - **RESEARCH**

[03j](#) Assessing Contaminants in Minnesota Loons and Pelicans - Phase III

[03k](#) Movement and Seasonal Habitat Use of Minnesota Elk - **RESEARCH**

[03l](#) Genetic and Camera Techniques to Estimate Carnivore Populations - **RESEARCH**

- 03m Aquatic and Terrestrial Reptile Habitat
- 03n Digitization of Historic Gullion Ruffed Grouse Research
- 03o Effects of Grazing Versus Fire for Prairie Management - **RESEARCH**
- 03p Assessing Ecological Impact of St. Anthony Falls Lock Closure
- 03q Foundational Dataset Characterizing Historic Forest Disturbance Impacts
- 03r Hydrologic Effects of Contemporary Forest Practices in Minnesota - **RESEARCH**
- 03s Habitat Mitigation for Goblin Fern Conservation

Subd. 04 Water Resources

- 04a Understanding Water Scarcity, Threats, and Values to Improve Management - **RESEARCH**
- 04b Biofilm Technology for Water Nutrient Removal - **RESEARCH**
- 04c Biological Consequences of Septic Pollution in Minnesota Lakes - **RESEARCH**
- 04d Preventing Phosphorous from Entering Water Resources through Drain Tiles - **RESEARCH**
- 04e Southeast Minnesota Cover Crop and Soil Health Initiatives
- 04f Southeast Minnesota Subsurface Drainage Impacts on Groundwater Recharge - **RESEARCH**
- 04g Using Hydroacoustics to Monitor Sediment in Minnesota Rivers - **RESEARCH**
- 04h Assessment of Irrigation Efficiencies in Benton County
- 04i Shoreview Water Consumption and Groundwater Awareness Project

Subd. 05 Environmental Education

- 05a Trap Shooting Sports Facility Grants
- 05b Connecting Students with Watersheds through Hands-On Learning
- 05c Zumbro River Watershed Recreational Learning Stewardship Sites
- 05d Students Engaging Local Watersheds Using Mobile Technologies
- 05e Mississippi River Water Journey Camps

Subd. 06 Aquatic and Terrestrial Invasive Species

- 06a Minnesota Invasive Terrestrial Plants and Pests Center
- 06b Emerald Ash Borer Ecological and Hydrological Impacts - Phase II - **RESEARCH**
- 06c Biological Control of Canada Thistle - **RESEARCH**
- 06d Preventing a New Disease of Pines in Minnesota - **RESEARCH**

Subd. 07 Air Quality, Climate Change, and Renewable Energy

- 07a Renewable and Sustainable Fertilizers Produced Locally - **RESEARCH**
- 07b Reducing Emissions from Open Burning through Biomass Gasification

07c Building Deconstruction to Reduce Greenhouse Gas Emissions and Solid Waste

Subd. 08 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

08a Prioritizing Future Management of North Shore Trout Streams

08b Propagating Native Plants and Restoring Diverse Habitats

08c Preserving and Protecting Minnesota Native Orchid Species

08d Acceleration of Minnesota Conservation Assistance - Final Phase

08e Metro Conservation Corridors Phase VIII - Prairie, Forest, and Savanna Restoration

08f Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation

08g Minnesota State University Moorhead Prairie and Riparian Restoration and Monitoring

08h Improving Community Forests Through Citizen Engagement

08i Flood Recovery on Sargent Creek Duluth Habitat Restoration

08j Shoreland Protection for the Lower St. Croix River

08k Redwood and Renville Counties Outdoor Recreation and Conservation Master Plan

Subd. 09 Land Acquisition for Habitat and Recreation

09a State Parks and State Trails Land Acquisitions

09b Metropolitan Regional Park System Land Acquisition - Phase IV

09c SNA Acquisition, Restoration, Enhancement and Public Engagement

09d Native Prairie Stewardship and Prairie Bank Easement Acquisition

09e Metro Conservation Corridors Phase VIII - Coordination and Mapping and Conservation Easements

09f Metro Conservation Corridors Phase VIII - Strategic Lands Protection

09g Metro Conservation Corridors Phase VIII - Priority Expansion of Minnesota Valley National Wildlife Refuge

09h Metro Conservation Corridors Phase VIII - Wildlife Management Area Acquisition

09i Mesabi Trail Development Soudan to Ely - Phase II

09j Multi-benefit Watershed Scale Conservation on North Central Lakes

09k Conservation Easement Assessment and Valuation System Development

Subd. 10 Emerging Issues Account

10 Emerging Issues Account

Subd. 11 Administration and Contract Agreement Reimbursement

11a Legislative-Citizen Commission on Minnesota Resources (LCCMR)

11b Contract Agreement Reimbursement

Funding Source:

Environment and Natural Resources Trust Fund (TF)

MN Laws 2015, Chapter 76, Section 2

Subd. 03 Foundational Natural Resource Data and Information

County Geologic Atlases - Part A

Subd. 03a \$2,040,000 TF

Dale Setterholm

U of MN - MN Geological Survey
2642 University Ave W
St. Paul, MN 55114-1057

Phone: (612) 627-4780 x223

Email: sette001@umn.edu

Web: <http://www.geo.umn.edu/mgs>

Appropriation Language

\$2,040,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Geological Survey to continue acceleration of the production of county geologic atlases for the purpose of sustainable management of surface water and groundwater resources. This appropriation is to complete Part A of county geologic atlases, which focuses on the properties and distribution of earth materials in order to define aquifer boundaries and the connection of aquifers to the land surface and surface water resources. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

County Geologic Atlases - Part B

Subd. 03b \$2,000,000 TF

Jan Falteisek

MN DNR
500 Lafayette Rd N

St. Paul, MN 55155

Phone: (651) 259-5665

Email: jan.falteisek@state.mn.us

Web: <http://www.mndnr.gov>

Appropriation Language

\$2,000,000 the first year is from the trust fund to the commissioner of natural resources to continue acceleration of the production of county geologic atlases for the purpose of sustainable management of surface water and groundwater resources. This appropriation is to complete Part B of county geologic atlases, which focuses on the properties and distribution of subsurface water found within geologic formations mapped in Part A in order to characterize the potential yield of aquifers and their sensitivity to contamination. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Minnesota Biological Survey

Subd. 03c \$2,450,000 TF

Bruce Carlson

MN DNR

500 Lafayette Rd

St Paul, MN 55155

Phone: (651) 259-5083

Email: bruce.carlson@state.mn.us

Web: <http://www.dnr.state.mn.us/eco/mcbs/index.html>

Appropriation Language

\$2,450,000 the first year is from the trust fund to the commissioner of natural resources for continuation of the Minnesota biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting, monitoring, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Minnesota's Biodiversity Atlas for Enhanced Natural Resource Management

Subd. 03d \$340,000 TF

Keith Barker

U of MN - Bell Museum of Natural History
1987 Upper Buford Cir
St. Paul, MN 55108

Phone: (612) 624-2737

Email: barke042@umn.edu

Web: <http://www.bellmuseum.umn.edu/>

Appropriation Language

\$340,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Bell Museum of Natural History to create a publicly accessible, online tool and repository that will electronically integrate over 600,000 existing biodiversity records, 300,000 existing images, and future data and associated imagery pertaining to Minnesota wildlife, plant, and fungi species in order to enhance research, guide field surveys, and inform conservation planning. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Updating the National Wetland Inventory for Minnesota - Phase V

Subd. 03e \$1,500,000 TF

Steve Kloiber

MN DNR
500 Lafayette Rd, Box 25
St Paul, MN 55155

Phone: (651) 259-5164

Email: steve.kloiber@state.mn.us

Web: http://www.dnr.state.mn/eco/wetlands/nwi_proj.html

Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources to continue to update and enhance wetland inventory maps for Minnesota. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Creating a Statewide Wetland Bird Monitoring Program

Subd. 03f \$146,000 TF

Kristin Hall

Audubon Minnesota
1 Water St W, Ste 200
St Paul, MN 55107

Phone: (651) 739-9332 x116

Email: khall@audubon.org

Web: <http://mn.audubon.org/>

Appropriation Language

\$146,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Audubon Minnesota to develop a statewide wetland bird monitoring program to enable long-term monitoring of the status of wetland birds and the health of their wetland habitats. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Minnesota Native Bee Atlas

Subd. 03g \$790,000 TF

Robert Blair

U of MN
1980 Folwell Ave, #200
St Paul, MN 55108

Phone: (651) 644-1591

Email: blairrB@umn.edu

Web: <http://www.minnesotamasternaturalist.org>

Appropriation Language

\$790,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to supplement and enhance existing bee survey efforts by engaging citizens in helping to document the distribution and phenology of wild Minnesota bees and integrating data from all related bee survey efforts into a single publicly accessible, online tool and repository. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Reintroduction and Interpretation of Bison in Minnesota State Parks

Subd. 03h \$600,000 TF

Edward Quinn

MN DNR

500 Lafayette Rd, Box 39

St. Paul, MN 55155

Phone: (651) 259-5594

Email: edward.quinn@state.mn.us

Web: <http://www.dnr.state.mn.us/index.html>

Appropriation Language

\$600,000 the first year is from the trust fund to the commissioner of natural resources to preserve American bison by reintroducing bison to Minneopa State Park and provide interpretive learning opportunities at Blue Mounds and Minneopa State Parks. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Endangered Bats, White-Nose Syndrome, and Forest Habitat

Subd. 03i \$1,250,000 TF

Richard Baker

MN DNR

500 Lafayette Rd, Box 25

St. Paul, MN 55155

Phone: (651) 259-5073

Email: richard.baker@state.mn.us

Web: <http://www.dnr.state.mn.us/eco/nhnrp>

RESEARCH

Appropriation Language

\$1,250,000 the first year is from the trust fund to the commissioner of natural resources in cooperation with the University of Minnesota and the United States Forest Service to survey

and radio-track endangered bats to define and understand summer forest habitat use in order to minimize forestry impacts and mitigate white-nose syndrome disease impacts. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Assessing Contaminants in Minnesota Loons and Pelicans-Phase III

Subd. 03j \$141,000 TF

Carrol Henderson

MN DNR

500 Lafayette Rd, Box 25

St Paul, MN 55155

Phone: (651) 259-5104

Email: carrol.henderson@state.mn.us

Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$141,000 the first year is from the trust fund to the commissioner of natural resources to continue to assess the potential impact of petroleum, dispersants, and heavy metal contaminants from the Deepwater Horizon oil spill in the Gulf of Mexico on the wintering habitat of Minnesota's common loons and white pelicans using radiotelemetry, geolocators, and contaminant analysis.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Movement and Seasonal Habitat Use of Minnesota Elk

Subd. 03k \$200,000 TF

Gino D'Angelo

MN DNR

35365 800th Ave

Madelia, MN 56062

Phone: (507) 642-8478

Email: gino.dangelo@state.mn.us

Web: <http://www.dnr.state.mn.us/wildlife/index.html>

RESEARCH

Appropriation Language

\$200,000 the first year is from the trust fund to the commissioner of natural resources to collect biological information about Minnesota elk, including movements and habitat use to enable long-term, sustainable management. This appropriation is contingent on a \$50,000 match from state or nonstate sources. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Genetic and Camera Techniques to Estimate Carnivore Populations

Subd. 03I \$200,000 TF

Ron Moen

U of MN - NRRI

5013 Miller Trunk Hwy

Duluth, MN 55811

Phone: (218) 720-4279

Email: rmoen@nrri.umn.edu

Web: <http://www.d.umn.edu/~rmoen>

RESEARCH

Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota - Duluth for the Natural Resources Research Institute to use genetic sampling and remote cameras to improve monitoring of distributions and estimate population sizes of carnivore species.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Aquatic and Terrestrial Reptile Habitat

Subd. 03m \$250,000 TF

Jennifer McGuire

University of St. Thomas

2115 Summit Ave

St. Paul, MN 55105

Phone: (651) 962-5221

Email: jtmcguire@stthomas.edu

Web: <http://www.stthomas.edu/biology/research/biogeochemistry.html>

Appropriation Language

\$250,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the University of St. Thomas in cooperation with the Three Rivers Park District to analyze the aquatic and terrestrial habitat for certain reptile species in urban lakes and to make specific recommendations to protect and enhance the habitat. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Digitization of Historic Gullions Ruffed Grouse Research

Subd. 03n \$75,000 TF

Kent Montgomery

Central Lakes College
501 West College Dr
Brainerd, MN 56401

Phone: (218) 855-8155

Email: kmontgomery@clcmn.edu

Web: www.clcmn.edu

Appropriation Language

\$75,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Central Lakes College to preserve the Gordon Gullion ruffed grouse data sets as permanent digital data files in order to improve accessibility to the information and inform forest wildlife conservation policies and practices.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Effects of Grazing Versus Fire for Prairie Management

Subd. 03o \$414,000 TF

Karen Oberhauser

U of MN

2003 Upper Buford Cir, 135 Skok Hall
St. Paul, MN 55108

Phone: (612) 624 8706

Email: oberh001@umn.edu

Web: <http://fwcb.cfans.umn.edu/oberhauser/>

RESEARCH

Appropriation Language

\$414,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to compare the effects of conservation grazing and prescribed fire on tallgrass prairie plants and pollinators in Minnesota in order to inform and improve land management practices. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Assessing Ecological Impact of St. Anthony Falls Lock Closure

Subd. 03p \$125,000 TF

Kathleen Boe

Minneapolis Riverfront Partnership
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Minneapolis, MN 55418

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Email: kathleen.boe@minneapolisriverfrontpartnership.org

Web: <http://www.minneapolisriverfrontpartnership.org>

Appropriation Language

\$125,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Minneapolis Riverfront Partnership to study the impact of altered river flow due to closure of the Upper Lock on the Mississippi River at St. Anthony Falls on the physical and biological characteristics of the river between the Coon Rapids Dam and Lock and Dam No. 1 in order to inform future river restoration efforts.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Foundational Dataset Characterizing Historic Forest Disturbance Impacts

Subd. 03q \$200,000 TF

Michael Falkowski

U of MN

1530 Cleveland Ave N, 115 Green Hall

St. Paul, MN 55108

Phone: (218) 726-6410

Email: mfalkows@umn.edu

Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to quantify forest disturbance impacts over the past forty years on water quality, wildlife demographics, and wood fiber supply in order to identify management strategies that better respond to disturbance impacts and improve and sustain forest resources. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Hydrologic Effects of Contemporary Forest Practices in Minnesota

Subd. 03r \$150,000 TF

Diana Karwan

U of MN

1530 Cleveland Ave N

St. Paul, MN 55108

Phone: (612) 624-2774

Email: dlkarwan@umn.edu

RESEARCH

Appropriation Language

\$150,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to install hydrologic monitoring stations to collect water quantity and quality data from lands managed for timber production to better understand the relationship between harvest practices and water resources and related responses to changing climate and other disturbance factors in order to inform forest management practices. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Goblin Fern: Habitat Mitigation for Species Conservation

Subd. 03s \$61,000 TF

Bobby Henderson

Leech Lake Band of Ojibwe

115 Sixth St NW

Cass Lake, MN 56633

Phone: (218) 784-8620

Email: bobby.henderson@llojibwe.org

Appropriation Language

\$61,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Leech Lake Band of Ojibwe to examine goblin fern populations, a threatened species in Minnesota, in relation to habitat degradation and to develop long-term habitat mitigation and species conservation strategies. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Subd. 04 Water Resources

Understanding Water Scarcity, Threats, and Values to Improve Management

Subd. 04a \$234,000 TF

Bonnie Keeler

U of MN

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RESEARCH

Appropriation Language

\$234,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to model and map statewide water scarcity and abundance; assess water-related risks to industry, municipalities, and ecosystems; and quantify the economic values of changes in water quality and quantity in order to inform long-term water sustainability strategies. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

A Novel Biofilm Technology for Water Nutrient Removal

Subd. 04b \$281,000 TF

Bo Hu

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Web: <http://bohu.cfans.umn.edu/>

RESEARCH**Appropriation Language**

\$281,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to develop a simulated lichen biofilm system that can be used to remove pollutants and recycle nutrients from storm water runoff and polluted lakes, ponds, and lagoons. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Biological Consequences of Septic Pollution in Minnesota Lakes

Subd. 04c \$364,000 TF

Heiko Schoenfuss

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St Cloud, MN 56301

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Web: <http://web.stcloudstate.edu/aquatictox/>

RESEARCH

Appropriation Language

\$364,000 the first year is from the trust fund to the Board of Trustees of the Minnesota State Colleges and Universities system for St. Cloud State University to assess the presence of possible sources of contaminants of emerging concern in Minnesota lakes in order to determine their effects on fish health, understand the potential contribution from septic systems, and inform options for remediation and prevention to protect Minnesota lakes from these contaminants in the future. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Preventing Phosphorous from Entering Water Resources Through Drain Tiles

Subd. 04d \$505,000 TF

Kenneth Valentas

U of MN

1479 Gortner Ave, 140 Gortner Labs

St. Paul, MN 55108

Phone: (763) 595-0365

Email: valentas@umn.edu

RESEARCH

Appropriation Language

\$505,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to develop a new nanocomposite material made from biomass that is designed to adsorb phosphorus, nitrogen, and pesticides from storm water and drain tile runoff discharge for recycling back to agricultural lands. This appropriation is subject to Minnesota Statutes, section 116P.10.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Southeastern Minnesota Cover Crop and Soil Health Initiatives

Subd. 04e \$253,000 TF

Matt Drewitz

Board of Water and Soil Resources
261 Hwy 15 S
New Ulm, MN 56073

Phone: (507) 359-6076

Email: matt.drewitz@state.mn.us

Web: <http://www.bwsr.state.mn.us>

Appropriation Language

\$253,000 the first year is from the trust fund to the Board of Water and Soil Resources to promote cover crops as a means of protecting soil and water quality in southeastern Minnesota through training and education for local practitioners, economic analysis of implementation, and on-farm demonstration sites. This effort must be coordinated with the University of Minnesota Forever Green Initiative. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Southeast Minnesota Subsurface Drainage Impacts on Groundwater Recharge

Subd. 04f \$488,000 TF

Erik Smith

U.S. Geological Survey
2280 Woodale Dr
Mounds View, MN 55112

Phone: (763) 783-3136

Email: easmith@usgs.gov

Web: <http://mn.water.usgs.gov>

RESEARCH

Appropriation Language

\$488,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the United States Geological Survey to assess the relationship between agricultural drainage and water flow within the unique karst geology of southeast Minnesota to characterize the potential impacts of drainage on groundwater recharge and groundwater sustainability in the region. This appropriation is not subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Using Hydroacoustics to Monitor Sediment in Minnesota Rivers

Subd. 04g \$455,000 TF

Christopher Ellison

U.S. Geological Survey
2280 Woodale Dr
Mounds View, MN 55112

Phone: (763) 783-3121

Email: cellison@usgs.gov

Web: <http://mn-internal.cr.usgs.gov/mnlocal/index.html>

RESEARCH**Appropriation Language**

\$455,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the United States Geological Survey to install hydroacoustic equipment on the lower Minnesota and Mississippi Rivers to improve measurement and monitoring accuracy for suspended sediment and enhance ongoing sediment reduction efforts by state, federal, and local agencies. This appropriation is not subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessment of Irrigation Efficiencies in Benton County

Subd. 04h \$431,000 TF

Gerry Maciej

Benton Soil and Water Conservation District
14 Second Ave W
Foley, MN 56329

Phone: (320) 968-5300 x3

Email: gerry@soilandwater.org

Web: <http://www.soilandwater.org>

Appropriation Language

\$431,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Benton Soil and Water Conservation District to develop and implement a decision support system to increase irrigation efficiencies and provide outreach on irrigation best management practices. Software developed with this appropriation must be available in

the public domain. Project efforts should be coordinated with the Department of Natural Resources. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Shoreview Water Consumption and Groundwater Awareness Project

Subd. 04i \$54,000 TF

Mark Maloney

City of Shoreview
4600 Victoria St N
Shoreview, MN 55126

Phone: (651) 490-4651

Email: mmaloney@shoreviewmn.gov

Web: <http://shoreviewmn.gov>

Appropriation Language

\$54,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the city of Shoreview to provide biweekly water consumption data to at least 400 residential households for a two-year period to determine whether additional groundwater can be conserved with greater awareness of consumption data. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Subd. 05 Environmental Education

Trap Shooting Sports Facility Grants

Subd. 05a \$132,000 TF

Open

MN DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: Open

Email: [Open](#)

Web: [Open](#)

Appropriation Language

\$132,000 the first year is from the trust fund to the commissioner of natural resources for trap shooting sports facility grants under Minnesota Statutes, section 87A.10.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Connecting Students with Watersheds through Hands-On Learning

Subd. 05b \$400,000 TF

John Lenczewski

Minnesota Trout Unlimited
PO Box 845
Chanhassen, MN 55317

Phone: (612) 670-1629

Email: jlenczewski@comcast.net

Web: <http://mntu.org/>

Appropriation Language

\$400,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Minnesota Trout Unlimited to provide hands-on learning focused on water quality, groundwater, aquatic life, and watershed health stewardship. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Zumbro River Watershed Recreational Learning Stewardship Sites

Subd. 05c \$300,000 TF

Lawrence Svien

Zumbro Watershed Partnership
1485 Industrial Dr NW, Rm 102
Rochester, MN 55901

Phone: (507) 226-6787

Email: admin@zumbrowatershed.org

Web: <http://www.zumbrowatershed.org>

Appropriation Language

\$300,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Zumbro Watershed Partnership to develop at least six recreational and educational sites on the Zumbro River with water quality demonstration elements and interpretative signage designed to encourage adoption of water protection practices. No more than 15 percent of this appropriation may be spent on site and construction consultation, planning, and design. Any plantings or restoration activities conducted with this appropriation must use native plant species according to the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Splash Screen: SciGirls Exploring Watersheds Using Mobile Technologies

Subd. 05d \$147,000 TF

Joan Freese

Twin Cities Public Television
172 Fourth St E
St. Paul, MN 55101

Phone: (651) 229-1339

Email: jfreese@tpt.org

Web: <http://www.tpt.org>

Appropriation Language

\$147,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Twin Cities Public Television to deliver an experiential, project-based educational program using mobile technologies to empower at least 200 middle school students in 4-H programs to engage in understanding and protecting local water resources.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Water Journey Camps

Subd. 05e \$25,000 TF

Beth Mercer-Taylor

U of MN
1954 Buford Ave
St. Paul, MN 55108

Phone: (612) 624-9430

Email: bethmt@umn.edu

Web: <http://environment.umn.edu>

Appropriation Language

\$25,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to design and pilot two week-long summer camps for youth ages 6 to 11 focused around clean water and the Mississippi River and designed to get children outdoors exploring and engaged with the natural environment and creating educational materials to help their communities protect water quality.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Subd. 06 Aquatic and Terrestrial Invasive Species

Minnesota Invasive Terrestrial Plants and Pests Center

Subd. 06a \$5,000,000 TF

Robert Venette

U of MN

1992 Folwell Ave

St Paul, MN 55108

Phone: (612) 301-1405

Email: venet001@umn.edu

Web: <http://www.mitppc.umn.edu>

Appropriation Language

\$5,000,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Invasive Terrestrial Plants and Pests Center established in Laws 2014, chapter 312, article 13, section 44, to conduct research to prevent, minimize, and mitigate the threats and impacts posed by invasive plants, pathogens, and pests to the state's prairies, forests, wetlands, and agricultural resources. This appropriation is available until June 30, 2023, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2023

Work Plan (PDF)

Emerald Ash Borer Ecological/Hydrological Impacts - Phase 2

Subd. 06b \$400,000 TF

Anthony D'Amato

U of MN
1530 N Cleveland Ave
St Paul, MN 55108

Phone: (612) 625-3733

Email: damato@umn.edu

Web: <http://www.forestry.umn.edu/silviclab/index.htm>

RESEARCH**Appropriation Language**

\$400,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to assess the potential impacts of emerald ash borer on Minnesota black ash forests and quantify potential impacts on native forest vegetation, invasive species spread, and hydrology. This appropriation is available until June 30, 2020, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2020

Work Plan (PDF)

Biological Control of Canada Thistle

Subd. 06c \$300,000 TF

Roger Becker

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411 Borlaug Hall, 1991 Upper Buford Cir
St. Paul, MN 55108

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Web: <http://appliedweeds.cfans.umn.edu/>

RESEARCH**Appropriation Language**

\$300,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to develop a biological control for Canada thistle, an invasive plant species in Minnesota. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Preventing a New Disease of Pines in Minnesota

Subd. 06d \$371,000 TF

Robert Blanchette

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1991 Upper Buford Cir, 495 Borlaug Hall

St. Paul, MN 55126

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Email: robertb@umn.edu

Web: <http://forestpathology.cfans.umn.edu/default.htm>

RESEARCH

Appropriation Language

\$371,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to establish early detection for heterobasidion, an invasive root rot fungus, and develop efforts to prevent its spread and reduce its impact. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Subd. 07 Air Quality, Climate Change, and Renewable Energy

Renewable and Sustainable Fertilizers Produced Locally

Subd. 07a \$1,000,000 TF

Alon McCormick

U of MN

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RESEARCH

Appropriation Language

\$1,000,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Morris West Central Research and Outreach Center and Twin Cities Campus to develop and demonstrate new technologies aimed at enabling renewable and sustainable production of ammonia for fertilizer in a localized manner. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Reducing Emissions from Open Burning through Biomass Gasification

Subd. 07b \$268,000 TF

William Northrop

U of MN

111 Church St SE

Minneapolis, MN 55455

Phone: (612) 625 6854

Email: wnorthro@umn.edu

Appropriation Language

\$268,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota in cooperation with the Department of Natural Resources to characterize and promote distributed biomass gasification of wood waste as a means for producing renewable and sustainable energy in rural areas through a demonstration at the Department of Natural Resources regional office facility in New Ulm.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Building Deconstruction to Reduce Greenhouse Gas Emissions and Solid Waste

Subd. 07c \$1,000,000 TF

Part 1 - \$845,000

Steve Thomas

The NetWork for Better Futures d/b/a Better Futures Minnesota

1017 Olson Memorial Hwy

Minneapolis, MN 55405

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Web: <http://www.betterfuturesminnesota.com>

Part 2 - \$155,000

Victor Krause

U of MN - Duluth NRRI

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Web: <http://www.nrri.umn.edu>

Appropriation Language

\$845,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Better Futures Minnesota in cooperation with the Northwest Indian Opportunities Industrialization Center and \$155,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota - Duluth for the Natural Resources Research Institute to develop and test a model for implementing building deconstruction and material reuse as a competitive alternative to demolition for the purpose of reducing greenhouse gas emissions, reducing landfill waste, and providing job training. The project report must quantify and document greenhouse gas emissions reductions resulting from specific deconstruction techniques and materials reuses.

Project due to be completed: 6/30/2017

Work Plan - Part 1 (PDF)

Work Plan - Part 2 (PDF)

Subd. 08 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

Prioritizing Future Management of North Shore Trout Streams

Subd. 08a \$416,000 TF

Lucinda Johnson

U of MN - NRRI

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Duluth, MN 55811

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Web: <http://www.nrri.umn.edu/staff/ljohnson.asp>

Appropriation Language

\$357,000 the first year is from the trust fund and \$59,000 the first year is from the Great Lakes protection account to the Board of Regents of the University of Minnesota - Duluth for the Natural Resources Research Institute to identify key areas in North Shore streams that supply the cold groundwater essential to sustaining trout fisheries, in order to focus habitat restoration, protection, and management efforts on the areas that are most essential for long-term stream health and sustainability. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Propagating Native Plants and Restoring Diverse Habitats

Subd. 08b \$495,000 TF

Rich Perrine

Martin County Soil and Water Conservation District
923 N State St, Ste 110
Fairmont, MN 56031

Phone: (507) 235-6680

Email: richard.perrine@mn.nacdnet.net

Web: <http://www.martinswcd.net>

Appropriation Language

\$495,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Martin County Soil and Water Conservation District for a cooperative 13-county effort by Blue Earth, Brown, Cottonwood, Crow Wing, Faribault, Freeborn, Jackson, Lake, Le Sueur, Martin, Nicollet, Waseca, and Watonwan Counties to protect and expand native forest and prairie habitat for species in greatest conservation need in four regions of the state through collection and propagation of local ecotype native plants, habitat restoration efforts, and educational outreach. This appropriation is available until June 30, 2020, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2020

Work Plan (PDF)

Preserving and Protecting Minnesota Native Orchid Species

Subd. 08c \$167,000 TF

David Remucal

U of MN - Landscape Arboretum
3675 Arboretum Dr
Chaska, MN 55318

Phone: (952) 443-1418

Email: lnitabac@umn.edu

Web: <http://www.arboretum.umn.edu>

Appropriation Language

\$167,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Landscape Arboretum for propagation and cultivation research to enable long-term conservation of at least 15 selected species of the 48 native orchid species in Minnesota. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Acceleration of Minnesota Conservation Assistance - Final Phase

Subd. 08d \$1,000,000 TF

Tabor Hoek

Board of Water and Soil Resources
520 Lafayette Rd N
St Paul, MN 55155

Phone: (507) 537-7260

Email: tabor.hoek@state.mn.us

Web: <http://www.bwsr.state.mn.us>

Appropriation Language

\$1,000,000 the first year is from the trust fund to the Board of Water and Soil Resources for the final phase of a pilot program to provide grants to soil and water conservation districts and other units of local and state government for employment of staff to provide technical assistance to secure enrollment and retention of private lands in federal and state conservation programs. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Prairie, Forest, and Savanna Restoration

Subd. 08e \$276,000 TF

Tom Lewanski

Friends of the Mississippi River
360 N Robert St, Ste 400
St Paul, MN 55101

Phone: (651) 222-2193 x1

Email: tlewanski@fmr.org

Web: <http://www.fmr.org>

Appropriation Language

\$276,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Friends of the Mississippi River for Phase VIII of the Metro Conservation Corridors partnership to conduct restoration activities on at least 195 acres of forest and savanna and at least 60 acres of prairie to preserve and increase wildlife habitat in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties. Expenditures are limited to the identified project corridor areas as defined in the work plan. A list of proposed restorations must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation

Subd. 08f \$400,000 TF

Wiley Buck

Great River Greening
35 W Water St, Ste 201
St Paul, MN 55107

Phone: (651) 665-9500

Email: wbuck@greatrivergreening.org

Web: <http://www.greatrivergreening.org>

Appropriation Language

\$400,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Great River Greening for Phase VIII of the Metro Conservation Corridors partnership to pilot and evaluate innovative restoration techniques aimed at improving the

resilience of bur oak communities to changing climate conditions and enhancing prairie management to benefit pollinators with the help and engagement of citizen volunteers. Expenditures on restoration efforts are limited to the identified project corridor areas as defined in the work plan. A list of proposed restorations must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which point the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

MSU Moorhead Science Center Restoration & Monitoring

Subd. 08g \$527,000 TF

Brian Wisenden

Moorhead State University
1104 Seventh Ave S
Moorhead, MN 56563

Phone: (701) 212-5801

Email: wisenden@mnstate.edu

Web: <http://web.mnstate.edu/wisenden>

Appropriation Language

\$527,000 the first year is from the trust fund to the Board of Trustees of the Minnesota State Colleges and Universities system for Minnesota State University Moorhead in cooperation with the Department of Natural Resources to restore and monitor 160 acres of prairie and riparian habitat and develop and disseminate monitoring protocols. This appropriation is contingent upon the donation of a 60-acre parcel to Minnesota State University Moorhead from the Minnesota State University Moorhead Alumni Foundation and is available until June 30, 2020, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2020

Work Plan (PDF)

Improving Community Forests Through Citizen Engagement

Subd. 08h \$800,000 TF

Ken Holman

MN DNR
500 Lafayette Rd N
St. Paul, MN 55155

Phone: (651) 259-5269

Email: ken.holman@state.mn.us

Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$800,000 the first year is from the trust fund to the commissioner of natural resources to design and pilot a program, including grants to communities, to mobilize citizen volunteers to protect, improve, and maintain local forests in communities around the state. Participation is open to any municipality in the state and participating municipalities will be selected through a competitive proposal process that will include representation from both metropolitan and nonmetropolitan areas of the state. Trees planted using this appropriation must be species that are native to Minnesota. A participating municipality must provide a match of not less than 25 percent, up to half of which may be in the form of in-kind support. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Flood Recovery on Sargent Creek Duluth Habitat Restoration

Subd. 08i \$300,000 TF

Christopher Kleist

City of Duluth

411 First St W, Room 211

Duluth, MN 55802

Phone: (218) 355-0598

Email: ckleist@duluthmn.gov

Web: <http://www.duluthmn.gov>

Appropriation Language

\$300,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the city of Duluth to re-establish stable and natural streambanks with riparian and aquatic habitat restoration on at least 5,400 linear feet of Sargent Creek in Duluth destroyed during the flood of 2012.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Shoreland Protection for the Lower St. Croix River

Subd. 08j \$190,000 TF

Deb Ryun

St. Croix River Association
119 N Washington St
St Croix Falls, MN 54024

Phone: (715) 483-3300

Email: debryun@scramail.com

Web: <http://stcroixriverassociation.org/>

Appropriation Language

\$190,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the St. Croix River Association to provide technical assistance to landowners, local governments, realtors, and developers on shoreland conservation and protection of the lower St. Croix River. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Redwood and Renville Counties Outdoor Recreation and Conservation Master Plan

Subd. 08k \$75,000 TF

Mark Erickson

Redwood County and Renville County
105 Fifth St S, Ste 311
Olivia, MN 56277

Phone: (320) 523-3702

Email: mark_e@co.renville.mn.us

Web: <http://www.co.renville.mn.us>

Appropriation Language

\$75,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Renville County in cooperation with Redwood County to develop a joint outdoor recreation and conservation master plan to guide future development and protect cultural, historical, and natural resources in the Minnesota River Valley.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Subd. 09 Land Acquisition for Habitat and Recreation

State Parks and State Trails Land Acquisitions

Subd. 09a \$1,500,000 TF

Jennifer Christie

MN DNR

500 Lafayette Rd

St. Paul, MN 55155

Phone: (651) 259-5579

Email: jennifer.christie@state.mn.us

Web: <http://www.mndnr.gov>

Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources to acquire at least 335 acres for authorized state trails and critical parcels within the statutory boundaries of state parks. State park land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metropolitan Regional Park System Land Acquisition Phase 4

Subd. 09b \$1,000,000 TF

Deb Streets Jensen

Metropolitan Council

390 N Robert St

St. Paul, MN 55101

Phone: (651) 602-1554

Email: deb.jensen@metc.state.mn.us

Web: <http://www.metrocouncil.org/Parks.aspx>

Appropriation Language

\$1,000,000 the first year is from the trust fund to the Metropolitan Council for grants to acquire at least 133 acres of lands within the approved park unit boundaries of the metropolitan regional park system. This appropriation may not be used to purchase habitable residential

structures. A list of proposed fee title and easement acquisitions must be provided as part of the required work plan. This appropriation must be matched by at least 40 percent of nonstate money that must be committed by December 31, 2015, or the appropriation cancels. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

SNA Acquisition, Restoration, Enhancement and Public Engagement

Subd. 09c \$4,000,000 TF

Peggy Booth

MN DNR

500 Lafayette Rd, Box 25

St. Paul, MN 55155

Phone: (651) 259-5088

Email: peggy.booth@state.mn.us

Web: <http://www.dnr.state.mn.us/snas/index.html>

Appropriation Language

\$4,000,000 the first year is from the trust fund to the commissioner of natural resources to acquire at least 350 acres of lands with high-quality native plant communities and rare features to be established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5, restore and improve at least 550 acres of scientific and natural areas, and provide technical assistance and outreach. A list of proposed acquisitions must be provided as part of the required work plan. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Native Prairie Stewardship and Prairie Bank Easement Acquisition

Subd. 09d \$3,325,000 TF

Judy Schulte

MN DNR

1241 East Bridge Street

Redwood Falls, MN 56283

Phone: (507) 822-0344

Email: judy.schulte@state.mn.us

Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$3,325,000 the first year is from the trust fund to the commissioner of natural resources to acquire native prairie bank easements on at least 675 acres, prepare baseline property assessments, restore and enhance at least 1,000 acres of native prairie sites, and provide technical assistance to landowners. Of this amount, up to \$135,000 must be deposited in a conservation easement stewardship account. Deposits into the conservation easement stewardship account must be made upon closing on conservation easements or at a time otherwise approved in the work plan. A list of proposed easement acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Coordination and Mapping and Conservation Easements

Subd. 09e \$515,000 TF

Kris Larson

Minnesota Land Trust
2345 University Ave W, Ste 400
St. Paul, MN 55114

Phone: (651) 647-9590

Email: klarson@mnland.org

Web: <http://www.mnland.org>

Appropriation Language

\$515,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Minnesota Land Trust for Phase VIII of the Metro Conservation Corridors partnership to provide coordination and mapping for the partnership and to acquire permanent conservation easements on at least 120 acres of strategic ecological landscapes to protect priority natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties. A list of proposed easement acquisitions must be provided as part of the required work plan. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work plan. Up to \$40,000 may be used for

coordination and mapping for the Metro Conservation Corridors. All conservation easements must be perpetual and have a natural resource management plan. A list of proposed easement acquisitions must be provided as part of the required work plan. This appropriation is available June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Strategic Lands Protection

Subd. 09f \$750,000 TF

Robert McGillivray

The Trust for Public Land
2610 University Ave W, Ste 300
St. Paul, MN 55114

Phone: (651) 999-5307

Email: Bob.McGillivray@tpl.org

Web: <http://www.tpl.org>

Appropriation Language

\$750,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with The Trust for Public Land for Phase VIII of the Metro Conservation Corridors partnership to acquire in fee at least 35 acres of high-quality priority state and local natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties. A list of proposed acquisitions must be provided as part of the required work plan. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work plan. This appropriation may not be used to purchase habitable residential structures, unless expressly approved in the work plan. A list of fee title acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Priority Expansion of Minnesota Valley National Wildlife Refuge

Subd. 09g \$500,000 TF

Deborah Loon

Minnesota Valley National Wildlife Refuge Trust Inc
2312 Seabury Ave
Minneapolis, MN 55406

Phone: (612) 801-1935

Email: dloon@mnvalleytrust.org

Web: <http://www.mnvalleytrust.org>

Appropriation Language

\$500,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Minnesota Valley National Wildlife Refuge Trust, Inc. for Phase VIII of the Metro Conservation Corridors partnership to acquire in fee at least 100 acres of priority habitat for the Minnesota Valley National Wildlife Refuge in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties. A list of proposed acquisitions must be provided as part of the required work plan. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards. Expenditures are limited to the identified project corridor areas as defined in the work plan. This appropriation may not be used to purchase habitable residential structures, unless expressly approved in the work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Metro Conservation Corridors Phase VIII - Wildlife Management Area Acquisition

Subd. 09h \$400,000 TF

Patrick Rivers

MN DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5209

Email: pat.rivers@state.mn.us

Web: <http://www.dnr.state.mn.us/index.html>

Appropriation Language

\$400,000 the first year is from the trust fund to the commissioner of natural resources for Phase VIII of the Metro Conservation Corridors partnership to acquire in fee at least 82 acres along the lower reaches of the Vermillion River in Dakota County within the Gores Pool Wildlife Management Area. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards. This appropriation may not be used to purchase habitable residential structures, unless expressly approved in the work plan. This

appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2017

Work Plan (PDF)

Mesabi Trail Development Soudan to Ely - Phase II

Subd. 09i \$1,000,000 TF

Bob Manzoline

St. Louis and Lake Counties Regional Railroad Authority
111 Station Rd
Eveleth, MN 55734

Phone: (218) 744-2653

Email: bmanzoline@rrauth.com

Appropriation Language

\$1,000,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the St. Louis and Lake Counties Regional Railroad Authority for the right-of-way acquisition, design, and construction of segments of the Mesabi Trail, totaling approximately seven miles between Soudan and Ely. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Multi-benefit Watershed Scale Conservation on North Central Lakes

Subd. 09j \$950,000 TF

Lindsey Ketchel

Leech Lake Area Watershed Foundation
PO Box 455
Hackensack, MN 56452

Phone: (218) 675-5773

Email: llawf@tds.net

Web: <http://www.leechlakewatershed.org>

and

Dan Steward

Board of Water and soil Resources

1601 Minnesota Drive
Brainerd MN 56401

Phone: (218) 828-2598

Email: dan.steward@state.mn.us

Web: <http://www.bwsr.state.mn.us>

Appropriation Language

\$950,000 the first year is from the trust fund to the Board of Water and Soil Resources to secure permanent conservation easements on at least 480 acres of high-quality habitat in Crow Wing and Cass Counties. Of this amount, up to \$65,000 must be deposited in a conservation easement stewardship account; and \$54,000 is for an agreement with the Leech Lake Area Watershed Foundation in cooperation with Crow Wing County Soil and Water Conservation District and Cass County Soil and Water Conservation District. Deposits into the conservation easement stewardship account must be made upon closing on conservation easements or at a time otherwise approved in the work plan. A list of proposed easement acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Conservation Easement Assessment and Valuation System Development

Subd. 09k \$250,000 TF

Bonnie Keeler

U of MN
1954 Buford Ave
St. Paul, MN 55108

Phone: (612) 626-2120

Email: keel0041@umn.edu

Web: <http://www.environment.umn.edu/contact-us/directory/bonnie-keeler/>

Appropriation Language

\$250,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to assess the effectiveness of existing conservation easements acquired through state expenditures at achieving their intended outcomes of public value and ecological benefits and to develop a standardized, objective conservation easement valuation system for guiding future state investments in conservation easements to ensure the proposed environmental benefits are being achieved in a cost-effective manner. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Subd. 10 Emerging Issues Account

Emerging Issues Account

Subd. 10 \$1,000,000 TF

Susan Thornton

Legislative-Citizen Commission on Minnesota Resources
100 Rev Dr Martin Luther King Jr Blvd, Rm 65
St. Paul, MN 55155

Phone: (651) 296-6264

Email: susan.thornton@lccmr.leg.mn

Web: <http://www.lccmr.leg.mn>

Appropriation Language

\$1,000,000 the first year is from the trust fund to an emerging issues account authorized in Minnesota Statutes, section 116P.08, subdivision 4, paragraph (d).

Project due to be completed: 6/30/2017

Work Plan

Subd. 11 Administration and Contract Agreement Reimbursement

Legislative-Citizen Commission on Minnesota Resources (LCCMR)

Subd. 11a \$1,072,000 TF

Susan Thornton

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100 Rev Dr Martin Luther King Jr Blvd, Rm 65
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Appropriation Language

\$1,072,000 the first year is from the trust fund to the Legislative-Citizen Commission on Minnesota Resources for administration in fiscal years 2016 and 2017 as provided in Minnesota Statutes, section 116P.09, subdivision 5.

Project due to be completed: 6/30/2017

Work Plan

Contract Agreement Reimbursement

Subd. 11b \$135,000 TF

Amanda Graeber

MN DNR

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St. Paul, MN 55155

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Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$135,000 the first year is from the trust fund to the commissioner of natural resources at the direction of the Legislative-Citizen Commission on Minnesota Resources for expenses incurred for contract agreement reimbursement for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of these funds.

Project due to be completed: 6/30/2017

Work Plan (PDF)

2. FY2017 - MN Laws 2016, Chapter 186, Section 2

2016 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS

M.L. 2016: Chapter 186, Section 2

Process for M.L. 2016 Appropriations

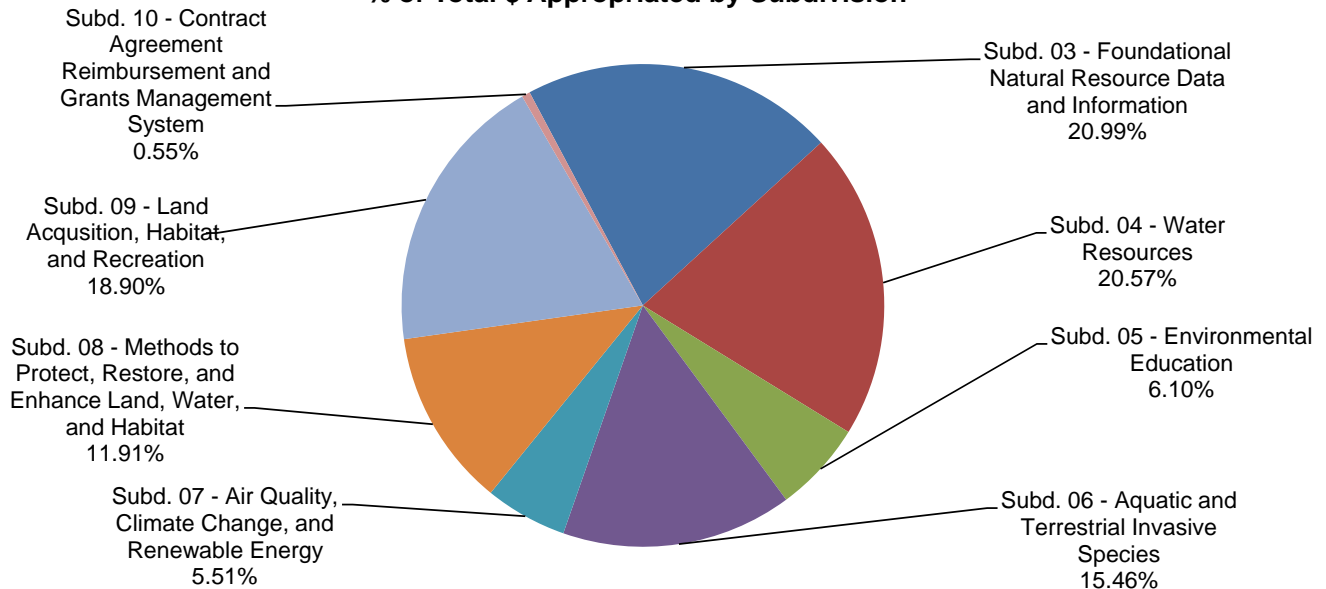
For the FY 2016 and FY 2017 biennium (July 1, 2015 - June 30, 2017), approximately \$46.3 million is available each year (total = \$92,674,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2016 Request for Proposal (RFP) 186 proposals requesting a total of approximately \$131 million were received. Through a competitive multi-step process, 97 of these proposals, requesting a total of \$70.4 million, were chosen to present to the LCCMR and 89 proposals were selected to receive a recommendation for funding to the 2016 MN Legislature. On 05/22/16 the Legislature adopted 79 of the recommendations, including 73 without any changes and 6 at a decreased or increased dollar amount; dropped 10 of the recommendations; and added 7 new appropriations for a total of 86 appropriations. On 05/31/16, 79 of the appropriations, totaling \$37,909,000, were signed into law by the Governor as M.L. 2016, Chapter 186 and 7 appropriations, totaling \$8,428,000, were line-item vetoed.

November 19 & December 9, 2014	2016 Funding Priorities Determined and RFP Adopted
December 16, 2014	2016 RFP Issued
May 11, 2015	2016 RFP Proposal Deadline (Received 185 Proposals totaling \$130,873,618)
September 16, 2015	2016 Selection of Proposals for Presentations
September 29 & 30 and October 1, 6, 7, & 8	2016 Proposal Presentations (Selected 97 proposals totaling \$70,379,775 to present)
October 20, 2015	2016 Allocations Recommendations
November, 2015 - February, 2016	Research Projects Recommended Undergo Peer Review
December 2, 2015	2016 Appropriation Language Review & Adoption
May 22, 2016	Appropriations adopted by MN Legislature
May 31, 2016	Appropriations signed into law by Governor
June 7, 2016	Project work plans approved by LCCMR
July 1, 2016	Projects can begin

Summary of Appropriations by Subdivision

Subdivision	\$ Recommended	# Appropriations
Subd. 03 - Foundational Natural Resource Data and Information	\$7,958,000	17
Subd. 04 - Water Resources	\$7,799,000	23
Subd. 05 - Environmental Education	\$2,312,000	9
Subd. 06 - Aquatic and Terrestrial Invasive Species	\$5,860,000	7
Subd. 07 - Air Quality, Climate Change, and Renewable Energy	\$2,090,000	5
Subd. 08 - Methods to Protect, Restore, and Enhance Land, Water, and Habitat	\$4,515,000	9
Subd. 09 - Land Acquisition, Habitat, and Recreation	\$7,165,000	7
Subd. 10 - Contract Agreement Reimbursement and Grants Management System	\$210,000	2
TOTAL	\$37,909,000	79

% of Total \$ Appropriated by Subdivision

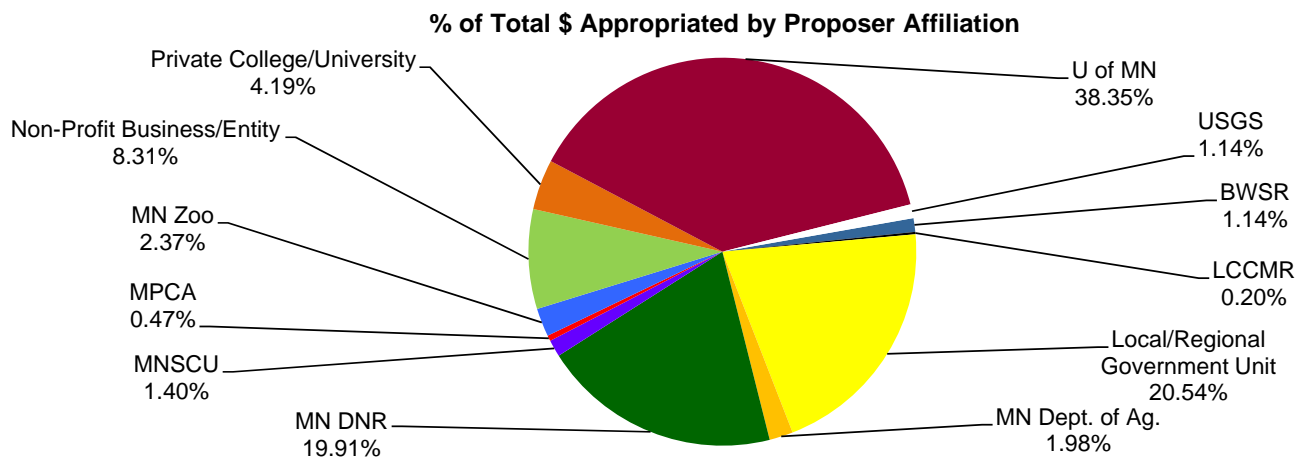


2016 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS

M.L. 2016: Chapter 186, Section 2

Summary of Appropriations by Proposer Affiliation*		
Affiliation Type by Proposer Affiliation	\$ Recommended	# Appropriations
Minnesota Board of Water and Soil Resources (BWSR)	\$433,000	1
Legislative-Citizen Commission on Minnesota Resources (LCCMR)	\$75,000	1
Local/Regional Government Unit	\$7,787,000	11
Minnesota Department of Agriculture (MDA)	\$750,000	1
Minnesota Department of Natural Resources (MN DNR)	\$7,547,000	13
Minnesota State Colleges and Universities (MNSCU)	\$532,000	4
Minnesota Pollution Control Agency (MPCA)	\$180,000	1
Minnesota Zoo (MN Zoo)	\$897,000	2
Non-Profit Business/Entity	\$3,149,000	10
Private College/University	\$1,587,000	2
University of Minnesota (U of MN)	\$14,539,000	32
U.S. Geological Survey (USGS)	\$433,000	1
TOTAL	\$37,909,000	79

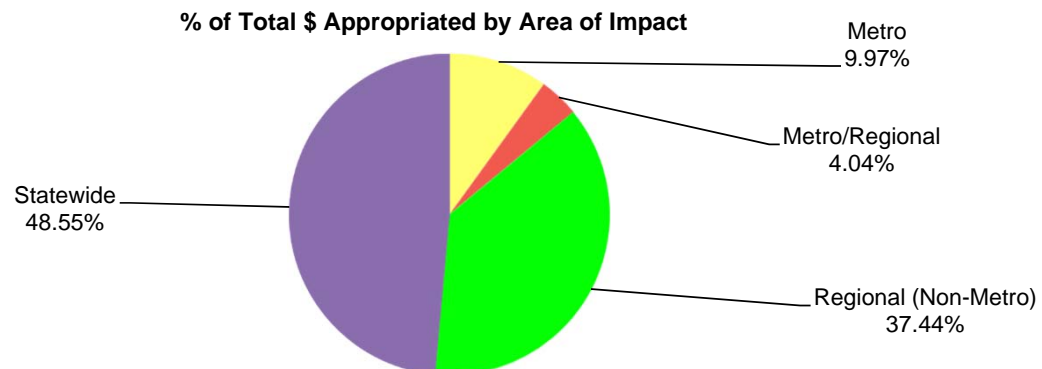
*Dollar amounts based on project manager affiliation listed in the proposal; some proposals have multiple partners with multiple affiliations and dollars requested distributed between them.



Summary of Appropriations by Area of Impact		
Area of Impact	\$ Recommended	# Proposals
Metro*	\$3,778,000	6
Metro/Regional	\$1,533,000	4
Regional (Non-Metro)**	\$14,194,000	30
Statewide	\$18,404,000	39
TOTAL	\$37,909,000	79

* "Metro" region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

** "Regional" means area of impact is less than "Statewide" but includes one or more regions of the state ("Northwest", "Northeast", "Central", "Southwest", or "Southeast") other than the 11-county "Metro" region.





ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

M.L. 2016 Appropriations: Chapter 186, Section 2

SUMMARY OF M.L. 2016 APPROPRIATIONS BY SUBDIVISION (\$37,909,000)

SUBD. 03. Foundational Natural Resource Data and Information: \$7,958,000 – 17 Appropriations

- Collection, analysis, mapping, and dissemination of foundational data and information pertaining to pollinators, prairie and forest ecosystems, lakes, rivers, springs, and wetlands, including the completion of a decade-long effort to update the National Wetlands Inventory for Minnesota.
- Research and analysis to optimize natural resource management practices and conservation strategies for protecting native pollinator species, including bees and imperiled butterflies, and various other wildlife, including birds, small mammals, amphibians, fish, and elk.
- Development and implementation of tools to help guide and prioritize habitat protection and natural resource management in response to environmental change and stressors, including the launch of a new statewide habitat monitoring network, development and piloting of a more cost-efficient forest inventory methodology, and development of tools to assess the relationships between vegetation and ground and surface water quality.
- Research and evaluation of the risks for grassland wildlife, pollinators, butterflies, and game and non-game birds resulting from unintentional exposure to insecticides and other pesticides.

SUBD. 04. Water Resources: \$7,799,000 – 23 Appropriations

- Research and assessment to improve understanding about increasing instances of harmful algal blooms and inform the development of tools for predicting, tracking, and mitigating impacts of harmful algal bloom events.
- Expansion and acceleration of a program to improve water quality and aquatic ecosystem health in streams and rivers through re-establishment of native mussel species.
- Research and analysis initiatives to develop or improve technologies, materials, and techniques for treating or removing a variety of pollutants – including salts, metals, sulfates, pesticides, pharmaceuticals, and excess nutrients – from wastewater, stormwater, agricultural runoff, groundwater, and other polluted water bodies in order to ensure drinking water supply safety and protect aquatic species and water quality.
- Development of various new technologies and methodologies to improve understandings about ground and surface water quality, supply, storage, and flow to inform drinking water protection and management strategies.
- Assessments of the presence, flow, and interaction of bacteria and contaminants – including salts and insecticides – within natural environments to understand impacts on the health of soil and aquatic ecosystems.
- Testing, monitoring, and assessment to quantify and improve agricultural and urban hydrology management practices and related water quality treatment options aimed at reducing soil erosion, improving peak water flow management, and decreasing bacteria and nutrient loading.
- Outreach and coordination of partnership efforts involving citizens and agencies within watersheds to identify and promote implementation of pollution reduction strategies and conservation practices to improve water quality.

SUBD. 05. Environmental Education: \$2,312,000 – 9 Appropriations

- Delivery of hands-on education, training, and mentoring of students, teachers, and community volunteers in conservation practices and environmental stewardship through various initiatives throughout the state, including internships with soil and water conservation districts, service learning at school forests, youth-led community sustainability projects, expansion of the Master Water Steward Program, and classroom learning on topics including habitat and species conservation, water quality, and Dakota Indian environmental principles.
- Development and delivery of a statewide initiative involving interrelated public forums, educational videos, and broadcast television programs focused on outdoor recreation, conservation, and natural resource issues.

SUBD. 06. Aquatic and Terrestrial Invasive Species: \$5,860,000 – 7 Appropriations

- Research and analysis initiatives aimed at preventing, minimizing, and mitigating the threats and impacts posed by invasive species, including expanded support for priority efforts of the Minnesota Invasive Terrestrial Plants and Pests Center, development and evaluation of ballast water treatment systems, evaluation of biocontrol agents for white nose syndrome in bats, and continued evaluation and propagation of Dutch elm disease resistant trees.
- Implementation of innovative invasive species management efforts, including localized targeting of emergent terrestrial invasive species to halt spread and demonstration of carp control techniques at a sub-watershed scale.

SUBD. 07. Air Quality, Climate Change, and Renewable Energy: \$2,090,000 – 5 Appropriations

- Research, analysis, and development of various clean energy technologies and strategies, including thermoelectric energy generation from waste heat, integration of solar energy and wastewater recycling into agricultural facilities, and hydrogen fuel generation from wind power
- Analysis and demonstration of alternatives for meeting localized community energy needs, particularly in low-income areas, through strategies including solar gardens and energy efficiency.

SUBD. 08. Methods to Protect, Restore, and Enhance Land, Water, and Habitat: \$4,515,000 – 9 Appropriations

- Research and analysis of methods for enhancing habitat for pollinators and game birds, including innovative uses of supplementary plantings in urban and agricultural landscapes, improved restoration practices based on how prairie fragments interact, strategies for prescribed burning to maximize habitat benefit, techniques to restore floodplain forests impacted by reed canary grass, and modified approaches to forest management to protect water quality.
- Restoration of uplands, wetlands, and shorelands in the greater metropolitan area and blufflands near Winona.

SUBD. 09. Land Acquisition, Habitat, and Recreation: \$7,165,000 – 7 Appropriations

- Protection and restoration of priority, high quality, and/or unique lands, including 750 acres restored within Minnesota's Scientific and Natural Area system, 500 acres protected by conservation easements in Stearns County, and 200 acres acquired and restored for wellhead protection within the Lincoln Pipestone Rural Water System.
- Expansion of outdoor recreational opportunities through construction and development of the Mesabi Trail, including a trail connection to Tower, and acquisition of 16 acres for a recreational trail and park in Fergus Falls.

SUBD. 10. Administration: \$210,000 – 2 Appropriations

- ENRTF project records system upgrade and project contract agreement reimbursement for non-state entities.

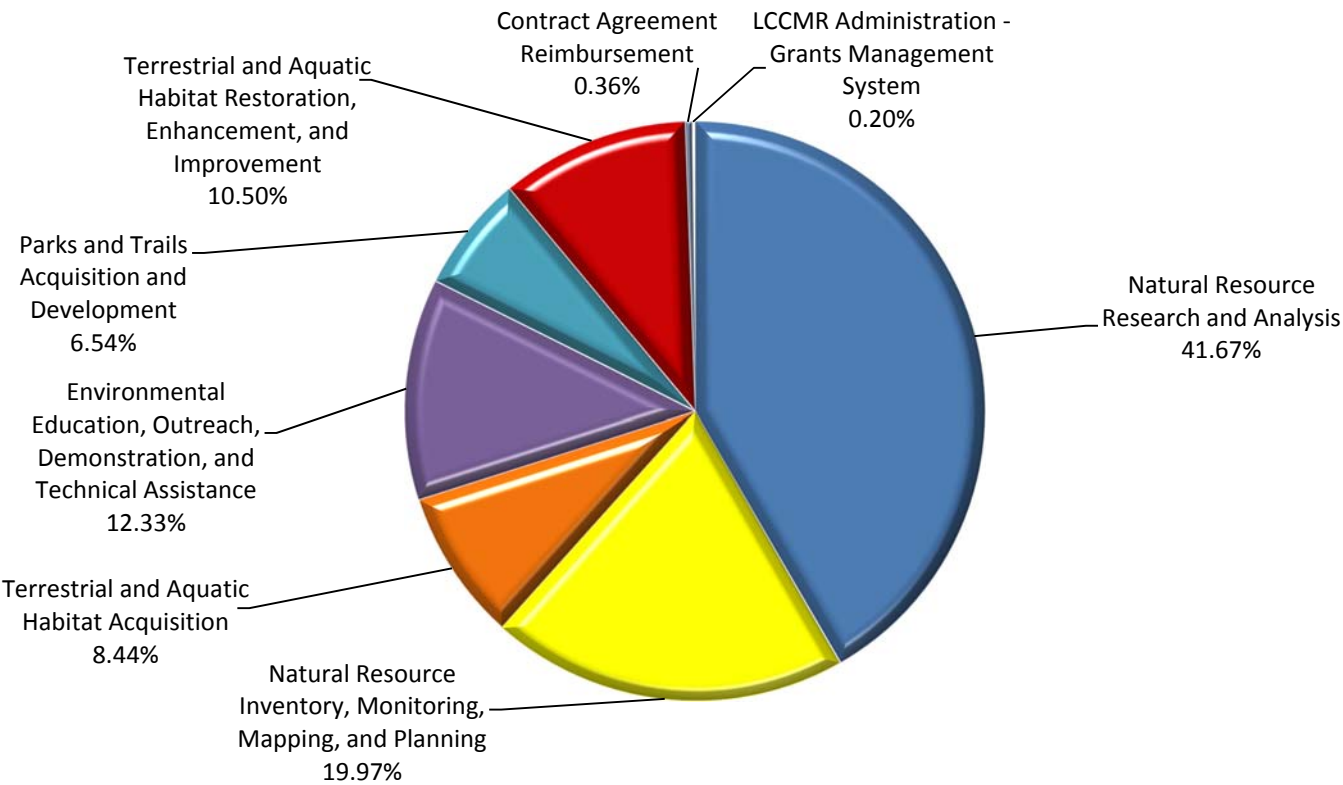


ENVIRONMENT AND NATURAL RESOURCES TRUST FUND
M.L. 2016 Appropriations: Chapter 186, Section 2

SUMMARY OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS FOR ~\$37.9 MILLION

- Natural Resource Research and Analysis: ~\$15.8 million**
Research and analysis efforts that will advance our knowledge about and provide strategies and recommendations for addressing issues relating to terrestrial and aquatic invasive species prevention, control, and mitigation; habitat monitoring and conservation; pollinator, plant, and animal species conservation, management, breeding, and reintroduction; habitat restoration practices; improvement of agricultural and forestry practices; clean energy technologies and strategies; climate change impacts and projections; effects of pesticide and insecticide exposure on wildlife and ecosystems; surface and ground water resources protection and sustainability; harmful algae blooms; drinking water and wastewater treatment; and technologies and processes for preventing and removing water contaminants.
- Natural Resource Inventory, Monitoring, Mapping, and Planning: ~\$7.6 million**
Inventory, monitoring, mapping, and planning efforts to obtain critical information and guide relevant decisions and efforts over time, including completion of the National Wetlands Inventory update for Minnesota; acceleration of a state spring inventory; surveying and monitoring for population distributions of pollinators, mussels, invasive species, and various wildlife; assessments of surface and ground water hydrological processes; implementation of a statewide habitat monitoring network; surveying, monitoring, and modeling of aquatic ecosystems; data collection and planning for the development of a new forest inventory methodology; inventory, assessment, monitoring, and mapping efforts pertaining to stormwater management, agriculture, and forestry practices; inventories of microbes found in ballast water and bacteria found in groundwater; monitoring and mapping of groundwater flow; and planning efforts for potential elk reintroductions, habitat restoration and stewardship, and clean energy investment.
- Environmental Education, Outreach, Demonstration, and Technical Assistance: ~\$4.7 million**
Environmental education, outreach, demonstration, and technical assistance efforts that will engage and educate Minnesotans on topics including ecology, pollinators, plant and wildlife species, invasive species, harmful algae blooms, environmental stewardship and resource sustainability, lead ammunition alternative options, water resources, outdoor recreation, climate change, and habitat protection and restoration; *demonstrate* options for water quality protection practices, water treatment technologies, invasive carp management, alternative agricultural and horticultural practices, and clean energy; and *provide training and technical assistance* on utilizing new natural resource tools and datasets, pollution reduction and wastewater treatment practices, invasive species identification and reporting, and natural resource conservation and management practices and options.
- Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement ~\$4.0 million**
Restoration, enhancement, and improvement activities on an estimated 1,216 acres, including 2.61 miles of shoreline; activities performed will include prescribed burning, soil preparation, seeding, native vegetation installation, woody encroachment removal, invasive species control, and monitoring and evaluation.
- Terrestrial and Aquatic Habitat Acquisition: ~\$3.2 million**
Acquisition of an estimated 710 acres in a combination of fee title (210 acres, including 0.2 miles of shoreline) and conservation easements (500 acres); permanently protected areas will include forests, prairies, grasslands, wetlands, shorelands, and other habitat.
- Parks and Trails Acquisition and Development: ~\$2.5 million**
Acquisition of an estimated 17 acres to create a new trail and park in the City of Fergus Falls; *design and construction* of trails in northern Minnesota, including a six mile segment of the Mesabi Trail and a local trail connection to the Mesabi Trail and new kayak route near the City of Tower.
- Contract Agreement Reimbursement: \$135,000**
Administering of contract agreement reimbursement for projects of non-state entities.
- LCCMR Administration Grants Management System: \$75,000**
To upgrade and modernize the LCCMR project records system and grants management processes.

% OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS



M.L. 2016 Projects

MN Laws 2016, Chapter 186, Section 2 (beginning July 1, 2016)

For the FY 2016 and FY 2017 biennium (July 1, 2015 - June 30, 2017), approximately \$46.3 million is available each year (total = \$92,674,000) for funding from the Environment and Natural Resources Trust Fund (ENRTF). In response to the 2016 Request for Proposal (RFP) 186 proposals requesting a total of approximately \$131 million were received. Through a competitive, multi-step process, 97 of these proposals, requesting a total of \$70.4 million, were chosen to present to the LCCMR and 89 of those proposals were selected to receive a recommendation for funding to the 2016 MN Legislature to collectively receive \$46.3 million in funding from the ENRTF. The Legislature adopted 79 of the recommendations, including 73 without any changes and 6 at a decreased or increased dollar amount; dropped 10 of the recommendations; and added 7 new appropriations for a total of 86 appropriations. On 05/31/16, 79 of the appropriations, totaling \$37,909,000, were signed into law by the Governor and 7 appropriations, totaling \$8,428,000, were line-item vetoed.

LINKS TO:

- [PDF list](#) of the M.L. 2016 projects adopted by the Legislature and signed by the Governor.
- [Summary](#) of appropriations and expected outcomes
- Additional information on LCCMR's [M.L. 2016 proposal and funding process](#)

NOTE: For all projects, [contact](#) us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 03 Foundational Natural Resource Data and Information

03a Data-Driven Pollinator Conservation Strategies - **RESEARCH**

03b Native Bee Surveys in Minnesota Prairie and Forest Habitats

03c1 Prairie Butterfly Conservation, Research, and Breeding - Phase II - **RESEARCH**

03c2 Prairie Butterfly Conservation, Research, and Breeding - Phase II - **RESEARCH**

03d Statewide Monitoring Network for Changing Habitats in Minnesota

03e Completing National Wetland Inventory Update for Minnesota

03f Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge

03g Sentinel Lakes Monitoring and Data Synthesis - Phase III - **RESEARCH**

03h State Spring Inventory for Resource Management and Protection - Phase II

03i Enhancing Understanding of Minnesota River Aquatic Ecosystem

- 03j Improving Brook Trout Stream Habitat through Beaver Management
- 03k Evaluate Temperature, Streamflow, and Hydrogeology Impact on Brook Trout Habitat
- 03l Restoration of Elk to Northeastern Minnesota
- 03m Game and Nongame Bird Pesticide Exposure - **RESEARCH**
- 03n Evaluating Insecticide Exposure Risk for Grassland Wildlife on Public Lands - **RESEARCH**
- 03o Development of Innovative Cost-Saving Methodology for Forest Inventory
- 03p Evaluation of Tree Retention Guidelines Pertaining to Wildlife
- 03q Determine Impacts on Wildlife From Emerald Ash Borer Infection of Black Ash Forests - **RESEARCH**
- 03r ~~Aggregate Mapping~~ - GOVERNOR VETO
- 03s ~~Pineland Sands Lands and Water Study~~ - GOVERNOR VETO
- 03t ~~Natural Resources Research Institute~~ - GOVERNOR VETO

Subd. 04 Water Resources

- 04a Tracking and Preventing Harmful Algal Blooms - **RESEARCH**
- 04b Assessing the Increasing Harmful Algal Blooms in Minnesota Lakes - **RESEARCH**
- 04c Restoring Native Mussels in Streams and Lakes
- 04d Assessing Techniques for Eliminating Contaminants to Protect Native Fish and Mussels - **RESEARCH**
- 04e Assessing Neonicotinoid Insecticide Effects on Aquatic and Soil Communities - **RESEARCH**
- 04f Bacterial Assessment of Groundwater Supplies Used for Drinking Water - **RESEARCH**
- 04g Understanding Bedrock Fracture Flow to Improve Groundwater Quality
- 04h Protection of State's Confined Drinking Water Aquifers - Phase II - **RESEARCH**
- 04i Assessment of Surface Water Quality With Satellite Sensors - **RESEARCH**
- 04j Development of Innovative Sensor Technologies for Water Monitoring - **RESEARCH**
- 04k Wastewater Treatment Process Improvements - **RESEARCH**
- 04l Membrane-Based Process for Decentralized Drinking Water Production - **RESEARCH**
- 04m Analyzing Alternative for Municipal Wastewater Treatment
- 04n Understanding Impacts of Salt Usage on Minnesota Lakes, Rivers, and Groundwater - **RESEARCH**
- 04o Microbes for Salt and Metal Removal - **RESEARCH**
- 04p Engineered Biofilter for Sulfate and Metal Removal from Mine Waters - **RESEARCH**
- 04q Developing Biosponge Technology for Removal of Nitrates from Minnesota Waters - **RESEARCH**
- 04r Morrison County Performance Drainage and Hydrology Management
- 04s Agricultural and Urban Runoff Water Quality Treatment Analysis - Phase II
- 04t Surface Water Bacterial Treatment System Pilot Project

- 04u Assessing Effectiveness of Wetland Restorations for Improved Water Quality
- 04v Integrating Targeted Watershed Planning Tools with Citizen Involvement - **RESEARCH**
- 04w Roseau Lake Watershed Targeted Water Quality Improvement

Subd. 05 Environmental Education

- 05a Minnesota Conservation Apprentice Academy
- 05b School Forests Outdoor Classrooms
- 05c Youth-Led Sustainability Projects in 50 Minnesota Communities - Phase III
- 05d New Prairie Sportsman Statewide Broadcast Video Project
- 05e Wildlife and Habitat Conservation Education for Southwest Minnesota High Schools
- 05f Standards-Based Dakota Indian Land Stewardship Education
- 05g Wolf Management Education in the Classroom - Phase II
- 05h Master Water Steward Program Expansion
- 05i Promoting Water Quality Stewardship through Student Mentoring and River Monitoring
- 05j ~~Wildlife Science Center~~ - GOVERNOR VETO

Subd. 06 Aquatic and Terrestrial Invasive Species

- 06a Minnesota Invasive Terrestrial Plants and Pests Center - Phase III - **RESEARCH**
- 06b Developing Membrane Filtration System to Treat Lake Superior Ballast Water - **RESEARCH**
- 06c Advancing Microbial Invasive Species Monitoring from Ballast Discharge - **RESEARCH**
- 06d Biological Control of White Nose Syndrome in Bats - Phase II - **RESEARCH**
- 06e1 Elimination of Target Invasive Plant Species - Phase II
- 06e2 Elimination of Target Invasive Plant Species - Phase II
- 06f Dutch Elm Disease Resistance - Phase II - **RESEARCH**
- 06g Invasive Carp Management Research in Lake Nokomis Subwatershed

Subd. 07 Air Quality, Climate Change, and Renewable Energy

- 07a Community Solar Garden Installation
- 07b Waste Heat Recovery with Efficient Thermoelectric Energy Generators - **RESEARCH**
- 07c Hydrogen Fuel from Wind-Produced Renewable Ammonia - **RESEARCH**
- 07d Utilization of Dairy Farm Wastewater for Sustainable Production
- 07e Solar Energy Utilization for Minnesota Swine Farms - Phase II

Subd. 08 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

- 08a Bee Pollinator Habitat Enhancement - Phase II

- 08b Measuring Pollen and Seed Dispersal for Prairie Fragment Connectivity - **RESEARCH**
- 08c Establishment of Permanent Habitat Strips Within Row Crops
- 08d Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species - **RESEARCH**
- 08e Controlling Reed Canary Grass to Regenerate Floodplain Forest - **RESEARCH**
- 08f Forest Management for Mississippi River Drinking Water Protection
- 08g Upland, Wetland, and Shoreline Restoration in Greater Metropolitan Area
- 08h Bluffland Restoration and Monitoring in Winona
- 08i Champlin Mill Pond Shoreland Restoration
- 08j ~~Pollinator Highway Demonstration Projects~~ - GOVERNOR VETO

Subd. 09 Land Acquisition, Habitat and Recreation

- 09a Scientific and Natural Area Acquisition and Restoration
- 09b Minnesota Point Pine Forest Scientific and Natural Area Acquisition
- 09c Conservation Easements in the Avon Hills - Phase III
- 09d Lincoln Pipestone Rural Water System Acquisition for Wellhead Protection
- 09e Mesabi Trail Segment from Highway 135 to Town of Embarrass
- 09f Tower Historic Harbor Trail Connections
- 09g Otter Tail River Recreational Trail Acquisition
- 09h ~~State Park and Trail Enhancement~~ - GOVERNOR VETO
- 09i ~~Douglas County Regional Park and Trail Planning, Development or Acquisitions~~ - GOVERNOR VETO

Subd. 10 Administration

- 10a Contract Agreement Reimbursement
- 10b Grants Management System

Funding Source:

Environment and Natural Resources Trust Fund (TF)

MN Laws 2016, Chapter 186, Section 2

Subd. 03 Foundational Natural Resource Data and Information

Data-Driven Pollinator Conservation Strategies

Subd. 03a \$520,000 TF

Daniel Cariveau

U of MN

1980 Folwell Ave

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Web: <http://www.dancariveau.com>

RESEARCH

Appropriation Language

\$520,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to improve understanding of the relationships and interactions between native bee pollinators and rare and declining plant species and to determine optimal placement and species plantings for pollinator habitat in order to develop guidelines for planning, designing, and planting pollinator habitat. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Native Bee Surveys in Minnesota Prairie and Forest Habitats

Subd. 03b \$600,000 TF

Crystal Boyd

MN DNR

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Web: <http://www.dnr.state.mn.us/mbs/grasslandbees.html>

Appropriation Language

\$600,000 the second year is from the trust fund to the commissioner of natural resources to continue to assess the current status and distribution of native bee pollinators in Minnesota by expanding surveys into the prairie-forest border region and facilitating interagency collaboration and public outreach on pollinators. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Prairie Butterfly Conservation, Research, and Breeding - Phase II

Subd. 03c \$750,000 TF

Subd. 03c1 \$421,000 TF

Erik Runquist

Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

Phone: (952) 431-9200

Email: erik.runquist@state.mn.us

Web: <http://www.mnzoo.org>

Subd. 03c2 \$329,000 TF

Robert Dana

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RESEARCH

Appropriation Language

\$750,000 the second year is from the trust fund. Of this amount, \$421,000 is to the Minnesota Zoological Garden and \$329,000 is to the commissioner of natural resources in collaboration with the United States Fish and Wildlife Service to continue efforts to prevent the extinction of imperiled native Minnesota butterfly species through breeding, research, field surveys, and potential reintroduction. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan - Runquist (Subd. 03c1) (PDF)

Work Plan - Dana (Subd. 03c2) (PDF)

Statewide Monitoring Network for Changing Habitats in Minnesota

Subd. 03d \$500,000 TF

Hannah Texler

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Web: <http://www.dnr.state.mn.us/mbs/index.html>

Appropriation Language

\$500,000 the second year is from the trust fund to the commissioner of natural resources to develop a consolidated statewide network of permanent habitat monitoring sites in prairies, forests, and wetlands to help guide and prioritize habitat protection and management decisions in response to environmental change. The design and testing methodologies of monitoring plots must address the status of pollinators and pollination. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Completing National Wetland Inventory Update for Minnesota

Subd. 03e \$1,500,000 TF

Steve Kloiber

MN DNR

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St. Paul, MN 55155

Phone: (651) 259-5164

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Web: http://www.dnr.state.mn.us/eco/wetlands/nwi_proj.html

Appropriation Language

\$1,500,000 the second year is from the trust fund to the commissioner of natural resources to complete the update and enhancement of wetland inventory maps for counties in central and northwestern Minnesota. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge
Subd. 03f \$212,000 TF

Gene-Hua Ng (Crystal)

U of MN
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Minneapolis, MN 55455

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Email: gcng@umn.edu

RESEARCH

Appropriation Language

\$212,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop a statewide assessment tool to help understand the relationship between vegetation growth and impacts on groundwater recharge under changing land use and climate. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Sentinel Lakes Monitoring and Data Synthesis - Phase III

Subd. 03g \$401,000 TF

Melissa Trembl

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Web: <http://www.dnr.state.mn.us/fisheries/management/research.html>

Appropriation Language

\$401,000 the second year is from the trust fund to the commissioner of natural resources for the third and final phase of a monitoring and multidisciplinary research effort on 25 sentinel lakes in Minnesota, which will integrate and synthesize previously collected data to enhance understanding of how lakes respond to large-scale environmental stressors and provide for

improved ability to predict and respond to lake changes for water and fisheries management. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

State Spring Inventory for Resource Management and Protection - Phase II

Subd. 03h \$370,000 TF

Jim Berg

MN DNR

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St. Paul, MN 55155

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Web: <http://www.dnr.state.mn.us/waters/index.html>

Appropriation Language

\$370,000 the second year is from the trust fund to the commissioner of natural resources to continue a systematic inventory of springs statewide to provide fundamental data needed to maintain spring flows and protect groundwater-dependent resources. Increased outreach to the public and other entities must be conducted to assist in the identification, documentation, and publication of spring locations. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Enhancing Understanding of Minnesota River Aquatic Ecosystem

Subd. 03i \$500,000 TF

Tony Sindt

MN DNR

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Hutchinson, MN 55350

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Web: <http://www.dnr.state.mn.us/fishwildlife/index.html>

Appropriation Language

\$500,000 the second year is from the trust fund to the commissioner of natural resources to accelerate collection of baseline data to enhance understanding of the Minnesota River ecosystem, measure future impacts of changing climate and landscapes on the aquatic ecosystem, and guide future management efforts. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Improving Brook Trout Stream Habitat through Beaver Management

Subd. 03j \$225,000 TF

Andrew Hafs

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Bemidji, MN 56601

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Web: <http://www.bemidjistate.edu/directory/facstaff/ahafs/>

Appropriation Language

\$225,000 the second year is from the trust fund to the Board of Trustees of the Minnesota State Colleges and Universities system for Bemidji State University to quantify how beaver activity influences habitat quality in streams for brook trout in northeastern Minnesota in order to improve current and future management practices. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Evaluate Temperature, Streamflow, and Hydrogeology Impact on Brook Trout Habitat

Subd. 03k \$115,000 TF

Bob Tipping

Minnesota Geological Survey
2609 Territorial Rd
St. Paul, MN 55114

Phone: (612) 626-5437

Email: tippi001@umn.edu

Web: <http://www.mngs.umn.edu/index.html>

Appropriation Language

\$115,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Geological Survey to evaluate links between southeastern Minnesota stream temperatures, trout habitat, and bedrock hydrogeology to improve trout stream management. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Restoration of Elk to Northeastern Minnesota

Subd. 03I \$300,000 TF

James Forester

U of MN

2003 Upper Buford Cir, 135 Skok Hall

St. Paul, MN 55108

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Email: jdforest@umn.edu

Web: <http://fwcb.cfans.umn.edu/forester/index.html>

RESEARCH

Appropriation Language

\$300,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota in cooperation with the Fond du Lac Band and Rocky Mountain Elk Foundation to determine the habitat suitability and levels of public support for restoring elk to northeastern Minnesota. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Game and Nongame Bird Pesticide Exposure

Subd. 03m \$349,000 TF

Julia Ponder

U of MN

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St. Paul, MN 55108

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Email: ponde003@umn.edu

Web: <http://www.TheRaptorCenter.org>

RESEARCH

Appropriation Language

\$349,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate the potential risk to game and nongame birds from exposure to neonicotinoid-treated agricultural seeds. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Evaluating Insecticide Exposure Risk for Grassland Wildlife on Public Lands

Subd. 03n \$250,000 TF

Nicole Davros

MN DNR

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Madelia, MN 56062

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Web: <http://www.dnr.state.mn.us/wildlife/index.html>

Appropriation Language

\$250,000 the second year is from the trust fund to the commissioner of natural resources to evaluate exposure risks of grassland wildlife to soybean aphid insecticides, to guide grassland management in farmland regions of Minnesota for the protection of birds, beneficial insects, and other grassland wildlife. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Development of Innovative Cost-Saving Methodology for Forest Inventory

Subd. 03o \$800,000 TF

Dennis Kepler
MN DNR
483 Peterson Rd
Grand Rapids, MN 55744

Phone: (218) 322-2512
Email: dennis.kepler@state.mn.us

RESEARCH

Appropriation Language

\$800,000 the second year is from the trust fund to the commissioner of natural resources to develop and pilot a new and more cost-effective methodology for an enhanced stand-based forest inventory, with the goal of extending the methodology statewide. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Evaluation of Tree Retention Guidelines Pertaining to Wildlife

Subd. 03p \$232,000 TF

Gerald Niemi
U of MN - NRRRI
5013 Miller Trunk Hwy
Duluth, MN 55811

Phone: (218) 720-4270
Email: gniemi@nrri.umn.edu
Web: <http://www.nrri.umn.edu>

RESEARCH

Appropriation Language

\$232,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute in Duluth to assess the effectiveness of the Minnesota Forest Resources Council tree retention guidelines in sustaining Minnesota's wildlife populations, by quantifying and evaluating the impacts on birds, small mammals, and amphibian diversity. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Determine Impacts on Wildlife From Emerald Ash Borer Infection of Black Ash Forests

Subd. 03q \$334,000 TF

Gerald Niemi

U of MN - NRRI

5013 Miller Trunk Hwy

Duluth, MN 55811

Phone: (218) 720-4270

Email: gniemi@nrri.umn.edu

Web: <http://www.nrri.umn.edu>

Appropriation Language

\$334,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute in Duluth to assess impacts of emerald ash borer and adaptive management on wildlife diversity in black ash forests and to develop recommendations to mitigate wildlife impacts. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

GOVERNOR VETO

~~Aggregate Mapping~~

~~Subd. 03r \$1,500,000 TF~~

~~TBD~~

~~MN DNR~~

~~500 Lafayette Rd~~

~~St. Paul, MN 55155~~

~~Phone:~~ ~~TBD~~

~~Email:~~ ~~TBD~~

~~Web:~~ ~~<http://www.dnr.state.mn.us/eco/mcbs/index.html>~~

~~Appropriation Language~~

~~\$1,500,000 the second year is from the trust fund to the commissioner of natural resources to map the extent and quality of aggregate resources in counties that have not previously been mapped. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.~~

~~Project due to be completed: 6/30/2019~~

~~Work Plan: PENDING~~

GOVERNOR VETO

~~Pineland Sands Lands and Water Study~~

~~Subd. 03s — \$1,500,000 TF~~

~~TBD~~

~~MN DNR~~

~~500 Lafayette Rd~~

~~St. Paul, MN 55155~~

~~Phone: TBD~~

~~Email: TBD~~

~~Web: <http://www.dnr.state.mn.us/eco/mcbs/index.html>~~

Appropriation Language

~~\$1,500,000 the second year is from the trust fund to the commissioner of natural resources to study the impact of changes in land use from forest land to irrigated agriculture in the Pineland Sands aquifer along the Crow Wing River. The commissioner must notify the public about the study and hold an open house in the study area to inform the community on potential impacts to surface water and groundwater in the area. This appropriation is available until June 30, 2021, and is not subject to Minnesota Statutes, sections 116P.05, subdivision 2, paragraph (b), and 116P.09, subdivision 4. The commissioner must submit or present a status update on the study to the chairs and ranking minority members of the house of representatives and senate committees and divisions with jurisdiction over the environment and natural resources by January 15, 2017.~~

~~Project due to be completed: 6/30/2021~~

~~Work Plan: Not required per exemption granted in MN Laws 2016, Chp. 186, Sec. 2, Subd. 3(s).~~

GOVERNOR VETO

~~Natural Resources Research Institute~~

~~Subd. 03t — \$1,100,000 TF~~

~~TBD~~

~~U of MN — NRRI~~

~~5013 Miller Trunk Hwy~~

~~Duluth, MN 55811~~

~~Phone: TBD~~

Email: TBD

Web: <http://www.nrri.umn.edu>

Appropriation Language

~~\$1,100,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for academic and applied research through MnDRIVE at the Natural Resources Research Institute for projects that include, but are not limited to, the creation of a portfolio of waterborne sulfate reduction technologies and the development of technologies for current and emerging environmental and natural resources opportunities. This appropriation is available until June 30, 2018, and is not subject to Minnesota Statutes, section 116P.05, subdivision 2.~~

Project due to be completed: ~~6/30/2018~~

Work Plan: PENDING

Subd. 04 Water Resources

Tracking and Preventing Harmful Algal Blooms

Subd. 04a \$500,000 TF

Daniel Engstrom

Science Museum of Minnesota
St. Croix Watershed Research Station, 16910 152nd St N
Marine on St Croix, MN 55047

Phone: (651) 433-5953

Email: dre@smm.org

Web: <http://www.smm.org/scwrs/>

RESEARCH

Appropriation Language

\$500,000 the second year is from the trust fund to the Science Museum of Minnesota for the St. Croix Watershed Research Station to identify species composition and timing of harmful algal blooms, understand the causes of bloom development in individual lakes, and determine how nutrients and climate interact to increase harmful algae outbreaks. This work must be done in cooperation with the University of Minnesota and the Minnesota Pollution Control Agency. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessing the Increasing Harmful Algal Blooms in Minnesota Lakes

Subd. 04b \$270,000 TF

Miki Hondzo

U of MN - St. Anthony Falls Laboratory
2 Third Ave SE
Minneapolis, MN 55414

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Email: mhondzo@umn.edu

Web: <http://www.safl.umn.edu>

RESEARCH**Appropriation Language**

\$270,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Saint Anthony Falls Laboratory to investigate lake processes and meteorological conditions triggering algal blooms and toxin production, develop models for tracking blooms, and provide outreach on the prediction, detection, and impacts of mitigation of algal bloom events. This work must be done in cooperation with the St. Croix Watershed Research Station of the Science Museum of Minnesota and the Minnesota Pollution Control Agency. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Restoring Native Mussels in Streams and Lakes

Subd. 04c \$600,000 TF

Mike Davis

MN DNR
2109 Lakeshore Dr N
Lake City, MN 55041

Phone: (507) 251-4116

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Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$600,000 the second year is from the trust fund to the commissioner of natural resources in cooperation with the Minnesota Zoological Garden for a statewide mussel program to rear, restore, and re-establish native mussel species in streams and rivers. This appropriation is

available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessing Techniques for Eliminating Contaminants to Protect Native Fish and Mussels

Subd. 04d \$287,000 TF

Kristine Wammer

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St. Paul, MN 55105

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Email: khwammer@stthomas.edu

Web: <http://www.stthomas.edu/chemistry/faculty/wammer.htm>

RESEARCH

Appropriation Language

\$287,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the University of St. Thomas to evaluate the use of ultraviolet treatment of wastewater to remove certain commonly detected wastewater contaminants, in order to reduce the contaminants' toxicity to native fish and mussels. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessing Neonicotinoid Insecticide Effects on Aquatic and Soil Communities

Subd. 04e \$400,000 TF

William Arnold

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RESEARCH

Appropriation Language

\$400,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to identify neonicotinoid insecticide breakdown components produced in water and plant leaves and assess their toxicity to soil and aquatic species and related biotic communities. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Bacterial Assessment of Groundwater Supplies Used for Drinking Water

Subd. 04f \$299,000 TF

Raymond Hozalski

U of MN

500 Pillsbury Dr SE

Minneapolis, MN 55455

Phone: (612) 626-9650

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RESEARCH**Appropriation Language**

\$299,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to characterize and analyze bacterial communities in Minnesota groundwater used as drinking water supplies and link the microbiological data to other water quality indicators for drinking water supply safety. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Understanding Bedrock Fracture Flow to Improve Groundwater Quality

Subd. 04g \$183,000 TF

Anthony Runkel

U of MN - MN Geological Survey

2609 Territorial Rd

St. Paul, MN 55114

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Email: runke001@umn.edu

Web: <http://www.mngs.umn.edu/>

Appropriation Language

\$183,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Geological Survey to use new techniques of borehole testing and rock fracture mapping in the Twin Cities metropolitan area to achieve a better understanding of groundwater flow through fractured bedrock, in order to improve groundwater management. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Protection of State's Confined Drinking Water Aquifers - Phasell

Subd. 04h \$433,000 TF

Jared Trost

US Geological Survey
2280 Woodale Dr
Mounds View, MN 55112

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Web: <http://mn.water.usgs.gov/index.html>

RESEARCH**Appropriation Language**

\$433,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the United States Geological Survey to continue to test methods of defining properties of confined drinking water aquifers, in order to improve water management. This appropriation is not subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Assessment of Surface Water Quality With Satellite Sensors

Subd. 04i \$345,000 TF

Jacques Finlay

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1987 Upper Buford Cir, 100 Ecology Bldg
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Web: <http://www.cbs.umn.edu/lab/finlay>

RESEARCH

Appropriation Language

\$345,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for a statewide assessment of water quality using new satellite sensors for high frequency measurement of major water quality indicators in lakes and rivers. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Development of Innovative Sensor Technologies for Water Monitoring

Subd. 04j \$509,000 TF

Tianhong Cui

U of MN

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RESEARCH

Appropriation Language

\$509,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop inexpensive and efficient sensitive sensors and wireless sensor networks for continuous monitoring of contaminants in lakes and rivers in Minnesota. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Wastewater Treatment Process Improvements

Subd. 04k \$398,000 TF

Timothy LaPara

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Web: <http://www.ce.umn.edu/people/faculty/lapara/index>

RESEARCH

Appropriation Language

\$398,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to characterize and quantify the nutrient-removing microorganisms used for municipal wastewater treatment, in order to improve the process used to reduce total nitrogen discharge. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Membrane-Based Process for Decentralized Drinking Water Production

Subd. 04I \$191,000 TF

Santiago Romero-Vargas Castrillón

U of MN
Department of Civil, Environmental, and Geo- Engineering
Minneapolis, MN 55455

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Web: <http://www.cege.umn.edu/directory/faculty-directory/romerovargas.html>

Appropriation Language

\$191,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop a low-energy use, membrane-based treatment technology to produce drinking water locally from surface waters by removing heavy metals and contaminants of emerging concern, including pesticides and pharmaceuticals. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Analyzing Alternative for Municipal Wastewater Treatment

Subd. 04m \$180,000 TF

Scott Kyser

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St. Paul, MN 55155

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RESEARCH

Appropriation Language

\$180,000 the second year is from the trust fund to the commissioner of the Minnesota Pollution Control Agency to analyze alternatives for improved treatment of sulfate and salty parameters at municipal wastewater plants to inform the development and implementation of wild rice, sulfate, and other water quality standards. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Understanding Impacts of Salt Usage on Minnesota Lakes, Rivers, and Groundwater

Subd. 04n \$497,000 TF

John Gulliver

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2 Third Ave SE
Minneapolis, MN 55414

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RESEARCH

Appropriation Language

\$497,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to quantify the current water-softening salt loads in Minnesota lakes, rivers, and groundwater, assess alternative water-softening materials and methods, and quantify the transport of de-icing and water-softening salt through the soil. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Microbes for Salt and Metal Removal

Subd. 04o \$596,000 TF

Daniel Bond

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RESEARCH

Appropriation Language

\$596,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to continue to research the potential of recently discovered microbes from Soudan Iron Mine in northern Minnesota for removing salts and metals from groundwater and surface water resources. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Engineered Biofilter for Sulfate and Metal Removal from Mine Waters

Subd. 04p \$440,000 TF

Sebastian Behrens

U of MN

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RESEARCH

Appropriation Language

\$440,000 the second year is from the trust fund to the Board of Regents of the University of

Minnesota to develop an efficient, low-cost, biomass-derived adsorbent material for use in bioactive filters able to remove sulfate and metals from mining-impacted waters. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.
Project due to be completed: 6/30/2019

Work Plan (PDF)

Developing Biosponge Technology for Removal of Nitrates from Minnesota Waters

Subd. 04q \$198,000 TF

Lawrence Wackett

U of MN
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St. Paul, MN 55108

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Email: wacke003@umn.edu

Appropriation Language

\$198,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to adapt and test an inexpensive biosponge technology for its effectiveness at removing nitrates from drinking water. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Morrison County Performance Drainage and Hydrology Management

Subd. 04r \$209,000 TF

Helen McLennan

Morrison SWCD
16776 Heron Rd
Little Falls, MN 56345

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Email: helen.mclennan@mn.nacdnet.net

Appropriation Language

\$209,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Morrison Soil and Water Conservation District to conduct an assessment of drainage infrastructure, in order to develop hydrology restoration priorities and a

countywide performance drainage ordinance to address land use-change impacts to the hydrogeology. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Agricultural and Urban Runoff Water Quality Treatment Analysis - Phase II

Subd. 04s \$110,000 TF

Craig Austinson

Blue Earth County Drainage Authority
204 Fifth St S
Mankato, MN 56001

Phone: (507) 304-4253

Email: Craig.Austinson@blueearthcountymn.gov

Web: <http://www.co.blue-earth.mn.us>

Appropriation Language

\$110,000 the second year is from the trust fund to the Board of Water and Soil Resources for an agreement with the Blue Earth County Drainage Authority to continue monitoring a model demonstration for storage and treatment options in drainage systems designed to improve agricultural and urban water quality by reducing soil erosion, peak water flows, and nutrient loading. This appropriation is available until June 30, 2021, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2021

Work Plan (PDF)

Surface Water Bacterial Treatment System Pilot Project

Subd. 04t \$500,000 TF

Brian Corcoran

Vadnais Lake Area Water Management Organization
800 County Rd E
Vadnais Heights, MN 55127

Phone: (651) 204-6075

Email: brian.corcoran@vlawmo.org

Web: <http://www.vlawmo.org>

Appropriation Language

\$500,000 the second year is from the trust fund to the commissioner of natural resources for

an agreement with Vadnais Lake Area Water Management Organization to reduce bacteria and nutrient loads to Vadnais Lake, a drinking water supply reservoir, through implementation and evaluation of a subsurface constructed wetland as a best management practice for potential statewide use. The Vadnais Lake Area Water Management Organization must consider contracting with the University of Minnesota Department of Civil, Environmental, and Geo-Engineering to evaluate the effectiveness of the pilot treatment system so that it maximizes benefits and can be replicated elsewhere. This appropriation is available until June 30, 2021, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2021

Work Plan (PDF)

Assessing Effectiveness of Wetland Restorations for Improved Water Quality

Subd. 04u \$420,000 TF

Jacques Finlay

U of MN

1987 Upper Buford Cir, 100 Ecology Bldg

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Web: <http://www.cbs.umn.edu/lab/finlay>

RESEARCH

Appropriation Language

\$420,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to quantify the environmental benefits of sediment removal and native plant communities in wetland restorations by measuring resulting reductions in nitrogen and phosphorus delivery to groundwater and surface water. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Integrating Targeted Watershed Planning Tools with Citizen Involvement

Subd. 04v \$169,000 TF

Kimberly Musser

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Mankato, MN 56001

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Web: <http://mrbdc.mnsu.edu/>

Appropriation Language

\$169,000 the second year is from the trust fund to the Board of Trustees of the Minnesota State Colleges and Universities system for the Water Resources Center at Minnesota State University, Mankato, to use geographic information system (GIS) prioritization and modeling tools to develop pollution reduction strategies in five priority subwatersheds in the Le Sueur River watershed and to promote implementation of the reduction strategies through citizen involvement and outreach. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Roseau Lake Watershed Targeted Water Quality Improvement

Subd. 04w \$65,000 TF

Henry Van Offelen

MN DNR

Tower Rd N

Detroit Lakes, MN 56501

Phone: (218) 846-8406

Email: henry.van.offelen@state.mn.us

Appropriation Language

\$65,000 the second year is from the trust fund to the commissioner of natural resources to develop targeted water quality improvements for the Roseau Lake watershed by coordinating with partner agencies to identify the top priority field scale best management and conservation practices to implement in the region.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Subd. 05 Environmental Education

Minnesota Conservation Apprentice Academy

Subd. 05a \$433,000 TF

Jenny Gieseke

Board of Water and Soil Resources

520 Lafayette Rd
St. Paul, MN 55155

Phone: (507) 381-3131

Email: jenny.gieseke@state.mn.us

Web: <http://www.bwsr.state.mn.us>

Appropriation Language

\$433,000 the second year is from the trust fund to the Board of Water and Soil Resources in cooperation with Conservation Corps Minnesota and Iowa for the final phase of a program to train and mentor future conservation professionals by providing apprenticeship service opportunities with local soil and water conservation districts in Minnesota. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

School Forests Outdoor Classrooms

Subd. 05b \$440,000 TF

Amy Kay Kerber

MN DNR

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St. Paul, MN 55155

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Web: <http://www.mndnr.gov/schoolforest>

Appropriation Language

\$440,000 the second year is from the trust fund to the commissioner of natural resources in cooperation with Conservation Corps Minnesota and Iowa to renovate and restore 60 school forests and train students, teachers, school district facility staff, and community volunteers to be long-term stewards of the school forests and provide education and service learning experiences at school forest sites. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Youth-Led Sustainability Projects in 50 Minnesota Communities - Phase III

Subd. 05c \$400,000 TF

Shelli-Kae Foster

Prairie Woods Environmental Learning Center
12718 10th Street NE
Spicer, MN 56288

Phone: (320) 441-9254

Email: Shelli-kae.Foster@co.kandiyohi.mn.us

Web: <http://www.youthenergysummit.org>

Appropriation Language

\$400,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Prairie Woods Environmental Learning Center to expand the Youth Energy Summit (YES!) program statewide to complete more than 200 new youth-led climate change mitigation and adaptation projects in over 50 Minnesota communities.

Project due to be completed: 6/30/2018

Work Plan (PDF)

New Prairie Sportsman Statewide Broadcast Video Project

Subd. 05d \$300,000 TF

Patrick Moore

Pioneer Public Television
120 Schlieman W
Appleton, MN 56208

Phone: (320) 289-2919

Email: pmoore@pioneer.org

Web: <http://www.pioneer.org>

Appropriation Language

\$300,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Pioneer Public Television to provide outreach on outdoor recreation, conservation, and natural resource issues, including water quality, wildlife habitat, and invasive species, through a series of interrelated public forums, educational and training videos, and statewide broadcast television programs. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Wildlife and Habitat Conservation Education for Southwest Minnesota High Schools

Subd. 05e \$147,000 TF

Carol Strecker

Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

Phone: (952) 431-9568

Email: carol.strecker@state.mn.us

Web: <http://www.mnzoo.org>

Appropriation Language

\$147,000 the second year is from the trust fund to the Minnesota Zoological Garden to engage high school students in critical prairie wildlife and habitat conservation projects by using the zoo's unique animal collections and state-of-the-art technology to deliver hands-on learning in 12 southwestern Minnesota high schools.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Standards-Based Dakota Indian Land Stewardship Education

Subd. 05f \$197,000 TF

Darlene St. Clair

Dakota Wicohan
PO Box 2
Morton, MN 56270

Phone: (507) 697-6272

Email: dstclair@stcloudstate.edu

Web: <http://www.dakotawicohan.com>

Appropriation Language

\$197,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Dakota Wicohan to enhance the capacity of approximately 1,250 students to be stewards of the land in Minnesota by learning about Dakota Indian values and environmental principles through a standards-based experiential multimedia curriculum. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Wolf Management Education in the Classroom - Phase II

Subd. 05g \$240,000 TF

David Kline

International Wolf Center
3410 Winnetka Ave N, Ste 101
Minneapolis, MN 55427

Phone: (763) 560-7374 x225

Email: david@wolf.org

Web: <http://www.wolf.org>

Appropriation Language

\$240,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the International Wolf Center to expand the Wolves at Our Door classroom education program to assist students in understanding wolves and associated management issues.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Master Water Steward Program Expansion

Subd. 05h \$116,000 TF

Peggy Knapp

Freshwater Society
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Email: pknapp@freshwater.org

Web: <http://www.freshwater@freshwater.org>

Appropriation Language

\$116,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Freshwater Society to train community volunteers as master water stewards who will work with neighborhoods to install water management projects that preserve and restore water quality. This appropriation is available until June 30, 2019, by which

time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Promoting Water Quality Stewardship through Student Mentoring and River Monitoring

Subd. 05i \$39,000 TF

Emily Deaver

Minnesota State University - Southwest
1501 State St
Marshall, MN 56258

Phone: (507) 537-6171

Email: emily.deaver@smsu.edu

Appropriation Language

\$39,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Southwest Minnesota State University to partner with area schools to deliver inquiry-based, hands-on learning and mentoring on water quality stewardship between university agriculture students and high school and middle school students.

Project due to be completed: 6/30/2018

Work Plan (PDF)

GOVERNOR VETO

~~Wildlife Science Center~~

~~Subd. 05I \$500,000 TF~~

~~TBD~~

~~Wildlife Science Center
5463 West Broadway Ave
Columbus, MN 55025~~

~~**Phone:** (651) 464-3993~~

~~**Email:** TBD~~

~~**Web:** <http://www.wildlifesciencecenter.org/>~~

~~Appropriation Language~~

~~\$500,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Wildlife Science Center to provide environmental education programs using ambassador wild animals.~~

~~Project due to be completed: 6/30/2018~~

~~Work Plan: PENDING~~

Subd. 06 Aquatic and Terrestrial Invasive Species

Minnesota Invasive Terrestrial Plants and Pests Center - Phase III

Subd. 06a \$3,750,000 TF

Robert Venette

U of MN

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St Paul, MN 55108

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Web: <http://www.mitppc.umn.edu>

RESEARCH

Appropriation Language

\$3,750,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Invasive Terrestrial Plants and Pests Center to conduct research to prevent, minimize, and mitigate the threats and impacts posed by terrestrial invasive plants, pathogens, and pests to the state's prairies, forests, wetlands, and agricultural resources. This appropriation is available until June 30, 2023, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2023

Work Plan (PDF)

Developing Membrane Filtration System to Treat Lake Superior Ballast Water

Subd. 06b \$151,000 TF

Santiago Romero-Vargas Castrillón

U of MN

Department of Civil, Environmental, and Geo- Engineering

Minneapolis, MN 55455

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Email: sromerov@umn.edu

Web: <http://www.cege.umn.edu/directory/faculty-directory/romerovargas.html>

RESEARCH

Appropriation Language

\$151,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop a filtration system utilizing bioactive membrane technologies for use in treating Lake Superior ballast water to remove at least 90 percent of suspended pathogens, invasive species, and contaminants. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Advancing Microbial Invasive Species Monitoring from Ballast Discharge

Subd. 06c \$368,000 TF

Randall Hicks

U of MN - Duluth
1035 Kirby Dr, SSB 207
Duluth, MN 55812

Phone: (218) 726-8438

Email: rhicks@d.umn.edu

RESEARCH

Appropriation Language

\$368,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to identify bacteria in ship ballast water and St. Louis River estuary sediments, assess the risks posed by invasive bacteria, and evaluate treatment techniques for effectiveness at removing the bacteria from ballast water. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Biological Control of White Nose Syndrome in Bats - Phase II

Subd. 06d \$452,000 TF

Christine Salomon

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Minneapolis, MN 55455

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Web: <http://www.cbs.umn.edu/contacts/christine-salomon>

RESEARCH

Appropriation Language

\$452,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to continue research to identify, develop, and optimize biocontrol agents for white nose syndrome in bats by evaluating the biocontrol effectiveness of microbes collected at additional hibernacula throughout the state and conducting baseline characterization of the total bat microbiomes. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Elimination of Target Invasive Plant Species - Phase II

Subd. 06e \$750,000 TF

Subd. 06e1 \$511,000 TF

Monika Chandler

Minnesota Department of Agriculture
625 Robert St N
St. Paul, MN 55155

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Subd. 06e2 \$239,000 TF

Angela Gupta

U of MN
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Rochester, MN 55904

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Web:

<http://www.mda.state.mn.us/en/plants/pestmanagement/weedcontrol/targetplants.aspx>

Appropriation Language

\$750,000 the second year is from the trust fund. Of this amount, \$511,000 is to the commissioner of agriculture and \$239,000 is to the Board of Regents of the University of Minnesota to train volunteers and professionals to find, control, and monitor targeted newly emergent invasive plant species. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan - Chandler (Subd. 06e1) (PDF)

Work Plan - Gupta (Subd. 06e2) (PDF)

Dutch Elm Disease Resistance - Phase II

Subd. 06f \$200,000 TF

Robert Blanchette

U of MN

1991 Upper Buford Cir, 495 Borlaugh Hall

St. Paul, MN 55126

Phone: (612) 625-0202

Email: robertb@umn.edu

Web: <http://forestpathology.cfans.umn.edu/default.htm>

RESEARCH**Appropriation Language**

\$200,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to continue to identify and evaluate native Minnesota elms that are resistant to Dutch elm disease and begin propagating disease-resistant specimens for field trial testing. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Invasive Carp Management Research in Lake Nokomis Subwatershed

Subd. 06g \$189,000 TF

Adam Arvidson

Minneapolis Parks and Recreation Board

2117 River Rd W

Minneapolis, MN 55411

Phone: (612) 230-6470

Email: aarvidson@minneapolisparcs.org

Web: <http://www.minneapolisparcs.org>

Appropriation Language

\$189,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Minneapolis Park and Recreation Board to apply current invasive carp management research to the entire Lake Nokomis subwatershed and provide demonstration guidance for large-scale carp management. This appropriation is available until June 30, 2020, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2020

Work Plan (PDF)

Subd. 07 Air Quality, Climate Change, and Renewable Energy

Community Solar Garden Installation

Subd. 07a \$490,000 TF

BJ Allen

Rural Renewable Energy Alliance

3963 8th Street SW

Backus, MN 56435

Phone: (218) 209-5584

Email: bj@rreal.org

Web: <http://www.rreal.org>

Appropriation Language

\$490,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Rural Renewable Energy Alliance to install a 200-kilowatt community solar garden to provide for electrical distribution in Cass, Beltrami, Hubbard, and Itasca Counties, to assist households in the Minnesota low-income housing energy assistance program in meeting electrical energy needs and serve as a model for low-income energy assistance elsewhere in the state. This appropriation is not subject to Minnesota Statutes, section 116P.10.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Waste Heat Recovery with Efficient Thermoelectric Energy Generators

Subd. 07b \$400,000 TF

Uwe Kortshagen

U of MN

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Minneapolis, MN 55455

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Email: kortshagen@umn.edu

RESEARCH

Appropriation Language

\$400,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop thermoelectric energy generators using advanced, high-performance materials able to more efficiently capture waste heat and transform the heat into electricity. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Hydrogen Fuel from Wind-Produced Renewable Ammonia

Subd. 07c \$250,000 TF

William Northrop

U of MN

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Minneapolis, MN 55455

Phone: (612) 625 6854

Email: wnorthro@umn.edu

RESEARCH

Appropriation Language

\$250,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop a technical solution for converting wind-produced ammonia to hydrogen through catalytic decomposition, for use in reducing emissions from diesel engines and powering fuel cell vehicles. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be

completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Utilization of Dairy Farm Wastewater for Sustainable Production

Subd. 07d \$475,000 TF

Bradley Heins

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46352 State Hwy 329
Morris, MN 56267

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Web: <http://wcroc.cfans.umn.edu/research-programs/dairy>

Appropriation Language

\$475,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the West Central Research and Outreach Center in Morris to develop and evaluate an integrated system that recycles and uses nutrients in dairy wastewater from feedlots and milk processing, thereby reducing nutrients from agricultural runoff, and to provide outreach on adoption of new technologies. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Solar Energy Utilization for Minnesota Swine Farms - Phase II

Subd. 07e \$475,000 TF

Lee Johnston

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46352 State Hwy 329
Morris, MN 56267

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Web: <http://wcroc.cfans.umn.edu>

Appropriation Language

\$475,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the West Central Research and Outreach Center in Morris to continue to develop and evaluate the utilization of solar photovoltaic systems at swine facilities to improve energy and economic performance, reduce fossil fuel usage and emissions, and optimize water usage. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Subd. 08 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

Bee Pollinator Habitat Enhancement - Phase II

Subd. 08a \$387,000 TF

Marla Spivak

U of MN

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St. Paul, MN 55108

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Web: <http://www1.umn.edu>

Appropriation Language

\$387,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to continue assessment of the potential to supplement traditional turf grass by providing critical floral plant resources to enhance bee pollinator habitat. Plant materials and seeds must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Measuring Pollen and Seed Dispersal for Prairie Fragment Connectivity

Subd. 08b \$556,000 TF

Lauren Sullivan

U of MN

1987 Upper Buford Cir, 100 Ecology Bldg
St. Paul, MN 55108

Phone: (612) 301-1056

Email: lsullivan@umn.edu

RESEARCH

Appropriation Language

\$556,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to determine habitat connectivity between prairie fragments by measuring plant movement by dispersal of pollen and seeds to improve prairie restoration implementation. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Establishment of Permanent Habitat Strips Within Row Crops

Subd. 08c \$179,000 TF

Shawn Schottler

Science Museum of Minnesota
16910 152nd St N
Marine on St. Croix, MN 55047

Phone: (651) 433-5953 x18

Email: schottler@smm.org

Appropriation Language

\$179,000 the second year is from the trust fund to the Science Museum of Minnesota for the St. Croix Watershed Research Station to research the viability of establishing prairie forbs and alfalfa as permanent cover strips in the bare soil between selected rows of corn and soybeans as potential pollinator, monarch, and gamebird habitat. Monitoring of the native plant strips must evaluate the effects of pesticides from adjacent crops on pollinators, including determining whether there is a reduction of pollinators that results in reduced setting of seeds on the native plants. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species

Subd. 08d \$267,000 TF

Rebecca Montgomery

U of MN

1530 Cleveland Ave N

St. Paul, MN 55108

Phone: (612) 624-7249

Email: rebeccam@umn.edu

RESEARCH

Appropriation Language

\$267,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to compare the effects on brushland habitat of conducting prescribed burning in spring, summer, and fall to provide improved management guidelines for wildlife habitat. This appropriation is available until June 30, 2020, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2020

Work Plan (PDF)

Controlling Reed Canary Grass to Regenerate Floodplain Forest

Subd. 08e \$218,000 TF

Tim Schlagenhaft

Minnesota State Office of National Audubon Society

2000 Main W

Red Wing, MN 55066

Phone: (651) 764-4242

Email: tschlagenhaft@audubon.org

RESEARCH

Appropriation Language

\$218,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Minnesota state office of the National Audubon Society to determine the most effective regeneration methods for restoration of floodplain forests in southeast Minnesota impacted by invasive reed canary grass. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Forest Management for Mississippi River Drinking Water Protection

Subd. 08f \$300,000 TF

Melissa Barrick

Crow Wing SWCD
322 Laurel St, Ste 13
Brainerd, MN 56401

Phone: (218) 828-6197

Email: melissa.barrick@crowwingswcd.org

Web: <http://crowwingswcd.org/>

Appropriation Language

\$300,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Crow Wing Soil and Water Conservation District to pilot a water protection approach for the watershed through development of forest stewardship plans and targeted riparian forest restoration projects. Any expenditures from this appropriation spent on forest management plans or restoration must be for lands with a long-term contract commitment for forest conservation, and the restoration must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Upland, Wetland, and Shoreline Restoration in Greater Metropolitan Area

Subd. 08g \$509,000 TF

Wiley Buck

Great River Greening
35 Water St W, Ste 201
St. Paul, MN 55107

Phone: (651) 665-9500

Email: wbuck@greatrivergreening.org

Web: <http://www.greatrivergreening.org>

Appropriation Language

\$509,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Great River Greening to restore approximately 150 acres of forest, prairie, woodland, and wetland and 0.15 miles of shoreline throughout the greater Twin Cities metropolitan area, using volunteers, and to conduct restoration evaluation on previously restored parcels. A list of proposed restorations and evaluations must be provided as part of the required work plan. Plant and seed materials must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Bluffland Restoration and Monitoring in Winona

Subd. 08h \$99,000 TF

Neal Mundahl

Winona State University
175 Mark St W
Winona, MN 55987

Phone: (507) 457-5695

Email: nmundahl@winona.edu

Web: <http://www.winona.edu>

Appropriation Language

\$99,000 the second year is from the trust fund to the Board of Trustees of the Minnesota State Colleges and Universities system for Winona State University to inventory, restore, and monitor the 40-acre Garvin Heights Natural Area in Winona and provide related public outreach and education. Plant and seed materials must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Champlin Mill Pond Shoreland Restoration

Subd. 08i \$2,000,000 TF

Todd Tuominen

City of Champlin

11955 Champlin Dr
Champlin, MN 55316

Phone: (763) 923-7120

Email: ttuominen@ci.champlin.mn.us

Web: <http://www.ci.champlin.mn.us>

Appropriation Language

\$2,000,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the city of Champlin to restore the Champlin Mill Pond shoreline and adjacent habitat. Plant and seed materials must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

GOVERNOR VETO

Pollinator Highway Demonstration Projects

Subd. 08j—\$2,200,000 TF

TBD

MN-DOT

395 John Ireland Blvd

St. Paul, MN 55155

Phone: TBD

Email: TBD

Web: <http://www.dot.state.mn.us/>

Appropriation Language

~~\$2,200,000 the second year is from the trust fund to the commissioner of transportation to restore and enhance wildlife habitat along trunk highways, including: marked Interstate Highway 35, one north and one south of the metropolitan area; marked Interstate Highway 90; and two locations along marked Interstate Highway 94. Of this amount, up to \$25,000 may be used to monitor and study the effects of different levels of native plant diversity on roadside pollinators and the timing of mowing on pollinator abundance and diversity. The commissioner must submit a report to the chairs and ranking minority members of the house of representatives and senate committees and divisions with jurisdiction over transportation and environment and natural resources by January 15, 2017, and submit or present to the chairs a follow-up status report by January 15, 2020. This appropriation is available until June 30, 2022, and must include a five-year restoration process. This appropriation is not subject to Minnesota Statutes, sections 116P.05, subdivision 2, paragraph (b), and 116P.09, subdivision 4.~~

Project due to be completed: 6/30/2019

Work Plan: Not required per exemption granted in MN Laws 2016, Chp. 186, Sec. 2, Subd. 8(j).

Subd. 09 Land Acquisition, Habitat and Recreation

Scientific and Natural Area Acquisition and Restoration

Subd. 09a \$1,386,000 TF

Peggy Booth

MN DNR

500 Lafayette Rd, Box 25

St. Paul, MN 55155

Phone: (651) 259-5088

Email: peggy.booth@state.mn.us

Web: <http://www.dnr.state.mn.us/snas/index.html>

Appropriation Language

\$1,386,000 the second year is from the trust fund to the commissioner of natural resources to restore and improve approximately 750 acres of scientific and natural areas. A list of proposed restorations must be provided as part of the required work plan. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Minnesota Point Pine Forest Scientific and Natural Area Acquisition

Subd. 09b \$500,000 TF

Peggy Booth

MN DNR

500 Lafayette Rd, Box 25

St. Paul, MN 55155

Phone: (651) 259-5088

Email: peggy.booth@state.mn.us

Web: <http://www.dnr.state.mn.us/snas/index.html>

Appropriation Language

\$500,000 the second year is from the trust fund to the commissioner of natural resources in

cooperation with the Duluth Airport Authority to acquire approximately ten acres as an addition to the designated Minnesota Point Pine Forest Scientific and Natural Area located along the shores of Lake Superior in Duluth.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Conservation Easements in the Avon Hills - Phase III

Subd. 09c \$1,300,000 TF

Thomas Kroll

Saint Johns Arboretum and University
PO Box 3000
Collegeville, MN 56321

Phone: (320) 363-3163

Email: tkroll@csbsju.edu

Web: <http://www.csbsju.edu/arboretum/avonhills>

Appropriation Language

\$1,300,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Saint John's University in cooperation with Minnesota Land Trust to secure permanent conservation easements on approximately 500 acres of high-quality habitat in Stearns County, prepare conservation management plans, and provide public outreach. A list of proposed easement acquisitions must be provided as part of the required work plan. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Funding for the long-term monitoring and enforcement fund must come from nonstate sources for easements acquired with this appropriation. The state may enforce requirements in the conservation easements on land acquired with this appropriation and the conservation easement document must state this authority and explicitly include requirements for water quality and quantity protection. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Lincoln Pipestone Rural Water System Acquisition for Wellhead Protection

Subd. 09d \$1,500,000 TF

Jason Overby

Lincoln Pipestone Rural Water System

415 Benton E
Lake Benton, MN 56149

Phone: (507) 368-4248

Email: lprw@itctel.com

Web: <http://www.lprw.com>

Appropriation Language

\$1,500,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Lincoln Pipestone Rural Water to acquire and restore lands designated under an approved wellhead protection plan. Lands acquired with this appropriation must be from willing sellers and be identified by the Department of Health as targeted vulnerable lands for wellhead protection. Lands must be restored to permanent vegetative cover, but may be used for recreation and renewable energy if adequate protection of the drinking water aquifer is provided. A list of proposed acquisitions must be provided as part of the required work plan. Plant and seed materials must follow the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. Income derived from the lands acquired with funds appropriated under this paragraph is exempt from Minnesota Statutes, section 116P.10, if used for additional wellhead protection as provided under this paragraph until adequate wellhead protection has been achieved, as determined by the commissioner of health. Any income earned after that must be returned to the environment and natural resources trust fund. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Mesabi Trail Segment from Highway 135 to Town of Embarrass

Subd. 09e \$1,200,000 TF

Bob Manzoline

St. Louis & Lake Counties Regional Railroad Authority
111 Station Rd
Eveleth, MN 55734

Phone: (218) 744-2653

Email: bmanzoline@rrauth.com

Appropriation Language

\$1,200,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the St. Louis and Lake Counties Regional Railroad Authority for engineering and construction of segments of the Mesabi Trail, totaling approximately six miles between Highway 135 and the town of Embarrass. This appropriation is available until June 30, 2019, by

which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Tower Historic Harbor Trail Connections

Subd. 09f \$679,000 TF

Linda Keith

City of Tower
PO Box 576
Tower, MN 55790

Phone: (218) 753-4070

Email: linda@cityoftower.com

Web: <http://www.cityoftower.com>

Appropriation Language

\$679,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the city of Tower to construct recreational trails along the harbor in Tower and to connect to the Mesabi Trail. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Otter Tail River Recreational Trail Acquisition

Subd. 09g \$600,000 TF

Gordon Hydukovich

City of Fergus Falls
112 Washington Ave W
Fergus Falls, MN 56537

Phone: (218) 332-5427

Email: gordon.hydukovich@ci.fergus-falls.mn.us

Web: <http://www.ci.fergus-falls.mn.us>

Appropriation Language

\$600,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the city of Fergus Falls to acquire approximately 16 acres along the Otter Tail River for a recreational trail and park. This appropriation is contingent on at least a

\$400,000 match of nonstate money. Prior to the acquisition, a phase 1 environmental assessment must be completed and the city must not accept any liability for previous contamination of lands acquired with this appropriation.

Project due to be completed: 6/30/2018

Work Plan (PDF)

GOVERNOR VETO

~~State Park and Trail Enhancement~~

~~Subd. 09h — \$1,228,000 TF~~

~~TBD~~

~~MN DNR~~

~~500 Lafayette Rd~~

~~St. Paul, MN 55155~~

~~Phone:~~ TBD

~~Email:~~ TBD

~~Web:~~ ~~<http://www.dnr.state.mn.us/eco/mcbs/index.html>~~

Appropriation Language

~~\$1,228,000 the second year is from the trust fund to the commissioner of natural resources for enhancement of state parks and trails as follows: \$614,000 is for enhancement of state parks and \$614,000 is for enhancement of state trails. This appropriation is not subject to Minnesota Statutes, sections 116P.05, subdivision 2, paragraph (b), and 116P.09, subdivision 4.~~

~~Project due to be completed:~~ 6/30/2018

~~Work Plan:~~ ~~Not required per exemption granted in MN Laws 2016, Chp. 186, Sec. 2, Subd. 9(h).~~

GOVERNOR VETO

~~Douglas County Regional Park~~

~~Subd. 09i — \$400,000 TF~~

~~TBD~~

~~Douglas County~~

~~305 8th Ave W~~

~~Alexandria, MN 56308~~

~~Phone:~~ TBD

~~Email:~~ TBD

~~Web:~~ ~~<http://www.co.douglas.mn.us>~~

Appropriation Language

~~\$400,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Douglas County for park and trail planning, development, or acquisition for a regional park. The grant must be matched by other state or nonstate sources. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.~~

~~**Project due to be completed:** 6/30/2019~~

~~**Work Plan:** PENDING~~

Subd. 10 Administration

Contract Agreement Reimbursement

Subd. 10a \$135,000 TF

Jason Tidemann

MN DNR

500 Lafayette Rd, Box 10

St. Paul, MN 55155

Phone: (651) 259-5533

Email: jason.tidemann@state.mn.us

Web: <http://www.dnr.state.mn.us>

Appropriation Language

\$135,000 the second year is from the trust fund to the commissioner of natural resources, at the direction of the Legislative-Citizen Commission on Minnesota Resources, for expenses incurred for contract agreement reimbursement for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of these funds.

Project due to be completed: 6/30/2018

Work Plan (PDF)

Legislative-Citizen Commission on Minnesota Resources (LCCMR)

Subd. 10b \$75,000 TF

Susan Thornton

Legislative-Citizen Commission on Minnesota Resources

100 Rev Dr Martin Luther King Jr Blvd, Rm 65

St. Paul, MN 55155

Phone: (651) 296-6264

Email: susan.thornton@lccmr.leg.mn

Web: <http://www.lccmr.leg.mn>

Appropriation Language

\$75,000 the second year is from the trust fund to the Legislative-Citizen Commission on Minnesota Resources for upgrading and modernizing a project records management system.

Project due to be completed: 6/30/2018

III. Completed Research Projects

“a summary of any research project completed in the preceding biennium;”

This section includes summaries of all projects completed, including research projects.

- The following documents are summaries of accomplishments for each appropriation year and short abstracts for all projects completed since the previous biennial report of January 15, 2015.
- The abstracts describe the general accomplishments of each project for completed projects. See <http://www.lccmr.leg.mn>.
- Research projects have been marked as such in the description.
- Full final reports are available at the LCCMR, Room 65 - State Office Building. The abstracts are current as of 12/31/2016.
- 76 Projects were completed for a total of \$44,487,343.
- Legal Citations
 1. M.L. 2015, Chapter 76, Section 2
 2. M.L. 2014, Chapter 226, Section 2
 3. M.L. 2013, Chapter 52, Section 2
 4. M.L. 2011, First Special Session, Chapter 2, Article 3, Section 2
 5. M.L. 2010, Chapter 362, Section 2
 6. M.L. 2005, First Special Session, Chapter 1, Article 2, Section 11
- Spreadsheet of all research projects completed between January 1, 2015 and December 31, 2016.

- 1. M.L. 2015 Projects Completed**
January 15, 2015 – January 15, 2017
MN Laws 2015, Chapter 76, Section 2

M.L. 2015 Projects

MN Laws 2015, Chapter 76, Section 2 (beginning July 1, 2015)

For the FY 2016 and FY 2017 biennium (July 1, 2015 - June 30, 2017), approximately \$46.3 million is available each year (total = \$92,674,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2015 Request for Proposal (RFP) 152 proposals requesting a total of approximately \$126.3 million were received. Through a competitive, multi-step process, 76 of these proposals, requesting a total of \$74.9 million, were chosen to present to the LCCMR and 65 of those proposals were selected to receive a recommendation for funding to the 2015 MN Legislature. The Legislature adopted 63 of these project recommendations and replaced two of them with two new project appropriations on 05/18/15. The project appropriations adopted by the Legislature were signed into law by the Governor on 05/22/15.

LINKS TO:

- [Print-ready PDF list](#) of the M.L. 2015 projects adopted by the Legislature and signed by the Governor.
- [Summary](#) of appropriations and expected outcomes
- Additional information on LCCMR's [M.L. 2015 proposal and funding process](#)

NOTE: For all projects, [contact us](#) to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

MN Laws 2015, Chapter 76, Section 2

Subd. 03 Foundational Natural Resource Data and Information

Assessing Ecological Impact of St. Anthony Falls Lock Closure

Subd. 03p \$125,000 TF

Kathleen Boe

Minneapolis Riverfront Partnership
2522 Marshall St NE
Minneapolis, MN 55418

Phone: (612) 465-8780 x212

Email: kathleen.boe@minneapolisriverfrontpartnership.org

Web: <http://www.minneapolisriverfrontpartnership.org>

Appropriation Language

\$125,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Minneapolis Riverfront Partnership to study the impact of altered river flow due to closure of the Upper Lock on the Mississippi River at St. Anthony Falls on the physical and biological characteristics of the river between the Coon Rapids Dam and Lock and Dam No. 1 in order to inform future river restoration efforts.

OVERALL PROJECT OUTCOME AND RESULTS

On June 10, 2015, the Upper St. Anthony Falls Lock and Dam was closed to navigation. This closure, and the resulting changes to navigation and dredging, is expected to alter the sediment dynamics of the Mississippi River between Coon Rapids Dam and Ford Dam. This project was undertaken to develop a baseline condition of the Mississippi River using physical, chemical, and biological indicators that can be tracked over time as the river's ecosystem responds to adjustments in management. Lessons learned from this project are expected to help develop a better understanding of the relationships between river management, hydrology, sediment dynamics and river ecology that can be applied to other river management scenarios.

The project team collected bathymetry, water chemistry, sediment, invertebrate, and mussel data to establish the physical, chemical, and biological condition of the river at the time of lock closure. They also sourced existing data from state and local agencies, such as the Department of Natural Resources (DNR), into a common database. The project team then critically evaluated the available physical, chemical, and biological data to identify key indicators of changes in river health.

No single indicator can provide a complete measurement of changes in the river. We suggest that monitoring within each category of data (physical, chemical, and biological) would allow for the most complete assessment of future river changes. In the physical category, bathymetry data would be an effective indicator to assess the impacts of stopping dredging on river habitat. In the chemical category, water quality data are relatively simple to monitor and are part of ongoing programs. In the biological category, mussels are publicly relatable and also integrate physical (habitat) and chemical (total suspended solids) parameters in their responses to the riverine environment.

A final report summarizing the findings entitled Assessing the Ecological Impact of Lock Closure will be submitted to the LCCMR.

PROJECT RESULTS USE AND DISSEMINATION

Dozens, if not hundreds, of people and organizations are committed to the future of the Minneapolis riverfront. The results of a scientific study conducted at the time of the lock closure, a historic event by nearly any measure, is important for many of the planning and program efforts going forward. Accordingly, the study team took a multifaceted approach to dissemination of project results; these efforts will continue beyond the end of the actual grant period itself.

In-person presentations

Project staff took part in two events dedicated to disseminating the results of the study. Lead scientist Jane Mazack presented preliminary findings at the "Sip of Science" program at the Aster Cafe in Minneapolis. Mazack and DNR scientist Mike Davis were part of a Riverfront Vitality Forum, presented by the Minneapolis Riverfront Partnership at the Mill City Museum.

Both presentations began from a foundational understanding that treated the lock closure as the latest in a long series of river manipulations that have taken place on the Minneapolis stretch of the river. The presentations then detailed the study's methodology, key components of what was being sought, and the preliminary results.

Digital/social media

The dissemination of project results through digital social media has been awaiting final development of project results. Project team members from the River Life program manage a blog "River Talk", as well as a digital map, the River Atlas and Twitter and Facebook feeds. We expect the map of project results to be posted to the River Atlas once the Atlas staff member returns from summer leave.

Social media feeds through Twitter and Facebook will likewise be activated through at least December 2016.

The report, as well as significant supplemental material and links to project data, will be posted on the River Life web site as well as the sites of the Minneapolis Riverfront Partnership and the Mississippi Watershed Management Organization.

River Life publishes a quarterly digital publication, Open Rivers: Rethinking the Mississippi River Planning is under way to have Issue 4, published in October 2016, focusing on the results and studies of the project.

Project completed: 6/30/2017

FINAL REPORT (PDF)

Subd. 09 Land Acquisition for Habitat and Recreation

Metro Conservation Corridors Phase VIII - Wildlife Management Area Acquisition

Subd. 09h \$400,000 TF

Patrick Rivers

MN DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5209

Email: pat.rivers@state.mn.us

Web: <http://www.dnr.state.mn.us/index.html>

Appropriation Language

\$400,000 the first year is from the trust fund to the commissioner of natural resources for Phase VIII of the Metro Conservation Corridors partnership to acquire in fee at least 82 acres along the lower reaches of the Vermillion River in Dakota County within the Gores Pool Wildlife Management Area. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards. This appropriation may not be used to purchase habitable residential structures, unless

expressly approved in the work plan. This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

OVERALL PROJECT OUTCOME AND RESULTS

The DNR, in partnership with Dakota County, acquired 169.59 acres of high quality habitat along the lower reaches of the Vermillion River on April 27, 2016. The acquisition consists of several disjoint parcels that are inholdings within the Gores Pool Wildlife Management Area (WMA) and the Vermillion River Complex. This was a high-priority acquisition for the Department of Natural Resources as the area is classified as an Outstanding Regionally Significant Ecological Area for documented colonial waterbird nesting and red shouldered hawks. The property includes more than one mile of river shoreline, high value wetlands and floodplain forest (red oak- sugar maple- basswood forest; silver maple floodplain forest) important for waterfowl, beaver and mink, whitetail deer and numerous other species including non-game species of special concern. Bald eagles and common snapping turtles are present; lake sturgeon and blue sucker occur in Mississippi River Pool 3 nearby. The acquisition reduced the WMA boundary by approximately one mile and resolves potential for boundary dispute.

PROJECT RESULTS USE AND DISSEMINATION

This parcel will soon be designated as part of the statewide WMA system (anticipated in August, 2016). This process involves publishing a designation order in the State Registrar, and a news release announcing this and other recently acquired WMA lands. The news release will mention the use of Environment and Natural Resource Trust Fund for the acquisition.

Project dcompleted: 6/30/2017

[FINAL REPORT](#) (PDF)

- 2. M.L. 2014 Projects Completed**
January 15, 2015 – January 15, 2017
MN Laws 2014, Chapter 226, Section 2

M.L. 2014 Projects Completed in 2015-2016

MN Laws 2014, Chapter 226, Section 2 (beginning July 1, 2014)

MN Laws 2014, Chapter 312, Article 12, Section 8 (beginning July 1, 2014)

For the Minnesota's FY 2014-15 biennium (July 1, 2013 - June 30, 2015), approximately \$33.8 million was available each fiscal year (Total = \$67,620,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2014 Request for Proposal, 192 proposals requesting a total of approximately \$111 million were received. Through a competitive, multi-step process 94 of these proposals, requesting a total of \$58.7 million, were chosen to present to the LCCMR and 71 of those proposals, totaling \$29 million, were chosen to receive a recommendation for funding to the 2013 MN Legislature. The Legislature adopted all 71 of these project recommendations and they were signed into law by the Governor on 05/09/14. The Legislature added one additional project and it was signed into law by the Governor on 05/20/14. For 2014 a total of 72 appropriations will be receiving \$30,430,000.

NOTE: For all projects, contact us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 04 Aquatic and Terrestrial Invasive Species

04c Northwest Minnesota Regional Aquatic Invasive Species Prevention Pilot

Subd. 05 Foundational Natural Resource Data and Information

05d Restoring Forest Inventory Data

05g Assessing Contaminants in Minnesota's Loons and Pelicans - Phase 2

05i Wild Bee Pollinator Surveys in Prairie-Grassland Habitats

Subd. 06 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

06i Cattail Management for Wetland Wildlife and Bioenergy Potential

06k Expansion of Greenhouse Production

Subd. 07 Land Acquisition, Habitat, and Recreation

07d Shoreland Acquisition on St. Croix River

Subd. 08 Air Quality, Climate Change, and Renewable Energy

08h Solar Photovoltaic Installation at Residential Environmental Learning Centers

Subd. 09 Environmental Education

09b Youth-led Sustainability Initiatives in 40 Greater Minnesota Communities

09e Educating Minnesotans about Potential Impacts of Changing Climate

- 09f Pollinator Education Center at the Minnesota Landscape Arboretum
- 09h Raptor Lab Integrating Online and Outdoor Learning Environments
- 09i Wolf Management Education

Subd. 10 Administration and Contract Agreement Reimbursement

- 10a Contract Agreement Reimbursement

Subd. 04 Aquatic and Terrestrial Invasive Species

Northwest Minnesota Regional Aquatic Invasive Species Prevention Pilot

Subd. 04c \$219,000 TF

Julie Goehring

Red River Basin Commission
1120 28th Ave N, Suite C
Fargo, ND 58102

Phone: (701) 356-3183

Email: Julie@redriverbasincommission.org

Web: <http://www.redriverbasincommission.org>

Appropriation Language

\$219,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Red River Basin Commission to develop aquatic invasive species prevention strategies on a watershed scale and develop materials to sustain watershed scale decision-making and implementation. This initiative must be coordinated with the Department of Natural Resources and outdoor heritage fund activities for locally based invasive species control. Specific reporting and analysis of outcomes and findings of this alternative approach must be provided to enable duplication in other regions of the state.

Project Overview

Aquatic invasive species are a threat to the ecology and the recreational and economic viability of Minnesota's water resources. When an invasion is confined to a distinct lake or wetland, local government units will implement localized plans to address invasions. However, when a water body crosses jurisdictions, such as with river systems, to be effective a more coordinated, regional approach is necessary that is more attuned with the natural pathways for invasive species. The Red River Basin Commission is using this appropriation to pilot an effort to develop processes for addressing invasive species at a watershed scale using partnerships between local government units working collectively rather than individually. The pilot is intended to create a model for invasive species prevention that can be applied in other parts of the state.

OVERALL PROJECT OUTCOME AND RESULTS

Aquatic Invasive Species (AIS) spread has become one of the top concerns as it threatens the recreational and economic viability of the surface water resources of the Red River of the North watershed. According to the Minnesota Department of Natural Resources Infested Waters report

(2016), Zebra Mussels have invaded the Otter Tail, Pelican and Red River systems. The Local Governmental Units (LGU's) are implementing plans to address AIS issues at the county level, but introduction into our river systems necessitate a regional approach to education, outreach and management of AIS within the Red River of the North watershed. The goal of this pilot project was to expand AIS work from a largely county based process to a watershed scale through partnerships between LGU's. The project targeted three main watersheds, Buffalo, Otter Tail and Wild Rice, which make up the Red River drainage basins of Becker, Clay, Otter Tail and Wilkin Counties.

The project focused on three specific outcomes including 1) Coordination with LGU's to develop effective AIS communication and management. 2) Develop and distribute educational materials that support best management practices for AIS. 3) Expand and leverage opportunities to develop and deliver an AIS program based on best management practices that are replicable throughout the region.

The project made significant progress toward the coordination of the LGU's within the three watersheds and four counties. All endorsed the watershed approach and included this strategy in their local plans. The Red River Basin Commission staff met monthly for the duration of the project with AIS LGU's to integrate the watershed approach and worked directly with over 20 groups and 6,000 individuals including natural resource managers, lake property owners, students, teachers and researchers.

Educational materials and management resources including; AIS Risk Assessments for the targeted watersheds, an AIS mobile application, GIS based AIS maps, AIS identification cards, information brochures and promotional items and multiple surveys, presentations and ads were all developed and disseminated by the Red River Basin Commission for the watershed approach to AIS management as a result of the project.

PROJECT RESULTS USE AND DISSEMINATION

Educational materials and management resources developed by the Red River Basin Commission were disseminated to local groups, state agencies, national and international AIS related peer groups through the Red River Basin Commission website, public presentations and educational workshops.

Additionally, targeted media messages included regionally branded print media and radio AIS promotions that run along with other timely water conservation messages daily during prime listening time were adopted for reaching a regional listening audience of 71,500 weekly.

The resources developed including the Aqua.mn mobile application - <https://aqua.mn/> and website- <http://www.redriverbasincommission.org/> are designed so citizens can access educational materials and resources with links back to county based resources, watershed partner resources and Minnesota Department of Natural Resources AIS tools and information.

The AIS Risk Assessments that use science, fact and logic to identify and quantify vectors of risk assist in planning for zebra mussel management. These assessments were shared with and are used by watershed districts, local units of government, lake associations and others, to support the prioritization of funding and activities, including inspection and decontamination, to curtail and prevent the spread of zebra mussels and other AIS species to Minnesota's lakes and rivers. The AIS Risk Assessment GIS Tool allows users to interactively explore the infestation risks of lakes and rivers in the project area, and visualize where aquatic invasive species have been sighted. It serves as a digital companion to the static maps generated in the reports. The AIS Risk Assessment GIS Tool can be accessed on ArcGIS Online via the link:

<http://www.arcgis.com/home/webmap/viewer.html?webmap=2a3a1ecbc1ca414b875c0b8feed7463a>

The Red River Basin Commission lead efforts to collect, review and distribute current AIS survey data and watershed scale demographic data within the targeted project region. The survey initiatives were aimed to help determine the current knowledge, attitude and interest in AIS issues affecting Minnesota's lakes region. A final survey results report was shared with watershed districts, LGU's, lake associations and others and is attached to the LCCMR Final Report.

As a basin wide focused organization the Red River Basin Commission is continuing to take action in coordinating efforts between organizations focused on AIS. The Red River Basin Commission through the facilitation of the Red River AIS Technical and Science Team and multiple other working groups will continue to sustain and build upon the watershed scale AIS strategy for the Red River of the North International Watershed.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Wild Rice River Watershed: AIS Prioritization (PDF)

Otter Tail River Watershed: AIS Prioritization (PDF)

Pelican River Watershed: AIS Prioritization (PDF)

Early Detection Zebra Mussel Monitoring Project (PDF)

Subd. 05 Foundational Natural Resource Data and Information

Restoring Forest Inventory Data

Subd. 05d \$100,000 TF

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Appropriation Language

\$100,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to obtain and restore statewide forest inventories of 1935, 1953, and 1966 to link with more recent data to improve understanding of historical forest trends and enhance long-term ecological monitoring.

Project Overview

Long-term forest plot datasets are helpful for understanding the changing conditions and ecology of forestland over time. The USDA Forest Service produced statewide forest inventories in 1935, 1953, 1962, 1977, 1990, 2003, 2008, and 2013. Unfortunately, only the data from 1977 to the present is currently easily accessible and available in full. Researchers at the University of Minnesota are using this appropriations to locate and restore important information from the 1935, 1953, and 1962 surveys and link it to the more recent data from 1977 and later to generate more detailed understandings of changes in Minnesota's forests over time. Compiling this data will be useful for examining forests in

terms of climate change implications for resilience and adaptability, carbon sequestration potential, habitat and biodiversity change, and overall forest health.

OVERALL PROJECT OUTCOME AND RESULTS

Motivation and objectives: Long-term datasets have proven invaluable for understanding changing forest conditions and implications for timber supply, wildlife habitat, insect, disease, wildfire, and climate change. This history is also important to charting future investments in forest based industry, forest management and the protection of forests resources for the role they play in water quality and retention of biodiversity. The primary objective of this project was to find and restore the first (1935), second (1953) and third (1962) statewide forest inventories of Minnesota plus other forest inventory datasets we might find. A secondary object was to develop comparisons of those inventories to present day forest conditions.

Methods: The project began with review of the published literature and available notes, letters, planning and other documents) plus direct contacts with present and former USDA Forest Service inventory staff who might recall aspects of these early inventories and especially where these data might be located. With success in locating these data, we have moved to digitize and restore them, check the accuracy of the restoration, and make comparisons with the present (the 2014) statewide forest inventory. Finally, we have sought to make these data (and metadata) publically available for other analysts and researchers.

Results: We have succeeded in restoring the 1935 statewide forest inventory in considerable detail, now described in a published project report. We have also located various summary data of the 1953 inventory. However, that effort was developed as an update of the 1935 inventory with inputs of data obtained from federal, state, county and private companies in various years. Thus it lacks the geographical and temporal specificity and completeness to be very detailed and thus useful in research. The 1962 inventory records were fully digital and are thought to be much more useful, but those records are yet to be located-thus our search is continuing.

Significance: The project publication (Flanary et al. 2016) included with this report describes the restoration of the 1935 inventory and comparisons to the present. Also, figures 8, 9 and 10 of this report describe major aspects of forest change. This report is viewed by the USDA Forest Service forestry inventory leadership as a very successful effort and a model for other states in restoration of inventories from the 1930s to the 1960s that have likewise been lost in terms of their detail. The agency is now moving to establish a nationwide effort to restore these older yet very valuable inventory datasets.

PROJECT RESULTS USE AND DISSEMINATION

The project data have been and are increasingly used to provide an understanding of the dramatic change in our forests since 1935. E.g., we have moved from a very young forest to an older forest with 3-4 times more standing biomass per acre than in the 1930s with important implications for forest health, wildfire, productivity and habitat. These results have been presented to the Minnesota Forest Resources Council and the Minnesota Forest Resource Partnership and been made available on the Interagency Information Cooperative website at: <http://iic.umn.edu/project-areas/forest-inventory/historic-data/1936-usfs-survey>. Additional presentations, publications and reports (and popular messages) are planned for the coming months.

Project completed: 6/30/2016

FINAL REPORT (PDF)**Restoration of the 1936 Statewide Forest Survey of Minnesota (PDF)**

Assessing Contaminants in Minnesota's Loons and Pelicans - Phase 2

Subd. 05g \$260,000 TF

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Appropriation Language

\$260,000 the second year is from the trust fund to the commissioner of natural resources to continue to assess the potential impact of petroleum, dispersants, and heavy metal contaminants from the Deepwater Horizon oil spill in the Gulf of Mexico on the wintering habitat of Minnesota's common loons and white pelicans using radiotelemetry, geolocators, and contaminant analysis.

Project Overview

Over a three-month period in 2010, approximately five million barrels of oil was spilled into the Gulf of Mexico causing extensive damage to marine and wildlife habitats and resulting in significant losses in fish and wildlife populations. A number of Minnesota's migratory bird species spend parts of their lives in the areas impacted by the spill and impacts on their populations in the state could become evident over time. Impacts could be from immediate losses of birds that were present at the time of the spill or from cumulative negative effects resulting from contamination of the food chain by petroleum chemicals and the dispersants used on the oil. The two Minnesota species that are potentially most vulnerable are the common loon and the American white pelican; some of their young would have been present in the Gulf at the time of the spill and their behavior and feeding patterns put them at greater risk of exposure to chemicals from the spill persisting in the environment. The Minnesota Department of Natural Resources is using this appropriation to continue efforts aimed at determining whether or not common loon or American white pelican populations in Minnesota have been impacted by the Gulf oil spill. Phase one revealed that there were population losses following the spill and that a significant percentage of Minnesota loons and pelicans have been exposed to oil and dispersant contaminants, which may be having long-term effects by causing changes in behavior, migratory abilities, reproductive success, or longevity. Any impacts documented will be critical for receiving remediation funds from the Federal Natural Resource Damage Assessment (NRDA) process currently underway, and those funds could be used to help restore the populations of these two species.

OVERALL PROJECT OUTCOME AND RESULTS

The Deepwater Horizon oil spill in 2011 released about five million gallons of crude oil into the Gulf of Mexico and subsequent deposition of up to one million gallons of "dispersant". Both are carcinogenic and threaten the health of Common Loons and American White Pelicans that nest in Minnesota and

winter in the Gulf of Mexico.

Minnesota has the largest populations of Common Loons and American White Pelicans in the continental US. We have a stewardship responsibility to preserve healthy populations of those species.

This project documented the threat posed to loons and pelicans by the Deepwater Horizon oil spill. Loon research involved satellite telemetry and internal transmitters to monitor migration and wintering movements, geolocators on leg bands to study diving behavior, and sampling of blood, feathers, tissues, and eggs for contaminants. Pelican research involved analyses of eggs and shed bill knobs. Collection of pelican migration with cell tower transmitters was not successful.

Radiotelemetry revealed juvenile loons wintering in the Gulf where contaminants occurred. In summer they traveled along the Atlantic seaboard to Quebec and northern Manitoba their first two years. This information is new to science.

Sublethal petroleum contaminant levels were present in pelican eggs (46.3%), bill knobs (78.4%), loon eggs (17.9%) and blood (35.0%), loon feathers (14.3%) and fat (31.8%). Dispersant contamination was found in pelican bill knobs (37.0%) and eggs (43.5%). Those contaminants could affect survivability, behavior, reproduction, or chick survival. Loon population levels appear stable. Pelicans declined from 2012 to 2015 but the cause does not appear related to the oil spill.

The federal Oil Pollution Act of 1990 will allow the State of Minnesota to obtain remediation funds from BP to pay for recovery efforts for conservation of loons and pelicans. The DNR is awaiting guidelines to apply for remediation funds.

PROJECT RESULTS USE AND DISSEMINATION

This LCCMR project has generated an enormous amount of media and public attention, especially for the work related to loons and the potential impact of the Deepwater Horizon oil spill on loons. There have been numerous presentations to conservation groups, garden clubs, bird clubs, civic groups, and statewide media coverage.

Recent media coverage has included:

1. Loon research. A look at new loon research at a time when Minnesota stands to share in BP Oil Spill settlement money to benefit the state bird. Photo gallery by Aaron Lavinsky. Star Tribune. Sept. 3, 2016.
2. Minnesota on Cusp of a New Era of Loon Conservation. Star Tribune. Tony Kennedy. Sept. 4, 2016.
3. Gulf oil spill residue found in Minnesota loons. Greg Vandegrift, KARE-TV. Sept. 27, 2016.
4. Loon Study. Frequently asked questions. USGS. Upper Midwest Environmental Sciences Center. Website.
5. Loons and the gulf oil spill. MN DNR website. Nongame Wildlife Program.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Wild Bee Pollinator Surveys in Prairie-Grassland Habitats

Subd. 05i \$370,000 TF

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Appropriation Language

\$370,000 the second year is from the trust fund to the commissioner of natural resources to assess the current status and distribution of wild bee pollinators in prairie-grassland habitats of Minnesota.

Project Overview

Wild bees are important for their pollination services and for their contribution to species diversity; for example, many prairie-grassland plant species require pollinators for seed production. However, while the importance of plant-pollinator interactions is well recognized, there are large gaps in our knowledge of Minnesota's wild bees. The only statewide list of bee species was published in 1919 and it reported only 88 species, whereas it is currently estimated that there are approximately 350-400 native bee species in the state. The Minnesota Department of Natural Resources is using this appropriation to conduct field surveys throughout the prairie-grassland region of MN to document the diversity and distribution of wild bees and related vegetation diversity and quality in order to assess the current status of wild bees and provide a baseline for comparing to past and future data. This information will be used to refine conservation and management decisions to enhance bee pollinator populations and prairie-grassland habitat. Future efforts could further expand knowledge by extending surveys into forested and forest-transition regions of the state.

OVERALL PROJECT OUTCOME AND RESULTS

Wild bees are important for their pollination services and also for their contributions to species diversity in prairie-grasslands. Many prairie plant species require pollinators for seed production and bees are often cited as the most important pollinator group. Native prairies once covered a third of Minnesota, but less than two percent of this habitat remains today. The impact of this habitat loss to wild bees is unknown due to large gaps in our knowledge of Minnesota's wild bees. The primary objective of this project was to fill in these knowledge gaps. This was accomplished by compiling existing records of wild bees statewide and conducting surveys of wild bees in prairie-grassland habitats of western Minnesota. The association of wild bees with native plant species and the effects of prairie restoration efforts on bee species diversity are poorly understood. To address these information needs, both native prairie and restored grassland sites were surveyed for bees and associated flowering plants.

To build upon the 1919 publication, *The Hymenoptera of Minnesota*, by Frederic Washburn that listed only 66 bee species, 11 museum collections in the Upper Midwest were accessed for bee specimens from Minnesota. Numerous personal collections, reports and publications were reviewed. Distributional data was obtained for over 30,000 bee specimens, resulting in a preliminary Minnesota wild bee list that presently stands at 418 reported species with an additional 29 species requiring expert evaluation . In

addition, the statewide distribution of known species was greatly expanded. For example, a common sweat bee (*Halictus ligatus*) was known from only one county in 1919, but this project has compiled records from an additional 44 counties.

Surveys for wild bees were conducted at 75 locations in western Minnesota, May through October 2015 and May through June 2016. Fifty-five native prairie sites distributed across western Minnesota and eight restored grassland sites were sampled every three weeks to obtain seasonal information on bees and flowering plants, and comparative information on bees found in native prairie versus restored grassland. The remaining twelve sites were sampled every three weeks to augment county records. Over 10,000 bee specimens were collected through this effort. Specimens have been prepared and data entered into databases that will be used to inform researchers and land managers.

Important bee and plant records were obtained. The rare and declining yellow banded bumble bee (*Bombus terricola*) was documented in Stevens County. This is a county record for the species and also the first time this bee has been recorded visiting snowberry plants, genus *Symphoricarpos*. Equally notable is the absence of another declining species, the rusty patched bumble bee (*Bombus affinis*). Twenty-eight county records for plants were collected during these surveys, as well as information on blooming phenology.

PROJECT RESULTS USE AND DISSEMINATION

Data collected from this project is stored in the MNDNR Natural Heritage Information System and bee specimens are being deposited in the Insect Collection at the University of Minnesota. These will be available to researchers, land managers, and the public.

Several MNDNR websites were developed that summarize the goals and accomplishments of this project and address wild bees and other pollinators:

- Native Bees of Minnesota's Grasslands presents the goals and accomplishments of this project <http://www.dnr.state.mn.us/mbs/grasslandbees.html>.
- Minnesota's Pollinators webpage <http://www.dnr.state.mn.us/pollinators/index.html>
- Minnesota Pollinator Resources webpage http://www.dnr.state.mn.us/pollinator_resources/index.html.
- Pollinator Resource Values for Upland & Wetland Prairies webpage and booklet http://files.dnr.state.mn.us/natural_resources/npc/pollinator_booklet.pdf.

The project coordinator/bee specialist (Crystal Boyd) has delivered information on this project through presentations, publications, interviews and educational events. She co-organized a Tallgrass Prairie Bee Identification Workshop and has highlighted Minnesota's wild bees at a wide variety of public venues.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Subd. 06 Methods to Protect, Restore, and Enhance Land, Water, and Habitat

Cattail Management for Wetland Wildlife and Bioenergy Potential

Subd. 06i \$74,000 TF

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Appropriation Language

\$74,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Northwest Research and Outreach Center in Crookston to evaluate different management techniques for cattail control and related wildlife impacts in northwest Minnesota and to assess the use of cattails as a biofuel feedstock.

Project Overview

On many public lands in northwest Minnesota, cattail growth has far exceeded the distribution recommended for optimum wetland wildlife habitat and a need for cattail control has become recognized. Cattails have also recently been demonstrated to have bioenergy potential. Researchers at the University of Minnesota in Crookston are using this appropriation to evaluate cattail management and harvesting techniques in various northwest Minnesota habitats as a means of reducing an increasing overabundance of exotic cattails in wetlands, which are degrading wildlife habitat, while providing a value-added feedstock for sustainable bioenergy in the region.

OVERALL PROJECT OUTCOME AND RESULTS

Cattails are a major problem in Minnesota wetlands because their growth is commonly in excess of the 50:50 ratio of cattail/bulrush vegetation to open water desired for optimum wetland wildlife habitat. How to control them is the most frequently asked question by wetland managers. This project evaluated traditional management techniques (mowing, burning, grazing, and chemical) and explored the logistics of partial harvest for biofuel. Since 2005, the International Institute for Sustainable Development in Winnipeg, Manitoba has been evaluating cattails to remove nutrients from runoff water to reduce eutrophication of Lake Winnipeg, and develop an economically viable system of harvesting cattails for biofuel. This project used the Canadian model to evaluate possible applications in Minnesota. Management effects on vegetation, birds, and amphibians were measured. The energy content of cattail pellets is similar to wood (~ 8,500 Btu/lb.) and, at least for northwest Minnesota, are an ideal sustainable bioenergy source; available in large quantities, no planting required, and no competition with agricultural lands. Challenges include guaranteeing a reliable fuel supply in spite of varying wetland and weather conditions, and refine logistics so the energy content of the product is in favorable relationship to the total amount of energy required to harvest, transport, and process. Cattails produce 8-10 tons of biomass per acre so the resource is large since about half could be harvested in a checkerboard pattern for wildlife management. Over 95,500 acres of cattails are in the 10 northwestern Minnesota counties. What is needed is an integrated management system of dependable harvest, processing into an acceptable fuel (usually pellets), storage systems, and identify users all within reasonable proximity to reduce transportation costs. Such would help offset the expensive cost of cattail control, and generate a renewable and Minnesota-grown fuel that would help mitigate greenhouse gases. The potential economic and environmental values are significant.

PROJECT RESULTS USE AND DISSEMINATION

Findings from this project and other case studies are being disseminated through presentations to a broad spectrum of interest groups (natural resource agencies, landowners, researchers, students,

private industry, and entrepreneurs), through the electronic media, and by an illustrated booklet. The booklet by 13 authors contains a review of a broad range of management techniques along with a discussion of the ingredients of a niche industry, called the "bioeconomy" in Manitoba. Presentations were made to the following: Cattail Summit in Crookston campus involving collaborators from the International Institute for Sustainable Development in Winnipeg, University of North Dakota, Red River Basin Commission, Agricultural Utilization Research Institute, and the Hudson Valley Grass Energy Cooperative of Kingston, NY; annual meeting of the North Dakota Chapter of The Wildlife Society; Wetland Biomass Workshop at Loyola University in Chicago: Heating the Midwest with Biomass Conference in Rochester, MN sponsored by Agriculture Utilization Research Institute; International Wildlife Management Congress in Sapporo, Japan; symposium on Renewable Energy and Wildlife at the national meeting of The Wildlife Society in Winnipeg, Manitoba; Cattail Management and the Bioeconomy Workshop, U of Winnipeg, Manitoba; workshop on using cattails for bioremediation and energy sponsored by Red River Basin Commission. More recently, Ray Norrgard, one of the booklet co-authors and Wetlands Program Leader for MN DNR spoke on cattail management at a statewide wetland management workshop for 150 wetland wildlife managers sponsored by the MN Chapter of The Wildlife Society. Booklets were distributed and discussed.

Cattail and other resources on biofuels and sustainability are posted on the U of MN Crookston Center for Sustainability web page under "Reports and Resources." <https://www.crk.umn.edu/units/center-sustainability>. Also at the U of MN's Northwest Research and Outreach Center web site under <http://www.nwroc.umn.edu/research/wildlife-management-biofuels> with the booklet at: http://www.nwroc.umn.edu/sites/nwroc.umn.edu/files/cattail_management.pdf A list serv of wetland and sustainability researchers and managers has been established and sets the stage for follow-up collaboration.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Expansion of Greenhouse Production

Subd. 06k \$176,000 TF

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Appropriation Language

\$176,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the city of Silver Bay to expand and enhance a city-owned greenhouse facility to increase system production for locally grown food on a year-round basis and reduce water usage.

Project Overview

New and innovatively designed greenhouse facilities have the potential to provide sustainable food, fuel, and other products year round by utilizing ecological processes and other practices to integrate production of fish, plants, and algae in a low input, self-sustainable system. The City of Silver Bay and researchers at the University of Minnesota - Duluth are using this appropriation to expand and enhance a demonstration greenhouse facility. Refined techniques developed at the facility have the potential to be transferred and replicated at similar facilities throughout the state.

OVERALL PROJECT OUTCOME AND RESULTS

Minnesotans currently import over 90% of the food they consume each year. New developments in Controlled Environmental Agriculture (CEA) have the potential to allow year-round food production in cold climates like ours. These CEA approaches hold the promise of billions in new economic development along with increased environmental and human health producing environmentally sustainable and healthy food year-round in Minnesota. Victus Farms is a 9,000 ft² controlled environmental agriculture facility (CEA) in Silver Bay, MN operated by researchers at the University of MN, Duluth. Victus Farms is aimed at developing/demonstrating an environmentally sustainable and economically viable approach to year-round food production in cold climates. It also conducts applied research to improve these CEA production methods, and education to communicate the benefits of CEA and train its future workforce.

LCCMR Funds were used at Victus Farms to explore the potential of a wide variety of crops and production methods. Specifically, we wanted to determine the revenues generated per square foot of greenhouse space for a variety of potential crops, and determine the best methods to grow these crops. We were able to determine that lettuce (\$101.76/ft²), basil (\$125.84/ft²) and hot peppers (\$130.00/ft²) were the crops with the best economic potential. In addition, we concluded that given its large local market and ease of year-round growth, lettuce has the best overall potential. We were also able to determine the most consistent, environmentally sustainable and economically viable growth method was a hydroponic approach including both vertical thin films and deep water floating rafts. As the result of this project work and its dissemination, two new related businesses have been created in Northern Minnesota and several others are in the early stages of development. These CEA approaches have the potential to create a new multibillion-dollar sustainable food production industry in Minnesota.

PROJECT RESULTS USE AND DISSEMINATION

Since the LCCMR funded portion of our project began in June of 2014 we have conducted numerous dissemination activities. These include local, national and global presentations (13 total); Tours of the Victus Farms facility to a wide variety of groups/individuals (over 20 in total); Peer reviewed research publications (3); Technical Reports (10 total) and numerous media stories (8 total) in local newspapers, TV stations, Radio Stations and University of MN, communication outlets. Therefore, we have been fortunate to enjoy a great deal of interest in our work at Victus Farms over the past several years, and have had numerous opportunities to communicate our work to a broad audience from local hobbyists to community groups to private businesses to university researchers, to prominent, local, state and national policy makers. As the result of our project work and these widespread dissemination activities, two new CEA businesses (Mariner Farms and Wicked Fin Aquatic Farms) have begun operations in our region, and many others are in the early stages of development.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Subd. 07 Land Acquisition, Habitat, and Recreation

Shoreland Acquisition on St. Croix River

Subd. 07d \$1,250,000 TF

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Appropriation Language

\$1,250,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Washington County to purchase 15 acres, encompassing 3,500 feet of St. Croix shoreland paralleling Brown's Creek State Trail in the city of Stillwater. The county will transfer the parcel to the city of Stillwater. This appropriation is contingent on the expenditure of at least \$2,500,000 of nonstate match.

Project Overview

The St. Croix River is one of the most pristine, large river ecosystems remaining in the upper Mississippi River System. Washington County, in partnership with the City of Stillwater, is using this appropriation to acquire 15 acres containing 3,500 feet of St. Croix River shoreline just north of downtown Stillwater and parallel to the Brown's Creek State Trail. The land will be turned into a local nature park for trail users, river users, tourists, and area residents with passive recreation including fishing, boat launching, walking, and picnicking.

OVERALL PROJECT OUTCOME AND RESULTS

This \$4.3 million project resulted in acquisition of 15 acres of property along the St. Croix River for a new shoreline park in downtown Stillwater to enhance ecosystems, restore public access to the riverfront and contribute to an even more vibrant downtown economy.

This premier property was one of the longest stretches of St. Croix River frontage remaining in single private ownership in Washington County, with approximately 3,300 feet of largely wooded area sloping toward the river and containing a beach. The long rectangular piece of land running from just north of the old Zephyr line depot almost to the Wolf Marina in downtown Stillwater lies within the Lower St. Croix National Scenic Riverway District. The new Browns Creek Trail that opened in fall of 2014 runs parallel with the property and will connect downtown Stillwater to the Gateway Trail. State, regional and local residents and visitors will soon have a new gem of a park in which to connect, relax, recreate and take in the awe-inspiring St. Croix River.

The parcel was initially acquired by Washington County who is placing a conservation easement on it to assure its return to a more natural state in perpetuity and transferring it to the City of Stillwater in 2015. The City of Stillwater will launch a planning process to define the use of the property and develop a management plan for the restoration and long-term care of the property. This could include recreational

uses such as shore fishing, short-term docks, walk-in boat launches, walking paths, nature observation, and picnicking, in addition to its trail access.

Collaboration and taxpayer funding from three levels of government made this project possible: \$1.25 million in State ENRTF dollars, \$1.96 million in Washington County Land and Water Legacy Funds, and \$1.125 million in City of Stillwater funds.

PROJECT RESULTS USE AND DISSEMINATION

Our dissemination efforts for this project focused on generating media coverage to make the public aware of the purchase agreement and closing on the property. We released two press releases about the project, one announcing the signing of the purchase agreement and approval of the project by the Washington County Board on September 17, 2014 and the other announcing the closing on November 25, 2014. The St. Paul Pioneer Press, KSTP, Stillwater Gazette and Stillwater Current ran news stories.

Project completed: 6/30/2015

FINAL REPORT

Subd. 08 Air Quality, Climate Change, and Renewable Energy

Solar Photovoltaic Installation at Residential Environmental Learning Centers

Subd. 08h \$150,000 TF

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Appropriation Language

\$150,000 the second year is from the trust fund to the commissioner of natural resources for agreements with Deep Portage Learning Center to coordinate with Audubon Center of the North Woods; Eagle Bluff Environmental Learning Center; Laurentian Environmental Learning Center; Long Lake Conservation Center; and Wolf Ridge Environmental Learning Center the installation of at least five kilowatt institutional solar arrays at each of the six residential environmental learning centers as a teaching tool. Prior to the installation, the proposed placement of the solar arrays must be submitted to the Legislative-Citizen Commission on Minnesota Resources office to ensure the demonstration of the maximum educational value.

Project Overview

Over the past several years six environmental learning centers located around the state - Audubon Center of the North Woods, Deep Portage Learning Center, Eagle Bluff Environmental Learning Center, Laurentian Environmental Learning Center, Long Lake Conservation Center and Wolf Ridge Environmental Learning Center - have been implementing demonstrations of energy conservation,

energy efficiency, and renewable energy on their campuses for use as educational tools for the thousands of students and visitors that come to the centers each year. The six environmental learning centers are using this appropriation to expand their energy demonstration offerings by installing 5-kilowatt solar photovoltaic systems at each of the centers.

OVERALL PROJECT OUTCOME AND RESULTS

Six Minnesota-made 6.15 kW tenKsolar arrays have been installed at six Minnesota Environmental Education centers. Each array has an internet-based reporting system that is hosted on the eGauge website. The device numbers are as follows:

- Deep Portage: 19732
- Wolf Ridge: 19723
- Eagle Bluff: 16737
- Laurentian: 19730
- Audubon: 19735
- Long Lake: 19742

You simply type in the device number, and various graphs and production numbers will pop up.

Teachers and students and members of the interested public will be able to monitor the production of whichever center they would like to follow; they can compare and contrast. All of the arrays are situated in public places where access to the general public is easily achieved.

We (the RELCs) believe that this project will be accessed by at least 25,000 people each year. We are the premier disseminators of Environmental Education in Minnesota, and this ability will greatly increase the knowledge and analysis of Solar Electric production in the State of Minnesota. Prior to this project, there were many arrays in Minnesota that did not have the public accessibility and analysis available to the general public. We believe that a new leaf is turning over at the RELCs in regard to Solar Electric education. These arrays should be solid producers for the next 25 years; therefore, the public will receive many years of value and top-quality dissemination.

As of August 11, 2015 the arrays have produced 12.53 megawatt hours of electricity, they have mitigated approximately 12 tons of atmospheric CO₂, and are showcasing Minnesota technology and innovation. The unique reflectors of the tenKsolar arrays were formulated by Minnesota's own 3M Company.

PROJECT RESULTS USE AND DISSEMINATION

Vigorous dissemination has begun at Eagle Bluff, Wolf Ridge and Deep Portage.

Wolf Ridge has developed an alternative energy brochure that features the solar array and invites guests and interested members of the public to take a tour. They have also crystallized their new solar electric curriculum around the array and are excited that the Jack Piccotta Science Center has gone net zero in the summer months.

Deep Portage offered six solar energy tours this summer and also prominently featured the array in the Izaak Walton League Camp (June 28-July 3, 2015) curriculum. There were also several dozen impromptu solar energy tours, based on people walking by the array and asking, "What's this?"

Eagle Bluff has used the array during the 2014-15 school year, as their array was activated last Fall. This past summer numerous visitors and campers were also exposed to the wonders of solar energy.

Northwoods Audubon, Long Lake and Laurentian have toured interested members of the public and will be putting great effort into this coming school year and embedding the previously developed solar energy curriculum into their school offerings.

Project completed: 6/30/2015

FINAL REPORT

Subd. 09 Environmental Education

Youth-led Sustainability Initiatives in 40 Greater Minnesota Communities

Subd. 09b \$350,000 TF

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Appropriation Language

\$350,000 the second year is from the rust fund to the commissioner of natural resources for an agreement with Prairie Woods Environmental Learning Center and Laurentian Environmental Learning Center to complete over 100 youth-led sustainability action projects in 40 communities in southwest, southeast, central and northeastern Minnesota.

Project Overview

Adoption of renewable energy technologies and energy conservation practices can contribute in a variety of ways to the environmental and economic health of rural Minnesota communities through costs savings and emissions reductions. Engaging and coaching students as the leaders in the process of implementing such practices provides the added benefit of increasing knowledge, teaching about potential career paths, and developing leadership experience. Using this appropriation the Prairie Woods Environmental Learning Center and its partners are expanding an existing program called the Youth Energy Summit (YES!) to engage approximately 650 students in implementing 150 additional youth-led renewable energy and energy conservation projects in over 40 communities in central, northeastern, southwestern, and southeastern Minnesota. These projects will be driven by collaboration between students, community members, and local businesses and organizations.

OVERALL PROJECT OUTCOME AND RESULTS

The Youth Energy Summit (YES!) program is designed to mobilize teams of youth to address critical environmental issues and emerging opportunities in Minnesota.

The YES! program impacts for July 1, 2014 to June 30, 2016 include:

- 36 YES! Teams completed over 280 youth-led energy conservation projects in 52 communities
- Over 820 students in grades 6-12 participated in YES! and worked with local community leaders, businesses, schools, public utilities, waste haulers and other partners
- Over 26,000 additional students and 125,000 community members were directly impacted by these efforts to decrease waste and increase energy efficiency

Over the last 2 seasons (2014-2016), YES! teams leveraged over \$ 550,000 in local support of projects and in the form of in-kind contributions, matching funds, and volunteer hours and another \$ 110,000 in grants, fundraisers and corporate support. These collaborative, student-driven projects included: installing hydration stations, building and maintaining deep winter greenhouses, school gardens, hydroponic gardens, solar boats and vehicles, installing waste oil recycling stations, improving recycling systems, reducing school energy bills, promoting environmental stewardship through educational events and more!

During the past 2 seasons, YES! staff conducted 4 Fall Summits, 25 Winter Workshops tailored to meet the needs and interests of teams, and a Community Convening co-hosted with Climate Generation. Teams participated in spring judging events each season with award winners highlighted in the Team Accomplishments documents.

The YES! program demonstrates that young people in Minnesota are ready, willing and able to assume leadership roles and take action to address environmental issues and opportunities affecting our state and the world. Collaborating partners for this project include: Prairie Woods ELC, Laurentian Environmental Center, Ney Nature Center, Central Minnesota Sustainability Partnership, Southwest Initiative Foundation, and Saint John's University. Of special note, the Royalton YES! team won the state-wide 2014 "Red Wagon" award from the Minnesota Alliance with Youth.

PROJECT RESULTS USE AND DISSEMINATION

Information on YES! projects are regularly highlighted through the YES! website (www.youthenergysummit.org/), blog posts, Facebook updates and Twitter. The YES! website received well over 25,000 page views from July 1, 2014 to June 30, 2016 with 68 % of these viewers being new to the site. Local media frequently print stories on YES! team accomplishments, the Warbler, a PWELC newsletter reaching 1,400 people, goes out 3 times a year and commits a page of each publication to YES! furthermore the YES! e-newsletter goes out 4 times a year.

Several communications and outreach activities have been done in relation to this Youth-Led project including one Community Convening hosted by the YES! Albany team in collaboration with Climate Generation: A Will Steger Legacy. This event brought together community leaders, resource experts, parents and students to learn about climate mitigation strategies and to highlight local resources. A highlight of the evening was the telling of climate stories by 4 citizens, 2 of which were YES! students. Other outreach activities include tabling at local green fairs and events by student-led YES! teams.

The program's funding partners are regularly updated on projects and show their support through continued funding and volunteer time. Coordinators submit Press Releases to local and regional outlets for Spring Award winners and other important stories.

YES! staff and students presented at a 21st Century Skills workshop for the National Joint Powers Alliance in Staples, MN, (2015), Region 9 Economic Development events (2016) and the Smithsonian Water Ways exhibit at Prairie Woods ELC (2016) and plan to table at the Minnesota Community

Education and Minnesota Education Association events this fall (2016). During YES! events, techniques such as S.M.A.R.T. goals have been developed and shared with the students and students have taken that information back to their Team to successfully plan and implement projects.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Educating Minnesotans about Potential Impacts of Changing Climate

Subd. 09e \$325,000 TF

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Appropriation Language

\$325,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the Will Steger Foundation to plan and conduct forums, workshops, and trainings on Minnesota's changing climate and the potential impacts on ecosystems and natural resources. An accompanying television program and information spots must be produced for broadcast and use at the forums.

Project Overview

Climate change has and will have profound effects on Minnesota's economy, agriculture, tourism, and natural resources. While climate change is often discussed in the broader contexts of its potential impacts at a national or international level, research has shown that climate change education and behavior change happens more effectively when the issue is made local and relevant. The Will Steger Foundation is using this appropriation to develop and implement efforts aimed at increasing understanding of the potential impacts of climate change for Minnesota and changing related behavioral norms of Minnesotans through the use of stories of individuals' experiences, facilitation of related discussions, and guidance toward additional available resources. Activities include holding public forums and educator workshops around the state, establishment of peer support networks, and the production and broadcast of information spots and a documentary on public television. Approximately 100,000 people are expected to be reached statewide.

OVERALL PROJECT OUTCOME AND RESULTS

In 2014 Climate Generation: A Will Steger Legacy was allocated \$325,000 from the Minnesota ENRTF to implement Educating Minnesotans about Potential Impacts of a Changing Climate. The project was branded as Climate Minnesota: Local Stories, Community Solutions and developed in response to the urgent need to increase climate literacy and promote behavior change among Minnesotans. The knowledge of local experts and the stories of individuals engaged in the issue of climate change were a key focus.

The two major activities of this project include:

1) 12 Statewide Public Convenings: 12 public convenings engaged 1000 Minnesotans and 100 community organizations, across the state. Convenings included presentations on climate impacts and solutions, and were community specific. A climate expert, such as Mark Seeley, presented on climate impacts including flooding in Duluth and increased urban heat effects in Rochester. In addition, a panel of community members shared stories of how they were implementing climate solutions, such as stormwater management through raingardens, or public health education. The convenings closed with a range of workshops featuring tangible solutions such as energy efficiency projects, building rain gardens or crafting their own climate story to share.

Post convening survey results showed that:

- Participants show an increase in their confidence to talk about climate change impacts and solutions
- PThe majority of participants said they met at least 2 people at the convening that they could email, call or meet with if they needed advice about how to deal with climate change
- P88% of participants have taken some step toward mitigating and or adapting since the convening

2) Television production: In coordination with TPT, a 60 minute documentary, Minnesota Stories in a Changing Climate, was produced that shares the stories of six Minnesotans experiencing climate change. The documentary includes expert testimony and a discussion guide.

PROJECT RESULTS USE AND DISSEMINATION

The results of Climate Minnesota: Local Stories, Community Solutions have been used and disseminated through a variety of means depending on the project activity.

Climate Minnesota Convening's

The model of public engagement that was developed and tested through Climate Minnesota has been shared, including the survey results of our convening's at:

- CLEAN network (national climate literacy network) webinar presentation
- Poster presentation at the American Geophysical Union
- Minnesota Climate Adaptation Conference

All convening's have a recap page where we have included audio, presentations and sometimes video for individuals to revisit and use as a resource. They can be accessed at www.climategen.org/

Finally, we have also applied for funding to use the model both nationally and locally. We will be presenting on the project at the upcoming National Association for Environmental Education Conference in October

Webinars

Convening survey results and featured stories from the convening's were shared at two webinars held in March and April. 250 people attended or watched the archive of these webinars.

Minnesota's Changing Climate Screenings

We continue to offer screenings and discussion of Minnesota's Changing Climate around the state. They screenings offer an opportunity to customize discussion based on location. For example, one screening was held at Frontenac State Park and the focus was climate change impacts on natural areas, while screenings in businesses offer the opportunity to discuss behavior change in the workplace. We have offered it so far in locations engaging 750 people.

Educator Workshop

100 educators viewed and received copies and discussion guides of Minnesota's Changing Climate at the last two summer's institutes for climate change education. The majority showed interested in using the film in their classroom.

Storytelling Collection

Our storytelling collection has grown to 30 over the last two years. We continue to develop and coach individuals to add to the collection. Governor Dayton chose to use one of the stories from our collection in his "state of the state" address.

Media Coverage and Participation Summary

Climate Minnesota Participants

- 1100 Convening Attendees
- 120 Community Organizations Reached
- 45 Convening Workshop Leaders
- 37 Storytellers
- 130 Webinar Attendees
- 12 Minnesota Stories in A Changing Climate Screenings
- 750 Minnesota Stories Screening Attendees

Climate Minnesota Convenings Media Highlights:

- 26 media stories about convenings (pre- and post-event coverage)
- 15 stories in local papers (Bemidji Pioneer, Owatonna People's Press, Duluth News Tribune, etc.)
- 3 blog posts (Minnesota Brown, MPR's Updraft blog, etc.)
- 3 TV interviews
- 5 radio interviews (WTIP North Shore, Mankato State campus station, etc.)
- Additional mentions of convenings on MPR in lead-up to events
- Climate Minnesota project highlighted by the White House in the announcement of their new Climate Education and Literacy Initiative (Dec. 2014)
- Media stories surrounding Climate Minnesota have consistently used our "frame" - talking about climate change as a local and personally relevant issue

Project completed: 6/30/2016

FINAL REPORT (PDF)

Pollinator Education Center at the Minnesota Landscape Arboretum

Subd. 09f \$615,000 TF

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Appropriation Language

\$615,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop exhibits for an educational center that will offer hands-on learning experience about the role of pollinators and importance of pollinator habitat. Exhibits must utilize and integrate the best available science pertaining to all pollinator types, particularly native species. Approval of the work plan for this appropriation is contingent upon the organization addressing how it will increase access to the center by youth at no or limited cost.

Project Overview

Pollinators play a key role in ecosystem function and in agriculture, including thousands of native plants and more than one hundred U.S. crops that either need or benefit from pollinators. However, pollinators are in dramatic decline in Minnesota and throughout the country. The causes of the decline are not completely understood, but identified factors include loss of nesting sites, fewer flowers, increased disease, and increased pesticide use. Developing an aware, informed citizenry that understands this issue is one key to finding and implementing solutions to counteract these factors. The Minnesota Landscape Arboretum is using this appropriation to implement educational efforts designed to raise awareness about pollinators, their role in the environment and the economy, and the challenges they currently face due to recent unprecedented decline. Exhibits, programming, and demonstration sites will explore the role of pollinators in plant reproduction, maintaining biodiversity, and supporting agriculture and provide guidance on actions individuals can take, such as with their landscaping choices, to help pollinators.

OVERALL PROJECT OUTCOME AND RESULTS

It is well-known that pollinators are suffering due to loss of habitat, diminished diversity of native vegetation, and upticks in disease. The Minnesota Landscape Arboretum is in a unique position to introduce the public to the plight facing our pollinators what they can do to help. Last year the Arboretum hosted 462,000 visitors including 28,000 school children on field trips. Now all of these visitors will have an opportunity to learn the basics of pollinator science at the Pollination Education Center - through both formal and informal education. In collaboration with University of Minnesota researchers Dr. Marla Spivak and Dr. Karen Oberhauser, the Arboretum has created highly engaging exhibits that will encourage visitors to explore:

- The intricate relationships between flowers and their pollinators,
- The critical role of pollination in plant reproduction and in maintaining species diversity,
- How pollination is vitally important for many food crops,
- Creating pollinator-friendly landscapes in urban and rural settings, by helping to preserve and restore diversity and health of native habitats.

On the grounds surrounding the Pollination Education Center, the Garden for Pollinators introduces visitors to plants that are valuable for use in pollinator-friendly landscaping. Interpretive signage

provides tips on planting for pollinators, observing pollinators, and offers citizen science opportunities and plant labels provide visitors with specific information on the plant species that they can use in their gardens. Zones in the garden for pollinators include:

- Butterfly Zone - Demonstrates perennials, with sturdy clusters of flowers preferred by butterflies and caterpillars.
- Compare Zone - Allows for comparison of native species vs. cultivars and their benefit to pollinators.
- Bee Lawn - Planted with dutch clover, ground plum, and coreopsis as an example of a pollinator friendly lawn for low-traffic areas.
- Wild Bee Habitat - An example of nesting habitat for native bees.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Raptor Lab Integrating Online and Outdoor Learning Environments

Subd. 09h \$186,000 TF

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Appropriation Language

\$186,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Raptor Center to develop an environmental education program on raptors for middle schools that integrates outdoor experiences with technology and scientific investigation.

Project Overview

Increasingly many youth are disconnected from the outdoors and the natural world and many of these same youth, nearly 50% in Minnesota, are also not proficient in science. Yet such experiences and knowledge are necessary components for this next generation to understand and participate in solving the complex environmental challenges facing our world. The University of Minnesota's Raptor Center is using this appropriation to develop and implement an online learning environment for 7th and 8th grade students that links outdoor experiential learning with classroom curriculum by engaging students in the design and execution of student-based research projects that utilize real-world data from raptors admitted to the Raptor Center in conjunction with students' outdoor exploration of their local environment. Initially the program will be tested with a minimum of 900 students at five schools in different regions of the state with varying demographics and then made available to schools statewide.

OVERALL PROJECT OUTCOME AND RESULTS

The Raptor Lab is a resource for teaching students science-based research through wildlife issues and outdoor exploration of their local environment. The goal was to link outdoor experiential learning with a

STEM-focused classroom curriculum. The Raptor Lab curriculum addresses the urgent need to connect students with the natural world and inspire them to participate in solving challenging environmental problems.

Major goals for the project are to:

- Instill in students an action-based conservation ethic through outdoor exploration
- Expand access to an effective environmental education curriculum to middle school teachers and students throughout the state of Minnesota
- Engage students in solving environmental issues through experiential learning and scientific investigation
- Develop skills of critical thinking, collaboration and communication in middle school students

The Raptor Lab online environment has been designed, developed, built, and piloted. It consists of three parts: (1) Wildlife Veterinarian in Training; (2) Wildlife Researcher; and (3) Share Your Work. Part 1 has 6 videos and 5 activities to simulate training students to role play being a wildlife vet in training. Part 2 has eleven videos and two activities walking students through conducting a scientific research report on an environmental issue. Part 3 is an online environment where students can apply their learning by conducting their own outdoor field investigation. Students upload images, maps, sounds, data, and video to present their findings.

The Raptor Lab was piloted by 14 teachers in eight school districts (four metro and four outstate) reaching 1,010 students. Online assessment tools were created to assess student learning. The pre-assessment was taken by 911 students and the post by 652 (one pilot site dropped out mid-year and another did not administer final assessment due to schedule conflict. Pilot teachers took part in two workshops, receiving training and providing feedback and evaluation of the curriculum.

PROJECT RESULTS USE AND DISSEMINATION

The Raptor Lab has been presented at several conferences: the National Association of Environmental Educators, the Minnesota Naturalist Association, the Minnesota Science Teacher's Association, and the University of Minnesota's Grand Challenges Conference. In the fall of 2016, TRC staff will present at the Minnesota Education Association (MEA) Conference and the National Science Teacher's Association Regional Conference. The Raptor Lab was also promoted at the Minnesota Alliance of Geographic Education's workshops held at the LT Media Lab and the Minnesota Alliance of Geographic Education annual meeting. In addition, social media has been used to highlight the development of the Raptor Lab. Raptor Center Staff will also use their large database of schools currently engaged with their program to market the Raptor Lab to schools around the state.

The Raptor Lab is currently in use by last year's pilot teachers and has already begun to be expanded to other schools. Raptor Lab should reach between 1,000 - 1,500 students this school year. Teachers in Prior Lake middle schools are replacing sections of their curriculum with Raptor Lab to teach the scientific method and teachers at Rockford Middle School are integrating the Raptor Lab across subject fields to use in STEM, science, math, language arts, and social studies.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Wolf Management Education

Subd. 09i \$120,000 TF

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Appropriation Language

\$120,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with the International Wolf Center for outreach to metro area kindergarten through grade 12 classrooms and nature centers to help children understand wolf management issues.

Project Overview

Wolves are a hot topic in Minnesota, with the public sharply divided on management issues such as wolf hunting. The complexity of the topic lends itself to a lot of misunderstanding and misinformation that is not always helpful to resolving the polarized debate. The International Wolf Center is using this appropriation to help bridge the gap with science-based information by delivering on-site programs to approximately 460 classrooms in the Twin Cities metro area to teach approximately 16,000 students about wolf biology and behavior, the social and political conflicts surrounding wolves, and the overall effects of wildlife habitat loss throughout the state.

OVERALL PROJECT OUTCOME AND RESULTS

This project was undertaken to provide engaging, unbiased 60-minute program about wolves to public school K-12 classrooms and nature centers in the 9 county twin cities metro area. An IWC outreach specialist presented these programs to help students understand the complicated issues surrounding wolves and wolf management.

A total of 546 school classroom programs were presented between Oct. 22, 2014 and June 30, 2016. Five nature center programs were presented as well, for a grand total of 551 programs, which surpassed the project goal of 460 programs, while coming in \$18,535 under budget. These programs reached approximately 13,906 students as well as approximately 600 teachers. Programs were presented to 546 individual school classrooms at 77 schools in 27 districts and 8 counties. Programs covered basic wolf biology, predator/prey dynamics, role of wolves in healthy ecosystems, myths and opinions of wolves, wolf management, and importance of wildland habitat. The PowerPoint based programs included engaging video clips and photos. Students were also able to learn from handling artifacts such as wolf, deer and moose bones and pelts.

Students were surveyed pre and post program using clicker survey technology to collect data on knowledge of and attitudes toward knowledge of wolves and wolf issues. Survey data showed a range in increases from 9% to 48% from preprogram to post-program in knowledge of wolf facts and attitude and understanding of issues between wolves and humans. When the increase from pre-program to post-program was not as high, we found students had scored quite high on the pre-program question.

99% of the teachers who participated in a post-program survey would recommend the program to other teachers.

PROJECT RESULTS USE AND DISSEMINATION

This information will be available on the International Wolf Center Website at www.wolf.org, and will also be presented in the Winter 2017 issue of International Wolf Magazine.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Subd. 10 Administration and Contract Agreement Reimbursement

Contract Agreement Reimbursement

Subd. 10a \$135,000 TF

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Appropriation Language

\$135,000 the second year is from the trust fund to the commissioner of natural resources at the direction of the Legislative-Citizen Commission on Minnesota Resources for expenses incurred for contract agreement reimbursement for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of these funds.

Project Overview

Appropriations to non-state entities must be made through a formal contract with a state entity that manages all of the funds for the project on a reimbursement basis. This appropriation to Minnesota's Department of Natural Resources (DNR) funds the expenses incurred by the DNR in contracting, contract management, and expense re-imbursement for most of the Environment and Natural Resources Trust Fund appropriations made to non-state entities, including both new projects funded during the biennium and existing projects funded in previous bienniums.

OVERALL PROJECT OUTCOME AND RESULTS

This appropriation was used to support the ENRTF contract management program, which ensured that ENRTF grantees expended grant funds in compliance with state law, session law, approved work plans, and Office of Grants Management grants policies.

The DNR Grants Unit managed 39 grants active in FY 2015, including monitoring 32 grants. In FY 2016, the Grants Unit managed 59 active grants.

Between 7/1/2014 when the services began and 12/31/2015 when they ended, the DNR Grants Unit:

- Made 199 reimbursements to grantees totaling \$7,099,485.17
- Prepared and executed 23 ML 2015 grant agreements
- Published 6 editions of the quarterly newsletter for all grantees
- Billed 1,619 hours at the FY 2015 professional services rate of \$56.94/hr
- Billed 720 hours at the FY 2016 professional services rate of \$59.00/hr
- Participated in the Office of the Legislative Auditor's Internal Controls and Compliance Audit of the Environment and Natural Resources Trust Fund. This audit, published in February 2016, identified no findings relating to the DNR Grants Unit contract management. It identified one finding related to DNR allocation of administrative costs, which the Grants Unit worked with LCCMR staff to resolve.

PROJECT RESULTS USE AND DISSEMINATION

Project personnel were in frequent contact with appropriation recipients and LCCMR staff. Information was disseminated through manuals, training sessions, orientations, meetings, memos, letters, emails, newsletter, and phone.

Project due to be completed: 6/30/2016

FINAL REPORT (PDF)

- 3. M.L. 2013 Projects Completed**
January 15, 2015 – January 15, 2017
MN Laws 2013, Chapter 52, Section 2

M.L. 2013 Projects Completed in 2015-2016

MN Laws 2013, Chapter 52, Section 2 (beginning July 1, 2013)

For the next biennium (July 1, 2013 - June 30, 2015), approximately \$33.8 million is available each fiscal year (Total = \$67,620,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2013 Request for Proposal, 169 proposals requesting a total of approximately \$155 million were received. Through a competitive, multi-step process 66 of these proposals, requesting a total of \$73 million, were chosen to present to the LCCMR and 46 of those proposals, totaling \$38.2 million (all FY 2014 funds and part of the FY 2015 funds), were chosen to receive a recommendation for funding to the 2013 MN Legislature. The Legislature adopted all 46 of these project recommendations and added one additional project. All 47 appropriations were signed into law by the Governor on 05/09/13. \$29.6 million remains available for LCCMR funding recommendations to the ML 2014 Legislature.

NOTE: For all projects, contact us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 03 Natural Resource Data and Information

- 03a Minnesota Biological Survey
- 03b County Geologic Atlases - Part A
- 03d Updating the National Wetland Inventory for Minnesota - Phase IV
- 03e Conservation Easement Stewardship Program - Phase III
- 03f Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol - **RESEARCH**
- 03g Improved Rapid Forest Ecosystem and Habitat Inventory
- 03h Finding Disease Resistant Elm Trees in Minnesota - **RESEARCH**
- 03i Enhancing Timber Sale Program Environmental and Economic Sustainability
- 03j Enhancing Environmental and Economic Benefits of Woodland Grazing - **RESEARCH**

Subd. 04 Land, Habitat, Restoration, and Recreation

- 04a State Parks and State Trails Land Acquisition
- 04b Scientific and Natural Areas Restoration, Enhancement and Citizen Engagement
- 04c Native Prairie Stewardship and Prairie Bank Easement Acquisition
- 04d Metropolitan Conservation Corridors (MeCC) - Phase VII
- 04e Landscape Arboretum Acquisition Lake Tamarack
- 04f Conservation Program Technical Assistance
- 04g Moose Habitat Restoration in Northeastern Minnesota - **RESEARCH**
- 04h Bee Pollinator Habitat Enhancement
- 04j Preserving the Avon Hills Landscape - Phase II
- 04k Frogtown Farm and Park Acquisition

04I Restorations Evaluations

Subd. 05 Water Resources

05a Sustaining Lakes in a Changing Environment - Phase II - **RESEARCH**

05c Heron Lake Sediment and Phosphorus Reduction Implementation Projects

05d Southern Minnesota Lakes Restoration

05g Membranes for Wastewater-Generated Hydrogen and Clean Water - **RESEARCH**

05h Antibiotics in Minnesota Waters - Phase II - Mississippi River - **RESEARCH**

Subd. 06 Aquatic and Terrestrial Invasive Species

06a An Aquatic Invasive Species Research Center - **RESEARCH**

06b Detection and Monitoring of Asian Carp Populations

06d Elimination of Target Invasive Plant Species

06e Biological Control of Garlic Mustard - **RESEARCH**

06f Zebra Mussel Control Research and Evaluation in Minnesota Waters - **RESEARCH**

Subd. 07 Environmental Education

07a Minnesota Conservation Apprentice Academy

07b Youth Outdoors: Mississippi River Education and Employment Opportunities

Subd. 08 Administration and Contract Management

08b Contract Agreement Reimbursement

Funding Source:

Environment and Natural Resources Trust Fund (TF)

MN Laws 2013, Chapter 52, Section 2

Subd. 03 Natural Resource Data and Information

Minnesota Biological Survey

Subd. 03a \$2,650,000 TF

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Appropriation Language

\$2,650,000 the first year is from the trust fund to the commissioner of natural resources for continuation of the Minnesota biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting, monitoring, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

Project Overview

The Minnesota Biological Survey (MBS) is an ongoing effort begun in 1987 by the Minnesota Department of Natural Resources (DNR) that is systematically surveying, county-by-county, the state's natural habitats. The effort identifies significant natural areas and collects and interprets data on the status, distribution, and ecology of plants, animals, and native plant communities throughout the state. To date, surveys have been completed in 81 of Minnesota's 87 counties and nearly 20,000 records of rare features have been recorded. MBS data is used by all levels of government in natural resource planning and use decisions, including prioritization of protection of park lands and scientific and natural areas. This appropriation will permit continuation of the survey in Lake, St. Louis, Clearwater, Beltrami, Lake of the Woods, and Koochiching counties. Additionally sites containing select native plant communities or select rare plant and animal populations will be monitored, conservation technical assistance will be provided, and interpretive products and publications will be developed to make the information useful to a variety of audiences.

OVERALL PROJECT OUTCOME AND RESULTS

The need to protect and manage functional ecological systems, including ecological processes and component organisms continues to accelerate with increased demands for land, water, and energy, continued habitat fragmentation, loss of species and genetic diversity, invasive species expansion, climate change, and other changing environmental conditions.

Since 1987 the Minnesota Biological Survey (MBS) has systematically collected, interpreted and delivered baseline data on the distribution and ecology of plants, animals, native plant communities, and functional landscapes. These data help prioritize actions to conserve and manage Minnesota's ecological systems and critical components of biological diversity.

Since July 2013, MBS contributed 1,326 new rare features records to the Rare Features Database, surveyed 72 lakes for rare plants and vegetation, and added 439 vegetation plots (releve) to the statewide database. Since 1987, MBS has added a total of 21,478 new rare feature records statewide; MBS botanists have documented 1,245 rare aquatic plants during targeted surveys of 1,983 lakes in 46 counties; MBS plant ecologists have contributed 5,392 of the 10,269 vegetation plot records in the DNR's releve database. Statewide 10,734 MBS sites of Biodiversity Significance and 83,913 polygons of native plant communities are now publically available on the Minnesota Geospatial Commons.

During this project period baseline surveys continued, focused in northern Minnesota (see map) within large functional landscapes of forests, peatlands, wetlands, and undeveloped lakes and streams. Highlights include helicopter-assisted field surveys of the most remote areas within northwest Minnesota's patterned peatlands, remote-access-only vegetation and botanical field surveys of the Border Lakes, and the discovery of a new state-record species of sedge, (*Carex tinctoria*), along with numerous other examples of new and expanded distribution data for native plant species.

MBS continued monitoring to measure the effectiveness of management and policy activities. For example, as part of DNR's forest certification high conservation value forest sites in southeastern

Minnesota have been targeted as monitoring sites with field survey efforts focused on detailed rare plant surveys. This work provided updates to existing data that is often more than 20 years old, set a foundation from which to more precisely track target species' populations through time, and improved the relevance of MBS data to monitoring needs.

PROJECT RESULTS USE AND DISSEMINATION

MBS data are stored primarily in the Division of Ecological and Water Resources information systems, which are increasingly linked to other databases in the MN DNR. For example, MBS, in collaboration with other DNR partners, developed and operationalized a DNR-wide native plant community GIS database that integrates native plant community mapping by all DNR Divisions. In addition, MBS procedures, updates, recent maps, and links to related data are presented on the DNR website. Many MBS GIS datasets are delivered to clients through the Minnesota Geospatial Commons. MBS regularly provides vegetation plot data from the releve database to researchers at academic institutions and other agencies and organizations. Non-public rare species data are available through agreements with the requesting agency and the DNR.

MBS publishes and distributes survey results in a variety of formats for various audiences. Many products are available on the DNR website, including GIS shape files of native plant communities and MBS sites, native plant community field guides, and guides to sampling techniques such as vegetation plot data collection using the releve method. MBS web pages are updated with new information and have links to associated resources: <http://www.dnr.state.mn.us/eco/mcbs/index.html>.

The DNR and Legislative libraries and other local information repositories (such as libraries within counties) have access to published products, including books, maps, reports, field guides and digital media. MBS has published several books and field guides and the publication of a natural history book based on MBS data collected in the northwestern prairie region and Red River Valley is underway. Based on local collaborator interest and the results of regional focus groups, this book will include a guide to selected natural areas of the region. A Minnesota publisher has agreed to publish this book.

Staff routinely make presentations that describe MBS methodologies and results to a wide range of audiences including county boards, local planning groups, citizen advisory groups, other biologists, land managers, and students. MBS staff provide local planners with ecological interpretations describing important sites of biodiversity identified during the Survey to assist with management plans. Staff lead or participate in technical workshops and field trips to exchange ideas on survey methodology and provide training in the application and interpretation of the data. For example, in 2014-15, MBS botanists and plant ecologists in collaboration with partners delivered nine field workshops to over 200 natural resource professionals. These field workshops focused on plant identification, native plant community classification, and how these skills can be used to inform management decisions.

Physical collections are deposited at Minnesota repositories, primarily at the University of Minnesota's J.F. Bell Museum of Natural History and at the Science Museum of Minnesota, St. Paul. As part of a larger network of museums and herbaria, these cooperators are essential to the documentation and sharing of MBS results. MBS and museum staff meet periodically to address curatorial, data management, and interpretive needs. During this project period, MBS deposited over 2,000 plant specimens to the Bell Museum Herbarium.

MBS also delivers data through an international organization, NatureServe, and also shares data with

cooperators at colleges and universities and with others in ecological regions where surveys are ongoing or completed.

Project completed: 6/30/2015

FINAL REPORT

County Geologic Atlases - Part A

Subd. 03b \$1,200,000 TF

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Appropriation Language

\$1,200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to continue the acceleration of the production of county geologic atlases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources for the purpose of sustainable management of surface water and groundwater resources. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Minnesota County Geologic Atlas program is an ongoing effort begun in 1979 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). This portion, called Part A and conducted by the Minnesota Geological Survey, collects geologic information to produce maps and databases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources. The information is used in planning and environmental protection efforts at all levels of government, by businesses, and by homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will initiate Part A geologic atlases for three additional counties yet to be determined depending on county participation and other priorities.

OVERALL PROJECT OUTCOME AND RESULTS

The Minnesota Geological Survey maps sediment and rock because these materials control where water can enter the subsurface (recharge), where and how much water can reside in the ground (aquifers), where the water re-emerges (discharge), and at what rates this movement occurs. This information is essential to managing the quality of our water and the quantity that can be sustainably pumped. This project completed geologic atlases for Meeker, Redwood, and Kanabec counties, and contributed to ongoing atlas work in Brown, Wadena, Becker, and Hubbard counties. Information about the geology is gleaned from the records of domestic wells, and from drilling conducted for this project. In Meeker County we used 3,600 wells and 6 cores, in Redwood we used 1,900 wells and 10 cores, in Brown County we used 1,700 wells and 8 cores, in Wadena County we used 2,787 wells and 3 cores, in Becker

we used 8,887 wells and 5 cores, in Hubbard we are using 9,550 wells and 3 cores, and in Kanabec we used 4,055 wells and 7 cores. In all cases these are augmented with soil borings and geophysical surveys. From the data we created maps of the geology immediately beneath the soil; the aquifers within the glacial sediment; and the shape, elevation, and rock types of the bedrock surface. These maps and data support monitoring, wellhead protection, water appropriation, clean-ups, and water supply management.

In large portions of Redwood counties the glacial materials are relatively thin, and most of the bedrock types present do not provide much water. This makes the mapping of glacial sand bodies, which are potential aquifers, very important. In Becker, Hubbard, and Wadena counties the glacial deposits are the only viable water source. Irrigation is an important water use in those counties, and the atlas information will be useful in managing water for maximum benefit. In Meeker, Brown, and Kanabec counties, the glacial deposits vary in thickness, and the bedrock includes some formations that can serve as aquifers. In every county the database of well construction records we have compiled is an excellent indicator of which aquifers the population is currently relying on. Printed and digital versions of all these atlases will be delivered to LCCMR.

PROJECT RESULTS USE AND DISSEMINATION

The Minnesota County Geologic Atlas program is an ongoing effort begun in 1979 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). This portion, called Part A and conducted by the Minnesota Geological Survey, collects geologic information to produce maps and databases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources. The information is used in planning and environmental protection efforts at all levels of government, by businesses, and by homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will initiate Part A geologic atlases for three additional counties yet to be determined depending on county participation and other priorities.

Project due to be completed: 6/30/2016

FINAL REPORT (PDF)

Updating the National Wetland Inventory for Minnesota - Phase IV

Subd. 03d \$1,000,000 TF

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Appropriation Language

\$1,000,000 the first year is from the trust fund to the commissioner of natural resources to continue the update and enhancement of wetland inventory maps for Minnesota. This appropriation is available until

June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Over the past 100 years, about half of Minnesota's original 22 million acres of wetlands have been drained or filled. Some regions of the State have lost more than 90 percent of their original wetlands. The National Wetland Inventory, a program initiated in the 1970s, is an important tool used at all levels of government and by private industry, non-profit organizations, and private landowners for wetland regulation and management, land management and conservation planning, environmental impact assessment, and natural resource inventories. The data behind the National Wetlands Inventory for Minnesota is now considerably out-of-date and a multi-phase, multi-agency collaborative effort coordinated by the Minnesota Department of Natural Resources is underway to update the data for the whole state. This appropriation is being used to conduct the fourth of six phases of this effort, which involves wetlands maps for portions of Lake, Cook, and St. Louis counties in northeastern Minnesota. A completed wetlands inventory will help improve wetland protection and management.

OVERALL PROJECT OUTCOME AND RESULTS

Updating the National Wetland Inventory (NWI) is a key component of the State's strategy to ensure healthy wetlands and clean water for Minnesota. This effort is a multi-agency collaborative under leadership of the Minnesota Department of Natural Resources. These data are intended to replace the original 1980s NWI data. The NWI data provide a baseline for assessing the effectiveness of wetland policies and management actions. These data are used at all levels of government, as well as by private industry and non-profit organizations for wetland regulation and management, land use, conservation planning, environmental impact assessment, and natural resource inventories. The update project is being conducted in phases with data released for each region as it is finalized.

In this fourth phase of the overall effort, the DNR updated wetland inventory maps for 14,700 square miles in northeast Minnesota covering all of Lake, Cook, and St. Louis counties as well as portions of Carlton and Koochiching counties. The overall accuracy for wetland identification is 86%.

The updated NWI data was created in accordance with federal wetland mapping guidance. This update used spring aerial imagery acquired in 2009, summer imagery acquired in 2013, and lidar elevation data as well as other ancillary data. Quality assurance of the data included visual inspection, automated checks for attribute validity and consistency, as well as a formal accuracy assessment based on an independent field data. Further details on the methods employed can be found in the technical procedures document for this project located on the project website (http://www.dnr.state.mn.us/eco/wetlands/nwi_proj.html).

PROJECT RESULTS USE AND DISSEMINATION

All wetland map data and aerial imagery are available free of charge to the public. The data have been made available through the Minnesota Geospatial Commons (<https://gisdata.mn.gov/>) as well as through an online wetland viewer (<http://www.dnr.state.mn.us/eco/wetlands/map.html>). A copy of the data has also been provided to the US Fish and Wildlife Service for inclusion in the national wetland database.

Use of the NWI data is being promoted through a variety of channels. The DNR has given presentations about the NWI data at both the Minnesota Water Resources Conference and the Minnesota GIS/LIS Conference. The DNR and MnGeo have presented at the Minnesota GIS/LIS Conference regarding the availability of the spring aerial imagery. A press release has also been drafted for an expected

September release. A peer-reviewed journal article was published in the journal Wetlands based on the work from the previous NWI project phase and a book chapter has been prepared for an upcoming publication on wetland assessment.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Photo Interpretation Guide: For Updating The National Wetland Inventory In Minnesota (PDF)

Updating the National Wetland Inventory in Northeast Minnesota: Technical Documentation (PDF)

Conservation Easement Stewardship Program - Phase III

Subd. 03e \$60,000 TF

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Appropriation Language

\$200,000 the first year is from the trust fund to the commissioner of natural resources for the final phase to bring conservation easements held by the Department of Natural Resources up to minimum conservation standards, through monitoring, baseline data collection, and baseline report preparation.

Project Overview

The purchase of conservation easements - restrictions on land use that protect natural features while keeping land in private ownership - has proven to be an effective means to protect land at a lower initial cost than full state ownership. However, once an easement is purchased there are ongoing stewardship, monitoring, and enforcement responsibilities necessary to ensure the terms of the agreement between the easement holder and the landowner are met. Earlier efforts funded by the Environment and Natural Resources Trust Fund in 2008 and 2011 allowed the Minnesota Department of Natural Resources (DNR) to retroactively bring existing conservation easements up to minimum standards by developing a central inventory and management system of the conservation easements held by the DNR, along with a plan for how they would be administered into the future. This appropriation is the final phase of this effort allowing the DNR to continue and accelerate the implementation of the previously developed plan. Additionally, tools will be developed to enhance monitoring efficiency using remote sensing.

OVERALL PROJECT OUTCOME AND RESULTS

This was the last phase of a three-phase project to establish procedures and tools to effectively monitor conservation easements held by the DNR. One project goal was to monitor and create baseline reports for 75 existing conservation easements-actual attainment was 85 easements. As detailed in the Phase III Supplemental Report, additional goals were to investigate the use of image processing software coupled with LiDAR and current imagery to improve the efficiency of conservation easement stewardship. Two areas were explored: 1) can these tools be used to accurately redraw stream centerlines after changes in stream courses; and 2) can remote sensing tools be written to automatically identify possible violations

of easement terms? DNR trout stream easement boundaries are typically 66' from stream centerlines and move with stream course changes. It is essential to have accurate maps of easement boundaries for monitoring, but it is time consuming to edit boundaries manually. Staff created a novel approach to generate stream centerlines from LiDAR and adjust them with imagery where stream course changes had occurred. Tests of a 15km stream section demonstrated the accuracy and usefulness of this approach. Manual effort of 90 minutes to digitize the stream section was reduced to 11 minutes. In the second problem area, staff utilized eCognition image analysis software to classify land cover in easement corridors utilizing imagery with three levels of resolution and LiDAR and identify objects/conditions that could be easement violations. Staff concluded that to effectively monitor easements remotely would require image resolution no coarser than 6" and LiDAR that had been acquired at the same time. Possible violations identified in this fashion still need on-site verification, but this technique can highlight areas of concern and reduce on-site visit time. Tools developed in this project have potential application for statewide riparian buffer mapping and monitoring.

PROJECT RESULTS USE AND DISSEMINATION

Results for Activity 1 of the project are being assembled in a fashion where they can be presented to personnel in Fish and Wildlife who are responsible for the maintenance of the stream centerline GIS layers for possible broader application. In addition, a presentation is being planned for BWSR and DNR personnel involved in mapping the public waters and ditches as part of the new 50 foot buffer legislation. There is potential for applying both the centerline and land cover techniques developed for this project to buffer mapping and monitoring.

Results for Activity 2, using tools developed in project phases I and II to visit 75 additional easements for the purposes of collecting baseline property information and creating those reports, was disseminated primarily to DNR management for the purposes of directing monitor efforts. One update was generated for the Conservation Easement Stewardship User Manual during the project for staff training use. During the project, wild and scenic river easement baseline property reports were signed and mailed to fee title owners of the properties.

Periodic project updates and preliminary results were presented to the Conservation Easement Stewardship committee for the purposes of gathering additional direction from that group during the project. A conservation easement stewardship cost calculator was disseminated to DNR fiscal staff. Information about the calculator was presented to the LCCMR on June 25, 2015.

Project completed: 6/30/2015

FINAL REPORT

Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol

Subd. 03f \$838,000 TF

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RESEARCH

Appropriation Language

\$838,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to continue the characterization of unique microbes discovered in the Soudan Underground Mine State Park that have potential applications for metal remediation in water resources, microbial electrofuels, and biocontrol of white-nose bat syndrome. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Soudan Iron Mine near Ely, Minnesota is no longer an active mine and is now part of a state park, as well as the home to a state-of-the-art physics laboratory at the bottom of the mine. The mine has also been discovered to contain an extreme environment in the form of an ancient and very salty brine bubbling up from a half-mile below the Earth's surface through holes drilled when the mine was active. Strange microorganisms - part of an ecosystem never before characterized by science - have been found living in the brine. Scientists from the University of Minnesota will use this appropriation to continue to study this unique ecosystem and its organisms and build upon findings from a previous Environment and Natural Resources Trust Fund supported effort to explore potential applications of using the microorganisms living there for removing metals from mine waters, producing biofuels, and developing a biocontrol for White-Nose Syndrome, which is decimating bat populations around the country.

OVERALL PROJECT OUTCOME AND RESULTS

The Soudan Iron Mine in Minnesota provides direct access to microbes with special adaptations that can be harnessed for biotechnology. We conducted research to harness these microbes to approach some of the most critical environmental challenges in Minnesota:

Metal Bioremediation:

Our goal was to explore the native fungi living in the mine. These fungi live in extremely harsh and variable chemical conditions, including high metal concentrations in water. Because the Soudan Iron Mine fungi have adapted to the conditions in the mine, they might possess properties that we can use for cleaning up metal-contaminated water. When we use plants or microorganisms (like fungi) to remove metals from water, it is termed bioremediation. We investigated mine fungi that thrive in heavily contaminated waters with metals such as copper, cobalt, zinc, nickel, and mercury. We isolated 1014 different strains of fungi representing 140 different taxa, including novel species. We screened 60 fungal isolates and discovered that several species accumulate metals within their living biomass. These findings confirmed that: (1) many Soudan Iron Mine fungal isolates have promising metal removal characteristics in solid and liquid growth conditions; (2) the amount of metal removed from water was similar between natural and lab specimens; and (3) metal binding can be reversed in some cases. These results can be used to develop a suite of bioremediation strategies using fungi as passive sorbent materials or in living self-regenerating bioreactor.

Electrosynthesis Project:

We characterized and developed methods for understanding two bacterial isolates from the Soudan Mine: *Marinobacter subterranei* and *Desulfuromonas soudanensis*. *D. soudanensis* is capable of producing electricity and dissolving rust in high salt concentrations, making it a very unusual organism. We sequenced and characterized its genome to better understand how electricity production works at

high salt concentrations, a process that could be important for future applications in microbial bioremediation and desalination. We are currently in the process of developing a genetic system in *D. soudanensis* to further our understanding of how it generates electricity in high salt conditions. *M. subterranei* is a model for the study of metal precipitation, a process that, if better understood, could allow us to feed electricity directly into bacteria. These bacteria could then be engineered to produce desired products using electricity. Given the complexities of this biological process, we are still an early stage of understanding the fundamental pathway that enables metal precipitation. Our students working on these two projects have presented their work at national and international meetings and have produced 2 peer reviewed scientific manuscripts on their work as well.

White Nose Bat Syndrome Biological Control:

White Nose Syndrome is a devastating bat disease causing catastrophic economic and biodiversity losses throughout the US. Our primary goal was to identify microbes that inhibit the fungal pathogen, *Pseudogymnoascus destructans* that could eventually be developed as a treatment in caves and mines. As part of this biocontrol strategy, we collected and screened new microbes from the Soudan Mine. In total, 32/121 fungal strains and 60/262 bacterial isolates inhibited growth of *P. destructans*. Analysis of active strains provided us with a picture of which types of inhibitory microbes may be found in various mine locations, which may help future screening and discovery efforts. With this library of nearly 100 antifungal strains, we are poised to move forward into phase II, which will involve testing the ability of each active strain to inhibit *P. destructans* on specific substrates both in the lab and in the environment. An additional outcome is that a subset of at least 50 strains had activity against human pathogens and these will be further explored in a separate project.

PROJECT RESULTS USE AND DISSEMINATION

Information, discoveries, approaches and questions from our project have been used and disseminated in a number of different ways: Presentations about individual projects have been given to school groups, college students, local community groups and at professional scientific conferences (see examples, below). Several components of this project were completed and shared as peer-reviewed scientific manuscripts. Some of the fundamental scientific discoveries have been used to further develop and expand new ideas that were not a part of the original research plan. These new ideas and hypotheses have been incorporated into new grant proposals, resulting in successful new funding at both the state and federal levels (including several new LCCMR proposals that build directly on initial research accomplished in this period as Phase II projects). Some additional uses include the screening of these new, diverse microbial libraries against other targets, including human infectious disease pathogens. For example, several of the bacterial strains that showed no activity against the fungal bat pathogen did exhibit inhibition of human yeast pathogens. These strains will be further studied to purify and identify the active components for potential development as human therapeutics.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Improved Rapid Forest Ecosystem and Habitat Inventory

Subd. 03g \$262,000 TF

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Appropriation Language

\$262,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate a new approach to forest inventory, based on statewide forest inventory and analysis (FIA) data.

Project Overview

Minnesota has 15.9 million acres of forest land managed by a variety of county, state and federal agencies, and private landowners for timber production, wildlife habitat, and ecological considerations. Forest managers rely on inventory data to make effective planning and management decisions. Because forests are continually changing through natural and human processes, forest inventory data is periodically updated. However, doing so is an expensive and time-consuming endeavor and, as a result, much of Minnesota's forest inventory data is currently out of date. This appropriation is being used by scientists at the University of Minnesota to evaluate an innovative approach to forest inventory using existing statewide Forest Inventory and Analysis (FIA) data that could help reduce costs, expedite future updates, and improve overall usability.

OVERALL PROJECT OUTCOME AND RESULTS

Forests cover one-third of Minnesota and contain 15.9 million acres of timberland managed in large part by county, state and federal agencies and private landowners. Of this, 53% is public. DNR forest stand inventory records alone include nearly 200,000 stands. Stand inventories are central to the management of these lands. But forests change rapidly (e.g., 14% of field plots change cover type within 5 years) and stands can shift from sapling to old forest stage in 2-4 score years. Thus inventories need updating, but such efforts have fallen far behind. Why? They are costly (say \$6 per acre, \$3 for field plots, \$3 for mapping) and can total millions of dollars statewide. Consequently these data are typically insufficient and out of date.

The project questioned existing inventories and explored new ideas, methodology and tools to dramatically reduce costs and to expand ecological and habitat detail. The findings below will foster inventories with greater frequency, timeliness and detail:

1. A major use of inventories is in forest planning (harvest scheduling), but results indicate such analyses do not require large numbers of field plots.
2. Forest yield estimates, essential to planning, likewise do not require large numbers of field plots-nearby and past inventories can satisfy much of this data need.
3. Data mining analyses indicate numerous ecological variables can be imputed to inventory stands from data already available such as physiographic class, soil maps, location, and tree species present. Results show moderate to high accuracy for native plant community class (NPC) estimation.
4. Habitat suitability models have been refined and packaged for PC use. This enables local to large area habitat characterization for 150+ wildlife species across past, present and projected inventories.
5. Based on the above findings, cost effective alternative inventory designs are now available to fit diverse situations. These can reduce field plot costs to half or less.

6.

PROJECT RESULTS USE AND DISSEMINATION

1. Workshops, training, software tools and publications are already underway to foster implementation among DNR and county participants and other landowners. Some of these will be offered through the Sustainable Forests Education Cooperative (SFEC) from the University's Cloquet Forestry Center. These workshops will cover developing local yield tables, the use of efficient judgment (located) plots, and choosing your inventory design from among alternatives. Lidar workshops have already been held. We are also making the data mining and habitat imputation capability available as software for PCs. Further details on project findings and tools and their implementation will be made available as University of Minnesota Forestry Research Notes at www.forestry.umn.edu and on the Interagency Information Cooperative website at iic.umn.edu.
2. The project manager and staff have presented project progress and various results at several meetings of participating professionals and agencies (e.g., the Minnesota Forest Resources Partnership). These communications have focused on inventory design. This includes advising on the development of a DNR Forestry led implementation proposal directed to the LCCMR. Staff has also been working with DNR Forestry on the implementation of ecological imputation findings. A report on parts of this work has been accepted for presentation at the 2015 National Convention of the Society of American Foresters in Baton Rouge, LA in November.
3. Combinations of Lidar, spectral imagery and automated cover type mapping software explored in the project are coming soon and will likely reduce mapping costs to half or less.
4. It is anticipated that these project findings will be examined and implemented by most project participants.
5. The subject of this LCCMR project is an increasingly common and internationally important topic. Many states and countries are faced with similar inventory cost and effectiveness problems. Thus publications and methods developed from this project will likely spur further study by others well beyond Minnesota.

Project completed: 6/30/2015

FINAL REPORT

Finding Disease Resistant Elm Trees in Minnesota

Subd. 03h \$200,000 TF

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RESEARCH

Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to

evaluate and identify native Minnesota elms resistant to Dutch elm disease to assist with limiting the susceptibility of the state's elms to Dutch elm disease. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Elms were once a very widespread tree in Minnesota and amongst the most common and popular in urban landscapes due to their size, shading capability, and tolerance of pollution and other stresses. Over the past five decades, though, Dutch elm disease, an exotic and invasive pathogen, has killed millions of elms throughout the state. However, scientists at the University of Minnesota have observed that some elms have survived the disease and appear to have special characteristics that make them resistant to Dutch elm disease. This appropriation is being used to identify, propagate, and evaluate native Minnesota elms resistant to Dutch elm disease to assist with limiting the susceptibility of the state's remaining elms to Dutch elm disease and possibly lay the foundation for re-introductions of the tree in the future.

OVERALL PROJECT OUTCOME AND RESULTS

Dutch elm disease is caused by an exotic invasive fungus (*Ophiostoma novo-ulmi*) that was introduced into Minnesota in the 1960's. Since that time the disease has killed millions of elms in urban and forested landscapes across the state. Although most American elms have no resistance to this pathogen, some continue to survive the disease and remain healthy in locations where all other elms have died. To determine if these trees have some tolerance to the disease or just escaped infection, we collected and inoculated a group of selected elms from across Minnesota. These trees were found from surveys with the help of city officials and the general public and they are from metropolitan and rural areas throughout the state. Accomplishments included:

1. Twenty-five trees were selected for testing during the first phase of the project.
2. All trees were successfully propagated to produce clones.
3. Successful inoculation methods were developed.
4. Clones were screened in greenhouse and field for resistance.
5. 600 trees representing different native elm selections have been planted in the elm research nursery at the University of Minnesota for continued testing and evaluation.
6. Over 50 additional selections have been identified and are available for propagation for the future.

Results indicate that there is a range of elm genotypes that vary in their tolerance to Dutch elm disease. We are continuing our efforts to find the highest degree of resistance among different genotypes so more Minnesota-hardy elms can be added to our urban and rural landscapes. New elm selections will provide the much needed diversity in these important native species and will provide more options for replanting in communities devastated by the emerald ash borer and other exotic pests and diseases. A Phase II elm project which began on July 1, 2016 with funds from the Minnesota Environment and Natural Resource Trust Fund will allow the testing of more elms, study the mechanisms of resistance found in the trees and continue to field test our selections to ensure trees with the greatest resistance and best growth characteristics are available for planting by the people of Minnesota.

PROJECT RESULTS USE AND DISSEMINATION

Over the duration of this project many presentations, magazine articles, and scientific publications have been completed providing information about the project to a large audience of stakeholders including the arborists, nursery managers, foresters, researchers and the general public. We have received a great

deal of feedback from the public supporting this project to find hardy Minnesota elms that are resistant to Dutch elm disease. With this information we are closer to our goal of introducing more Minnesota native elms back to our urban and rural landscape. Since the 1960's, Minnesota has lost millions of elms to this disease, changing the landscape. The results from our investigations show that there is hope to obtain resistant elms that are native to Minnesota and these will provide benefits to the environment and people of Minnesota.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Enhancing Timber Sale Program Environmental and Economic Sustainability

Subd. 03i \$336,000 TF

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Appropriation Language

\$336,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate the impacts of timber payment methods on postharvest forest ecological conditions and net revenue generated from public timber sale programs. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota has 9.5 million acres of public forest lands that play an important role in sustaining Minnesota's environment and economy. The policies and programs used by public timber sale programs can impact post-harvest ecological conditions and have pronounced effects on the composition, structure, and productivity of the forest in the future. Additionally, timber harvesting revenues play an important role in economic activity, employment, and tax revenue. Currently, timber on public lands is sold in of two ways: pay based on volume harvested and pay based on appraised volume available for harvest, regardless of the actual harvest. Scientists at the University of Minnesota are using this appropriation to evaluate how timber payment methods impact post-harvest forest ecological conditions, net revenue generated from public timber sale programs, and barriers perceived by forest managers and loggers. This information will help gauge economic and ecological tradeoffs between the two methods in order to maximize future forest productivity, wildlife habitat, and biodiversity.

OVERALL PROJECT OUTCOME AND RESULTS

The method used by a timber sale program to collect payment for timber sold was perceived by land managers and others to have a substantial impact on post-harvest ecological conditions and net timber sale revenue. The two payment methods used are consumer scale (scale) and lump sum. Under the scale method, the buyer only pays for timber that has been harvested and scaled by a qualified scaler.

With this method, the seller tracks harvested volume using scale tickets which require administrative time to process. The lump sum method requires the buyer to pay a fixed amount for the timber, regardless of the timber volume actually harvested.

Our study goals were to evaluate how the two timber payment methods: a) impact post-harvest ecological conditions; b) impact the cost-effectiveness within Minnesota's public timber sale programs; and c) are perceived by natural resource managers and loggers. To accomplish these study goals, we collected data from post-harvest sites, reviewed agency records, conducted a field economic experiment using a timber sale auction, conducted time studies, administered a mail survey, and conducted interviews and focus groups.

We found that the perceptions of ecological and economic impacts of timber payment method often exceed actual impact. Timber payment method did not impact post-harvest ecological conditions, gross stumpage revenue or stumpage price bids. Numerous factors (e.g., pre-harvest operator conditions, operator) had a greater impact on post-harvest ecological conditions than payment method. A strong biomass market could increase utilization and thus post-harvest ecological conditions under a lump sum method. The impact of using the consumer scale method on net timber sale revenue is less than one percent of the timber sale's value. Logging business owners participating in the study ranked timber payment method lower in importance than other factors when bidding on a sale. As each payment method has its strengths and weaknesses (see table below), agencies need the flexibility to select the approach which best meet their needs.

Summary of factors favoring use of scale and lump sum payment methods.

Factors favoring scale method	Factors favoring lump sum method
1) Less administrative time and accuracy needed to estimate sale volume	1) Less time needed to administer active timber sale and to process paperwork and other related documents
2) Appraisal staff have low probability of accurately estimating sale volume and value	2) Facilitates simultaneously administering several timber sales
3) Timber sales with a high percentage of low value timber and/or where operating costs are expected to be high	3) Fewer personnel required for timber sale
4) More woody material may be retained on-site for wildlife purposes	4) High utilization can facilitate manual reforestation efforts
5) Salvage timber sales	5) Timber sale has uniform characteristics (e.g., pine plantation)

PROJECT RESULTS USE AND DISSEMINATION

Project cooperator meetings were conducted annually to discuss upcoming areas of focus, data and methods, and to present results to date. Semi-annual project summary reports submitted to LCCMR were shared with all project cooperators. During the March 24, 2016 project cooperator meeting in Willow River, final results from all project components were presented during a highly interactive session and four one-page fact sheets were distributed. Participants at that March 2016 meeting were so interested in the study results that they suggested and helped arrange additional presentations to the Minnesota Association of County Land Commissioners (June 9, 2016) and the Minnesota Forest Resources Partnership (June 23, 2016). Additional project outreach included a meeting with the DNR

Forest Operations and Management Section in 2014, four papers and presentations at the Council on Forest Engineering annual meetings in 2014 and 2015, a seminar presented during the 2015 International Symposium for Society and Resource Management, three seminars to University of Minnesota graduate students and faculty, and a poster presented during the 2015 Society of American Foresters Annual Meeting. Three graduate students completed M.S. theses on their work in this project. Two University of Minnesota, Department of Forest Resources Staff Papers were produced. Everyone who participated in the Activity 2 mail survey was sent an electronic summary letter with instructions for how to receive the full report. At least two manuscripts are being prepared for peer-review journals and will be submitted after project completion.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Enhancing Environmental and Economic Benefits of Woodland Grazing

Subd. 03j \$190,000 TF

Diomy Zamora

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RESEARCH

Appropriation Language

\$190,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate management options for woodlands used for grazing to improve ecological and economic benefits. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Over 527,000 acres of unmanaged woodlands are being used for livestock grazing throughout Minnesota. Managing these grazed woodlands based on the use of best management practices can provide environmental and economic opportunities, including improved water quality, maximized forage production, and higher-quality timber. The best management practices involved are commonly used in other parts of the country with other types of ecosystems, but have not been widely adopted in Minnesota due to a lack of knowledge and experience with implementing them within the ecosystems of Minnesota. This appropriation is being used by scientists at the University of Minnesota to evaluate and demonstrate how to effectively adapt and implement these best management practices for improved woodland grazing for use in Minnesota.

OVERALL PROJECT OUTCOME AND RESULTS

Over 527,000 acres of unmanaged woodlands are being used for livestock grazing throughout Minnesota. Managing these grazed woodlands based on the use of best management practices can

provide environmental and economic opportunities, including improved water quality, maximized forage production, and higher-quality timber. The best management practices involved are commonly used in other parts of the country with other types of ecosystems, but have not been widely adopted in Minnesota due to a lack of knowledge and experience with implementing them within the ecosystems of Minnesota. This appropriation is being used by scientists at the University of Minnesota to evaluate and demonstrate how to effectively adapt and implement these best management practices for improved woodland grazing for use in Minnesota.

PROJECT RESULTS USE AND DISSEMINATION

Over 527,000 acres of unmanaged woodlands are being used for livestock grazing throughout Minnesota. Managing these grazed woodlands based on the use of best management practices can provide environmental and economic opportunities, including improved water quality, maximized forage production, and higher-quality timber. The best management practices involved are commonly used in other parts of the country with other types of ecosystems, but have not been widely adopted in Minnesota due to a lack of knowledge and experience with implementing them within the ecosystems of Minnesota. This appropriation is being used by scientists at the University of Minnesota to evaluate and demonstrate how to effectively adapt and implement these best management practices for improved woodland grazing for use in Minnesota.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Silvopasture: Establishment and Management Principles for Northern Hardwood Forests in Minnesota and the North Central United States (PDF)

Subd. 04 Land, Habitat, Restoration and Recreation

State Parks and State Trails Land Acquisition

Subd. 04a \$1,000,000 TF

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Appropriation Language

\$1,000,000 the first year is from the trust fund to the commissioner of natural resources to acquire authorized state trails and critical parcels within the statutory boundaries of state parks. State park land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work plan. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's extensive state park and trail system, the second oldest in the country, is currently comprised of a total of 76 state parks and recreation areas and 13 state trails scattered throughout the state. Some of Minnesota's state parks and trails have privately owned lands within the designated park boundaries or trail corridors. Purchase of these lands from willing landowners for addition to the state park and trail system makes them permanently available for public recreation and enjoyment and facilitates more efficient management. Additional benefits include preserving contiguous wildlife corridors, facilitating preservation and restoration of native plant communities and cultural resources, reducing impacts of future development, and providing riparian buffers along wetlands, creeks, and lakes. The Minnesota Department of Natural Resources is using this appropriation to fund the acquisition of approximately 245 acres to add to the state park and trail system, which includes:

- 50 acres for Great River Bluffs State Park in Winona County
- 115 acres for Cuyuna Country State Recreation Area in Crow County
- 80 acres for the Mill Towns State Trail in Rice County

OVERALL PROJECT OUTCOME AND RESULTS

Minnesota Environment and Natural Resources Trust Fund funding resulted in the Department of Natural Resources acquiring approximately 103 acres of land within the statutory boundaries of two Minnesota State Parks and one Minnesota State Trail.

- Acquired approximately 29 acres in Frontenac State Park comprised Lowland forested wetlands with a small stream and exposed dolomite bluff face partially covered with a mix of native prairie and some upland trees.
- Acquired approximately 8 acres of an entire island located within the new Lake Vermilion-Soudan Underground Mine State Park. This acquisition preserves unique island habitat, viewshed and enhances outdoor recreation opportunities such as canoe campsite and a new day use area.
- Partially funded the acquisition of approximately 66 acres of land for Mill Towns State Trail to preserve and protect ~6 miles of a former railroad corridor for future development of the legislatively authorized trail that will eventually connect cities of Faribault and Dundas.

PROJECT RESULTS USE AND DISSEMINATION

These project results and dissemination have been communicated through updated state park and state trail maps reflecting state managed land instead of private in-holdings, and are identified as public land open to be used and enjoyed by all visitors.

A news release promoting the recent acquisition for the Mill Towns State Trail is scheduled for July 2016, and credits Minnesota Environment and Natural Resources Trust Fund as a partial funding source.

Signage at the above listed locations lists ENRTF as a funding source for these State Parks or State Trails.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Scientific and Natural Areas Restoration, Enhancement and Citizen Engagement

Subd. 04b \$1,500,000 TF

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Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources to conserve sites of biodiversity significance by restoring and enhancing lands established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5, and providing volunteer engagement and outreach. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's Scientific and Natural Areas (SNA) Program is an effort to preserve and perpetuate the state's ecological diversity and ensure that no single rare feature is lost from any region of the state. This includes landforms, fossil remains, plant and animal communities, rare and endangered species, and other unique biotic or geological features. These sites play an important role in scientific study, public education, and outdoor recreation. The Minnesota Department of Natural Resources is using this appropriation to conduct restoration and enhancement activities on approximately 1,600 acres in existing SNAs and to increase citizen and student knowledge and skills pertaining to ecological restoration and biodiversity conservation through engagement with SNAs.

OVERALL PROJECT OUTCOME AND RESULTS

Habitat restoration and enhancement actions increased the quality of habitat on more than 1500 acres of designated Scientific and Natural Areas (SNAs) through achieving: restoration of about 235 acres at 4 SNAs; woody invasive species control on 371 acres at 49 SNAs, herbaceous invasive species treatment on 266 acres at 44 SNAs, and installation of invasive species control boot brush kiosks at 5 SNAs; about 26 miles of burn breaks at 24 SNAs and completion of 720 acres of prescribed burns at 25 SNAs and 141 acres of prescribed haying at 7 SNAs; and site development work (e.g. entry and boundary signs, new gates, and site cleanup) at over 50 SNAs. Conservation Corps Minnesota was involved in 42 of these projects. Adaptive Management Plans have been completed for 19 SNAs. Ecological monitoring has been completed at 7 SNAs; including monitoring of snakes at an SNA which is yielding new information that will inform natural resource management work.

The public's and youth involvement in SNAs and their knowledge and skills about biodiversity conservation has significantly increased through the SNA Outreach Initiative in its second phase through this appropriation. As of September 2015: the SNA Facebook page reached over 34,000 people with over 1500 likes of the page and the quarterly SNA e-newsletter Nature Notes reached over 3,250 subscribers. From January 2014 through June 2015, about 170 SNA events were held involving over 1550 people and volunteer site stewards were helping monitor and care for 128 or 80% of SNAs. The statewide color map locating all SNAs was updated and 5000 copies of this second addition were printed.

PROJECT RESULTS USE AND DISSEMINATION

Dissemination is primarily achieved through the upgraded SNA webpage on the DNR website: <http://www.mndnr.gov/snas> and through other electronic/social media which are linked through this webpage. With support through this funding, the SNA Facebook page was launched in February 2014; the SNA Facebook page has achieved over 1,500 page likes and total monthly reach of over 34,000 by March 2015. The 11th (Winter 2014) issue of the Nature Notes e-newsletter was delivered to over 3,250 subscribers. The statewide color map locating all SNAs (with directions to all sites and ENRTF acknowledgement on the back) was updated and 5000 copies of this second addition were printed and nearly all have been distributed.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Restoration Evaluations (PDF)

Outreach (PDF)

Native Prairie Stewardship and Prairie Bank Easement Acquisition

Subd. 04c \$750,000 TF

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Appropriation Language

\$750,000 the first year is from the trust fund to the commissioner of natural resources to acquire native prairie bank easements, prepare baseline property assessments, restore and enhance native prairie sites, and provide technical assistance to landowners. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Prior to European settlement more than 18 million acres of prairie covered Minnesota. Today less than 1% of that native prairie remains, and about half of those remaining acres are in private landownership without any formal protection currently in place. Through this appropriation the Minnesota Department of Natural Resources will work with private landowners of high quality native prairie sites to protect remaining native prairie using a variety of tools. Approximately 200 acres are expected to be permanently protected through Native Prairie Bank conservation easements. A variety of restoration and enhancement activities will be implemented on a total of about 690 acres. Additionally, education and technical assistance will be provided to interested landowners to help them improve the management and stewardship of native prairie sites they own.

OVERALL PROJECT OUTCOME AND RESULTS

Native Prairie Bank (NPB) conservation easements were acquired on 330 acres thereby permanently protecting valuable native prairie. Specifically, 3 easements were acquired in part with this appropriation located in Wilkin, Traverse and Big Stone Counties (194 acres pro-rated to this

appropriation). In total, 12 baseline property reports were written through this appropriation (including 2 of the 3 newly acquired easement baselines). In addition to baseline reports, 16 existing Native Prairie Bank easements were monitored and data entered into the Department of Natural Resource (DNR)'s Conservation Easement Monitoring database.

Restoration and enhancement activities were completed on a total of over 850 acres exceeding the project's target acreage. Specific accomplishments are 18 prescribed burns on 702 acres, 4 prairie reconstructions on 6 acres, and 21 invasive species control projects on 147 acres; 9 of these 43 projects involved Conservation Corps Minnesota (CCM) crews. Boundary signing has been completed on 5 NPB easements.

Through this appropriation, 9 different events were held aimed at getting prairie stewardship information to landowners. NPB staff also worked with all 10 Prairie Conservation Plan Local Technical Teams to insure that landowners being approached by other practitioners are made aware of their prairie stewardship options such as Native Prairie Bank that are available through the Scientific and Natural Area (SNA) Program. Prairie specialists engaged 70+ different priority prairie landowners one-on-one to discuss prairie protection and management options for their property. One landowner received a comprehensive Prairie Stewardship plan.

PROJECT RESULTS USE AND DISSEMINATION

Native Prairie Tax Exemption brochures were updated and printed to aid in prairie outreach, encourage prairie preservation and improve prairie stewardship of native prairie acres that may not be protected long-term by other means. A .pdf copy of this brochure is included with the final report and a paper copy can be made available upon request. A total of 3000 Prairie Tax Exemption brochures were printed, 1000 of which were paid for through this appropriation.

Additionally, included with the final report is an article written about a landowner technical assistance success story. This article was written to promote the technical assistance available to private land prairie landowners through this appropriation and encourage pro-active prairie land management. An abbreviated version of this story was shared in the SNA Nature Notes which is published quarterly and distributed to over 3,250 subscribers. One Prairie Stewardship Plan was completed and is being followed by the landowner.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Restoration Evaluations (PDF)

Metropolitan Conservation Corridors (MeCC) - Phase VII

Subd. 04d \$2,000,000 TF

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Appropriation Language

\$2,000,000 the first year is from the trust fund for the acceleration of agency programs and cooperative agreements. Of this appropriation, \$10,000 is to the commissioner of natural resources for agency programs and \$1,990,000 is to the commissioner of natural resources for agreements as follows: \$304,000 with Friends of the Mississippi River; \$368,000 with Dakota County; \$208,000 with Great River Greening; \$310,000 with Minnesota Land Trust; \$400,000 with Minnesota Valley National Wildlife Refuge Trust, Inc.; and \$400,000 with the Trust for Public Land for planning, restoring, and protecting priority natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work plan. This appropriation may not be used for the purchase of habitable residential structures, unless expressly approved in the work plan. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work plan. Lands that would require payments in lieu of taxes under Minnesota Statutes, section 97A.061 or 477A.12, shall not be acquired with money from this appropriation. Up to \$54,000 is for use by Minnesota Land Trust in a monitoring and enforcement fund as approved in the work plan and subject to subdivision 16. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work plan. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

OVERALL PROJECT OVERVIEW

Though many parts of the Twin Cities metropolitan area are urbanized, there are also has large areas of natural lands that continue to serve as important habitat for fish, wildlife, and plant communities. However, pressure on these remaining lands continues to intensify as population and development pressures increase. This appropriation represents the seventh phase of an ongoing effort by a partnership of state and non-profit organizations, called the Metro Conservation Corridors (MeCC) partnership, to conduct strategic and coordinated land protection, restoration, and enhancement activities that build connections between remaining high quality natural areas in the greater Twin Cities metropolitan area and ensures their benefits are available for future generations. Efforts will strengthen and protect biodiversity; improve water quality in lakes, rivers, and streams; and improve connectivity and access to outdoor recreation. This phase involves six partners and is expected to result in the permanent protection of more than 260 acres and the restoration and enhancement of more than 260 acres. Organizations involved in this phase include Dakota County, Friends of the Mississippi River, Great River Greening, Minnesota Land Trust, MN Valley National Wildlife Refuge Trust, and Trust for Public Land.

Individual Partner Project Overviews

- *1.1/1.2: Coordination and Mapping - Minnesota Land Trust (\$20,000)*
The Minnesota Land Trust provides coordination, mapping, and data management for the Metropolitan Conservation Corridors partnership. Funds are being used to coordinate the partnership, guide strategic outreach and implementation efforts, manage project data, and provide reporting and mapping of accomplishments.
- *2.1 & 3.4: Protect, Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$304,000)*
Friends of the Mississippi is using this appropriation to permanently protect six acres through fee title acquisition for addition to Fish Creek Natural Area near Maplewood, MN, and to restore and enhance approximately 134 acres of permanently protected prairie, savanna, wetland, and forest habitat in Dakota, Washington, Ramsey, and Hennepin counties. Specific restoration and enhancement activities will include updating management plans, soil preparation, prescribed burning, native vegetation installation, woody encroachment removal, and invasive species control.
- *2.3: Restoring Our Lands and Waters - Great River Greening (\$208,000)*
These funds will enable Great River Greening to restore approximately 90 acres of permanently protected forests, savanna, prairie, and wetland habitat and 0.18 miles of shoreland habitat while engaging hundreds of volunteers in the stewardship of the Metropolitan area's remaining natural areas. Specific activities include invasive species control, seeding/planting, prescribed burning, and other associated activities.
- *2.6 & 3.7: Dakota County Lakeshore and Riparian Protection - Dakota County (\$368,000)*
Through this appropriation Dakota County plans to permanently protect approximately 27 acres of shoreland and contiguous upland in the Marcott Lakes area of Inver Grove Heights by securing a conservation easement from willing landowner. For all acres protected, natural resource management plans will be prepared to ensure their long term stewardship. Additionally, restoration and enhancement activities are expected to occur on approximately 40 acres.
- *3.1: 2013 TPLs Critical Land Protection Program - Trust for Public Land (\$400,000)*
The Trust for Public Land is using this appropriation to purchase approximately 24 acres of land and 0.2 miles of shoreline with high ecological value and then convey the land to state or local governments for long-term stewardship and protection. Lands being considered for permanent protection in this round of funding include an areas around the Rum River in Anoka County, Lindstrom Natural Area in Chisago County, and Carnelian Creek and Keystone Woods area in Washington County.
- *3.2: Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$300,000)*
With this appropriation, the Minnesota Land Trust plans to protect 100 acres of high quality forest, prairie, wetland, or shoreline habitat by securing permanent conservation easements and dedicating funds for their perpetual monitoring, management, and enforcement. Lands being considered for permanent protection in this round of funding are located in Chisago, Goodhue, Hennepin, Isanti, and Washington counties.
- *3.3: Priority Expansion of Minnesota Valley National Wildlife Refuge - Minnesota Valley National Wildlife Refuge Trust Inc. (\$400,000)*
The Minnesota Valley National Wildlife Refuge Trust is using this appropriation to purchase a total of approximately 100 acres of land and donated to the U.S. Fish and Wildlife Service to expand the Minnesota Valley National Wildlife Refuge. Many benefits are anticipated from this

project, including improved habitat connectivity, protection of native species, improved water quality in the Minnesota River, and increased public access to natural lands for activities such as hiking, hunting, and fishing. Restoration and management plans will be completed for all acquired lands.

OVERALL PROJECT OUTCOME AND RESULTS

Metro Conservation Corridors partners continued their work to accelerate protection and restoration of high-quality natural lands within the greater Twin Cities Metropolitan Area. Six partner organizations participated - Minnesota Land Trust, Friends of the Mississippi River, Dakota County, Great River Greening, Trust for Public Land, and Minnesota Valley National Wildlife Trust. Minnesota Valley National Wildlife Trust received a 1-year extension to their grant and will report their final outcomes separately. Three specific areas of activity were pursued:

1. **Partnership Coordination, Mapping, and Database Management:** An upgrade to the MeCC web-based project database was completed and the MeCC corridor map was revised and posted for public use. Partners met quarterly to review project accomplishments, share information, and to strategically plan and coordinate conservation activities.
2. **Restore and Enhance Significant Habitat:** Partners restored/enhanced 364.5 acres of habitat (282.6 acres through ENRTF) and 0.42 miles of shoreline (0.35 miles ENRTF), exceeding overall proposed outcomes in both areas and leveraging an additional \$342,658. Despite the Partnership achieving its collective goals, Dakota County fell short of its habitat restoration/enhancement goal by 75%, returning \$17,000 (42%) of its funding for this activity. A landowner with whom they expected to work instead opted to enroll in CRP, ultimately restoring habitat and receiving a payment.

Partner	Proposed (Habitat/Shoreline)	Accomplished Habitat/Shoreline (ENRTF)	Accomplished Habitat/Shoreline (Other)	Expenditures (ENRTF / Other)
Friends of the Mississippi River	134 acres/0 miles	135.5 acres/0 miles	0.0 acres/0 miles	\$142,000/\$4,546
Great River Greening	90 acres/0.18 miles	137 acres/0.35 miles	73 acres/0.07 miles	\$184,270/\$315,178
Dakota County	40 acres/0 miles	10.1 acres/0 miles	8.9 acres/0 miles	\$22,808/\$22,935
Totals	264 acres/0.18 miles	282.6 acres/0.35 miles	81.9 acres/0.07 miles	\$349,078/\$342,658

3. **Acquire Significant Habitat:** Partners protected 308 acres of land (189 acres ENRTF) and 2.5 miles of shoreline (1.25 miles ENRTF) through fee and conservation easement acquisition. This exceeded proposed outcomes for shoreline protection by 625% (0.2 miles proposed vs 1.25 miles achieved), but fell short in acres protected by 28% (189 acres achieved vs 262 proposed). The \$1,053,216 from ENRTF leveraged \$3,373,183 through other sources.

Two partners turned back funding:

- Minnesota Land Trust was unable to complete an easement due to financial considerations or tax implications of easements on the part of landowners. \$251,388 (84% of grant) was returned.

- akota County exceeded its proposed protection goals, but turned back \$132,196 (40% of its grant for protection) due to setbacks with two landowners.

The amount of funding returned to the State (33% of total appropriation for protection) is proportional to the shortfall in ENRTF acres protected (28% below goal).

PROJECT RESULTS USE AND DISSEMINATION

Partners publicized accomplishments through a diverse array of press releases, organization newsletters and the internet. Additionally, the MeCC Partnership maintains an interactive public web map that shows the locations of MeCC projects over time. This web map can be directly accessed at: <http://www.dnr.state.mn.us/maps/MeCC/mapper.html>.

Project completed: 6/30/2016

FINAL REPORT (PDF)

ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS (Click project # to go to listing for that project)

- **1.1/1.2** - MeCC VII - Coordination and Mapping - Minnesota Land Trust (\$20,000)
- **2.1/3.4** - MeCC VII - Protect, Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River - Friends of the Mississippi River (\$304,000)
- **2.3** - MeCC VII - Restoring Our Lands and Waters - Great River Greening (\$208,000)
- **2.6/3.7** - MeCC VII - Dakota County Lakeshore and Riparian Protection - Dakota County (\$368,000)
- **3.1** - MeCC VII - 2013 TPL's Critical Land Protection Program - Trust for Public Land (\$400,000)
- **3.2** - MeCC VII - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$300,000)
- **2.6/3.3** - MeCC VI - Priority Expansion and Restoration MN Valley NW Refuge - Minnesota Valley National Wildlife Refuge Trust, Inc. (\$400,000)

1.1/1.2 FINAL REPORT - MeCC VII - Coordination and Mapping - Minnesota Land Trust (\$20,000)

Project Outcome and Results

In this seventh phase of the Metro Conservation Corridors the partners met quarterly to review project accomplishments, share information related to each respective partner's conservation work across the MeCC program area, and to strategically plan and coordinate conservation activities.

The MeCC web-based project database upgrade work was completed by the DNR during Spring 2016 and made available for partner review, planning, and coordination purposes. Based on partner feedback, the web-based map was revised and was posted for public use which was made available for use in June 2016. The web-based map for public use can be accessed on the DNR's website.

Project Results Use And Dissemination

The MeCC Partnership maintains an interactive public web map that shows the locations of MeCC projects over time. This web map can be directly accessed at:

<http://www.dnr.state.mn.us/maps/MeCC/mapper.html>, while the web-based project database can be accessed by authorized partners at: <https://webapps15.dnr.state.mn.us/mecc/>.

Project completed: 6/30/2016

2.1/3.4 FINAL REPORT - Metro Conservation Corridors (MeCC) Phase VII-Friends of the Mississippi River. Protect, Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$304,000)

Project Outcome and Results

FMR had three goals for this project: Increase the amount of native habitat, enhance the quality of existing habitat and acquire and permanently protect habitat along the Mississippi River in Maplewood. To approach the first two goals we committed to restoring 10 acres of prairie and enhancing 54-acres of prairie, 10-acres of savanna and 60 acres of forest/woodland for a total of 134 acres improved. We accomplished the goals through the following projects:

- Gelhar-Emrick (Ravenna Township): A 6-acre unit at this property was restored to prairie.
- Pine Bend Bluffs SNA (Inver Grove Heights): A restored prairie and two native bluff prairies were managed for invasive weeds by spot-spraying and burning. Total prairie enhanced: 39
- Old Mill Park (Hastings): This project resulted in 10 acres of enhanced oak savanna.
- Ravenna Block (Ravenna Township): A total of 5 acres of a previously installed prairie was managed for the initial two-year establishment period (mowing, spot-treat weeds). 34 acres of forest were managed for invasive woody plants (cut and stump-treat, fall foliar treatment).
- Spring Lake Park Reserve (Rosemount): Prairie was installed in a 17.5-acre old field.
- Heritage Village Park (Inver Grove Heights) : We controlled invasive weeds and seeded native prairie/savanna species on 2 acres of woodland and 7 acres of savanna.
- Mississippi River Gorge (Minneapolis): 7 acres of woodland were enhanced by controlling invasive woody plants.
- Gateway North Open Space Area (Cottage Grove): 6 acres of woodland were enhanced by controlling woody invasive species.
- River Oaks Park (Cottage Grove): Controlled woody and herbaceous plants on an acre each of prairie and woodland.

Project totals: 23.5 acres of prairie installed/restored and 45 acres of existing prairie, 17 acres of savanna and 50 acres of forest/woodland were enhanced for a total of 135.5 acres of habitat improved. The third goal was accomplished by acquiring 6 acres of bluffland habitat in the Fish Creek Natural area, Maplewood.

Project Results Use And Dissemination

Information about this project was disseminated in several ways. FMR published articles about the site specific projects in our traditional newsletter and in our electronic newsletter. Articles could also be found on our website. An article about the Fish Creek acquisition appeared in the St. Paul Pioneer Press and in the Minneapolis Star Tribune. We often organize volunteer events for our project sites and we share information with our participants.

Project completed: 6/30/2016

2.3 FINAL REPORT - MeCC VII - Restoring Our Lands and Waters - Great River Greening (\$208,000)

Project Outcome and Results

Along with partners and volunteers, Greening undertook restoration projects to reduce habitat fragmentation, enhance habitat quality, reconnect habitat corridors, and build connections with local communities. Habitats included prairie, oak savanna, woodland, wetland, and riparian. Significantly exceeding all of our goals, we:

1. restored/enhanced 141 acres of upland habitat and an additional 77 acres with leveraged non-state funds for a total of 218 acres,
2. restored/enhanced 0.35 mile of shoreland habitat and an additional 0.08 mile using leveraged non-state funds for a total of 0.42 miles ,

3. engaged over 1750 (>500 youth) volunteers in meaningful parts of these projects
4. leveraged \$315,178 in non-state funds

Table 1: Summary of Deliverables by Parcel

Parcel Name	City	County	Acres	Shoreline (mi)	Volunteers
Trout Brook Nature Preserve	St. Paul	Ramsey	7		882
Long Pond Elk Ranch II	Princeton	Sherburne	3		-
Doyle-Kennefick Regional Park	Elko	Scott	10		142
Katherine Abbott Park I	Mahtomedi	Washington	19		313
Wild & Scenic Rivers II - Rum	Cambridge	Isanti	1	0.15	-
Pilot Knob Hill III	Mendota Heights	Dakota	1		24
Cedar Creek Conservation Area	Oak Grove	Anoka	67		-
Central Corridor II and III	Woodbury / Cottage Grove	Washington	6		337
Spring Lake Regional Park III	Cedar Lake Twsp	Scott	20		-
Arcola Mills Maintenance	May Township	Washington	-		-
Cedar Lake Farm Regional Park	New Prague	Scott	3	0.20	-
Dodge Nature Center Lilly Preserve	Mendota Heights	Dakota	4		63
TOTALS			141	0.35	1,761

Sites hosted five documented rare species (2 plants, 3 vertebrates), and three native plant communities with biodiversity of statewide significance.

We restored and de-fragmented habitat in ecological corridors, and at several ecological cores. Restorations protected water quality along the Mississippi River and the Rum River and its watershed.

Volunteers planted over 4,500 trees/shrubs and 5,600 forb/grass plugs, and received presentations from a Greening ecologist as part of their workday.

Project Results Use And Dissemination

Volunteer event descriptions acknowledging Trust Fund contributions and qualitative results were emailed to Greening's e-subscribers in July 2013, Feb 2014, July 2014, February 2015, July 2015, and

spring 2016 in advance of our spring and fall volunteer event seasons. Over the course of the grants, the number of subscribers increased from approximately 5,000 to about 6,500. Information about the Metro Conservation Corridors is on our website in the Initiatives and Volunteer Events sections at <http://www.greatrivergreening.org/>. Over the course of the grant, the visits to the Greening website increased from over 1,200 to over 1,500 visits per month. Seven press articles disseminated information about the projects. Greening is in active partnership with landowners, other land managers, service providers, conservation peers, and volunteers resulting in a dynamic and timely exchange of information and results.

Project completed: 6/30/2016

2.1/3.4 FINAL REPORT - MeCC7: Dakota County Lakeshore and Riparian Protection - Dakota County (\$368,000)

Project Outcome and Results

The project goal was to acquire permanent conservation easements or land along rivers, streams, and undeveloped lakeshore in Dakota County; prepare Natural Resource Management Plans (NRMPs) for conservation easements; and restore/enhance protected land. The project scope encompassed some of the best natural resource features found in the metropolitan region. A sound fiscal and ecological conservation approach was taken, while attempting to balance the interests, rights and responsibilities of private landowners, with public concerns about water, wildlife habitat, outdoor recreation, and climate change.

In November 2011, Dakota County adopted a comprehensive Land Conservation Vision that includes establishing permanent vegetative buffers along all rivers, streams and undeveloped lakeshore, and protecting quality natural areas. The County's land conservation programs targeted specific areas in the County and mailings were issued to determine landowner interest. Program applications were reviewed and evaluated using County Board-approved criteria; and top-ranking projects were considered for permanent protection. Appraisals were conducted for recommended projects. NRMPs and baseline Property Reports were prepared for projects where landowners accepted purchase offers; and landowners agreed to cash or in-kind restoration and management contributions. Restoration projects were also completed on existing easement and fee title properties.

The project goals were to acquire an estimated five permanent conservation easements and one fee title property, totaling 235 acres, and restoring/enhancing 40 acres of protected land. In spite of significant County efforts, a wide variety of issues prevented projects from being completed. Landowner inflated value expectations, lack of family agreement to move forward, and inability to make timely decisions delayed and derailed projects. Subsequently, the County didn't meet its acquisition goals, but exceeded its restoration goals, and overall, accomplished the following:

Project Name	Acres	Miles of Shoreline	Ecological Significance	Activity Description	ENRTF Cost
Cemstone	61.7	1.7	Designated trout stream area on Vermillion River	Fee title acquisition	\$104,932
Ruppe	17.2	0.5	Chub Creek riparian area	Easement acquisition	\$25,450
Schweich	20.7	0.3	Chub Creek riparian area/upland	Easement acquisition	\$60,400

Cemstone	19	1.7	Designated trout stream riparian area/upland	Initial site preparation, seeding and first phase restoration of formerly cultivated and disturbed areas	\$4,845
Malecha	27	0.9	Wetland restoration	Wetland berm construction and initial seeding	\$6,000
Ruppe	NA	0.5	Chub Creek riparian area	Natural Resource Management Plan (NRMP) completed	\$5,625
Schweich	15	0.3	Chub Creek riparian area, and formerly cultivated upland area	NRMP completed and buffer seeded	\$4,238 (NRMP only)

Project Results Use And Dissemination

Information about the specific projects funded through this State appropriation is integrated with information about the County's comprehensive land conservation efforts that were initiated in 1998, with a farmland and natural areas protection plan partially funded by the Environment and Natural Resources Trust Fund. Implementation of the initial plan and subsequent revisions resulted in the permanent protection of 11,244 acres of natural areas and agricultural land and over 51 miles of shoreland outside of the regional park and greenway system. This project informed and improved internal and external County land conservation practices, procedures and policies. County staff has provided numerous local, regional and national presentations about how Dakota County has developed and implemented its successful programs. Information has appeared on TV and radio, as well as metropolitan newspapers and residential newsletters. Information can also be found on the County's web site at: <https://www.co.dakota.mn.us/Environment/LandConservation/Pages/default.aspx>.

Project completed: 6/30/2016

3.2 FINAL REPORT - MeCC VII - 3.2 - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$300,000)

Project Outcome and Results

In this seventh phase of the Metro Conservation Corridors, the Minnesota Land Trust (Land Trust) sought to protect 100 acres of critical habitat through conservation easements within designated Metro conservation corridors. To facilitate this outcome, the Land Trust implemented an RFP process (a revision of the MMAPLE framework developed for the ENRTF-funded Avon Hills program in Stearns County) to solicit bids from interested landowners within areas of high biological value targeted for the program. A framework for scoring and prioritizing bids was developed for the Metro Corridors program that placed emphasis on a set of ecological criteria (size of habitat to be protected, condition of the habitat, ecological/protection context within which the parcel lies, and threat) and cost. Along with their proposal for inclusion into the program, landowners identified the funding level necessary for their participation.

The Land Trust utilized an array of strategies to effectively target landowners within priority areas,

ranging from direct mail to face-to-face meetings and web-based methods (Facebook and web postings). Anoka and Washington Conservation Districts were contracted to engage local landowners within priority areas. Anoka Conservation District (ACD) sent 17 mailings out to landowners of high priority properties within the Rum River Watershed. Washington Conservation District utilized both GIS-generated mail merge and direct contact to reach 100 landowners. The Land Trust also sent out targeted mailings to 26 landowners of property meeting criteria for the program elsewhere in the Metro.

Twelve bids were received and ranked relative to the established criteria; three projects were identified as highest priority for the program. These landowners were engaged in easement negotiations but eventually declined to continue forward due to financial considerations, specifically low appraised land values (relative to landowner expectations/desires) and tax implications for the landowner. As a result, no conservation easements were procured through this grant.

Project Results Use And Dissemination

The Land Trust developed partnerships with local conservation partners (Anoka and Washington Conservation Districts) to conduct targeted landowner outreach in priority geographies to identify interested landowners. Outreach materials, including program fact sheets and application materials, were developed and shared with local partners and or were direct-mailed to landowners by the Land Trust. In addition, the Land Trust marketed the easement program and RFP process through social media and on its web site. Over 140 landowners were reached via direct mail or through face-to-face meetings, and an unknown number of individuals were reached through our web-based media. Though no easements were completed from which to disseminate results, the time invested in outreach through local partnerships provides a strong foundation from which to continue protection efforts in the Conservation Corridors area.

Project completed: 6/30/2016

Landscape Arboretum Acquisition Lake Tamarack

Subd. 04e \$2,000,000 TF

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Appropriation Language

\$2,000,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to acquire land surrounding Lake Tamarack in Carver County as part of the acquisition of approximately 80 acres. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The University of Minnesota's Landscape Arboretum is the largest and most diverse horticultural site in

Minnesota. It features gardens and natural areas representative of Minnesota and the upper-Midwest that can be explored using several miles of trails. Additionally it conducts fruit and plant breeding research to develop cultivars that have particular desired characteristics, such as cold hardiness or disease resistance. The arboretum has a long-term goal of protecting the entire watershed of which it is a part. This appropriation is being used by the arboretum to acquire approximately 80 acres of land surrounding Lake Tamarack in Carver County, which will protect a variety of habitat types and 1,300 feet of shoreline in an area threatened by development. This new portion of the arboretum will have free public access and provide additional land for future research that may pertain to restoration ecology, crop production, bio-energy, or wildlife habitat.

OVERALL PROJECT OUTCOME AND RESULTS

The University of Minnesota Landscape Arboretum purchased the property at 400 Arboretum Boulevard, Victoria, (previously known as the Kerber Farm or Lano Burau Property), effective Friday, November 1, 2013. The property consists of 78.13 acres in Carver County. This is the final property purchase identified in the Arboretum's 1995 Boundaries Plan. Over 300 acres have been added to the Arboretum during the last 18 years.

The property is north of State Highway 5 and directly adjacent to the Horticultural Research Center. The property contains native forest, wetlands, tillable land, and 1,300 feet of lakeshore on Lake Tamarack. Current structures on the property will be evaluated for condition and safety and some will likely be retained for unheated storage while others may be demolished.

The property will be used in the future for research; protection of wildlife, wetlands and water quality; protection of big woods, oak savanna and upland meadow; and educational and public low impact recreational purposes. Research uses have not been determined and roads, fencing, and irrigation will be installed in the 10 acre area designated for research. Some of the current soybean fields could also be used for alternative crop, forage crop, or restoration research projects, and the Arboretum is considering partners from across the University of Minnesota or other conservation and natural resources groups.

Funding for this purchase was provided by the Environment and Natural Resources Trust Fund (ENRTF) - recommended by the Legislative Citizens Commission for Minnesota Resources (LCCMR), the Lessard Sams Outdoor Heritage Council (LSOHC) and the Minnesota Landscape Arboretum Foundation. Because we received LCCMR and LSOHC funding to purchase the property, the Arboretum will provide FREE public access. The University of Minnesota is charging the City of Victoria \$1 for the 50 year Use License Agreement for the Trail that crosses the Lake Tamarack Property and \$1 for the Use License Agreement for Temporary Construction Access for this trail. There are no fees beyond the \$2 for the entire trail including the sections that do not cross the Lake Tamarack Property. Finally, the Arboretum will work over the next several months to develop public access policies and install signage.

PROJECT RESULTS USE AND DISSEMINATION

The acquisition was successfully publicized by the Arboretum with a press release issued on November 11, 2013 and was also covered in the Arboretum E-News with 10,000 subscribers. It was then covered in the local media:

- U to expand arboretum with 78-acre purchase, Minnesota Daily, January 28, 2013
- U Arboretum expands base in Chanhassen by 78 acres, Star Tribune, November 12, 2013
- Minnesota Landscape Arboretum grows by 78 acres, Finance & Commerce, November 13, 2013

- Minnesota Landscape Arboretum Grows By 78 Acres, WCCO-CBS News Online, November 13, 2013

Project completed: 6/30/2014

FINAL REPORT

Conservation Program Technical Assistance

Subd. 04f \$3,000,000 TF

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Appropriation Language

\$3,000,000 the first year is from the trust fund to the Board of Water and Soil Resources to continue providing grants to soil and water conservation districts and other units of local and state government for the employment of staff to reenroll expiring lands into programs for conservation purposes. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Enrollment of private lands in conservation programs can provide important natural resource and other public benefits by taking the lands out of production so that they can provide various wildlife, water quality, and ecological benefits. This appropriation is enabling the Minnesota Board of Soil and Water Resources to continue to provide grants to local soil and water conservation districts for employment of technical staff to assist private landowners in implementing conservation programs. This effort is expected to assist with the enrollment, retention, and management of 170,000 private acres of grasslands, wetlands, and forests in federal and state conservation programs, particularly in areas expected to lose enrollments in the Conservation Reserve Program (CRP).

OVERALL PROJECT OUTCOME AND RESULTS

During this project a total of 42,474 private landowner contacts were made resulting in 8,235 contracts on 160,258 acres of land positively impacted (restored, enhanced or managed) with grassland and wetland programs. A contact is defined as a personal interaction between the Farm Bill Assistance Partnership (FBAP) staffer and a landowner. It may be a phone conversation discussing program benefits and opportunities, office visit to review plan documents or an in-field visit to stake out a practice. In order for a contract to be completed it takes several contacts to move a landowner through the process, once again demonstrating the value of these positions.

Program	CCRP *	CCRP *	CCRP *	CCRP *	General	Other local, state and federal **
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Type	Filter Strips	Riparian Buffers	Wetlands	Windbreaks	General CRP	CRP and CCRP	Various conservation concerns	Total
					Gen. Erosion and water quality	Mgt. Activities to sustain site		
Contracts	2,002	355	1,829	510	237	1,180	2,122	8,235
Acres	14,044	4,235	71,265	1,335	3,817	22,091	43,471	160,258

89,544 acres of this total were critical wetland and riparian CRP contracts and this exceeded our goal of 80,000 acres. With this project, targeted local outreach, enrollment and implementation has occurred which directly led to the project accomplishments.

The primary environmental benefits tied to the land use conversion from row crops to perennial vegetation due to CRP and other programs, includes the reduction of sediment and nutrient pollutants to water bodies as well as increased habitat for resident and migratory species.

The new Federal Farm Bill reduced the national CRP acreage limit and drastically curtailed General CRP sign-ups and encouraged more focused Continuous CRP (CCRP). This allowed local staff hired through this project to assist landowners who wanted to focus on CCRP, management of existing CRP contracts to optimize the environmental benefits as well as other programs to reach the goals of this project. Due to these facts local staff were still able to accomplish 94% of the overall acreage goal for the project (160,258 acres compared to 170,000 goal).

This project is built upon the framework of a multi partner group called the Farm Bill Assistance Partnership (FBAP) created in 2002 to accelerate private lands conservation program implementation. Emphasis is on the maximum use of federal and state conservation programs to retain and restore grasslands and wetlands on private lands primarily in the agricultural region of MN. At the core of the project is the hiring of Soil and Water Conservation District (SWCD) or Pheasants Forever (PF) staff to engage and lead landowners through conservation practice enrollment and implementation. At the close of this project there were 47 counties participating with 30.40 full time staff equivalents hired (18 SWCD and 12 PF employees housed in SWCD offices).

This \$3M ENTRF funded project was leveraged with \$873,737 of local and non ENTRF funds to bring the grand total for the project to nearly \$3.9M.

PROJECT RESULTS USE AND DISSEMINATION

The work of this project, past, present and future is tracked as part of the MN Conservation Lands Summary. This document is the only accounting of our collective private and public conservation estate here in MN. As CRP comes and goes and as we add permanently protected lands it is imperative that we have a foundation of our conservation estate. This report is updated annually and is posted on the BWSR web site at <http://www.bwsr.state.mn.us/easements/CLS%20Statewide%20Summary%20August%2013%202015.pdf>.

The Farm Bill Assistance Partnership has been a model for local-state-federal agency and NGO

cooperation and has been used for other conservation related acceleration projects. At the local level biologists utilize past successes and future goals to provide widespread and one-on-one outreach to landowners in their covered areas.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Moose Habitat Restoration in Northeastern Minnesota

Subd. 04g \$200,000 TF

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RESEARCH

Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute to develop best practices guidelines for creating moose foraging habitat efficiently and cost-effectively. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Moose, one of Minnesota's most iconic wildlife species, are dying at increasingly higher rates in Minnesota and there is uncertainty as to why. Estimates suggest the population declined 35 percent just between 2012 to 2013, and projections suggest moose could be nearly gone from the state by 2020 if this trend is not halted and, ideally, reversed. Scientists at the University of Minnesota are using this appropriation to identify appropriate management and habitat needs and the sorts of actions that can be implemented to help slow or prevent continued population declines amongst Minnesota's moose populations. The project is a continuation and expansion of work completed and underway by two other past Environment and Natural Resources Trust Fund supported projects on determining the cause for the increasing mortality.

Project due to be completed: 6/30/2016

Work Plan (PDF)

Bee Pollinator Habitat Enhancement

Subd. 04h \$200,000 TF

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Appropriation Language

\$200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to assess the potential to supplement traditional turf grass by providing critical floral plant resources to enhance bee pollinator habitat. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Bees play a key role in ecosystem function and in agriculture, including more than one hundred U.S. crops that either need or benefit from pollinators. However, bee pollinators are in dramatic decline in Minnesota and throughout the country. One of the potential causes appears to be a scarcity of bee-friendly flowers, particularly in urban areas, which is leading to nutritional deficiencies, chronic exposure to pesticides, and debilitating diseases and parasites. Scientists at the University of Minnesota are using this appropriation to assess options that can be broadly implemented in urban areas to enhance bee pollinator habitat and counteract declining populations and bee health. The effort will examine ways to supplement traditional turfgrass landscapes, particularly in areas that primarily serve an aesthetic purpose, with flowering plants that can provide increased nutrition and less potential exposure to pesticides.

OVERALL PROJECT OUTCOME AND RESULTS

Our goal was to develop an innovative way of helping bee pollinators by enhancing turf areas with native flowering plants. Planting "bee lawns" could help reduce intensive inputs (pesticides and fertilizers) and provide low-growing floral areas, which would beautify Minnesota and provide a creative model for a simple yet effective way to help pollinators and protect our natural resources. First, we identified turf grasses that are well suited to incorporating flowering plants. We found that hard fescue, *Festuca brevipila*, like other fine leafed fescues, demonstrates drought tolerance, slow vertical growth rate, and excellent winter hardiness making it suitable for a lower-input lawn species. Next, we found that native floral species, *Prunella vulgaris* spp. *lanceolata* and *Astragalus crassicaupus* established well in hard fescue, with *Prunella* establishing better in loamy soil and *Astragalus* in sandy soil. We also found that *Symphotrichum lateriflorum* (native calico aster) would bloom at a low height under light mowing pressure, making it a third native species for incorporation into turf. These experiments were important first steps in identifying native plants to diversify lawns that are both attractive to pollinators and can withstand mowing pressure. To assist homeowners in establishing flowers in their own existing home lawns, we subjected turf areas in two locations to scalping and/ or aeration and then seeded them with native flowers. The flowers established at higher rates at the location that used minimal turfgrass management (infrequent mowing and no fertilizer use) compared to the more intensively managed site. This latter finding indicates that flowering lawns will do best with lower inputs, which will contribute to more sustainable landscapes that are beneficial to pollinators. Ian Lane, graduate student that conducted this work, defended his Master's degree in May 2016.

PROJECT RESULTS USE AND DISSEMINATION

This project reached a broad audience with research-based information about bee lawns. Professional

audiences have been reached through articles in trade journals. Hobbyist audiences have been reached through presentations at local, regional, and national meetings. Scientific audiences have been engaged through departmental seminars and national scientific meetings. Ian Lane, graduate student, will produce at least three peer-reviewed publications from this project. Most importantly, the general public has been reached in a number of ways: we hosted five field days, 3,000 copies of a new brochure on Bee Lawns were distributed, and a new page on the Bee Lab website at the University of Minnesota was developed with information on planting and maintenance of Bee Lawns: <https://www.beelab.umn.edu/> A pdf copy of the brochure and evaluations from attendees of the 2016 field day are included as an Addendum to this report.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Bee Lawn Brochure (PDF)

Bee Lawn Info (PDF)

Preserving the Avon Hills Landscape - Phase II

Subd. 04j \$772,000 TF

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Appropriation Language

\$772,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Saint John's University in cooperation with the Minnesota Land Trust to secure permanent conservation easements on high quality habitat in Stearns County, prepare conservation management plans, and provide public outreach. A list of proposed easement acquisitions must be provided as part of the required work plan. Up to \$80,000 is for use by Minnesota Land Trust in a monitoring and enforcement fund as approved in the work plan and subject to subdivision 16. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work plan. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The Avon Hills area is a unique 65,000-acre glacial moraine landscape located in Stearns County just west of St. Cloud. It has been identified as having statewide ecological significance and includes the highest concentration of native plant communities in the county - including oak and maple-basswood forests, tamarack and mixed-hardwood swamps, and wet meadows - and several rare plants and animal

species, including American ginseng, cerulean warbler, red-shouldered hawk, and Blanding's turtle. This appropriation is being used by the St. John's Arboretum at St. John's University to secure permanent protection, via conservation easements, for an additional 350-550 acres of high quality habitat in the Avon Hills area, prepare conservation management plans for the easement lands, and provide public outreach on the significance of the Avon Hills landscape and options for its protection. St. John's Arboretum previously used a 2008 Environment and Natural Resources Trust Fund appropriation to permanently protect more than 1,000 acres in the area.

OVERALL PROJECT OUTCOME AND RESULTS

Conservation easements to permanently protect private land from development are the main goal of this project located in the Avon Hills 10 miles west of St. Cloud, MN. We tested a reverse bidding system termed the MN Multi-faceted Approach for Prioritizing Land Easements (MMAPLE) to rank submitted easement locations. MMAPLE ranks proposed easements by comparing the land's inherent ecological features to the cost per acre for the easement, thereby focusing on the best value. Land which has many inherent ecological values receives a higher score. Conversely, landowners who bid a higher price per acre for the easement receive a lower score.

The MMAPLE process resulted in seven bids for easements. Pursuit of easements was discontinued with five of these landowners due to concerns with future tax implications, or land use restrictions imposed by the easement itself. In this regard, MMAPLE proved effective as a ranking tool in identifying the next highest-scoring eligible landowner within the candidate pool; this enable the Land Trust to move quickly in engaging the landowner. MMAPLE also proved its ability to efficiently leverage the grant funding under this phase of the project; both easement acquisitions were bargain sales by the landowners. On the first easement acquisition of 170 acres, the easement was purchased for \$126,100 below its full market value; the second easement of 61 acres was purchased for \$67,800 below its full market value. Total appraised value of the two purchased easements was \$635,300, with the grant providing \$441,400 towards acquisition; donated value of these bargain sales amounted to \$193,900.

The grant also funded outreach and education to increase landowner awareness of easements and land protection as well overall conservation. Landowner conferences held at Saint John's University were the main vehicle for this outreach with 559 total attendees.

PROJECT RESULTS USE AND DISSEMINATION

The Land Trust shared news of the easement acquisitions on both the Avon Hills (Riesner) and (Dwyer) parcels on its website and Facebook page. MMAPLE was also featured as a new model for acquiring conservation easements in the Fall 2015 publication of the academic journal, Natural Resources & Environment. The MMAPLE model was being advocated for use in other grants by advisors and staff of the LCCMR and other funders such as the Lessard-Sams Outdoor Heritage Council.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Frogtown Farm and Park Acquisition

Subd. 04k \$1,500,000 TF

Robert McGillivray

The Trust for Public Land

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Appropriation Language

\$1,500,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Trust for Public Land to acquire a portion of 12 acres for Frogtown Farm and Park to be established as a St. Paul city park.

Project Overview

The Frogtown area of St. Paul is a culturally diverse, low-income neighborhood having less green space per child than any other neighborhood in the city and was recently identified as an area in need of a new park. This appropriation is being used by The Trust for Public Land, in partnership with the City of St. Paul, to acquire a portion of twelve acres of a currently vacant space in the area to establish the multi-purpose Frogtown Farm and Park. The vision for the space is to provide a safe space for neighborhood children to experience nature and families to recreate while simultaneously acting as a demonstration urban farm for community members to learn about growing food locally as a vehicle for advancing self-sufficiency, environmental stewardship, healthy living, and community collaboration.

OVERALL PROJECT OUTCOME AND RESULTS

On December 4, 2013, The Trust for Public Land acquired +/- 13 acres from the Wilder Foundation and conveyed it to the City of Saint Paul. The land will be used to create Frogtown Farm and Park - a much-needed public green space for this culturally diverse, low-income neighborhood. The new Frogtown Farm and Park will include a six-acre urban demonstration farm, a recreation area, and a nature sanctuary that preserves a grove of large mature oak trees. When complete, this urban park will be the site of a variety of activities demonstrating green and sustainable inner-city living and providing exceptional educational opportunities.

The land was purchased for \$2,200,000. Of that, \$1,498,000 was from the Environment and Natural Resources Trust Fund and \$702,000 was from the City of St. Paul.

Creation of this public park and demonstration farm will advance environmental and social justice, and strengthen residents' self-sufficiency, environmental stewardship, healthy living and community collaboration. The project furthers the LCCMR Six-Year Strategic Plan in multiple ways including: protecting important land resources (especially the oak grove), supporting research and demonstration projects of natural resources, supporting community based conservation, encouraging outdoor recreation, and promoting public education and dissemination of information about natural resources (for both students and community residents).

The City of Saint Paul has put the project out to bid, and construction is expected to begin on the initial park and farm improvements in the summer of 2015.

PROJECT RESULTS USE AND DISSEMINATION

This project is highlighted on The Trust for Public Land's website at: <http://www.tpl.org/our-work/parks-for-people/frogtown-park-and-farm>

The Trust for Public Land also issued a press release with the City of Saint Paul:
<http://www.tpl.org/media-room/frogtown-park-deal-finalized>

There have also been a number of news stories covering this project:

- <http://www.minnpost.com/political-agenda/2013/12/deal-finalized-new-park-st-pauls-frogtown-neighborhood>
- http://www.twincities.com/stpaul/ci_24654416/st-pauls-frogtown-park-and-urban-farm-set
- <http://kstp.com/news/stories/S3296801.shtml?cat=1>

FINAL REPORT

Project completed: 6/30/2015

Restoration Evaluations

Subd. 04I \$200,000 Transfer from M.L. 2009, Chp. 143, Sec. 2, Subd. 8b as amended by M.L. 2011, First Special Session, Chp. 2, Art. 3, Sec. 2, Subd. 18, Para. A, Clause 8

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Appropriation Language

\$200,000 from Laws 2009, chapter 143, section 2, subdivision 8, paragraph (b), Legislative-Citizen Commission on Minnesota Resources, as amended by Laws 2011, First Special Session, chapter 2, article 3, section 2, subdivision 18, paragraph (a), clause (8), is transferred to the Board of Regents of the University of Minnesota for evaluation of lands restored using money from the trust fund. The lands to be evaluated shall be identified and prioritized in consultation with the Legislative-Citizen Commission on Minnesota Resources.

Project Overview

Ecological restorations aim to aid the recovery of native ecosystems that have been degraded or lost. However, very seldom are restorations evaluated past the initial implementation phase to determine whether the efforts achieved their goals and the funds spent were a strategic conservation investment. Monitoring and evaluation of restorations can teach what works and what does not in order to advance restoration practices and increase the likelihood of success for future projects. The Environment and Natural Resources Trust Fund has funded restoration activities on hundreds of thousands of acres since its inception. The University of Minnesota is using this appropriation to evaluate the outcomes and effectiveness of some of those restoration efforts in order to inform and improve future land restoration techniques and best practices and future state investments in restoration activities.

OVERALL PROJECT OUTCOME AND RESULTS

In 2013 LCCMR requested an evaluation of ENRTF restorations, from 1990-2010, to assess ecological outcomes of past projects, to determine factors tied to successful outcomes, and to develop evaluation criteria for proposed and completed projects. Our evaluation was based on information gathered from LCCMR files (450 projects), project manager files (78 projects), project manager interviews (59 projects) and field surveys (59 projects). Project managers were interviewed to gain insight into restoration process and organizational capacity to implement restorations. To quantify the extent of ecological recovery of each site we calculated: 1) proportion of plant species considered part of the potential natural vegetation following DNR Native Plant Community manuals (%PNV) and 2) an index of abundances of invasive species (CISA). These two parameters were used to classify ecological condition as high, medium or low quality. High quality restorations were those with greater than average %PNV and lower than average CISA; low quality restorations have the opposite scores, i.e., lower than average %PNV and higher than average CISA. 32% of projects evaluated were deemed high quality and 27% low quality. Using contingency analysis, we screened a variety of factors related to site history, organizational capacity, and type of ecosystem to determine which have the greatest potential to predict post-restoration ecological condition. This analysis found that starting condition, type of ecosystem, and an organization's internal capacity have the strongest effect on restoration outcome. Restorations of highly altered sites are much riskier than those undertaken on remnant natural areas, and so are less likely to result in high quality outcomes. Restorations of forests are riskier than prairie or wetland restoration. Common problems hindering restoration teams' capacity to keep their ecological restoration projects on track are inadequate staffing and expertise, insufficient funds, incomplete records, and leadership change: Evaluation guidelines, monitoring protocols, planning tool documents are included with the final report.

PROJECT RESULTS USE AND DISSEMINATION

The results of this project have been (or will be) disseminated in several ways:

1. A summary report (i.e., Restoration Evaluation Guidelines) that outlines the key findings of the evaluation has been developed. The guidelines will be posted on the Ecological Restoration Practitioners network and website (<https://cceevents.umn.edu/restoring-minnesota>).
2. Two webinars summarizing key elements of restoration project planning and recordkeeping were hosted in winter 2016. The webinar "Planning to Avoid Pitfalls: The Key to Restoration Success", with guests Dan Shaw from the Board of Water and Soil Resources and Wiley Buck from Great River Greening was hosted on February 23, 2016. The webinar "Learning by Doing: Why Restoration Records Matter" with guests Mark Cleveland from the Department of Natural Resources and Karen Schik from Friends of the Mississippi River was hosted on March 29, 2016. The target audience for the webinars were the project managers as well as other restoration professionals. Each webinar was viewed by approximately 55 professionals. The webinars began with a summary of the results of the restoration evaluation presented as an introduction and context for each topic. The invited expert guests for each webinar presented the perspectives of a state agency and a non-profit engaged in ecological restoration respectively. The webinars are archived on the Ecological Restoration Practitioners website (<https://cceevents.umn.edu/restoring-minnesota>). In partnership with the DNR, we offered a webinar to agency staff in November 2014.
3. Presentations describing the evaluation process and preliminary findings were made at 3 professional meetings: the Eighth SER Midwest Great Lakes Chapter meeting in Bloomington, IN in April 2016, the Society for Ecological Restoration 6th World Conference on Ecological

Restoration in Manchester England in August 2015, and the Seventh SER Midwest Great Lakes Chapter meeting in Glencoe, IL in March 2015.

4. The results of the restoration evaluation will be summarized and submitted for publication in at least two peer-reviewed journals.
5. Content in the Site Assessment and Monitoring courses of the online Ecological Restoration Training Consortium will be reviewed and updated to reflect recommendations and best practices developed as outcomes of the restoration evaluation project.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Guidelines (PDF)

Restoration Planning Tool (MS Excel)

Vegetation Monitoring Protocol Part 1 (PDF)

Vegetation Monitoring Protocol Part 2 (MS Excel)

Subd. 05 Water Resources

Sustaining Lakes in a Changing Environment - Phase II

Subd. 05a \$1,200,000 TF

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RESEARCH

Appropriation Language

\$1,200,000 the first year is from the trust fund to the commissioner of natural resources in cooperation with the United States Geological Survey, the University of Minnesota, and the University of St. Thomas to continue development and implementation of monitoring, modeling, and reporting protocols for Minnesota lakes to be used in water and fisheries management. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Minnesota's environment is changing in response to a variety of stressors - including population growth, residential development, industry, agriculture, invasive species, and climate change - and the state's iconic lakes, and the goods and services they provide (e.g., fishing and water recreation), are an important part of what's being impacted. To manage effectively for these changes it is important to understand how the state's many lakes respond to these stressors. This includes knowing baseline habitat conditions, observing long-term changes to the baseline, and developing models that can forecast the risks posed and expected impacts of various stressors. In 2009 the Minnesota Department of Natural Resources (DNR) began an ambitious long-term monitoring effort of 24 "sentinel" lakes

throughout the state specifically identified to represent the breath of basic conditions (e.g., water chemistry, habitat conditions, fishery types, surrounding ecosystem types) present in Minnesota's most common aquatic environments. The DNR is using this appropriation to continue and expand on that effort to develop and implement improved monitoring, modeling, and reporting protocols that will provide timely information on lake trends, reduce uncertainty about potential causes, and guide conservation approaches for improving water quality, reversing problematic trends, and preventing further degradation into the future.

OVERALL PROJECT OUTCOME AND RESULTS

Phase 2 of the Sentinel Lakes Long-Term Monitoring Program comprised a wide variety of monitoring and research activities on the 25 Sentinel Lakes selected to provide representation of Minnesota's major lake-types. During 2013-2016, the Sentinel Lakes Program continued to integrate the activities of key, collaborative agencies and partners (e.g. DNR, MPCA, USGS, and universities) which focus on determining the effects of large-scale ecological stressors (e.g., eutrophication, invasive species, and climate changes) on lake ecosystems. Highlights include:

- Detailed summaries of fish and aquatic plant sampling activities were prepared to guide future data analyses and monitoring activities.
- High-resolution water column temperature and dissolved oxygen tracking reveals progression of oxythermal-habitat changes for important fish species in Elk Lake.
- Continuation of specialized sampling of Cisco population in 3 Sentinel Lakes further enhanced our understanding of the relationships between Cisco and climate change and the presence of invasive species.
- Evaluations of biological indicators of lake status including pupal skins of aquatic midges, and White Sucker biology. Results indicate aquatic fly composition reflects lake nutrient status, while assessing White Sucker biology proved difficult. At least 141 species of midge were detected.
- A detailed report of phytoplankton and zooplankton composition, seasonal cycling, and interactions in 13 Sentinel Lakes was completed.
- Food web research conducted to understand impacts of zebra mussels finds that lake biota (insects and fish) shifted to alternative food sources.
- Long-term water quality and baseline aquatic plant surveys at Shaokotan Lake detected a major shift in 2015 from algae-dominance to clear water, aquatic plant-dominance due to watershed restoration and BMP implementation.
- New biophysical lake models were developed Pearl and Madison lakes, while previous models were used to simulate impacts of future climate conditions in Elk and Trout lakes. Surface water temperatures increase dramatically under future climate scenarios and oxygen depletion dynamics differed between lakes.

PROJECT RESULTS USE AND DISSEMINATION

The information gathered during the second phase of Sentinel Lakes sampling continues to provide insights useful to lake managers. The continued ability to collect water quality, zooplankton, fisheries, aquatic vegetation, and land use data over consecutive years from a set suite of lakes has added to the strong foundation of long-term monitoring that was established during the first phase of the project (2009 to 2013). Refining metrics and more fully developing our understanding of how they react to specific ecological stressors will continue to assist managers faced with developing management strategies and practices in lakes. The value to fisheries and lake managers is perhaps most evident in the Department of Natural Resource's commitment to hire and fund a full-time Sentinel Lakes coordinator position. That internally funded position was filled in May of 2016 and will provide project continuity going forward.

As was the case in Phase 1 we again included partner institutions with different areas of expertise, thus the project was able to gain valuable insights into 1) how lake systems in agricultural zones function (USGS), 2) how Chironomid (midge) populations may serve as important indicators of trophic status (University of Minnesota), and 3) how stable isotope analysis can lead to fuller understanding of the effects invasive species such as zebra mussels have on lake food webs (University of St. Thomas). The techniques developed by partners as well as their final results should provide valuable tools and information for some time to come. Continued, consecutive, sampling of Cisco populations has not only furthered our understanding of their population dynamics and their vulnerability to climate change and invasive species but has also added to the development of specific methods for monitoring this important climate- and land-use sensitive species in lakes across the state.

Finally, the project has become an excellent training tool for undergraduates, graduate students, and professionals. More than a dozen undergraduates have been able to gain valuable field experience and mentoring from research staff over the course of the project. The project has also served as a valuable entry point into fisheries for early-career professionals.

Much of the focus of disseminating information gathered during the project has been focused on a scientific audience but with an emphasis on making that information relevant to lake and fisheries managers. To that end, all collaborators past and present were invited to attend and present their findings at a Sentinel Lakes Summit which was held in Brainerd in 2015. Over 50 managers from DNR and PCA attended the event. A similar event is being planned for 2017. Additionally, a number of manuscripts covering a wide variety of topics are currently being prepared for submission to peer-reviewed publications. Already a number of presentations have been made at national, regional, and state-level professional meetings.

For general audiences the Department of Natural Resources maintains a series of Sentinel Lakes-related pages on their website (<http://www.dnr.state.mn.us/fisheries/slice/index.html>) and the Pollution Control Agency hosts Sentinel Lake Assessment reports on their website (<https://www.pca.state.mn.us/water/sentinel-lakes>).

Project completed: 6/30/2016

FINAL REPORT (PDF)

Phytoplankton Report (PDF)

Algal Community Dynamics Report (PDF)

Heron Lake Sediment and Phosphorus Reduction Implementation Projects

Subd. 05c \$122,000 TF

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Appropriation Language

\$122,000 the first year is from the trust fund to the Board of Water and Soil Resources for an agreement with the Heron Lake Watershed District for public outreach and installation and monitoring of water quality improvement projects. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Once known for its clean water, fertile soil, and healthy habitat, in more recent times the Heron Lake Watershed in southwestern Minnesota has been heavily impacted by pollution from intensive agriculture, feedlots, non-compliant septic systems, and urban stormwater runoff. The Heron Lake Watershed District is using this appropriation for public outreach and installation and monitoring of water quality improvement projects aimed at reducing sediment and nutrient loading for the benefit of public health, recreation, and wildlife habitat.

OVERALL PROJECT OUTCOME AND RESULTS

The Heron Lake watershed, approximately 472 square miles, is located within portions of Nobles, Jackson, Murray, and Cottonwood Counties in southwestern Minnesota. Heron Lake, a public water of the State of Minnesota, is impaired for phosphorus. Decreasing the amount of phosphorus and sediment entering Heron Lake would be valuable for reducing water pollution. The Heron Lake Watershed District Watershed Management Plan and county water plans recognize on-the-ground projects as the most effective way to address phosphorus and sediment.

Funding from the Minnesota Environment and Natural Resources Trust Fund was used to install projects in Nobles, Jackson, and Murray Counties. They included a bioretention basin, multiple water and sediment control basins, a bioretention basin, and a streambank stabilization. The purpose of these projects was to reduce sediment and nutrient loads into streams and lakes. The projects affected more than 300 acres and have an estimated reduction rate of 620 pounds of phosphorus and 575 tons of sediment per year. The grant dollars covered 75 percent of the project costs, with the landowner paying 25 percent.

Funds were also used to gather water samples at three sites in the watershed - Jack Creek, Okabena Creek, and the Heron Lake Outlet. The water samples were analyzed and compared to data gathered since 1996. The Jack Creek and Okabena Creek sampling sites decreased in phosphorus. Okabena Creek showed an increase. All sites showed a reduction in sediment.

Plans were made to visit three project sites in April of 2016. A newsletter summarizing the grant activities and promoting the project site tour was distributed to approximately 3,500 watershed residents, agency personnel, and legislators. Attending the event were eleven members of the general public, one Board of Water and Soil Resources staff, two news reporters, two Heron Lake Watershed District board members and three employees.

PROJECT RESULTS USE AND DISSEMINATION

Over the course of the grant period, information about the grant was presented at many meetings and events. Each year annual reports contained a project summary. The grant activities were summarized in a newsletter which was distributed to approximately 3,500 watershed residents, agency personnel, and legislators. In addition, reporters published articles regarding the project site tour in the Daily Globe, Tri County News, and Fulda Free Press.

Project completed: 6/30/2016

FIANL REPORT (PDF)

Project Brochure (PDF)

Southern Minnesota Lakes Restoration

Subd. 05d \$463,000 TF

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Appropriation Language

\$463,000 the first year is from the trust fund to the Board of Water and Soil Resources for an agreement with Le Sueur County to install shoreland and agricultural best management practices to improve water quality for up to 14 lakes in a tri-county area in southern Minnesota. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Lakes and streams located in Blue Earth, Le Sueur, and Waseca Counties provide important public benefits such as hydrologic storage, economic and recreational opportunities, and regional water quality improvement. However, several of the lakes and streams have been listed as impaired because of excess nutrients and sediment from runoff. Le Sueur County is using this appropriation to install shoreland and agricultural best management practices such as wetland enhancements, infiltration basins, stream restoration, and native plantings to improve the water quality of up to 11 lakes in the region.

OVERALL PROJECT OUTCOME AND RESULTS

The Grant consisted of 14 projects spread out in a region that covered Le Sueur, Blue Earth and Waseca Counties and provided environmental benefits to a number of different bodies of water.

In Blue Earth County, one project on Madison Lake was completed.

1. Bray Park Ravine Stabilization was a highly visible project that provided reductions of 30.3 T/yr. TSS, 30.3 T/yr. Soil and 34.8 lbs./yr. Phosphorus from entering Madison Lake.

In Waseca County, two shoreline projects were completed on Clear Lake.

1. Clear Lake Park Shoreline Restoration resulted in the reduction of TSS by 37.13 T/yr., Soil by 37.13 T/yr. and Phosphorus by 31.56 lbs./yr.
2. Kanewischer Shoreline Restoration provided reductions of 11.55 T/yr. TSS, 11.55 T/yr. Soil and 9.82 lbs./yr. Phosphorus. In Le Sueur County, eleven projects were constructed.

Five projects total were completed in the City of Waterville and resulted in reduced pollutant loads to a number of different waterbodies. A stream shoreline stabilization project and two retention areas were

constructed along White Water Creek which directly flows into Upper Sakatah Lake. Two large stormwater projects were completed near the City's water tower that discharges to the Cannon River directly before it enters Upper Sakatah Lake.

1. Lions Park retention project reduced TSS by 110.08 T/yr., Soil by 127.05 T/yr. and Phosphorus by 126.59 lbs./yr.
2. Mini Park restoration resulted in reductions of 42.0 T/yr. TSS, 42.0 T/yr. Soil and 48.3 lbs./yr. Phosphorus.
3. Streambank work and retention project at the WEM School District Bus Garage resulted in the reduction of 55.04 T/yr. TSS, 63.53 T/yr. Soil and 63.29 lbs./yr.
4. Water Tower A & B Reduced TSS by 1.36 T/yr. (72% Removal Efficiency), Soil by 1.36 T/yr. (72% Removal Efficiency) and Phosphorus by 2.35 lbs./yr. (11% Removal Efficiency). Water Tower Area (due to their high level of interconnection, reduction numbers for both Water Tower Area and Water Tower A & B are combined).

Six additional projects were done throughout Le Sueur County. Including wetland enhancements were completed at two Waterfowl Production Areas (WPA). These projects created enhanced areas for waterfowl as well as providing pollutant reductions.

1. Vail Ravine Stabilization resulted in reduction loads of 31.43 T/yr. TSS, 31.73 T/yr. Soil and 89.10 lbs./yr. Phosphorus from Upper Sakatah Lake.
2. The Rain Garden located at Lake Washington County Park removes 35.0 T/yr. TSS, 35.0 T/yr. Soil and 40.25 lbs./yr. Phosphorus from stormwater runoff before it ultimately reaches Lake Washington.
3. The Elysian City Park Shoreline Restoration Project on Lake Francis resulted in reductions of 19.62 T/yr. TSS, 17.0 T/yr. Soil and 19.62 lbs./yr. Phosphorus.
4. The Koppelman Ravine Stabilization provided reductions of 76.5 T/yr. TSS, 153.0 T/yr. Soil and 76.5 lbs./yr. Phosphorus from entering Lake Jefferson.
5. The Pruess WPA resulted in reductions of 31.43 T/yr. TSS, 31.43 T/yr. Soil and 47.14 lbs./yr. Phosphorus.
6. Rice Lake WPA enhancements reduced loads by 59.40 T/yr. TSS, 59.40 T/yr. Soil and 89.10 lbs./yr. Phosphorus.

PROJECT RESULTS USE AND DISSEMINATION

Information about the projects has been discussed at numerous city, county and lake association meetings. Information on the projects and the grant are posted on Le Sueur County's website and has been submitted to local papers for publication. The City of Waterville will be sending out an informational insert in upcoming water bills. A science teacher at the Waterville public school utilizes the rain garden for his classes. Articles have been published in the Waterville paper about the different projects being constructed. The City also is in the planning stages to hold an on-site open house celebration for the City Water Tower Projects.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Membranes for Wastewater-Generated Hydrogen and Clean Water

Subd. 05g \$246,000 TF

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RESEARCH**Appropriation Language**

\$246,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to develop, optimize, and test membranes made of thin film polymers embedded with selected bacteria to generate clean water and energy in the form of hydrogen from wastewater. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Waste streams often contain unutilized resources that if properly extracted or otherwise utilized could be used to provide additional sources of renewable energy or other benefits. Wastewater is one of the primary candidate waste streams because of its nutrient content and researchers have been developing technologies such as microbial fuel cells and algal-based biofuel production in order make use of these nutrients. Researchers at the University of Minnesota are using this appropriation to develop, test, and optimize another new technology that can be used to extract energy from wastewater, specifically a polymer membrane embedded with select bacteria that could be used to simultaneously improve wastewater treatment while generating renewable energy in the form of hydrogen. If effective the technology is likely to be scalable with broad application potential for use with any biodegradable liquid waste stream.

OVERALL PROJECT OUTCOME AND RESULTS

In this project we developed a technology that could extract energy from wastewater: a polymer film containing bacteria that generate hydrogen (a clean energy source) while cleaning the wastewater. The system also contained a mesh of small, permeable tubes ("fibers") for efficient hydrogen collection. A finding of this study was that the wastewater treated needed to be high strength to generate adequate quantities of hydrogen. This type of high strength wastewater is produced by food and sugar beet processing facilities, and dairies, among other industries, and is plentiful throughout Minnesota. This technology efficiently produced and collected hydrogen in the laboratory with synthetic wastewater and wastewater from a dairy and a sugar beet processor. When used with vacuum gas collection, the exit gas was approximately 51% hydrogen, which is suitable for use in a fuel cell or for direct combustion. The system was also deployed at a pilot-scale at a brewery and was able to produce and collect hydrogen from the brewery wastewater. After further optimization for ease of scale-up and manufacture, the composite membrane system could allow the extraction of high-quality energy from wastewater while also saving industries on their treatment fees and reducing the need for expensive centralized treatment. In fact, based on our (un-optimized) results, the hydrogen generated in the Metro area would yield approximately \$82,000/yr through electricity generation. This same assumption yields over \$312,000/yr from the sugar beet industry in the state through electricity generation. This does not include the cost savings associated with reduced treatment fees, which for two Metro area processors alone exceeds \$1,000,000/year/company. A patent application was submitted on this

technology and has been approved; the University of Minnesota is exploring commercialization and licensing options. A peer-reviewed manuscript was published from this work and has been submitted to the LCCMR.

PROJECT RESULTS USE AND DISSEMINATION

Information from this project has been shared with several large water technology companies in Minnesota who may have the interest and capability to assist in optimizing and eventually deploying this technology for large-scale energy production from wastewater. Information from this project has also been shared with personnel from the Metropolitan Council Environmental Services, who treat the high strength wastewater of many large food- and beverage-processing plants, the sugar beet industry, and the brewery at which the pilot study was performed. As stated above, a peer-reviewed manuscript was published from this work and has been submitted to the LCCMR. Multiple presentations about the research have been given at both regional and national/international conferences. Additional funding has been obtained from the Minnesota Department of Commerce to study and improve the scalability and manufacturability of the technology and optimize it for deployment.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Journal Article (PDF)

Antibiotics in Minnesota Waters - Phase II - Mississippi River

Subd. 05h \$203,000 TF

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RESEARCH

Appropriation Language

\$203,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the University of St. Thomas to measure antibiotic concentrations and antibiotic resistance levels and assess the contributions of farm runoff and wastewater treatment in a portion of the Mississippi River. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

The occurrences of contaminants including antibiotics, other pharmaceuticals, and personal care products in the environment have gained increasing attention in recent years because of their potential health and ecological impacts. However, serious gaps remain in our understanding of these contaminants and the significance of the threats they may pose, such as to drinking water. Through this appropriation scientists at the University of St. Thomas, Gustavus Adolphus College, and the University of Minnesota will continue work focused on the threats posed by antibiotics to understand which antibiotics are of the most concern - for example, because of their potential to increase antibiotic

resistance - and to delineate their urban and rural sources. The first phase focused on antibiotics in the Minnesota River and this phase will focus on the Mississippi River. Findings will help develop strategies to manage threats and minimize future impacts posed by antibiotics to human and ecological health.

OVERALL PROJECT OUTCOME AND RESULTS

This project was Phase 2 of a two-part ENRTF-funded study designed to examine the significance of antibiotics and antibiotic resistance in Minnesota surface waters. Both phases of the study analyzed the following:

- Antibiotic concentrations. Cutting-edge analytical techniques were developed to measure antibiotics at concentrations as low as parts per trillion.
- Antibiotic resistance genes. Quantitative polymerase chain reaction (qPCR) was used to quantify several antibiotic resistance genes.
- Antibiotic-resistant bacteria. Culture-based techniques were used to compare ability of bacteria from various sites to grow in the presence of elevated concentrations of antibiotics.

Phase 1, which ended in 2013, focused on a portion of the Minnesota River basin. The results showed that municipal wastewater treatment plants were a significant source of antibiotics, resistance genes, and antibiotic-resistant bacteria; elevated levels of all three were found in waters impacted by wastewater treatment plant effluent. These findings motivated Phase 2, where the focus shifted to surface waters that serve as drinking water sources and tap water samples and therefore a more direct potential connection to human health impacts. Based on the results of Phase 1, we decided to focus primarily on antibiotics used in human rather than agricultural medicine.

Phase 2 initially focused on the Mississippi River, including St. Cloud, Minneapolis, and St. Paul. Discussions with the Drinking Water Protection section of the Minnesota Department of Health about sites potentially impacted by wastewater led us to expand our study to Ely (Burntside Lake), Grand Marais (Lake Superior), Moorhead (Red River) and Burnsville (Kramer quarry). In general, no measurable antibiotic concentrations, no elevated levels of antibiotic-resistant bacteria, and no antibiotic resistance genes were found in drinking water sources. Development of a new membrane filtration technique allowed us to find antibiotic resistance genes in tap water samples at extremely low levels; the importance of these exceptionally low levels with respect to human health is unclear.

PROJECT RESULTS USE AND DISSEMINATION

Four St. Thomas undergraduate students have presented this work at American Chemical Society national meetings; two in 2014, one in 2015, and one in 2016. Dwight Stoll (Gustavus Adolphus) presented at the Quality Assurance meeting of Region 6 of the Environmental Protection Agency in Fall 2015. Kris Wammer (St. Thomas) has presented this work at two national meetings; the Fall 2015 Society of Environmental Toxicology and Chemistry meeting in Salt Lake City, and the Fall 2016 ACS meeting in Philadelphia. A manuscript detailing the findings from this work is also currently in preparation. In addition, we have in the past and will continue to engage relevant personnel at the state level, in particular from state agencies such as MDH, through meetings and formal talks. The MN One Health Antibiotic Stewardship Collaborative, which both Tim LaPara and Kris Wammer participate in, will help facilitate continued interactions with Minnesota stakeholders.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Subd. 06 Aquatic and Terrestrial Invasive Species

An Aquatic Invasive Species Research Center

Subd. 06a \$8,700,000 TF

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RESEARCH**Appropriation Language**

\$4,350,000 the first year and \$4,350,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to develop and support an aquatic invasive species (AIS) research center at the University of Minnesota that will develop new techniques to control aquatic invasive species including Asian carp, zebra mussels, and plant species. This appropriation is available until June 30, 2019, by which time the project must be completed and final products delivered.

Project Overview

Aquatic invasive species pose critical ecological and economic challenges for the entire state and beyond. They can cause irreparable harm to fisheries and aquatic habitat as well as damage to infrastructure. The problems posed by aquatic invasive species continue to grow as existing infestations expand and new exotic species arrive, most of which are poorly understood. New ideas and approaches are needed to develop real solutions. In 2012 the Minnesota Legislature provided the University of Minnesota with \$3,800,000 (\$2,000,000 from the Environment and Natural Resources Trust Fund; \$1,800,000 from the Clean Water Fund) to launch a new, first-of-its-kind research center specifically focused on developing and implementing solutions to control aquatic invasive species. This appropriation provides this new center with additional initial operating funds for conducting research aimed at slowing the spread, reducing, controlling, and/or eradicating aquatic invasive species including Asian carp, zebra mussels, Eurasian watermilfoil, and more. Proven tools and techniques developed at the center are intended to be implemented statewide.

Project due to be completed: 6/30/2019

Work Plan (PDF)

Detection and Monitoring of Asian Carp Populations

Subd. 06b \$540,000 TF

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Appropriation Language

\$540,000 the first year is from the trust fund to the commissioner of natural resources to accelerate a search and monitoring program directly targeting Asian carp to be used in the development of potential control strategies.

Project Overview

Asian carp pose a real and serious threat to Minnesota's aquatic ecosystems. While there are a few instances of individual carp being found in Minnesota waters, including the Mississippi and St. Croix Rivers, it is not presently believed that there are significant established populations in the state. In order to quickly and effectively respond to threats posed by Asian carp in the future, though, detailed information about the fish themselves is needed. The DNR is using this appropriation to establish an aggressive search and monitoring program directly targeting Asian carp to determine existing distribution and abundance, measure current reproductive success, and evaluate impacts on native fish populations. The information will inform rapid response efforts aimed at control and removal of Asian carp as they emerge.

OVERALL PROJECT OUTCOME AND RESULTS

Invasive Carp, especially Bighead Carp and Silver Carp, pose an imminent and serious threat to Minnesota's aquatic ecosystems. From the 2013 appropriation, the MN DNR was able to appoint three non-classified positions to monitor and remove Invasive Carp from Minnesota waters, assist with environmental DNA collection, and collect groundbreaking native species biological data to determine the effects to native species if Invasive Carp become established. As a result, the MN DNR has established and developed the state's Invasive Carp management, monitoring, and detection program including all life stages. The program collected data from 255,750 feet of contracted commercial gill net, 18 commercial seines, 55,800 feet of gill net, 168 hours electrofishing, 422 larval samples, 622 hoop net and 223 fyke net sampling nights.

We would prefer to catch no Invasive Carp, however it is irresponsible not to be prepared. From the funding, the program caught 7 Invasive Carp via contract commercial fishing, 1 Bighead Carp from targeted sampling, and process an additional 5 Invasive Carp caught by other commercial fishermen and anglers. Sampling has also allowed researchers to determine areas to target from an increased understanding of their biology, associations with native species, and catch records. Specifically, Lower Grey Cloud Slough and the King plant on the St. Croix River were identified as target areas after more than one fish was captured. The program has implemented processing protocols and gained the ability to work-up fish in-house including ageing, determining sex and maturity, and collect all structures necessary for microchemistry analysis. The results can be accessed from the MN DNR 2012 - 2015 Invasive Carp Sampling Reports.

The project furthers the LCCMR Six-Year Strategic Plan in multiple ways including: protecting important water resources, management of invasive species, supporting research of natural resources, and promoting public education and dissemination of information about natural resources.

PROJECT RESULTS USE AND DISSEMINATION

Project plans and results have been disseminated through annual MN DNR reports including, In addition, results have been presented at numerous conferences and meetings including Minnesota's American Fisheries Society annual meetings, the Midwest Fish and Wildlife Conference, U.S. Fish and Wildlife annual meetings, and many others.

This project is highlighted on the MN DNR website at: <http://www.dnr.state.mn.us/invasive-carp/index.html>

The project is described in the:

- Minnesota Invasive Carp Action Plan, online at: http://files.dnr.state.mn.us/natural_resources/invasives/carp-action-plan-draft.pdf
- The First Annual Report to Congress: Summary of Activities and Expenditures to Manage the Threat of [Invasive] Carp in the Upper Mississippi and Ohio River Basins, June 2012 to June 2014, online at: <https://www.fws.gov/midwest/fisheries/asian-carp/WRRDA2015.pdf>

Project completed: 6/30/2016

FINAL REPORT (PDF)

Elimination of Target Invasive Plant Species

Subd. 06d \$350,000 TF

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Appropriation Language

\$350,000 the first year is from the trust fund to the commissioner of agriculture to train volunteers and professionals to find, control, and monitor targeted newly emergent invasive species. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

New invasive plant species continue to emerge in Minnesota and will pose ongoing threats to Minnesota's economy, ecology, and environment if able to spread across the state. It is cheapest, easiest, and least harmful to find and control small populations of invasive plants before they become widespread. The Minnesota Department of Agriculture is using this appropriation to increase the state's flexibility and rapid response to newly emergent terrestrial invasive plant species by training professionals and volunteers to find, control, and monitor certain invasive plants that presently exist only as small, isolated populations in the state. Targeted species include Dalmatian toadflax (NW MN), cutleaf teasel (various isolated areas of state), Japanese hops (SW MN), Oriental bittersweet (Areas along St. Croix and Mississippi Rivers), and Grecian foxglove (Washington County).

OVERALL PROJECT OUTCOME AND RESULTS

The goals of the Elimination of Target Invasive Plants species were 1) Train volunteers and professionals to find target species; 2) Control these species before they spread; and 3) Monitor to prevent reinfestation. Target species are invasive plants that cause severe ecological harm. There are localized infestations of these plants and controlling them will prevent them from becoming widespread. Target species include Dalmatian toadflax, cutleaf teasel, Japanese hops, Oriental bittersweet and Grecian foxglove. We completed Phase 1 of this project and will expand the effort in Phase 2.

University of Minnesota Extension led education and outreach. A total of 34 workshops educated 772 people about target plants. Invasive Blitz was a workshop with 12 sessions across the state that trained volunteers to organize and conduct invasive species removal events. Volunteers reported 434 service events with management activities that impacted 9,582 acres in 30 counties.

Minnesota Department of Agriculture led survey and project coordination. A total of 1,542 road miles and 125 river and trail miles were surveyed with a multitude of volunteers and agency partners. Distribution data for target species can be accessed at <http://www.eddmaps.org/>. Coordination with private landowners and crew leaders was necessary. An agreement was written with each private landowner where crews worked to ensure clarity about expectations and activities. We wrote agreements with 162 landowners.

Conservation Corps Minnesota led the effort to control target invasives. There were 144 unique and 194 total (some returning members) crew members who worked on this project. Together, they treated 1,360 acres of target invasives.

This project was about eradicating plants, but people were key to success. Project achievements were due to the involvement of hundreds of volunteers, landowners, crew members and state and local partners. Engaging people has vital for long-term success.

PROJECT RESULTS USE AND DISSEMINATION

In addition to 34 workshops with 772 participants, there were 4 field tours, 10 presentations, 8 articles, 3 media events and mailings to hundreds of private landowners. Weed of the Month articles were run in local papers throughout the state. Overall, this dissemination reached thousands of Minnesotans.

Other Extension materials created to support this work, often funded with other grant and internal Extension funds including those generated from participant fees from workshops sponsored by the this project include:

- Oriental Bittersweet Fact Sheet (Extension produced)
- Bittersweet ID for Crafters (short version) (Joint funded: Extension & ENRTF)
- Bittersweet ID for Crafters (long version) (Joint funded: Extension & ENRTF)
- Defeating a Killer Vine: Oriental bittersweet (Farm Bill funded, via MDA)
- Going Rogue: The Story of Japanese Barberry (Farm Bill funded, via MDA)
- Keep a Lookout for New Invasive Plants in Minnesota flyer (MDA funded)
- Five 3D printed invasive plant models of Grecian foxglove (2), Japanese hops (2) and black swallow-wort (1) were produced (Farm Bill funded via MDA). To our knowledge, this is the first time 3D printing has been used to generate invasive plant models. This work is being received very well in by natural resource professionals.

If the live links to videos do not work, please go to the University of Minnesota Extension YouTube channel.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Prioritizing Invasive Plant Control Report (PDF)

Invasive Species Management Matrix (PDF)

Invasive Species Project Planning Worksheet (PDF)

Biological Control of Garlic Mustard

Subd. 06e \$140,000 TF

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RESEARCH

Appropriation Language

\$140,000 the first year is from the trust fund to the commissioner of natural resources in cooperation with the University of Minnesota to continue the implementation of biological control for invasive garlic mustard plants. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Garlic mustard is a non-native, invasive plant species that is severely threatening native plant communities and degrading wildlife habitat in forest and riparian zones throughout the state. The plant is considered the highest priority species for development of long-term management solutions such as biological control, which involves using natural enemies of a non-native species from its native region to control or reduce the impact of the species in the areas where they are invasive. Introducing one non-native species to control another, though, is something that must be done with care so that the introduction does not have unintended consequences. This appropriation is enabling the Minnesota Department of Natural Resources and the University of Minnesota to continue ongoing research and evaluation of biological control options for garlic mustard. With this phase the aim is to be able to release multiple biological control inserts and monitor their effectiveness.

OVERALL PROJECT OUTCOME AND RESULTS

This project advanced the goal of having effective biological control insects for garlic mustard (*Alliaria petiolata*). Host-specificity testing focused on the potential biocontrol insects *Ceutorhynchus scrobicollis* (a crown feeding weevil) and *C. constrictus* (a seed-feeding weevil). Monitoring garlic mustard populations in Minnesota provided information on garlic mustard populations in the absence of biocontrol. *C. scrobicollis* host specificity testing was completed for 15 plant species. Based on these

results, *C. scrobicollis* has the host specificity to be a successful biocontrol agent of garlic mustard. The researchers wrote a petition for release which summarizes the 18 years of *C. scrobicollis* host specificity testing. The petition was submitted to the USDA-APHIS Technical Advisory Group in June 2016. Rearing protocols, release methods, and biocontrol manuals were developed for *C. scrobicollis*. *C. constrictus* host specificity testing was completed for 19 plant species. The results show that *C. constrictus* continues to show the host specificity to be a successful biocontrol agent for garlic mustard. Approximately 30 more species need to be tested and then a petition for release of *C. constrictus* can be submitted to the USDA. Garlic mustard is a biennial and long-term monitoring shows that its populations can fluctuate widely from year to year. When the plots were established in 2005 and 2006, garlic mustard was present in 100% of the plots. Garlic mustard is still present in 88% of the plots as of June 2016. Garlic mustard is currently experiencing very little herbivory in Minnesota with an average amount of leaf removed due to herbivory ranging from 0.6 to 4.5% in 2014 - 2016. It is expected that after biological control release, garlic mustard cover and density will decrease and shoot heights and silique production of individual plants will decrease as well.

PROJECT RESULTS USE AND DISSEMINATION

- Dr. Jeanie Katovich and Dr. Roger Becker presented a poster on this project at the Upper Midwest Invasive Species Conference in Duluth, MN held October 20-22, 2014.
- Dr. Jeanie Katovich gave a presentation on the project to the "Invasive Plant Management" class at the University of Minnesota - Twin Cities during the spring 2015 and 2016 semesters.
- Dr. Roger Becker gave a presentation titled "Petition to release *Ceutorhynchus scrobicollis* for biological control of garlic mustard (*Alliaria petiolata*)" at the 2015 Midwest Invasive Plant Network Invasive Plant Symposium (part of the North Central Weed Science Society annual meeting) in Indianapolis, IN on December 9, 2015.
- Dr. Jeanie Katovich gave a presentation on the project to Northeast Region US Forest Service researchers and staff at a meeting in Roseville, MN on March, 3, 2016.
- Dr. Jeanie Katovich presented the host-specificity data for *Ceutorhynchus scrobicollis* to the USDA APHIS Technical Advisory Group at their annual meeting in Greenbelt Maryland on April 6, 2016.
- Monitoring data has been shared with a consortium of researchers led by Dr. Bernd Blossey of Cornell University. This group will work together to produce a peer-reviewed publication on the results of garlic mustard monitoring plots in the Midwest and Northeast regions of the United States. The paper is currently being written.
- Dr. Laura Van Riper will give the presentation "Perspectives on Garlic Mustard Biocontrol in the Midwest" at the Upper Midwest Invasive Species Conference in La Crosse, WI held October 17-19, 2016.
- The petition for release for *C. scrobicollis* was submitted to the USDA APHIS Technical Advisory Group.
- Title: A Petition for the Introduction, Experimental Release and Open-Field Release of the Root-Mining Weevil *Ceutorhynchus scrobicollis* (Coleoptera: Curculionidae) for the Biological Control of *Alliaria petiolata* (Garlic Mustard) in North America.
- Authors: Laura Van Riper, Esther Gerber, Harriet L. Hinz, Ghislaine Cortat, Elizabeth Katovich, Roger Becker, Mary Marek-Spartz
- Date submitted: June 21, 2016

Project completed: 6/30/2016

FINAL REPORT (PDF)

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Zebra Mussel Control Research and Evaluation in Minnesota Waters

Subd. 06f \$600,000 TF

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RESEARCH

Appropriation Language

\$600,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the United States Geological Survey, Upper Midwest Environmental Sciences Center, to assess the ecological impacts of a commercially available molluscicide formulation on the reproduction and development of native fish, as well as impacts on larval aquatic insect survival, and to evaluate the effectiveness of these treatment options for detection and control of zebra mussels. The United States Geologic Survey is not subject to the requirements in Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

Zebra mussels are an aquatic species that are invasive in Minnesota and severely threaten native fish and other aquatic species by disrupting food webs and damaging spawning habitat. Their range continues to expand within Minnesota lakes and rivers, where they are spread through the transporting of water, vegetation, or equipment from an infested water body. Once established zebra mussels are very difficult to control and there is an immediate need for safe and effective control measures to reduce their impacts in the state. Scientists at the United States Geological Survey are using this appropriation to assess the ecological impacts of a commercially available molluscicide formulation (Zequanox) showing some promise for the control of zebra mussels. Findings will be used to determine the extent to which this product can and should be used in Minnesota waters and, if so, to optimize treatment protocols and techniques to maximize zebra mussel control while minimizing undesirable impacts.

OVERALL PROJECT OUTCOME AND RESULTS

Zebra mussels (*Dreissena polymorpha*) continue to rapidly expand their range within Minnesota's lakes and rivers disrupting aquatic food webs, threaten native species, and damage infrastructure. Zequanox®, which contains killed cells of *Pseudomonas fluorescens* as the active ingredient, is a potential tool for controlling dreissenid mussels (zebra and quagga mussels *D. rostriformis bugensis*). The project goals were to determine the safety and efficacy of Zequanox for controlling zebra mussels and to evaluate the use of molecular tools to inform control efforts. Project studies are summarized in supplemental attachments with the final report.

The Zequanox non-target animal impacts database was expanded by evaluating the exposure-related impacts on three life stages of fathead minnow (*Pimephales promelas*), and on the survival of adult scuds (*Gammarus lacustris*) and mayfly nymphs (*Hexagenia* sp.) after applications were conducted in outdoor 1,000-L mesocosm tanks. No significant treatment related impacts were observed in survival of invertebrates or fathead minnows or in hatchability and growth of fathead minnows.

Detailed maps were prepared for portions of Lake Le Homme Dieu and Maple Lake (Douglas County), which had different zebra mussel infestation levels. Maps of depth, substrate hardness, and submerged aquatic vegetation (SAV) depth and biovolume were generated using side-scanning sonar and parallel sonar data transects were collected and processed into component data categories. Processed sonar data and resulting maps are available on the vendor's cloud-based server network and could be combined with new or existing data to generate additional mapping products. Sonar data were used to generate a geospatial database of map characteristics in ArcGIS, and spatial analyses of the data were used to generate additional map products in ArcMap. Conversion to ArcGIS allowed for spatial analysis and sharing in GIS format. Zebra mussel populations were correlated with depth and substrate and submerged aquatic vegetation was found to be an important component of zebra mussel habitat in shallow areas in Lake Le Homme Dieu.

The use of environmental DNA to detect and identify application locations for Zequanox that might have the greatest impact on zebra mussel populations was also evaluated. The use of eDNA could assist management agencies to identify infestations, however, eDNA was found to not be effective for targeting control efforts.

Methods to apply Zequanox under the surface were first evaluated in controlled laboratory and pond-scaled mesocosm studies and further evaluated in 27-m² enclosures placed in Robinson's Bay (Lake Minnetonka, MN). Whole water column and subsurface applications were evaluated by comparing zebra mussel mortality and biomass reduction between treated and control groups. Approximately 73 and 56% of the zebra mussels in contained samples were killed in the highest whole water column and subsurface Zequanox applications, respectively, and the similarly the adhering zebra mussel biomass was reduced ~79 and 57%, respectively.

Overall, we found that Zequanox has the potential to be used as a management tool for zebra mussels in quiescent water environments, however, Zequanox is not likely to be effective for eradication of zebra mussels in an open water environment. Additionally, eDNA may have utility as a tool for the detection of zebra mussels in a waterbody but it is not an effective tool for determining the biomass of zebra mussels present or for prioritizing the location of zebra control efforts.

PROJECT RESULTS USE AND DISSEMINATION

Three oral presentations describing study methods and results were prepared and disseminated at professional scientific meetings including the Upper Midwest Invasive Species Conference and the Annual Conference of the International Association of Great Lake Research. One webinar entitled "The potential use of eDNA to guide site selection for zebra mussel control treatments" was presented during a USGS hosted Environmental DNA Webinar Series. One peer-reviewed manuscript entitled "Safety of the molluscicide Zequanox® to nontarget macroinvertebrates *Gammarus lacustris* (Amphipoda: Gammaridae) and *Hexagenia* spp. (Ephemeroptera: Ephemeridae)" was prepared and published online on June 23, 2016 in the Management of Biological Invasions and is included as a supplemental attachment to the project final report. Five peer-reviewed reports that summarize study methods and

results were prepared and are supplemental attachments to the project final report.

A model was developed for selecting the proper concentration (w/v) of Zequanox to be used in stocks prepared for subsurface applications waters between 7 and 22°C. This prediction model is described in supplemental attachments with the final report.

Molecular markers for the detection of zebra mussels were found to be highly specific to zebra mussels. A water sampling protocol was also developed to improve the probability of detecting zebra mussels. The use of environmental DNA (eDNA) did correlate with zebra mussel biomass. Zebra mussel DNA did accumulate in depositional areas. This suggests that our zebra mussel eDNA assay could assist management agencies to identify infestations, but not inform control efforts. The molecular markers, sampling protocol and depositional areas are described in supplemental attachments with the final report.

Project completed: 6/30/2016

FINAL REPORT (PDF)

Safety of Molluscicide to Nontarget Macroinvertebrates (PDF)

Effects of Spray-Dried *Pseudomonas fluorescens* on Flathead Minnow (PDF)

Mapping Lakes to Characterize Substrate Hardness and Vegetated Habitat (PDF)

Environmental DNA Mapping of Zebra Mussel (PDF)

Development of Targeted Delivery Techniques for Zequanox (PDF)

Controlling Zebra Mussels Within Lake Minnetonka Enclosures (PDF)

Response to CO₂ Exposure in a Freshwater Mussel (PDF)

Subd. 07 Environmental Education

Minnesota Conservation Apprentice Academy

Subd. 07a \$186,000 TF

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Appropriation Language

\$186,000 the first year is from the trust fund to the Board of Water and Soil Resources in cooperation with the Conservation Corps Minnesota to continue a program to train and mentor future conservation professionals by providing apprenticeship service opportunities with soil and water conservation districts.

Project Overview

Many of the most experienced conservation practitioners at local soil and water conservation districts throughout the state are nearing retirement, and with their departure will go much of their practical,

on-the-ground knowledge, experience, and skills. Meanwhile, college students seeking to be the next generation of conservation practitioners have knowledge of emerging technologies and other innovations that can improve and contribute to current conservation efforts. Through this appropriation the Minnesota Board of Soil and Water Resources will work with the Minnesota Conservation Corps to continue a program that places students in apprenticeship positions with county soil and water conservation district offices throughout the state. This unique program provides an opportunity for interns to gain valuable in-the-field experience from current practitioners while sharing their knowledge with those practitioners about the newest ideas and solutions for meeting today's natural resource challenges.

OVERALL PROJECT OUTCOME AND RESULTS

Familiarizing future conservation leaders with Minnesota's various land-use practices, water and soil resources, plant and animal habitats, and landowner concerns is needed to maintain the capacity of local organizations to deliver conservation on the ground. Many of the conservation districts' most experienced conservation professionals and practitioners are nearing retirement age but due to budget constraints will not be replaced until they have left employment. Consequently, Minnesota is missing a great opportunity to transfer professional knowledge and experience to the next generation.

While university graduates with conservation-related degrees are knowledgeable in technology, theory, and research methods, their practical, on-the-ground skills need development. Communicating with landowners and adjusting designs for field nuances are vital to the success of conservation projects and best learned alongside seasoned professionals. In turn, apprentices bring knowledge of emerging technologies to improve the quality and productivity of conservation efforts.

This program funded the placement of 37 conservation apprentices in 35 SWCDs in 2014. During this time, the apprentices stabilized erosion on 7 million square feet of slopes, planted 28,001 plants, trees, shrubs and seedlings, maintained 3.5 million square feet of restored areas, collected 2,465 water samples, spent 2,110 Hours collecting data and mapping using GPS and GIS, and impacted 1,265 people through environmental education and outreach.

This program has benefits to both students and conservation districts. 100% of apprentices indicated they felt more prepared to work in the conservation industry as a result of the program and would recommend it to others. 96% of the Districts were satisfied with the work their apprentices completed, and 100% indicate they would participate in the program again. Managers also indicated that the work conducted by the apprentices increased the amount of conservation practices delivered by their districts during the program period.

This was the third grant awarded to the Apprentice Academy through LCCMR. Grant one addressed the cohorts working during the summers of 2011 and 2012. The state government shutdown of 2011 produced a small balance in the 2010 grant that was used to fund additional positions in 2012 and 2013; this in turn allowed a small balance the second grant (M.L. 2011) to fund additional positions in the this, the M.L. 2013, Chp. 52, Sec. 2, Subd. 07a plan, and carried funding into the early portion of 2014.

PROJECT RESULTS USE AND DISSEMINATION

Information from the project has been disseminated through reports to LCCMR, press releases by BWSR, local press releases by SWCDs, and through the Conservation Corps newsletter, website and annual report. Information was used to recruit apprentices and increase awareness of the project.

Communication and outreach activities include the aforementioned reports, press releases, and electronic newsletters. Additionally, BWSR and Conservation Corps staff conducted outreach to SWCDs to find optimal matches between districts and apprentices. Through the course of their work, the apprentices conducted significant outreach to land owners and residents in topics ranging from easement protection, to water quality education, to plant biodiversity.

Project completed: 6/30/2015

FINAL REPORT

Youth Outdoors: Mississippi River Education and Employment Opportunities

Subd. 07b \$450,000 TF

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Appropriation Language

\$450,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Wilderness Inquiry to provide outdoor education, recreation, and youth employment on the Mississippi River from Grand Rapids to St. Cloud, the Twin Cities, Hastings, and Red Wing. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

Project Overview

There has been a sharp decline in participation in outdoor recreation and education amongst youth, particularly in urban areas. Some argue that youth who have meaningful outdoor education experiences are more likely to become engaged in environmental stewardship and invested in outdoor resources as adults. Wilderness Inquiry - in partnership with state and federal agencies, non-profits, and local school districts - is using this appropriation to expand an environmental education and recreation program that provides youth with hands-on educational and recreational experiences of the Mississippi River. Funds enable the program to offer canoe experiences to an additional 6,000 youth and to expand the types of experiences provided to include overnight camping, aquatic sampling and monitoring, and conservation-related internships. The program is also expanding geographically to serve additional communities in the Twin Cities and outstate, including Grand Rapids, St. Cloud, Hastings, and Red Wing.

OVERALL PROJECT OUTCOME AND RESULTS

Youth in Minnesota and across the country are spending less time outdoors than ever before.

Minnesota is home to beautiful wilderness areas and our youth are missing out on opportunities to experience it. The goal of the Youth Outdoors project is to bring more youth outside to experience the wilderness -- urban and remote -- and gain a new appreciation for their environment and community through guided outdoor experiences.

Between July 1, 2013 and September 1, 2015 Wilderness Inquiry (WI) engaged 12,000 youth in outdoor programming. More than 11,000 youth joined WI for an introductory outdoor day experience and more than 830 youth participated in an overnight camping experience. Additionally, 31 youth were employed as interns with job responsibilities including supporting participants, leading educational stations, and creating new activities. On single day events, youth canoed, fished, hiked, explored, and collected data from lakes and rivers for hands-on water quality tests. Youth worked in teams to paddle 24-foot Voyageur canoes on urban waterways such as the Mississippi and Minnesota Rivers and Minneapolis Chain of Lakes as well as remote lakes and rivers across the state such as Voyageurs National Park and Lake Itasca. Outdoor Educators, with the support of partner organizations, facilitated activities to engage students with each other and the outdoors. On overnight camping experiences, youth set up tents, built fires, and cooked outside. We reached out to schools, formalized district partnerships, and engaged a variety of groups to offer these experiential and educational opportunities.

The University of Minnesota's Center for Applied Research and Educational Improvement (CAREI) collected data from the project as part of a 5-year plan to evaluate the program outcomes. We are continuing our relationship with CAREI to determine best practice and next steps. By engaging thousands of Minnesota youth in the outdoor educational experiences, we are energizing the next generation of environmental stewards.

PROJECT RESULTS USE AND DISSEMINATION

We disseminated information about the project and its outcomes through a variety of media including our website, social media networks, quarterly newsletter, partner website, and news sources. We have shared our educational resources with schools in an effort to support the continued engagement of their students in the outdoors. Our program has been highlighted in a number of local newspapers.

Project completed: 6/30/2015

FINAL REPORT

Subd. 08 Administration and Contract Management

Contract Management

Subd. 08b \$135,000 TF

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Appropriation Language

\$135,000 the first year is from the trust fund to the commissioner of natural resources at the direction of the Legislative-Citizen Commission on Minnesota Resources for expenses incurred for contract agreement reimbursement for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of

these funds.

Project Overview

Appropriations to non-state entities must be made through a formal contract with a state entity that manages all of the funds for the project on a reimbursement basis. This appropriation to Minnesota's Department of Natural Resources (DNR) funds the expenses incurred by the DNR in contracting, contract management, and expense re-imbursement for most of the Environment and Natural Resources Trust Fund appropriations made to non-state entities, including both new projects funded during the biennium and existing projects funded in previous bienniums.

OVERALL PROJECT OUTCOME AND RESULTS

This appropriation, in conjunction with Outdoor Heritage Fund appropriations, was used to support the contract management program, which ensured ENRTF funds were expended in compliance with state law, session law, approved work plans, and Office of Grants Management grants policies.

Services provided under this appropriation included the following:

- **Contract Management Services**
 - Prepared grant agreements and amendments
 - Encumbered/Unencumbered Funds
 - Executed Use of Funds Agreements
 - Advanced funds for land acquisition (if approved)
 - Communicated regularly with LCCMR staff and grant recipients
 - Contract management documentation, including file management
- **Training and Communications**
 - Trained recipients on state grant requirements
 - Worked with recipients to ensure grantees understood the state's reimbursement procedures and requirements
 - Provided ongoing technical assistance/guidance to recipients
- **Reimbursement Services**
 - Reviewed reimbursement requests
 - Arranged for prompt payment once expenses were verified eligible for reimbursement
 - Detailed accounting by pass-through appropriation for each grant recipient
- **Fiscal, Audit, and Close-out Services**
 - Financial reconciliation
 - Financial reporting
 - Contract management reporting (fund balance/expenditures)
 - Examined or audited records of recipients
 - Worked with recipients to successful close out of grants
 - Worked closely with and responded to requests from the Office of the Legislative Auditor

PROJECT RESULTS USE AND DISSEMINATION

Project personnel were in frequent contact with appropriation recipients and LCCMR staff. Information was disseminated through manuals, training sessions, orientations, meetings, memos, letters, emails, newsletter, and phone.

FINAL REPORT

Project completed: 6/30/2015

4. M.L. 2011 Projects Completed
January 15, 2015 – January 15, 2017

**MN Laws 2011, First Special Session, Chapter 2,
Article 3, Section 2**

M.L. 2011-12 Projects Completed in 2015-2016

MN Laws 2011, 1st Special Session, Chapter 2, Article 3, Section 2 (beginning July 1, 2011)

MN Laws 2012, Chp. 264, Article 4, Section 3 (beginning July 1, 2012)

For Minnesota's FY 2012-13 biennium (July 1, 2011 - June 30, 2013), approximately \$25.3 million was available each year (Total = \$50,656,000) for funding from the Environment and Natural Resources Trust Fund and a total of \$750,000 from the Land and Water Conservation Account (LAWCON). In response to the 2011-12 Request for Proposal (RFP) due April 9, 2010, 241 proposals requesting a total of approximately \$163.8 million were received. After full consideration of all proposals received through a competitive, multi-step process, on 07/14/10 the LCCMR selected 92 projects to be included in 87 appropriation recommendations to the 2011 Minnesota Legislature. The 2011 Legislature adopted 61 of the recommendations, including 52 without any changes and 9 at a decreased or increased dollar amount; dropped 26 of the recommendations; and added 8 additional appropriations for a total of 69 total appropriations. All 69 appropriations were signed into law (M.L. 2011, 1st Special Session, Chapter 2, Article 3) by the Governor on 07/20/11. The 2012 Legislature altered the 2011 appropriations to reduce the amounts appropriated to two projects in 2011 and add one new project in 2012 (M.L. 2012, Chp. 264, Art.4, Sec. 3).

NOTE: For all projects, contact us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

When available, we have provided links to web sites related to the project. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 03 Natural Resource Data and Information

- 03b County Geologic Atlases for Sustainable Water Management
- 03d Updating National Wetland Inventory for Minnesota - Phase III
- 03f Determining Causes of Mortality in Moose Populations - **RESEARCH**
- 03j Information System for Wildlife and Aquatic Management Areas

Subd. 04 Land, Habitat, and Recreation

- 04b State Parks and Trails Land Acquisition
- 04g Minnesota River Valley Green Corridor Scientific and Natural Area Acquisition
- 04i Metropolitan Conservation Corridors (MeCC) - Phase VI
- 04q Restoration Strategies for Ditched Peatland and Scientific and Natural Areas - **RESEARCH**

Subd. 06 Aquatic and Terrestrial Invasive Species

- 06a Improved Detection of Harmful Microbes in Ballast Water - **RESEARCH**
- 06c Evaluation of Switchgrass as Biofuel Crop - **RESEARCH**

Subd. 08 Environmental Education

- 08b Minnesota Junior Master Naturalist Program

Subd. 09 Emerging Issues

09a Minnesota Conservation Apprentice Academy

MN Laws 2011, 1st Special Session, Chapter 2, Article 3, Section 2

Subd. 03 Natural Resource Data and Information

County Geologic Atlases for Sustainable Water Management

Subd. 03b \$1,800,000 TF

Part 1 (\$1,200,000)

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Part 2 (\$600,000)

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Appropriation Language

\$900,000 the first year and \$900,000 the second year are from the trust fund to accelerate the production of county geologic atlases to provide information essential to sustainable management of ground water resources by defining aquifer boundaries and the connection of aquifers to the land surface and surface water resources. Of this appropriation, \$600,000 each year is to the Board of Regents of the University of Minnesota for the Geologic Survey and \$300,000 each year is to the commissioner of natural resources. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

The Minnesota County Geologic Atlas program is an ongoing effort begun in 1982 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). The program collects information on the geology of Minnesota to create maps and reports depicting the characteristics and pollution sensitivity of Minnesota's ground-water resources and their interaction with surface waters. The information from County Geologic Atlases is used in planning and environmental protection efforts at all levels of government, by

businesses, and by homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will:

- Support completion of geologic atlases for Carlton, McLeod, Carver, Benton, and Chisago counties.
- Support ongoing work on geologic atlases for Anoka, Blue Earth, Clay, Nicollet, Renville, Sibley, and Wright counties;
- Initiate geologic atlases for three or more additional counties;
- Make collected data available in a digital format.

PART 1 - MINNESOTA GEOLOGICAL SURVEY

OVERALL PROJECT OUTCOME AND RESULTS

The Minnesota Geological Survey maps sediment and rock because these materials control where water can enter the subsurface (recharge), where and how much water can reside in the ground (aquifers), where the water re-emerges (discharge), and at what rates this movement occurs. This information is essential to managing the quality of our water and the quantity that can be sustainably pumped. This project substantially completed geologic atlases for Meeker, Redwood, and Brown counties, and contributed to atlas work in Anoka and Wright counties. Information about the geology is gleaned from the records of domestic wells, and from drilling conducted for this project. In Meeker County we used 3,600 wells and 6 cores, in Redwood we used 1,900 wells and 10 cores, and in Brown County we used 1,700 wells and 8 cores, and soil borings and geophysical surveys. From the data we created maps of the geology immediately beneath the soil; the aquifers within the glacial sediment; and the shape, elevation, and rock types of the bedrock surface. These maps and data support monitoring, wellhead protection, water appropriation, clean-ups, and supply management.

In large portions of Brown and Redwood counties the glacial materials are relatively thin, and most of the bedrock types present do not provide much water. This makes the mapping of glacial sand bodies, which are potential aquifers, very important. Our maps will guide wise use and protection of these water supplies. In Meeker County, the glacial deposits can be very thick, and the bedrock includes some formations that can serve as aquifers. This is a more diverse and complicated ground water distribution. In all three counties the database of well construction records we have compiled is an excellent indicator of which aquifers the population is currently relying on.

PROJECT RESULTS USE AND DISSEMINATION

County geologic atlases are distributed in print and digital formats. The digital format allows us to include all the data that support the maps and the ability to change the maps or create new ones. The products are available from the MGS web site (<http://www.mnngs.umn.edu/index.html>). We also conduct post-project workshops in the map area to familiarize users with the products and their applications. The products are also distributed to libraries.

Project completed: 6/30/2015

FINAL REPORT

PART 2 - MN DNR

OVERALL PROJECT OUTCOME AND RESULTS

Geologic atlases provide information essential to sustainable management of groundwater resources.

Atlases define aquifer boundaries, the connection of aquifers to the land surface, and the connection of aquifers to surface water resources. They facilitate and enhance the operations of natural resource management and regulation by state and local government units.

County Geologic Atlases are specifically identified as essential data in the Statewide Conservation Plan, and in the efforts of the Environmental Quality Board, DNR Waters, and the Water Resources Center at the University of Minnesota to design a sustainable water management process. County geologic atlases facilitate management activities to identify sustainable water use and to protect water quality.

This project continued the acceleration of County Geologic Atlases, Part B by DNR initiated under M.L. 2009 that provided ENRTF funding through June 30, 2012. This work plan provided support for ongoing Part B atlases in Carlton, Benton, McLeod, Carver, and Chisago counties and to initiate seven new Part B atlases over the project period including Blue Earth, Nicollet, Sibley, Anoka, Clay, Renville, and Wright counties. The Carlton, Benton, McLeod, Carver, and Chisago county geologic atlases, Part B were completed, printed, and distributed; local training workshops were held for all completed atlases. Blue Earth, Nicollet, Sibley, Anoka, Clay, Renville, and Wright county Part B geologic atlases were all initiated. Project staff also assisted the initiation of the Part B Sherburne county geologic atlas.

All initiated projects completed initial analysis and groundwater sample collection with only carbon-14 sample collection and analysis remaining for the Renville atlas project. Well owners received reports of the chemical analysis of samples from their well. The format for new atlas reports was redesigned to a USGS-style science report format that will allow an expansion of the information presented in the report. All future atlas reports beginning with Blue Earth will use the new report format. The Blue Earth report is in final draft in the new format with reports for the Nicollet and Sibley atlases in development. Technical analysis and map development for other projects is underway.

The County Geologic Atlas series of reports is a long-term joint effort by the Minnesota Geological Survey and DNR to complete County Geologic Atlases for all counties in the state. Initiated Part B atlas projects mentioned above will be completed with additional existing ENRTF funding. Future Part B atlases are planned for Part A atlases that have been completed by the MGS, including Morrison, Houston, the Winona revision, and Meeker. Ten additional Part A county geologic atlases are currently underway by the MGS.

PROJECT RESULTS USE AND DISSEMINATION

The Carlton, Benton, McLeod, Carver, and Chisago county geologic atlases, Part B were completed and printed in paper format and distributed to county, libraries, state agencies, and other organizations. Printed reports are available for sale at the MGS. PDF versions of all printed reports were posted to the DNR web site at http://www.dnr.state.mn.us/waters/groundwater_section/mapping/status.html. Through DNR gov.delivery subscription, (sign up on DNR home page <http://www.dnr.state.mn.us/index.html>) interested persons may self-subscribe to be notified of completed projects and other DNR county geologic atlas news. Project data of completed reports, including water chemistry data and GIS data were also posted to the DNR web site. Following publication of each Part B report, a local workshop was held to introduce the report content and train users in its application. At the completion of each report, the report author prepares an article of atlas highlights for the Minnesota Ground Water Association newsletter. The membership of the MGWA includes many professional hydrogeology colleagues who use the atlas reports.

Project completed: 6/30/2015

FINAL REPORT

Updating National Wetland Inventory for Minnesota - Phase III

Subd. 03d \$1,500,000 TF

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Appropriation Language

\$1,500,000 the second year is from the trust fund to the commissioner of natural resources to continue the update of wetland inventory maps for Minnesota. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

The National Wetland Inventory, a program initiated in the 1970s, is an important tool used at all levels of government and by private industry, non-profit organizations, and private landowners for wetland regulation and management, land management and conservation planning, environmental impact assessment, and natural resource inventories. The data behind the National Wetlands Inventory for Minnesota is now considerably out-of-date and a multi-phase, multi-agency collaborative effort coordinated by the Minnesota Department of Natural Resources is underway to update the data for the whole state. This appropriation is being used to conduct the third phase of this effort, which involves updating wetland maps for 30 counties in southern Minnesota and acquiring additional data needed to update wetland maps for an additional 22 counties in central Minnesota during a future phase of the inventory.

OVERALL PROJECT OUTCOME AND RESULTS

Updating the National Wetland Inventory (NWI) is a key component of the State's strategy to ensure healthy wetlands and clean water for Minnesota. This effort is a multi-agency collaborative under leadership of the Minnesota Department of Natural Resources. These data are intended to replace the original 1980s NWI data. The NWI data provide a baseline for assessing the effectiveness of wetland policies and management actions. These data are used at all levels of government, as well as by private industry and non-profit organizations for wetland regulation and management, land use, conservation planning, environmental impact assessment, and natural resource inventories. The update project is being conducted in phases with data released for each region as it is finalized.

In this third phase of the overall effort, we updated wetland inventory maps for 36 counties in southern Minnesota (23,856 square miles). The overall accuracy for wetland identification is 94%. We also acquired aerial imagery data for 39,625 square miles in central and northwestern Minnesota needed for the next phases of the update.

The updated NWI data was created in accordance with federal wetland mapping guidance. This update used spring aerial imagery acquired in 2011 and lidar elevation data as well as other ancillary data.

Quality assurance of the data included visual inspection, automated checks for attribute validity and consistency, as well as a formal accuracy assessment based on an independent field data. Further details on the methods employed can be found in the technical procedures document for this project located on the project website (http://www.dnr.state.mn.us/eco/wetlands/nwi_proj.html).

PROJECT RESULTS USE AND DISSEMINATION<

All wetland map data and aerial imagery are available free of charge to the public. The data have been made available through the Minnesota Geospatial Commons (<https://gisdata.mn.gov/>) as well as through an online wetland viewer (<http://www.dnr.state.mn.us/eco/wetlands/map.html>). A copy of the data has also been provided to the US Fish and Wildlife Service for inclusion in the national wetland database.

Use of the NWI data is being promoted through a variety of channels. The DNR is giving presentation about the updated NWI data at both the Minnesota Water Resources Conference and the Minnesota GIS/LIS Conference. The DNR and MnGeo are co-presenting at the Minnesota GIS/LIS Conference regarding the availability of the spring aerial imagery. A short news article was developed for the Minnesota Geospatial Commons news feed and posted in May 2015. A broader press release has also been drafted for an expected September release. Finally, a peer-reviewed journal article was published in the journal Wetlands based on the work from the previous NWI project phase.

Project completed: 6/30/2015

FINAL REPORT

Determining Causes of Mortality in Moose Populations

Subd. 03f \$600,000 TF

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RESEARCH

Appropriation Language

\$300,000 the first year and \$300,000 the second year are from the trust fund to the commissioner of natural resources to determine specific causes of moose mortality and population decline in Minnesota and to develop specific management actions to prevent further population decline. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Moose, one of Minnesota's prized wildlife species, are dying at much higher rates in Minnesota than elsewhere in North America. Recently observed increases in mortality rates amongst some moose in northeastern Minnesota have led to concern that the population there may be starting a decline like that seen in the northwestern part of the state, where moose populations fell from over 4,000 to fewer

than 100 in less than 20 years. Additionally the specific causes of increased mortality amongst individual moose, such as potential nutritional factors, remain unknown. Scientists at the Minnesota Department of Natural Resources are using this appropriation to investigate the actual cause of death in recovered individual moose and determine what other factors may also be contributing. Once these causes of death and contributing factors are identified, it may be possible to implement management actions to address the overall population decline and help maintain healthy populations of moose in the state.

OVERALL PROJECT OUTCOME AND RESULTS

Minnesota's moose (*Alces alces*) are dying at rates much higher than elsewhere in North America. Recent aerial surveys indicate the northeastern population has declined 50% since 2006. Previous research in MN reported a 21% average non-hunting mortality rate, much higher than the 8-12% reported for moose elsewhere in North America. In 2013, the Minnesota DNR launched a new study to determine cause-specific mortality by deploying Iridium GPS collars on moose in northeastern MN and investigated mortalities within 24 hours of death to identify proximate cause of mortality and to examine the influence of potential contributing factors. In the first 2.5 years of this multi-year study, 156 moose have been radiocollared and annual mortality rates were 19% and 12% in 2013 and 2014, respectively; 9% of collared moose have died in the first half of 2015. Overall, 41 moose have died and causes of mortality were health-related (61%), which included bacterial infections, winter ticks, brainworm, accident, multiple chronic health issues, and other undetermined health causes, and predator-related (39%), which included confirmed and likely wolf-kills. Predisposing health issues (e.g. brainworm, pneumonia, previous injury) likely contributed to at least 6 of the wolf-killed moose. Response times from initial mortality notification (e.g. text message or email) to a team in the field at the death site were <24 hours in 23 cases (59%), between 24 and 48 hours in 10 cases (26%), and >48 hours in 6 cases (15%). Mortality implant transmitters (MITs) were deployed in 61 moose to detect instantaneous death as well as internal body temperature. Preliminary analyses of data from MITs recovered from moose that have died in Minnesota (n = 8) indicated prolonged elevated temperatures (>102 degrees F) for 10-30% of readings during the summer months. This study has documented key mortality factors to improve our understanding of the moose decline in northeastern Minnesota.

PROJECT RESULTS USE AND DISSEMINATION<

The moose project has received an enormous amount of media coverage, including international, national, regional, and local outlets. Minnesota DNR staff have provided presentations about this research project to international and national scientific meetings, regional meetings, and to local stakeholder groups. Links to some the highlighted media coverage and reports can be found on the project's website: <http://www.dnr.state.mn.us/moose/index.html>. Further, report on this project was published in the 2013 Summaries of Research Findings: <http://www.dnr.state.mn.us/publications/wildlife/research2013.html>.

With the continuation of ENTRF project funding for "Moose Decline and Air Temperatures in Northeastern Minnesota", M.L. 2014, Chp. 226, Sec. 2, Subd. 5m, outreach and dissemination of this project is on-going. Peer-reviewed publication of the findings of cause-specific mortality for adult moose in this study will be initiated after the completion of the third full year of the project (December 2015). Other peer-reviewed publications have been initiated, including a techniques paper documenting the methods used to respond to moose mortalities within 24 of death, and a collaborative analyses of serum chemistries from moose in Minnesota, New England states (Maine, New Hampshire, and New York), and western US (Colorado, Wyoming, and Montana).

Project completed: 6/30/2015

FINAL REPORT

Information System for Wildlife and Aquatic Management Areas

Subd. 03j \$500,000 TF

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Appropriation Language

\$250,000 the first year and \$250,000 the second year are from the trust fund to the commissioner of natural resources to develop an information system to facilitate improved management of wildlife and fish habitat and facilities. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

The Minnesota Department of Natural Resources (DNR) manages over 2,135 state Wildlife Management Areas (WMA) and Aquatic Management Areas (AMA) containing over 1.3 million acres. This appropriation is enabling the DNR to develop an information system that will better facilitate the management of the state's WMAs and AMAs by helping to identify needs; prioritize, plan, and carry out related activities; track and assess results of activities; and make the information available to resource management professionals and the public.

OVERALL PROJECT OUTCOME AND RESULTS

The DNR Division of Fish and Wildlife (FAW) needed a system to manage statewide information about Wildlife Management Areas (WMAs) and Aquatic Management Areas (AMAs). This project created a new information system for assessment of and projects on, facilities and habitat on these management areas. The system has a component for proposing and managing field projects. The system also handles information about public use and access to WMAs/AMAs, which will be presented on the DNR web site.

This system is called the Wildlife and Aquatic Habitat Management Application (WAHMA). WAHMA is now being used by staff within FAW. The WAHMA application can be broken down into three components:

- WAHMAGIS - GIS based data entry and management components for WMA/AMA information. This component can be further divided into separate applications:
 - WAHMAGIS-Desktop - a Windows PC based application that can be run from DNR offices, or over any Internet connection. All WAHMA data and project management tools can be used from the Desktop application. All data that has been captured is immediately available for every WMA and AMA in an organized interface.
 - WAHMAGIS-Mobile - a smaller field application that runs on rugged tablet computers. This application can be run over a Wi-Fi connection, a 4g phone connection, or completely disconnected. All existing data about facilities and habitat can be reviewed,

added or updated. Part of the project funding was used to purchase 53 field tablets, which were distributed to FAW field staff managing WMAs and AMAs.

- WAHMA-Work Planning - a web application used for proposing and managing projects. This component allows staff to propose and prioritize projects for funding and then manage the funded projects. Regional and Central Office staff review, prioritize and approve projects. FAW Program staff use the data to bundle appropriate projects for building funding proposals.
- WAHMA-Reporting - The principle report will be the Management Guidance Document, a summary for each WMA/AMA including unit description, goals, management plans and considerations.

PROJECT RESULTS USE AND DISSEMINATION

WAHMA provides a foundation and tools for FAW field staff to update and build out the inventory of facilities and habitat on WMAs/AMAs. As the data is entered and updated in the system, it can then be queried to identify unmet needs and set work priorities via the project management module of the system. WAHMA is also used to record information about public recreation, access, acquisition history, management goals and plans.

WAHMA broke new ground for a project proposal and approval system. Other DNR divisions expressed interest in using the same methods, so multiple demonstrations have been held within DNR. A technical presentation was done for MN.IT Services @ DNR staff. Field users have attended multiple training sessions. Presentations have been made at regional Wildlife meetings, at the bi-annual Wildlife School, and will be made at an upcoming Fisheries Academy.

WAHMA is primarily intended for use by FAW staff in managing lands, and in planning and accomplishing projects. Field staff will be the front line of gathering information, which will be used at all levels in FAW for unit planning and determining land management needs. WAHMA is also being used to manage more detailed recreation and management information for the public, which will be delivered with a public web site redesigned to present the additional maps and information. The GIS data from WAHMA will be available through DNR's internal data resource site, and to the public via the Minnesota Geospatial Commons.

Project completed: 6/30/2015

FINAL REPORT

Subd. 04 Land, Habitat, and Recreation

State Parks and Trails Land Acquisition

Subd. 04b \$3,000,000 TF

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Appropriation Language

\$1,500,000 the first year and \$1,500,000 the second year are from the trust fund to the commissioner of natural resources to acquire state trails and critical parcels within the statutory boundaries of state parks. State park land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work program. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Privately owned lands exist within the designated boundaries of state parks throughout Minnesota. Purchase of these lands from willing landowners for addition to the state park system makes them permanently available for public recreation and enjoyment and facilitates more efficient management. Additional benefits include preserving contiguous wildlife corridors, facilitating preservation and restoration of native plant communities and cultural resources, reducing impacts of future development, and providing riparian buffers along wetlands, creeks, and lakes. The Minnesota Department of Natural Resources is using this appropriation to partially fund the acquisition of approximately 120 acres, which includes:

- 64 acres for 6.5 miles of the Brown's Creek Segment of the Willard Munger State Trail in Washington County
- 75 acres for Mille Lacs Kathio State Park in Mille Lacs County
- 3 acres for Crow Wing State Park in Cass County
- 48 acres for Tettegouche State Park in Lake County
- 20 acres for Nerstrand Big Woods State Park in Rice County

OVERALL PROJECT OUTCOME AND RESULTS

Environment and Natural Resources Trust Fund funding resulted in the Department of Natural Resources acquiring approximately 332 acres of land within the statutory boundaries of six Minnesota State Parks and one statutorily designated State Trail:<

- Partially fund acquisition of approximately 64 acres, 6 miles, of the Brown's Creek Segment of the Willard Munger State Trail. This segment connects the existing State Trail to Stillwater and protects a critical section of the Brown's Creek trout stream.
- Acquired approximately 75 acres within Mille Lacs Kathio State Park located in Mille Lacs County. This parcel is located within the Historic Landmark District and contains significant cultural resources and 2/3rds of the lakeshore surrounding Warren Lake.
- Acquired approximately 10 acres within Crow Wing State Park located in Cass County. This parcel contains approximately 700 feet the Crow Wing River at high risk for development, protects shoreline and provides hiking and river access.
- Acquired approximately 3 acres within Lake Vermilion-Soudan Underground Mine State Park in St. Louis County. This property is an entire island located in Cable Bay and protects the riparian resources and viewshed from Minnesota's newest state park.
- Acquired approximately 104 acres within Banning State Park in Pine County. This property preserves the natural setting of the Kettle River and connects the north and south sections of the state park. The master plan was recently updated to include a new rock climbing recreational opportunity on portions of this parcel.
- Acquired approximately 61 acres within Whitewater State Park that preserves oak woodland and small outcrop communities scattered along the cliff features with critical wildlife habitat for prairie and savanna species.

- Partially fund approximately 15 acres within Jay Cooke State Park's Oak Trail. Historical accounts have a portion of a trail passing through Gill Creek, which early European voyagers and Native Americans used this route.

Any restoration needs will be determined in accordance with each state park and/or state trail master plan. Any additional operations, maintenance and/or restoration costs required to manage the additional land will be determined and taken into consideration during the next budget planning cycle. Additional costs are not anticipated to be a significant amount of increase, and will be absorb with existing staffing and within pre-existing Division restoration plans. The State Parks and Trails resource management staff is responsible for the restoration and management of the natural/undeveloped areas not planned for facilities. For restoration efforts like converting an old field to a prairie, bonding and Legacy funds are eligible and used. Legacy monies and other sources, such as general fund and the State Parks working capital fund are used for long-term maintenance of the communities once the site has been restored.

FINAL REPORT

Project completed: 6/30/2015

Minnesota River Valley Green Corridor Scientific and Natural Area Acquisition

Subd. 04g \$2,000,000 TF

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Appropriation Language

\$1,000,000 the first year and \$1,000,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with the Redwood Area Communities Foundation to acquire lands with high-quality native plant communities and rare features to be established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5. A list of proposed acquisitions must be provided as part of the required work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Up to \$54,000 may be retained by the Department of Natural Resources at the request of the Redwood Area Communities Foundation for transaction costs, associated professional services, and restoration needs. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Minnesota's Scientific and Natural Areas (SNA) Program is an effort to preserve and perpetuate the state's ecological diversity and ensure that no single rare feature is lost from any region of the state. This includes landforms, fossil remains, plant and animal communities, rare and endangered species, and other unique biotic or geological features. These sites play an important role in scientific study, public education, and outdoor recreation. The Redwood Area Communities Foundation is using this

appropriation to work in partnership with the Minnesota Department of Natural Resources to acquire approximately 420 acres of lands in the Minnesota River Valley containing some of the most ecologically sensitive plant communities, rare species, and other unique natural resources in the area. Acquired lands will be established as Scientific and Natural Areas.

Project due to be completed: 6/30/2016 [Extended in M.L. 2014, Chapter 226 and M.L. 2015, Chapter 76]

Work Plan (PDF)

Metropolitan Conservation Corridors (MeCC) - Phase VI

Subd. 04i \$3,475,000 TF

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Appropriation Language

\$1,737,000 the first year and \$1,738,000 the second year are from the trust fund to the commissioner of natural resources for the acceleration of agency programs and cooperative agreements. Of this appropriation, \$150,000 the first year and \$150,000 the second year are to the commissioner of natural resources for agency programs and \$3,175,000 is for the agreements as follows: \$100,000 the first year and \$100,000 the second year with Friends of the Mississippi River; \$517,000 the first year and \$518,000 the second year with Dakota County; \$200,000 the first year and \$200,000 the second year with Great River Greening; \$220,000 the first year and \$220,000 the second year with Minnesota Land Trust; \$300,000 the first year and \$300,000 the second year with Minnesota Valley National Wildlife Refuge Trust, Inc.; and \$250,000 the first year and \$250,000 the second year with The Trust for Public Land for planning, restoring, and protecting priority natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work program. This appropriation may not be used for the purchase of habitable residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work program.

An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

Overall PROJECT OVERVIEW

Though many parts of the Twin Cities metropolitan area are urbanized, there are also has large areas of natural lands that continue to serve as important habitat for fish, wildlife, and plant communities. However, pressure on these remaining lands continues to intensify as population and development pressures increase. This appropriation represents the sixth phase of an ongoing effort by a partnership of state and non-profit organizations, called the Metro Conservation Corridors (MeCC) partnership, to conduct strategic and coordinated land protection, restoration, and enhancement activities that build connections between remaining natural areas and ensures their benefits are available for future generations. This phase involves seven partners and is expected to result in the permanent protection of more than 600 acres and the restoration and enhancement of more than 750 acres.

Individual Partner PROJECT OVERVIEWS

- *1.1/1.2 - MeCC VI - Coordination, Mapping & Outreach & Mapping and Database Work - Minnesota Land Trust (\$40,000)*

The Minnesota Land Trust provides coordination, mapping, and data management for the Metropolitan Conservation Corridors partnership. Funds are being used to coordinate the partnership, guide strategic outreach and implementation efforts, manage project data, and provide reporting and mapping of accomplishments.

- *2.1 - MeCC VI - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$200,000)*

Friends of the Mississippi is using this appropriation to restore and enhance approximately 163 acres of permanently protected prairie and forest lands in Dakota, Washington, Ramsey, and Hennepin counties in order increase the amount of high quality habitat within designated conservation corridors. Specific activities will include updating management plans, soil preparation, prescribed burning, native vegetation installation, woody encroachment removal, and invasive species control.

- *2.3 - MeCC VI - Restoring Our Lands and Waters - Great River Greening (\$400,000)*

These funds will enable Great River Greening to restore approximately 121 acres of permanently protected forests, savanna, prairie, and wetland habitat and 0.18 miles of shoreland habitat while engaging hundreds of volunteers in the stewardship of the Metropolitan area's remaining natural areas. Specific activities include invasive species control, seeding/planting, prescribed burning, and other associated activities.

- *2.6/3.3 - MeCC VI - Priority Expansion and Restoration MN Valley NW Refuge - Minnesota Valley National Wildlife Refuge Trust Inc. (\$600,000)*

The Minnesota Valley National Wildlife Refuge Trust is using this appropriation to purchase a total of approximately 125 acres of land to expand the Minnesota Valley National Wildlife Refuge and to restore and enhance approximately 405 acres of oak savanna and remnant native prairie communities within the refuge. Many benefits are anticipated from this project, including improved habitat connectivity, protection of native species, improved water quality in the Minnesota River, and increased public access to natural lands for activities such as hiking, hunting, and fishing.

- *2.7/3.7 - MeCC VI - Dakota County Riparian and Lakeshore Protection - Dakota County (\$1,035,000)*

Through this appropriation Dakota County plans to permanently protect approximately 287

acres along rivers, including the Vermillion and Cannon Rivers, by securing conservation easements from willing landowners. For all acres protected, natural resource management plans will be prepared to ensure their long term stewardship. Additionally, restoration and enhancement activities are expected to occur on approximately 75 acres.

- **3.1 - MeCC VI - TPL's Critical Land Protection Program - Trust for Public Land (\$500,000)**
The Trust for Public Land is using this appropriation to purchase approximately 30 acres of land and 0.3 miles of shoreline with high ecological value and then convey the land to state or local governments for long-term stewardship and protection. Lands being considered for permanent protection in this round of funding include areas around the Rum River and Rice Creek in Anoka County, Lindstrom Natural Area in Chisago County, Savage Fen Scientific and Natural Area and Pike Lake in Scott County, and St. Croix/Fraconia-Scandia Scientific and Natural Area in Washington County.
- **3.2 - MeCC VI - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$400,000)**
With this appropriation, the Minnesota Land Trust plans to protect 150 acres of high quality forest, prairie, or wetland habitat by securing permanent conservation easements and dedicating funds for their perpetual monitoring, management, and enforcement. Lands being considered for permanent protection in this round of funding are located in Anoka, Carver, Goodhue, Hennepin, Isanti, Washington, and Wright counties.
- **3.5 - MeCC VI - Aquatic Management Area Acquisition - MN DNR (\$300,000)**
The Minnesota Department of Natural Resources is using this appropriation to purchase 35 acres, with 0.6 miles of shoreline, along the Vermillion River in Dakota County to be managed as Aquatic Management Areas. Priority will be given to lands that have a high risk of development, provide protection to shoreline and riparian zones, and allow access for anglers and habitat improvement projects.

Project completed: 6/30/2015

ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS (Click project # to go to listing for that project)

- **1.1/1.2 - MeCC VI - Coordination, Mapping & Outreach and Mapping & Database Work - Minnesota Land Trust (\$40,000)**
- **2.1 - MeCC VI - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$200,000)**
- **2.3 - MeCC VI - Restoring Our Lands and Waters - Great River Greening (\$400,000)**
- **2.6/3.3 - MeCC VI - Priority Expansion and Restoration MN Valley NW Refuge - Minnesota Valley National Wildlife Refuge Trust, Inc. (\$600,000)**
- **2.7/3.7 - MeCC VI - Dakota County Riparian and Lakeshore Protection - Dakota County (\$1,035,000)**
- **3.1 - MeCC VI - TPL's Critical Land Protection Program - Trust for Public Land (\$500,000)**
- **3.2 - MeCC VI - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$400,000)**
- **3.5 - MeCC VI - Aquatic Management Area Acquisition - MN DNR (\$300,000)**

1.1/1.2 FINAL REPORT - MeCC VI - Coordination, Mapping & Outreach and Mapping & Database Work - Minnesota Land Trust (\$40,000)

Project Outcome and Results

During the sixth phase of the Metro Corridors project, the Minnesota Land Trust worked with landowners throughout the Twin Cities metropolitan area to permanently protect important lands and Minnesota's remaining natural areas. Three perpetual conservation easements were completed that collectively protected 317 acres of land and more than 4,300 feet of shoreline, exceeding the grant obligations by 167 acres. Two easements were purchased, both as bargain sales; one easement was donated. All three projects were unique opportunities to protect high quality natural habitat and riparian areas. These projects include:

- Sunrise Lake (Chisago County): A 79-acre property of mixed hardwood and conifer forest, wetland, grassland and agricultural field in close proximity to Carlos Avery WMA.
- Tennyson Lake (Isanti County): A 158-acre property of wetlands, mixed hardwood and pine forest, open water, grasslands, and agricultural land, with 4,375 feet of undeveloped shoreline on Tennyson Lake and Spencer Brook.
- Rush River (Sibley County): A 79-acre property of open fields, wooded bluffs, sloping ravines, and lowland forest lying adjacent to the Minnesota River and Rush River County Park.

Baseline property reports were prepared for each easement, detailing the condition of the property for future monitoring and enforcement. LCCMR provided \$55,000 in grant funds to the Land Trust's dedicated Stewardship and Enforcement Fund for this required perpetual obligation. \$45,000 was for the three new projects under this phase of the Metro Corridors project, while \$10,500 was for an easement project from the previous phase of the Metro Corridors project. The Land Trust will report to LCCMR annually on both the status of the Stewardship and Enforcement Fund and the easements acquired with funds through this grant.

Total appraised value for the two purchased easements was \$267,000, with the grant providing \$209,080; donated value of these bargain sales was \$57,920. No appraisal was completed for the donated easement. The cost to the State of Minnesota to complete these projects was \$801 per acre. Cumulatively, across all phases of the Metro Corridors program, the Land Trust has protected 3,989 acres of critical habitat and 80,000 feet of shoreline, at a cost to the State of \$453 per acre. The Land Trust's work on this project demonstrates the continued cost effectiveness of using conservation easements to protect natural and scenic resources within developed and developing areas, as the cost to the State was well below the cost to purchase land in the Twin Cities region.

PROJECT RESULTS USE AND DISSEMINATION

The Land Trust continued to gain more experience with conservation easements, easement management, and issues unique to protecting land in a metropolitan area. This experience and information was shared with our partner organizations, other easement holders, local communities, and policy makers. The Land Trust also disseminated information about the specific land protection projects completed under this grant through our newsletter, annual report (4,200 pieces), web site, and press releases. Additionally, the MeCC Partnership maintains an interactive public web map that shows the locations of MeCC projects over time. This web map can be accessed at: www.dnr.state.mn.us/maps/MeCC/mapper.html

Project completed: 6/30/2015

2.1 FINAL REPORT - MeCC VI - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River (\$200,000)

Project Outcome and Results

High quality habitat within the Metro area is important for both resident and migratory species. The

Metro Conservation Corridors partnership is working to establish a system of habitat corridors that also provide open space and water quality benefits for the residents of the area. One goal of this project was to increase the amount of high quality habitat within designated conservation corridors. During this project, FMR installed 86 acres of prairie, besting the projected amount by 31 acres. This prairie restoration took place at the Emrick property, Gores Pool WMA, Heritage Village Park, Pine Bend Bluffs SNA, and Mississippi River Gorge sites. FMR conducted woodland restoration activities on 2 acres at Mounds Park and Heritage Village Park, falling short by 3 acres of the proposed goal. Uncommon flooding at Gores Pool WMA prevented woodland restoration at the site. Activities associated with this restoration included updating management plans, soil preparation, seed/plant installation, mowing, and weed control. These additional acres of natural communities will provide critical habitat for many species that rely on prairie and woodland, some of which are rare or in decline.

A second goal was to enhance the quality of existing habitat areas. We conducted enhancement activities, mostly exotic invasive plant control and burning, on 275.8 acres, exceeding the number of acres committed to in the work program by 172.8.

The third goal achieved was to develop a list of potential future restoration and acquisition projects within the corridors by reaching out to 27 landowners. This outreach has led to meetings and site visits with landowners interested in learning more about the natural resources on their property. In other cases, the follow up contact is still taking place. This outreach centered around existing conservation areas, including Gores Pool Wildlife Management Area, Mississippi River riparian area, Sand Coulee SNA, Pine Bend Bluffs Natural Area & the Vermillion River.

PROJECT RESULTS USE AND DISSEMINATION

FMR organizes many tours and stewardship events at the sites where we conduct restoration activities. We share information about this project with the participants of these events. FMR also occasionally publishes articles in its paper and electronic newsletters regarding restoration projects that it is involved in.

Project completed: 6/30/2014

2.3 FINAL REPORT - MeCC VI - Restoring Our Lands and Waters - Great River Greening (\$400,000)

Project Outcome and Results

Along with partners and volunteers, Greening undertook restoration projects to reduce habitat fragmentation, enhance habitat quality, reconnect habitat corridors, and build connections with local communities. Significantly exceeding all of our goals, we:

1. restored/enhanced 191 acres of upland habitat and an additional 192 acres with leveraged non-state funds for a total of 383 acres restored,
2. restored/enhanced 0.26 mile of shoreland habitat and an additional 0.20 mile using leveraged non-state funds for a total of 0.46 miles of restored shoreland,
3. engaged nearly 2,500 volunteers in meaningful parts of these projects, including 700 youth.

Habitats included prairie, oak savanna, woodland, wetland, riparian, and black ash swamp. Sites hosted a total of 14 documented rare species (7 vertebrates, 1 invertebrate, and 6 plant species) (Battle Creek Park, Hidden Valley Park, Katherine Abbott Park, Lake St. Croix Beach, Pilot Knob Hill, Spring Lake Park (Scott Co.), one easement property), and four native plant communities with biodiversity of statewide significance as rated by Minnesota County Biological Survey (Hidden Valley Park, Ike's Creek, Spring Lake Park (Scott Co.), Pond Dakota Mission).

We restored 18 sites using methods such as native species plantings, prescribed burns, and mechanical removal and treatment of invasive species. We restored and de-fragmented habitat along the valleys and banks of the Mississippi and Minnesota Rivers (Heritage Village Park, Battle Creek Park, Pilot Knob Hill, Pond Dakota Mission, Ike's Creek, Valley Park) as well as our Wild and Scenic Rivers (Cedar Creek Conservation Area, Martin's Meadows, five easement properties), and restored prairie/savanna at a site historically connected to Lost Valley Prairie SNA (Central Corridor). We also restored habitat at several ecological cores (Spring Lake Park (Scott Co.), Cedar Lake Farm, Katherine Abbott Park, Freeman Park).

Volunteers planted over 2,400 trees/shrubs and 27,000 forb/grass plugs, and received presentations from a Greening ecologist as part of their workday.

We leveraged a total of \$441,000 non-state funds for these projects.

PROJECT RESULTS USE AND DISSEMINATION

Volunteer event descriptions acknowledging Trust Fund contributions and qualitative results were emailed to Greening's e-subscribers in July 2011, Feb 2012, July 2012, February 2013, July 2013, and spring 2014 in advance of our spring and fall volunteer event seasons. Over the course of the grants, the number of subscribers increased from about 5,000 to over 6,000.

Information about the Metro Conservation Corridors is on our website in the Initiatives and Volunteer Events sections at <http://www.greatrivergreening.org/>. Over the course of the grant, the visits to the Greening website increased from approximately 1,200 to approximately 1,500 visits per month.

A summary of results from our partnership with Metro Conservation Corridors was included in email marketing in January 2012, as part of our 2011 annual report, reaching over 5,000 subscribers. Approximately 300 hard copies of the annual report were also distributed.

Two press articles, complete with correct ENRTF acknowledgement, were released during the grant period:

- The Mendota Heights Patch reported in April 2012 on continued restoration at Pilot Knob Historic Site: <http://www.greatrivergreening.org/wp-content/uploads/2013/07/4.23.12-Restoration-Continues-at-Pilot-Knob-Historic-Site-Mendota-Heights-MN-Patch.pdf>.
- The Isanti County News reported on a fall 2012 Greening volunteer event in the Wild and Scenic Rum River project area: <http://isanticountynews.com/2012/10/31/restoration-effort-preserves-20-acres-of-floodplain-forest-along-rum-river/>.

An additional five press articles, missing correct acknowledgement despite our efforts, disseminated information about the projects.

- The Bloomington Crow reported in April 2012 on a volunteer event focused on removing invasive species at Ike's Creek: <http://www.greatrivergreening.org/wp-content/uploads/2013/07/4.27.12-Chamber-Community-Outreach-Committee-Pulls-Buckthorn-at-Ike-Bloomington-Crow.pdf>.
- The Pioneer Press reported on May 3, 2012 on an upcoming volunteer event to remove invasive species and planting prairie seeds at Pilot Knob Hill: <http://www.greatrivergreening.org/wp-content/uploads/2013/07/5.3.12-Volunteers-at-Pilot-Knob-Mendota-Heights-Pioneer-Press.pdf>.
- The Mendota Heights Patch reported on May 8, 2012 on the same volunteer at Pilot Knob Hill, discussing the work to restore a prairie with a high biodiversity of native plant species:

<http://www.greatrivergreening.org/wp-content/uploads/2013/07/5.8.12-Pilot-Knob-Clean-up-Draws-Volunteers-Public-Officials-Mendota-Heights-MN-Patch.pdf>.

- The Sun Current reported in June 2012 on a volunteer event and the history of restoration at Ike's Creek: <http://www.greatrivergreening.org/wp-content/uploads/2013/07/6.27.12-Bringing-new-life-to-a-Bloomington-Creek-Sun-Current.pdf>.
- The Path, a newsletter published by DNR Division of Parks and Trails for its employees, reported in November 2012 on a volunteer event at a DNR Wild and Scenic River easement along the Rum River. See page 4: <http://www.greatrivergreening.org/wp-content/uploads/2013/07/12.11.12-DNR-Parks-and-Trails-Internal-Newsletter.pdf>.

Greening is in active partnership with landowners, other land managers, service providers, conservation peers, and volunteers resulting in a dynamic and timely exchange of information and results.

Project completed: 6/30/2015

2.6/3.3 FINAL REPORT - MeCC VI - Priority Expansion and Restoration MN Valley NW Refuge - Minnesota Valley National Wildlife Refuge Trust, Inc. (\$600,000)

Project Outcome and Results

Activity 1: The Minnesota Valley Trust, Inc. (MVT) acquired 154.6 acres of priority habitat to expand the St. Lawrence Unit of the Minnesota Valley National Wildlife Refuge on January 14, 2015. Of that, 95.1 acres were acquired with the ENRTF grant and 59.5 acres were acquired with other, non-state funds. This property joins two prior acquisitions for this unit, one of which was acquired in part with a prior ENRTF grant (ML2010 - MeCC V Supplemental). The total land acquired for this unit now stands at 445 acres.

About 60 acres of the acquired lands that had been actively-farmed cropland are being restored to its historic alluvial plain and slope wetland habitat with a 2015 Metro Conservation Partners Legacy Grant. This will restore the native wetland habitat with local ecotype vegetation, promote plant diversity to provide a suite of pollinator habitat, prime nesting cover and expanded forage options, and reclaim a unique ecosystem lost to agricultural practices. The project will increase sediment and nutrient entrainment to the Minnesota River, increase water storage and create additional habitat for wildlife, including game species.

Another 3.5 acres were acquired in July 2012 for the nearby Louisville Swamp Unit of the Refuge as leverage, and 176.5 acres were received in donation in December 2011 to create a new Waterfowl Production Area associated with the Refuge. The latter property was just 1 mile outside the corridors of the Metropolitan Conservation Corridors, so does not technically qualify as leverage acres, but was a priority for the Minnesota Valley National Wildlife Refuge & Wetland Management District and is reported here for information purposes.

Activity 2: The following work was completed for this activity:

- Oak savanna remnant at Long Meadow Lake Unit -- Mechanical removal and chemical treatment of woody invasive plant species on 15 acres; prescribed fire on 15 acres; supplemental seeding of native grass and wildflower species on the 15 acres.
- Oak savanna remnant at Louisville Swamp Unit -- Mechanical removal and chemical treatment of woody invasive plant species on 149 acres; prescribed fire on 155 acres.
- Mesic prairie at the Jessenland Unit - Prescribed fire on 300 acres.

PROJECT RESULTS USE AND DISSEMINATION

Upon completion of the restoration activities, the St. Lawrence Unit property will be posted open for public use and announced through news releases and the MVT website. Signage at the unit will include reference to the ENRTF.

Project completed: 6/30/2015

2.7/3.7 FINAL REPORT - MeCC VI - Dakota County Riparian and Lakeshore Protection - Dakota County (\$1,035,000)

Project Outcome and Results

The project goal was to acquire permanent conservation easements along rivers, streams, and undeveloped lakeshore in Dakota County; prepare Natural Resource Management Plans (NRMPs) for conservation easements; and restore/enhance protected land. The project scope encompassed some of the best natural resource features found in the metropolitan region. A sound fiscal and ecological conservation approach was taken, while attempting to balance the interests, rights and responsibilities of private landowners, with public concerns about water, wildlife habitat, outdoor recreation, and climate change.

In November 2011, the Dakota County Board adopted a comprehensive Land Conservation Vision that included establishing permanent vegetative buffers along all rivers, streams and undeveloped lakeshore and protecting quality natural areas. The County's land conservation programs targeted specific areas in the County and mailings were issued to determine landowner interest. Program applications were reviewed and evaluated using County Board-approved criteria; and top-ranking projects were considered for permanent protection. Appraisals were conducted for recommended projects. NRMPs and baseline Property Reports were prepared for projects where landowners accepted purchase offers; and landowners agreed to cash or in-kind restoration and management contributions. Restoration projects were also completed on existing easement properties.

The project goals were to acquire an estimated 28 permanent conservation easements, totaling 287 acres, and restoring/enhancing 75 acres of protected land. Although the County's efforts generated a large number of potential projects, a wide variety of issues prevented projects from being completed. Landowner challenges included requesting unacceptable project changes during the acquisition process, inflated land/easement value expectations, and reluctance to commit to long-term or even short-term restoration/management. As a result, the County only acquired four conservation easements, totaling 195 acres, not meeting its goal; and completed NRMPs and/or restoration projects on eight properties, totaling 98 acres, which exceeded its goal. Approximately 4 miles of shoreline were permanently protected through this project.

PROJECT RESULTS USE AND DISSEMINATION

Information about the specific projects funded through this State appropriation is integrated with information about the County's comprehensive land conservation efforts that were initiated in 1998, with a farmland and natural areas protection plan partially funded by the Environment and Natural Resources Trust Fund. Implementation of the initial plan and subsequent revisions resulted in the permanent protection of 10,362 acres of natural areas and agricultural land and 51.5 miles of shoreland outside of the regional park and greenway system.

This project informed and improved internal and external County land conservation practices, procedures and policies. County staff has provided numerous local, regional and national presentations

about how Dakota County has developed and implemented its successful programs. Information has appeared on TV and radio, as well as metropolitan newspapers and residential newsletters. Information can also be found on the County's web site at:
<https://www.co.dakota.mn.us/Environment/LandConservation/Pages/default.aspx>

Project completed: 6/30/2015

3.1 FINAL REPORT - MeCC VI - TPL's Critical Land Protection Program - Trust for Public Land (\$500,000) ***Project Outcome and Results***

The Trust for Public Land used Metro Conservation Corridors Phase VI funding to acquire two high quality habitat properties in the Metro Area - Rice Creek Headwaters in Anoka County, and Lindstrom Peninsula in Chisago County.

The Trust for Public Land acquired 343 acres of open space at the headwaters of Rice Creek in the eastern part of Anoka County on December 21, 2012, and conveyed this property to Anoka County on January 3, 2013. This acquisition protected nearly all of the shoreline of Columbus Lake and a half mile of Rice Creek, and has helped to complete public ownership of a 20+ mile conservation corridor along Rice Creek to the Mississippi River. The land provides habitat for many species in conservation need, and has connected large tracts of habitat in Anoka County. Anoka County is managing 258 acres of the land as a new public hunting area called Columbus Lake Conservation Area and the remaining 85 acres has been added to the Rice Creek Chain of Lakes Regional Park Reserve. The Trust for Public Land used \$67,000 of its M.L. 2011 MeCC funding, which acquired 14.7 acres, as well as \$940,000 from the Outdoor Heritage Fund, which acquired 206.1 acres, and \$169,000 from Anoka County, which acquired 37.2 acres, to purchase the 258 acres for the Columbus Lake Conservation Area. The remaining 85 acres of the Rice Creek Chain of Lakes Regional Park Reserve was funded by the Metropolitan Council's Park Acquisition Opportunity Grant Program and Anoka County. Please note that the remaining \$10,000 of the appropriated \$500,000 from ML 2011 MeCC was released to the MN DNR for their acquisition, reporting and management planning costs as outlined in the Project Budget Summary, and the approved Work Plan.

On October 28, 2014 The Trust for Public Land acquired the 30 acre Lindstrom peninsula and immediately conveyed it to the City of Lindstrom. This 30 acre peninsula will be added to the adjacent 64 acre Allemensratt Natural Area that the City acquired several years ago with partial ENRTF funding. The peninsula contains approximately 5,600 feet of sensitive shoreline and has been added to the existing natural area to be managed as part of the City's park program. This property provides excellent wildlife habitat, water quality benefits and public access in a high growth area. The Trust for Public Land used \$423,000 of its M.L. 2011 MeCC acquisition funding and all of its M.L. 2013 MeCC acquisition funding (\$395,000) with \$82,000 from the City of Lindstrom to purchase the land.

PROJECT RESULTS USE AND DISSEMINATION

The Trust for Public Land disseminates information on the TPL website, www.tpl.org, broadcasts emails to Embrace Open Space (EOS) and TPL list serve members, distributes press releases, and includes information in TPL's newsletters and publications as appropriate.

The Columbus Lake Conservation Area is highlighted in The Trust for Public Land's website at:
<http://www.tpl.org/our-work/land-and-water/columbus-lake-conservation-area>.

Anoka County, with assistance from The Trust for Public Land, developed a press release that resulted in

several newspaper articles about the Columbus Lake Conservation Area/Rice Creek Headwaters project. Links are below.

- <http://abcnewspapers.com/2013/01/15/land-protected-for-conservation-in-eastern-anoka-county/>
- <http://forestlaketimes.com/2013/01/09/anoka-county-adds-350-acres-for-conservation/>
- http://www.presspubs.com/quad/news/article_474e24ae-64db-11e2-8700-0019bb2963f4.html
- <http://www.startribune.com/local/north/186635221.html>

The Lindstrom project is highlighted on The Trust for Public Land's website at: <https://www.tpl.org/our-work/our-land-and-water/allemansratt-wilderness-park>. The following information has been published about the Lindstrom site:

- <http://www.chisagocountypress.com/main.asp?SectionID=1&SubSectionID=1&ArticleID=19566>
- <http://www.chisagocountypress.com/main.asp?SectionID=1&SubSectionID=1&ArticleID=19627>

Project completed: 6/30/2015

3.2 FINAL REPORT - MeCC VI - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust (\$400,000)

Project Outcome and Results

During the sixth phase of the Metro Corridors project, the Minnesota Land Trust worked with landowners throughout the Twin Cities metropolitan area to permanently protect important lands and Minnesota's remaining natural areas. Three perpetual conservation easements were completed that collectively protected 317 acres of land and more than 4,300 feet of shoreline, exceeding the grant obligations by 167 acres. Two easements were purchased, both as bargain sales; one easement was donated. All three projects were unique opportunities to protect high quality natural habitat and riparian areas. These projects include:

- Sunrise Lake (Chisago County): A 79-acre property of mixed hardwood and conifer forest, wetland, grassland and agricultural field in close proximity to Carlos Avery WMA.
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Baseline property reports were prepared for each easement, detailing the condition of the property for future monitoring and enforcement. LCCMR provided \$55,000 in grant funds to the Land Trust's dedicated Stewardship and Enforcement Fund for this required perpetual obligation. \$45,000 was for the three new projects under this phase of the Metro Corridors project, while \$10,500 was for an easement project from the previous phase of the Metro Corridors project. The Land Trust will report to LCCMR annually on both the status of the Stewardship and Enforcement Fund and the easements acquired with funds through this grant.

Total appraised value for the two purchased easements was \$267,000, with the grant providing \$209,080; donated value of these bargain sales was \$57,920. No appraisal was completed for the donated easement. The cost to the State of Minnesota to complete these projects was \$801 per acre. Cumulatively, across all phases of the Metro Corridors program, the Land Trust has protected 3,989 acres of critical habitat and 80,000 feet of shoreline, at a cost to the State of \$453 per acre. The Land Trust's work on this project demonstrates the continued cost effectiveness of using conservation easements to protect natural and scenic resources within developed and developing areas, as the cost to the State was well below the cost to purchase land in the Twin Cities region.

PROJECT RESULTS USE AND DISSEMINATION

The Land Trust continued to gain more experience with conservation easements, easement management, and issues unique to protecting land in a metropolitan area. This experience and information was shared with our partner organizations, other easement holders, local communities, and policy makers. The Land Trust also disseminated information about the specific land protection projects completed under this grant through our newsletter, annual report (4,200 pieces), web site, and press releases. Additionally, the MeCC Partnership maintains an interactive public web map that shows the locations of MeCC projects over time. This web map can be accessed at: www.dnr.state.mn.us/maps/MeCC/mapper.html

Project completed: 6/30/2015

Restoration Strategies for Ditched Peatland and Scientific and Natural Areas

Subd. 04q \$200,000 TF

Michele Walker

MN DNR
2115 Birchmont Beach Rd NE
Bemidji, MN 56601

Phone: (218) 308-2664

Email: michele.walker@state.mn.us

Web: http://www.dnr.state.mn.us/snas/coniferous_peatlands.html

RESEARCH

Appropriation Language

\$100,000 the first year and \$100,000 the second year are from the trust fund to the commissioner of natural resources to evaluate the hydrology and habitat of the Winter Road Lake peatland watershed protection area to determine the effects of ditch abandonment and examine the potential for restoration of patterned peatlands. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Thirty-seven percent of the naturally stored carbon in Minnesota occurs in a unique ecosystem type called peatlands that covers only 10% of the state. Peatlands form where water levels are near the surface and drainage is poor, which slows decomposition of plant debris and results in an accumulation of these organic materials in a partially decomposed mass called peat. Peatland ecology is largely governed by the water flowing through them and disruption of this flow can have profound impacts on the accumulation of peat, landforms, and vegetation. One peatland located in Lake of the Woods and Roseau counties, the Winter Road Lake Peatland, experienced such disruption in the early 1900's when a failed attempt to drain the lands for agriculture left behind numerous drainage ditches. The Minnesota Department of Natural Resources is using this appropriation to evaluate the effects of this ditching on peatland hydrology and habitat in order to understand options for peatland restoration and possibly create potential for wetland banking credits. Findings will be used to guide restoration strategies for peatlands throughout the state.

OVERALL PROJECT OUTCOME AND RESULTS

groundwater and surface water. The Winter Road Peatland Scientific and Natural Area (SNA) is one such peatland. Ditches installed in the early 1900's increased the water flow through this system and altered the peat and the vegetative habitat. The current effect of the ditches was evaluated by monitoring the peatland hydrology (groundwater and surface water) and vegetative habitat over three years at four different sites within the most visually impacted and accessible part of the peatland. In addition, the work was conducted to determine if ditch abandonment will improve the ecological health of this patterned peatland.

The monitoring network consisted of 8 surface water monitoring sites and 39 monitoring wells at 4 sites; A, B, C and D. Vegetation monitoring consisted of 19 releve sites and 8 vegetative transects co-located with the groundwater monitoring sites.

Hydrologic data showed that the ditches were removing water from the peatland and that water was removed faster when water levels were low. In addition, the digging of the ditch created a ditch spoil pile/berm on one side that now acts as a dam to groundwater flow, primarily when placed perpendicular to groundwater flow. This is probably due to the compaction of the peat beneath the berm. Peat sampling also showed that the peat is more decomposed next to the ditches. This is due to the lower water levels next to the ditch allowing the peat to dry out and decompose.

The vegetation data identified 106 different species and showed that within 30 meters of the ditch, the wetland condition is of poorer quality. After 30 meters, vegetation rebounds to more normal wetland conditions with minimal impacts at 100 meters away. The poorer quality wetland near the ditch occurs because the spoil piles raise the ground surface and allow lower quality wetland species to establish. It also is a result of the peat decomposing and drying out near the ditch.

The Natural Resources Research Institute evaluated the data from the monitoring and recommended that a limited approach to restoration be conducted at this time, after evaluation of other restoration sites in progress in the State. Site A should be restored first because it is more remote and will have limited upstream effects. Site A is located in the NNW section of the peatland and within a small lateral ditch just outside of the SNA but within the SNA watershed protection area. Restoration should begin by removing vegetation from the spoil/berm. Ditch blocks should be installed to stop flow from this ditch with subsequent partial removal of the spoil/berm. Continued monitoring is necessary to evaluate the effectiveness of this restoration. Restoration would reduce the risk of invasive species establishment near ditches, provide water-quality improvement, flood attenuation, and increase recreational opportunities.

PROJECT RESULTS USE AND DISSEMINATION

Project results will be primarily used to guide restoration of the peatland scientific and natural area as priorities allow. The data will also be used by wetland managers to define negative impact thresholds for wetlands affected by high capacity pumping.

The intention is to publish the data, give presentations to local government units and work with the regional information officer to disseminate the information to the community. The information from this report will be available on the DNR website at:

http://www.dnr.state.mn.us/waters/groundwater_section/publications/restoration_strategies_ditched_peatland_sna.pdf.

Copies of the report have been or will be made available to all the interested parties and land owners including MN DNR (Wildlife and Scientific and Natural Areas), Red Lake Nation, MN Board of Water and Soil Resources, Lake of the Woods County Environmental Director and the U.S. Army Corps of Engineers.

Project completed: 6/30/2015

FINAL REPORT

Subd. 06 Aquatic and Terrestrial Invasive Species

Improved Detection of Harmful Microbes in Ballast Water

Subd. 06a \$250,000 TF

Randall Hicks

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RESEARCH

Appropriation Language

\$125,000 the first year and \$125,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota for the University of Minnesota Duluth to identify and analyze potentially harmful bacteria transported into Lake Superior through ship ballast water discharge. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Ballast water - water carried in tanks on ships to help provide stability and aid steering - is likely the single greatest source for introduction of non-native and invasive aquatic species. Ballast water is collected in one body of water and discharged into another body of water, usually large distances apart. The recent appearance of a deadly fish virus called Viral Hemorrhagic Septicemia (VHS) in the Great Lakes has raised awareness that some bacteria being transported in ballast water, just like certain plant and animal species, also have the potential to be harmful invasive species. Nevertheless, little is actually currently known about what bacteria are being transported and what can be done to prevent their spread. Biologists at the University of Minnesota - Duluth are using this appropriation to identify and analyze bacteria being transported in ballast water in order to determine which are of greatest concern and to inform strategies for early detection and spread prevention.

OVERALL PROJECT OUTCOME AND RESULTS

While the Great Lakes face many threats, the presence of large and small invasive species threatens natural resources, people, and coastal economies. The objective of this project was to identify and evaluate the relative risk of potentially harmful bacterial groups and genes found in commercial ship ballast water that is discharged into the Duluth-Superior Harbor (DSH). Our ultimate goal was to establish a road map that can help direct future work towards higher risk ballast water microbial issues.

To accomplish this goal, ballast water was collected from 16 commercial ships that ply the Great Lakes (i.e., "lakers") containing freshwater ballast water, 10 ocean-going ships (i.e., "salties") containing freshwater ballast water and 2 "salties" containing seawater ballast water in 2011 and 2012. Although there are nearly 1,000 vessel visits per year to this harbor, we collected almost three times as many ballast water samples as expected to create one of the largest repositories of ballast water microbial samples in the Great Lakes.

DNA from portions of these samples was extracted to identify different bacterial taxa while the remaining portions were frozen on membrane filters and stored as a sample repository for future studies. More than 170,000 partial bacterial 16S rDNA sequences were obtained for each sample. All sequence data were screened against two lists of bacterial genera that contain pathogenic bacterial strains. One list contained 20 genera of bacteria that include strains pathogenic to fish or wildlife, and the second list contained 57 genera of bacteria that are potentially pathogenic to humans. DNA from 15 of the 20 bacterial genera harboring fish or wildlife pathogens was detected in at least one ballast water sample. DNA from 37 of 57 bacterial genera that include human pathogens was detected in at least one ballast or harbor water sample. DNA sequences from a few of these bacterial taxa were often more common than DNA sequences from traditional indicator bacteria used for monitoring microbiological water safety.

Two genera containing bacterial strains pathogenic to fish and wildlife (i.e., *Tenacibaculum*, *Piscirickettsia*) and one genus containing a human pathogen (i.e., *Plesiomonas*) were evaluated further because all species within those genera were pathogenic indicating an elevated possibility of introducing a pathogen into the DSH environment. An example of this elevated risk is the bacterium *Piscirickettsia*, which causes "muskie pox" disease in muskellunge. DNA from this bacterium was found in 25% of the ships sampled, including ships transporting ballast water from Lake St. Clair where *Piscirickettsia* was found in dead muskellunge during a 2006 fish kill. It was interesting that DNA from *Renibacterium* species, the causative agent of bacterial kidney disease (BKD) in fish throughout the Great Lakes was not detected in any ballast water sample. Similarly, no DNA sequences related to the ecologically harmful cyanobacterial genera *Anabaena* and *Microcystis* were detected in any ballast water or harbor water sample.

Microbes in ballast water may also modify native microbial populations by transferring genes for resistance the effects of antibiotics or the toxic effects of heavy metals. Six unique fosmid libraries containing bacterial metagenomic DNA were created for ship ballast water from Burns Harbor, IN, Hamilton, Ont., Cleveland OH, Detroit, MI and the Atlantic Ocean, and for Duluth-Superior Harbor water. Each fosmid library was screened for resistance to benzylpenicillin, cefotaxime and levofloxacin antibiotics and heavy metals, including cadmium, mercury, and zinc. Ballast water received from ports in larger, more densely populated cities (e.g., Cleveland, OH and Detroit, MI) usually had a larger proportions of microbial antibiotic and heavy metal resistance genes. Receiving ballast water from these harbors should cause greater concern for the spread of these genes to the Duluth-Superior Harbor than receiving ballast water from smaller metropolitan areas (e.g., Burns Harbor, IN). The information generated by this study provided the first step toward assessing the risks and potential impacts of microbial invasions in the Duluth-Superior Harbor and points to directions that warrant further research to develop methods to forecast future invasions.

PROJECT RESULTS USE AND DISSEMINATION

Information discovered by this project was disseminated in several ways. Preliminary results of this research were presented to the Duluth Harbor Technical Advisory Committee (HTAC), middle school

teachers and students, Lake Superior Chapter of Muskies, Inc., and discussed with executives of the Lake Carriers' Association and the Great Lakes Maritime Research Institute. Ten research presentations were given to scientists at four regional and national scientific conferences, a Twin Ports Freshwater Folk meeting, and the U.S. EPA Mid-Continent Ecology Division in Duluth. Participants in the project also organized a scientific session on "Tools for Predicting and Managing Current and Future Invasions of Potentially Harmful Species in the Great Lakes" at the 2013 International Association of Great Lakes conference. DNA data housed at the University of Minnesota will be uploaded into national databases for searching and retrieval. This project provided training for a graduate student seeking a M.S. degree and a postdoctoral investigator. A M.S thesis and two scientific publications are being prepared from the results of this research.

Project completed: 6/30/2015 [Extended in M.L. 2014, Chapter 226]

FINAL REPORT (PDF)

Evaluation of Switchgrass as Biofuel Crop

Subd. 06c \$120,000 TF

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RESEARCH

Appropriation Language

\$60,000 the first year and \$60,000 the second year are from the trust fund to the Minnesota State Colleges and Universities System for Central Lakes College in cooperation with the University of Minnesota to determine the invasion risk of selectively bred native grasses for biofuel production and develop strategies to minimize the invasion potential and impacts on biodiversity. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Bioenergy, a form of renewable energy derived from biological sources such as wood or grasses, is becoming an important component of the energy production mix. Native switchgrass is a species that has shown potential as a biofuel crop and efforts have been underway to selectively breed and hybridize it for maximize yield. However, these selectively bred switchgrass varieties also show some potential to be invasive and crowd out native biodiversity, resulting in significant ecological and economic impacts. Scientists at Central Lakes College and the University of Minnesota are using this appropriation to evaluate the invasion risk of selectively bred switchgrass varieties and develop strategies to minimize the invasion potential and impacts on biodiversity. Findings will help support long-term biofuel sustainability.

OVERALL PROJECT OUTCOME AND RESULTS

There is concern that native switchgrass bred for bioenergy may become invasive in Minnesota prairies.

This project showed that selecting switchgrass for larger size (biomass) can increase its competitive ability and exacerbate its impacts on other native prairie plants. Switchgrass populations with large seed were more vigorous and produced more biomass leading to larger impacts on prairie diversity. Breeding for small seed size and/or less seed set could mitigate negative effects on prairies. There was a direct tradeoff between biomass production and diversity in a restored prairie, greater biomass was associated with less prairie diversity. Biofuels from switchgrass should use small seeded switchgrass populations to balance production versus diversity goals of prairies. Finally, we determined that poplar buffers can reduce switchgrass biomass 69% and could serve as a management tool in limiting the spread of switchgrass biofuel cultivars.

We conducted 10 experiments in total. In a restored prairie (Ag and Energy Center in Staples, MN) we established 176 1 m² plots of cultivar and wild switchgrass populations (13 total populations) and monitored them for two or three years. We tested the impacts of switchgrass cultivars in a native prairie at Cedar Creek Ecosystem Science Reserve from 2012-2014 (241 0.64 m² plots) and 2013-2014 (244 1 m² plots). Supporting the field studies was a growth chamber test of germination of 12 wild and cultivar populations as well as a greenhouse study testing switchgrass cultivars effects on two native grasses. We also tested poplar buffers and mowing in managing switchgrass from 2012-2014 at the Ag and Energy Center.

Information from this project is being used to inform breeding strategies for reduced invasion risk. We are working with a switchgrass breeder and switchgrass germplasm from our project was re-incorporated into a national breeding program to support the development of cultivars with potentially less invasion risk. Results from this project will support the development of sustainable bioenergy systems in Minnesota that balance biodiversity and production.

PROJECT RESULTS USE AND DISSEMINATION

We have presented results from this project for diverse audiences of ecologists, agronomists and conservations including two presentations at the national Ecological Society of America conference (2012, 2013), three presentations for undergraduate interns at Cedar Creek Ecosystem Science Reserve (2012, 2013, 2014), poster presentations for switchgrass breeders and agronomists at the national conference "Switchgrass II" (2013) and Pioneer seed company symposium (2015), and a webinar for the Minnesota DNR - Conservation Science Chat Series (2015).

To date we have published one peer-reviewed paper in Crop Science "Switchgrass population and cold-moist stratification mediate germination" and a second paper is in later stages of revision "Competitive interactions of cultivar and wild switchgrass with native grasses" and will be submitted to Invasive Plant Science and Management. Two additional peer-reviewed papers will be produced from this project.

Project completed: 6/30/2015

FINAL REPORT

Subd. 08 Environmental Education

Minnesota Junior Master Naturalist Program

Subd. 08b \$365,000 TF

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Appropriation Language

\$365,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to expand the junior naturalist after-school programs. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Children are spending increasingly less time outdoors and are often failing to develop an appreciation and connection with nature. This has implications for children's health as well as their knowledge about science, the environment, and the world. In the long term this also impacts the broad public awareness and understanding necessary to ensure long-term protection and stewardship of our environment and natural resources. In order to help reverse this trend the University of Minnesota and the Minnesota Department of Natural Resources are partnering to expand and further develop an after-school program that provides outdoor, science-based educational opportunities for fourth and fifth grade students, particularly in underserved areas, to learn about the ecology and natural history of their schoolyards, neighborhoods, nearby natural areas, and the state.

OVERALL PROJECT OUTCOME AND RESULTS

The Minnesota Master Naturalist Explorers program was created to address the problem that children are spending increasingly less time outside and, consequently, know less about their environment and world. It responded to the needs identified in the 2009 Outdoor Education Legislative Report to increase outdoor learning opportunities for children.

The program connected Master Naturalist volunteers with elementary youth in after-school programs to provide hands-on, outdoor activities. The volunteers were recruited by advertising on the Master Naturalist blog and website. Their training took place in 6-hour workshops that covered techniques for working with youth outdoors and in the use of the Explorers' curricula. The curricula are based on the phenology of fall, winter, and spring. Volunteers were provided with the curricula, nature journals, backpacks, pencils, and nametags. They also received supplemental materials to help implement the program including directions for locating a host site, lesson plan aids, and additional worksheets for youth participants. These materials are available at www.minnesotamasternaturalist.org/juniornaturalist.

The Master Naturalist Explorers programs met for 4-8 weeks each, once a week. Each session lasted from one to two hours. Over the course of the program, 90 Master Naturalist volunteers were trained, 29 volunteers led programs at 33 sites across the state, and 482 youth participated.

Several pilot Explorers programs, which were focused on high-needs urban schools offering numerous after-school programs, were cancelled due to low enrollment. Subsequent enrollment efforts were

more successful in schools that had less-developed after-school programs as well as at schools in rural portions of the state.

Many Master Naturalist volunteers who went through Explorers training did not lead multi-week Explorers programs, but reported using the knowledge and curriculum for other activities including church, Scout, and community education programs. Additionally, the volunteers were more likely to lead Explorers programs that were shorter in duration (e.g. 4 weeks).

Project completed: 6/30/2015

FINAL REPORT

Subd. 09 Emerging Issues

[Back to top of page](#)

Minnesota Conservation Apprentice Academy

Subd. 09a \$200,000 TF

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Appropriation Language

\$100,000 the first year and \$100,000 the second year are from the trust fund to the Board of Water and Soil Resources in cooperation with Conservation Corps Minnesota to train and mentor future conservation professionals by providing apprenticeship service opportunities to soil and water conservation districts. This appropriation is available until June 30, 2014, by which time the project must be completed and the final products delivered.

PROJECT OVERVIEW

Many of the most experienced conservation practitioners at local soil and water conservation districts throughout the state are nearing retirement, and with their departure will go much of their practical, on-the-ground knowledge, experience, and skills. Meanwhile, college students seeking to be the next generation of conservation practitioners have knowledge of emerging technologies and other innovations that can improve and contribute to current conservation efforts. Through this appropriation the Minnesota Board of Soil and Water Resources will work with the Minnesota Conservation Corps to continue an effort that places students in apprenticeship positions with county soil and water conservation district offices throughout the state. This unique program provides an opportunity for interns to gain valuable in-the-field experience from current practitioners while sharing their knowledge with those practitioners about the newest ideas and solutions for meeting today's natural resource challenges.

OVERALL PROJECT OUTCOME AND RESULTS

Familiarizing future conservation leaders with Minnesota's various land-use practices, water and soil resources, plant and animal habitats, and landowner concerns is needed to maintain the capacity of local organizations to deliver conservation on the ground. Many of the conservation districts' most experienced conservation professionals and practitioners are nearing retirement age but due to budget constraints will not be replaced until they have left employment. Consequently, Minnesota is missing a great opportunity to transfer professional knowledge and experience to the next generation.

While university graduates with conservation-related degrees are knowledgeable in technology, theory, and research methods, their practical, on-the-ground skills need development. Communicating with landowners and adjusting designs for field nuances are vital to the success of conservation projects and best learned alongside seasoned professionals. In turn, apprentices bring knowledge of emerging technologies to improve the quality and productivity of conservation efforts.

This program funded the placement of 35 conservation apprentices in 33 Soil and Water Conservation Districts (SWCD) in 2013, and 37 conservation apprentices in 35 SWCDs in 2014. During this time, the apprentices stabilized erosion on 7.1 million square feet of slopes, planted 69,252 plants, trees, shrubs and seedlings, maintained 3.6 million square feet of restored areas, collected 5,514 water samples, spent 4,272 collecting data and mapping using GPS and GIS, and impacted 2,142 people through environmental education and outreach.

This program has benefits to both students and conservation districts. 96% of apprentices indicated they felt more prepared to work in the conservation industry as a result of the program and would recommend it to others. 96% of the Districts were satisfied with the work their apprentices completed, and 98% indicate they would participate in the program again. Managers also indicated that the work conducted by the apprentices increased the amount of conservation practices delivered by their districts during the program period.

This was the second grant awarded to the Apprentice Academy through LCCMR. Grant one addressed the cohorts working during the summers of 2011 and 2012. The state government shutdown of 2011 produced a small balance in the 2010 grant that was used to fund additional positions in 2012 and 2013; this in turn allowed a small balance in this, the 2011 grant to fund additional positions in the M.L. 2013, Chp. 52, Sec. 2, Subd. 07a plan, and carried funding into the early portion of 2014.

PROJECT RESULTS USE AND DISSEMINATION

Information from the project has been disseminated through reports to LCCMR, press releases by BWSR and the Governor's Office, local press releases by SWCDs, and through the Conservation Corps newsletter, website and annual report. Information was used to recruit apprentices and increase awareness of the project.

Communication and outreach activities include the aforementioned reports, press releases, and electronic newsletters. Additionally, BWSR and Conservation Corps staff conducted outreach to SWCDs to find optimal matches between districts and apprentices. Through the course of their work, the apprentices conducted significant outreach to land owners and residents in topics ranging from easement protection, to water quality education, to plant biodiversity.

Project completed: 6/30/2015

FINAL REPORT

- 5. M.L. 2010 Projects Completed**
January 15, 2015 – January 15, 2017
MN Laws 2010, Chapter 362, Section 2

M.L. 2010 Projects Completed in 2015-2016

MN Laws 2010, Chapter 362, Section 2 (beginning July 1, 2010)

NOTE: For all projects, contact us to obtain the most up-to-date work programs for current projects (project updates are required twice each year) or the final reports of completed projects.

The following documents are short abstracts for projects funded during the 2010 Legislative Session. The final date of completion for these projects is listed at the end of the abstract. When available, we have provided links to a project's web site. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 05	Water Resources
Subd. 05d	Agriculture and Urban Runoff Water Quality Treatment Analysis

Agricultural and Urban Runoff Water Quality Treatment Analysis

Subd. 05d \$485,000

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Appropriation Language

\$485,000 is from the trust fund to the Board of Water and Soil Resources for an agreement with the Blue Earth County Drainage Authority to reduce soil erosion, peak water flows, and nutrient loading through a demonstration model evaluating storage and treatment options in drainage systems in order to improve water quality. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

Rising crop prices and the deterioration of old, existing agricultural drainage systems have led to increased demand for new and improved drainage systems. As these new drainage systems are constructed there is a unique and valuable opportunity to implement a fundamental shift in the way drainage systems interact with the landscape by integrating conservation practices that balance with agricultural economics considerations. The Blue Earth County Drainage Authority is using this appropriation to demonstrate a community-based water quality and treatment system in which landowners, local government, and state agencies will collaboratively implement an approach to drainage systems that improves water quality and wildlife habitat while replacing outdated drainage systems. This approach has the potential to be a model for future drainage projects across the state.

OVERALL PROJECT OUTCOME AND RESULTS

This project provided proof to landowners and agencies that conditions for agricultural production were

enhanced and water quality was improved by implementing a combination of Best Management Practices on Blue Earth County Ditch No. 57 (CD57) in the Mapleton area of south central Minnesota. These results surpassed expectations and overwhelmingly proved that water quality was improved by reducing sediment and nutrient loading throughout the system. Water storage and drainage capacity were increased, which reduced flooding and improved field conditions for crop yields.

A combination of BMPs included two water storage basins, buffer strips, two-stage ditch, and a rate control weir. The two storage basins significantly increased storage capacity, with the Klein Pond providing 26.3 acre-feet of storage and the City Pond providing 23 acre-feet. Peak flow rates were reduced with reductions ranging from 10% to 50% at Klein Pond and the rate control weir averaging 6% in reduction for monitored rain events.

Water quality results show dramatic improvements for Total Suspended Solids, Total Phosphorus and Nitrates. Reductions for each pollutant ranged between 15% and 50% for the Klein Pond, averaging nearly 25%. The two-stage ditch and rate control weir had reductions between 2% and 10%, averaging nearly 5%. The Klein Pond was most effective at removing trapped sediments: 230,000 pounds of sediment, 415 pounds of phosphorus, and 23,000 pounds of nitrogen. Of the three BMPs monitored, results showed they removed a total of 251,000 pounds of sediment, equivalent to nearly 75 dump truck loads. Unexpected baseflow water quality improvements include reductions in TSS by more than 33% and TP concentrations reduced by more than 16%. Baseflow water quality also improved and increased habitat for wildlife. This project had a significant improvement in water quality and makes the CD 57 system a thriving place for a variety of species to live.

PROJECT RESULTS USE AND DISSEMINATION

The information from this project has been shared and disseminated in a variety of ways, including the following:

1. Event and Tour: Agricultural Drainage & the Future of Water Quality Workshop 2012
2. Event and Tour: Agricultural Drainage & the Future of Water Quality Workshop 2014 (165 in attendance)
3. Event: Agricultural Drainage & the Future of Water Quality Workshop 2015 (175 in attendance)
4. Multiple Site Visits: Blue Earth County, Minnesota Department of Agriculture, ISG and interested parties
5. Website: <http://www.is-grp.com/ag>
6. Presentations: By Chuck Brandel and/or Craig Austinson
 - o Minnesota State University Mankato, Department of Civil Engineering (2010)
 - o American Society of Civil Engineers (2011)
 - o Faribault County Drainage Authority (2013)
 - o Minnesota Water Resources Conference (2015)
 - o Iowa Water Conference (2014)
 - o Blue Earth County Soil and Water Conservation District (2014)
 - o County Drainage Authority (2015)
 - o Article: Conservation Drainage article, DIRT Magazine (Gislason and Hunter Law Firm publication)
7. CD 57 Fun Facts Brochure: Distributed at various events and activities
8. Final Report: Summarizes the entire CD 57 project
9. Water Quality Report: Quantitative data and methods used in the water quality analysis and all results

Project Publications:

- Mapleton Area Agricultural & Urban Runoff Analysis - Final Analysis (PDF - 48.6 MB)
- Mapleton Area Agricultural & Urban Runoff Analysis - Water Quality Report (PDF - 41.7 MB)

FINAL REPORT

Project completed: 06/30/2015

Subd. 06	Aquatic and Terrestrial Invasive Species
Subd. 06b	Ecological and Hydrological Impacts of Emerald Ash Borer

Ecological and Hydrological Impacts of Emerald Ash Borer

Subd. 06b \$636,000

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RESEARCH**Appropriation Language**

\$636,000 is from the trust fund to the Board of Regents of the University of Minnesota to assess the potential impacts of emerald ash borer on Minnesota's black ash forests and quantify potential impacts on native forest vegetation, invasive species spread, and hydrology. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

PROJECT OVERVIEW

The Emerald Ash Borer is an invasive insect that has been decimating ash trees throughout the Great Lake states and is currently advancing into Minnesota, where it threatens ash forests that occur across much of the state. Of particular concern is the impact Emerald Ash Borer will have on the ecology and functioning of black ash swamps, which cover over one million acres in Minnesota and represent the state's most common ash forest type. Scientists at the University of Minnesota's Department of Forest Resources are using this appropriation to conduct a five year study that will assess the likelihood of this invasive insect extending into the black ash forests in the northern part of Minnesota and its potential impact on these marshy forest areas. Findings will inform management recommendations for mitigating the potential impacts of Emerald Ash Borer.

OVERALL PROJECT OUTCOME AND RESULTS

The Emerald Ash Borer (EAB) has been decimating ash throughout the Lake States and is currently threatening the future of the ash forests that occur across much of Minnesota. Of particular concern is

the impact of EAB on black ash swamps, which cover over one million acres. This project was designed to increase our understanding of the impacts of EAB through the establishment of a network of research sites in black ash forests. Treatments simulating EAB-induced mortality (all trees girdled in 4-acre areas) and associated management responses (i.e., clearcutting and group selection harvests) were implemented at eight, large-scale (20 acre) research sites on the Chippewa National Forest. Each treatment included two levels of planting (planting or no planting) to evaluate the potential for planting non-host species to increase the resilience of these areas to EAB. Planted seedlings included American elm, white cedar, yellow birch, tamarack, and swamp white oak. Results from this project indicate that loss of black ash will have significant impacts on the hydrology of these areas with clearcut and girdled (EAB mortality) plots experiencing flooded conditions that extended six to eight weeks longer than other areas. Estimates of black ash's contribution to the water budget indicate it accounts for 40-80% of total evapotranspiration, reinforcing the important role it plays in ash swamp hydrology. Three-year survival of planted seedlings also reflect its hydrologic influence, with lowest overall survival rates in clearcuts due to flooded, marsh-like conditions in these areas. Swamp white oak, hackberry, and American elm had the greatest survival rates of planted species (>80% in non-clearcut areas) with the lowest rates observed for black spruce, northern white cedar, and tamarack (<20%). Collectively, these results underscore the importance of maintaining black ash canopies in these areas to increase the success of plantings aimed at reducing vulnerability to EAB.

PROJECT RESULTS USE AND DISSEMINATION

The results of this project have been shared on numerous occasions with resource professionals, policy makers, citizens, and scientists over the past five years in efforts to inform forest conservation decisions regarding the impacts of emerald ash borer on black ash forests in Minnesota. These dissemination activities have included the development of a fact sheet for LCCMR members that was distributed on the LCCMR tour of Itasca State Park on July 18, 2013. In addition, we have shared the results from this project with private forest landowners, and county, state, tribal and federal natural resource managers on multiple occasions, including at the Aitkin County Land Department Ash Workshop on March 9, 2012, Forest Health Workshop in Walker, MN on February 12, 2013, and North Central Forest Pest Workshop in Frontenac, MN on September 24, 2013. We organized and led a Black Ash Field Day at our research sites on August 21, 2013 for 38 field foresters, loggers, and landowners and also included several stops at our research sites as part of a Climate-Informed Forest Management field tour of the Chippewa National Forest on May 8, 2014 for 100 participants. We have developed a "silviculture case study" of the five-year results of this project that will be posted online on the "Great Lakes Silviculture Prescription Library" website this fall. Results of the project have also been presented at the Midwest-Great Lakes Society for Ecological Restoration Chapter Meeting in St. Paul, MN on March 28, 2014, Midwest Invasive Species Conference in Duluth, MN on October 22, 2014, Black Ash Symposium in Orono, ME on November 4, 2014, and Sustainable Forests Education Cooperative Wildlife and Forest Research Review in Cloquet, MN on February 24, 2015. Finally, the project PI has served on the Minnesota DNR black ash management guideline committee since the inception of this project and has shared project results to influence the current recommendations for managing MN black ash forests in the face of EAB. Publications resulting from this work are available for download from the Department of Forest Resources web site (www.forestry.umn.edu). Additional publications from this work that are currently in development will also be posted on this site and shared with LCCMR staff for dissemination.

FINAL REPORT

Project completed: 6/30/2015

6. M.L. 2005 Projects Completed
January 15, 2015 – January 15, 2017

**MN Laws 2005, First Special Session, Chapter 1,
Article 2, Section 11**

M.L. 2005 Projects Completed in 2015-2016

MN Laws 2005, First Special Session, Chapter 1, Article 2, Section 11 (beginning July 1, 2005)

NOTE: If a project has been completed the Final Report has been posted under the project descriptions here. For projects still underway, contact us to obtain the most up-to-date work programs (project updates are required twice each year).

The following documents are short abstracts for projects funded during the 2006-2007 biennium. The final date of completion for these projects is listed at the end of the abstract. When available, we have provided links to a projects web site. The sites linked to this page are not created, maintained, or endorsed by the LCMR/LCCMR office or the Minnesota Legislature.

Subd. 06	Recreation
Subd. 06m	Mesabi Trail

Mesabi Trail

Subd. 06m \$1,000,000

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Overall Project Outcome and Results:

The Mesabi Trail Master Plan, drafted in year 1992, was a collaborative effort by the St. Louis & Lake Counties Regional Railroad Authority and Itasca County, hereafter referred to as "Rail Authority", to develop a multi-use trail from Grand Rapids to Ely. The trail length was planned to be 132 miles long, 10-14 foot wide bituminous surface and located or aligned to emphasize the scenic, environmental, educational, and historic aspects of the region. The Master Plan identified the utilization of abandon railways, logging roads, mining roads, highways, and trails with four major trailheads built in Grand Rapids, Hibbing, Virginia, and Ely.

A trail "Citizens Advisory Group" was formed to support the Mesabi Trail whom secured 2,000 signed pledge cards and held an event on July 23, 1994 that attracted 7,000 people to a day of family activities, events, and music. The year 2005 ENRTF appropriation was used for the development and construction of several 10' wide, bituminous surfaced trail segments totaling 32 miles in length. Federal, State & Local funds were also used to construct these segments as seen within the "Results" section of this report. Funds were used on all facets of trail development including environmental, cultural resource, land acquisition, engineering and construction work.

Trail segments funded with this appropriation include trail within Vermillion State Park, 6 miles in length; and Vermillion State Park to Bearhead Road, 3.5 miles in length; and Scenic Highway 7 to

Marble, 2 miles in length; and McKinley to Biwabik, 5.5 miles in length; and Giants Ridge to Embarrass, 5 miles in length; and Eveleth to Fayal, 2.5 miles in length.

FINAL REPORT

Project completed: 01/15/2015

- Spreadsheet of all research projects completed between January 1, 2015 and December 31, 2016.

Environment and Natural Resources Trust Fund (ENRTF)

Research Projects completed between January 1, 2015 and December 31, 2016

Full abstracts are included in Section III. Completed Research Projects

Appropriation Year	Subdivision	Title	Organization	Project Ending	Funding Amount	Project Manager
Research Projects completed by June 30, 2015						
MN Laws 2010, Chapter 362, Section 2						
M.L. 2010	06b	Ecological and Hydrological Impacts of Emerald Ash Borer	U of MN	6/30/2015	\$ 636,000	D'Amato
MN Laws 2011, 1st Special Session, Chapter 2, Article 3, Section 2						
M.L. 2011	03f	Determining Causes of Mortality in Moose Populations	MN DNR	6/30/2015	\$ 600,000	Carstensen
M.L. 2011	04q	Restoration Strategies for Ditched Peatland and Scientific and Natural Areas	MN DNR	6/30/2015	\$ 200,000	Walker
M.L. 2011	06a	Improved Detection of Harmful Microbes in Ballast Water	U of MN - Duluth	6/30/2015	\$ 250,000	Hicks
M.L. 2011	06c	Evaluation of Switchgrass as Biofuel Crop	Central Lakes College	6/30/2015	\$ 120,000	Eckberg
Research Projects completed by June 30, 2016						
MN Laws 2013, Chapter 52, Section 2						
M.L. 2013	03f	Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol	U of MN	6/30/2016	\$ 838,000	Salomon
M.L. 2013	03h	Finding Disease Resistant Elm Trees in Minnesota	U of MN	6/30/2016	\$ 200,000	Blanchette
M.L. 2013	03j	Enhancing Environmental and Economic Benefits of Woodland Grazing	U of MN	6/30/2016	\$ 190,000	Zamora
M.L. 2013	04g	Moose Habitat Restoration in Northeastern Minnesota	U of MN - NRRRI	6/30/2016	\$ 200,000	Moen
M.L. 2013	05a	Sustaining Lakes in a Changing Environment - Phase II	MN DNR	6/30/2016	\$ 1,200,000	Reed
M.L. 2013	05g	Membranes for Wastewater-Generated Hydrogen and Clean Water	U of MN	6/30/2016	\$ 246,000	Novak
M.L. 2013	05h	Antibiotics in Minnesota Waters - Phase II - Mississippi River	University of St Thomas	6/30/2016	\$ 203,000	Wammer
M.L. 2013	06e	Biological Control of Garlic Mustard	MN DNR	6/30/2016	\$ 140,000	Van Riper
M.L. 2013	06f	Zebra Mussel Control Research and Evaluation in Minnesota Waters	US Geological Survey, Upper	6/30/2016	\$ 600,000	Gaikowski

IV. Agency Implementation

“recommendations to implement successful projects and programs into a state agency’s standard operations;”

No recommendations at this time.

V. Recommendations

“to the extent known by the commission, descriptions of the projects anticipated to be supported by the trust fund during the next biennium;”

There is \$50,828,000 available for expenditure in each year of the FY18-19 biennium from the Environment and Natural Resources Trust Fund (ENRTF) –biennial total available \$101,656,000. The amount available for expenditure is determined by the MN Constitution which states: “The amount appropriated each year of a biennium....may be up to 5.5% of the market value of the fund on June 30 one year before the start of the biennium”. The value of the ENRTF on June 30, 2016 was \$924,152,297.79.

The LCCMR is making a funding recommendation to the 2017 Legislature totaling \$59,156,000. Of this amount, \$50,728,000 is from the Environment and Natural Resources Trust Fund for FY18 and \$8,428,000 is from the Environment and Natural Resources Trust Fund for FY17. The LCCMR will be making a future additional funding recommendation for FY19 totaling up to \$50,828,000 from the Environment and Natural Resources Trust Fund to the 2018 Legislature. As stated in M.S. 116P, the LCCMR may make an annual or a biennial funding recommendation.

The list of recommended appropriations totaling \$59,156,000 from the Environment and Natural Resources Trust Fund is provided in “Section V. Recommendations.” The funding levels and the proposed legislative bill were adopted by the LCCMR on November 15, 2016.

LCCMR M.L. 2017 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND RECOMMENDATIONS BY SUBDIVISION

LCCMR Process for M.L. 2017 Recommendations

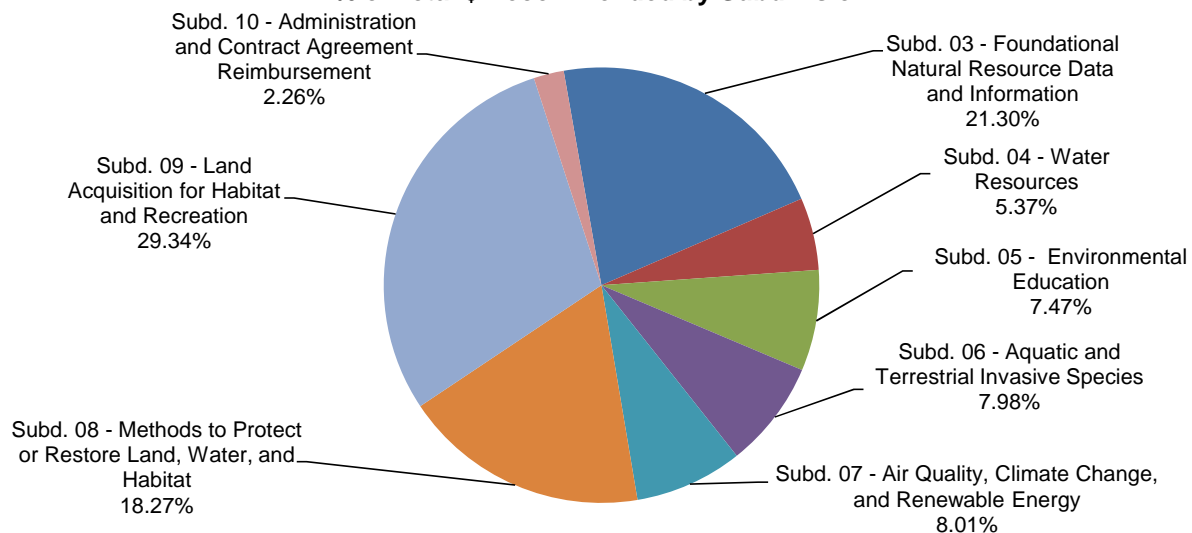
For the FY 2018 and FY 2019 biennium (July 1, 2017 - June 30, 2019), approximately \$50.8 million is available each year (total = \$101,656,000) for funding from the Environment and Natural Resources Trust Fund. Additionally, approximately \$8.4 million in ENRTF funds remain available from FY 2017 for appropriation during the 2017 legislative session if done so before the end of FY 2017. As of July 12-13 and November 15, 2016, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) has selected 69 appropriations totaling \$59.1 million to recommend to the 2017 Minnesota Legislature for funding from the Environment and Natural Resources Trust Fund (ENRTF). The recommendations are the result of the LCCMR's 2017 Request for Proposal (RFP) process, in which 195 proposals requesting a total of approximately \$159.6 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.

December 2 & 10, 2015	2017 Funding Priorities Determined and RFP Adopted
December 16, 2015	2017 RFP Issued
March 21, 2016	2017 RFP Proposal Deadline (Received 195 Proposals totaling approx. \$159.6 million)
June 7-8, 2016	2017 Selection of Proposals for Presentations
June 21, 22, 23, 27, 28, & 29, 2016	2017 Proposal Presentations
July 12-13, 2016	2017 Allocations Recommendations
July 2016 - November 2016	Research Projects Recommended Undergo Peer Review
November 15, 2016 & December 6 and 13, 2016	2017 Appropriation Language Review & Adoption

Summary of Recommendations by Subdivision

Subdivision	\$ Recommended	# Appropriations
Subd. 03 - Foundational Natural Resource Data and Information	\$12,601,000	14
Subd. 04 - Water Resources	\$3,175,000	9
Subd. 05 - Environmental Education	\$4,421,000	9
Subd. 06 - Aquatic and Terrestrial Invasive Species	\$4,721,000	6
Subd. 07 - Air Quality, Climate Change, and Renewable Energy	\$4,738,000	8
Subd. 08 - Methods to Protect or Restore Land, Water, and Habitat	\$10,808,000	12
Subd. 09 - Land Acquisition, Habitat, and Recreation	\$17,357,000	9
Subd. 10 - Administration and Contract Agreement Reimbursement	\$1,335,000	2
TOTAL	\$59,156,000	69

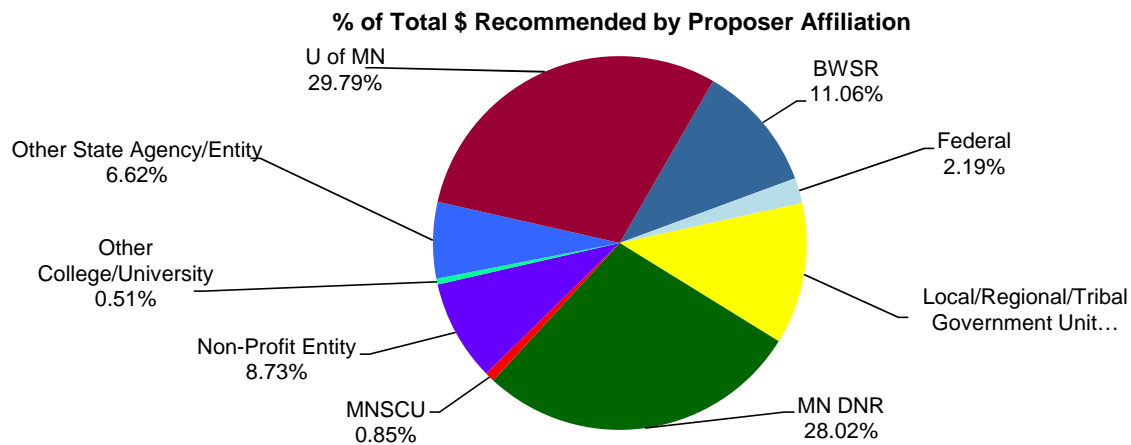
% of Total \$ Recommended by Subdivision



LCCMR M.L. 2017 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND RECOMMENDATIONS BY AFFILIATION AND AREA OF IMPACT

Summary of Recommendations by Proposer Affiliation*		
Affiliation Type by Proposer Affiliation	\$ Recommended	# Appropriations
Minnesota Board of Water and Soil Resources (BWSR)	\$6,540,000	2
Federal	\$1,293,000	2
Local/Regional/Tribal Government Unit	\$7,244,000	7
Minnesota Department of Natural Resources (MN DNR)	\$16,577,000	10
Minnesota State Colleges and Universities (MNSCU)	\$500,000	1
Non-Profit Entity	\$5,165,000	12
Other College/University	\$300,000	1
Other State Agency/Entity	\$3,916,000	6
University of Minnesota (U of MN)	\$17,621,000	28
TOTAL	\$59,156,000	69

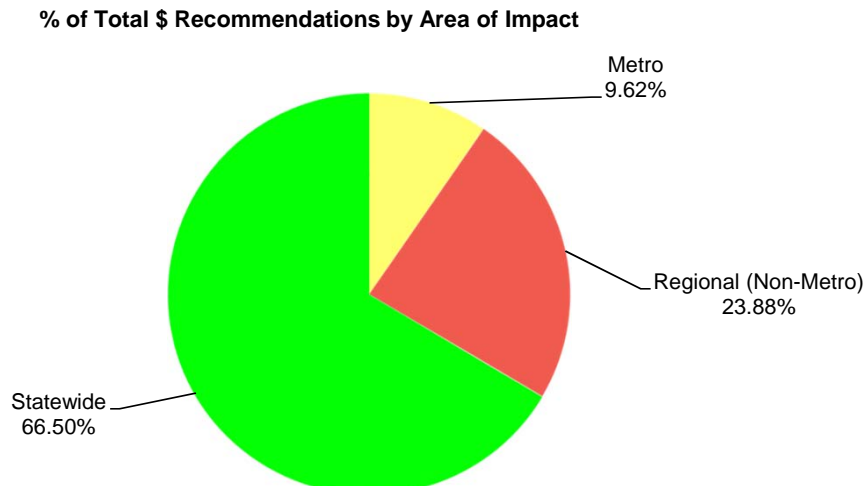
*Dollar amounts based on project manager affiliation listed in the proposal; some proposals have multiple partners with multiple affiliations and dollars requested distributed between them.



Summary of Recommendations by Area of Impact		
Area of Impact	\$ Recommended	# Appropriations
Metro*	\$5,692,000	10
Regional	\$14,128,000	18
Statewide	\$39,336,000	41
TOTAL	\$59,156,000	69

* "Metro" region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

** "Regional" means area of impact is less than "Statewide" but includes one or more regions of the state ("Northwest", "Northeast", "Central", "Southwest", or "Southeast") other than the 11-county "Metro" region.



Pending

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY 2017 and FY 2018)

For the FY 2018 and FY 2019 biennium (July 1, 2017 - June 30, 2019), approximately \$50.8 million is available each year (total = \$101,656,000) for funding from the Environment and Natural Resources Trust Fund. Additionally, approximately \$8.4 million in ENRTF funds remain available from FY 2017 for appropriation during the 2017 legislative session if done so before the end of FY 2017. As of July 12-13 and November 15, 2016, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) has selected 69 appropriations totaling \$59.1 million to recommend to the 2017 Minnesota Legislature for funding from the Environment and Natural Resources Trust Fund (ENRTF). The recommendations are the result of the LCCMR's 2017 Request for Proposal (RFP) process, in which 195 proposals requesting a total of approximately \$159.6 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 (\$59,156,000)	Percentage of Total Recommendation
Subd. 03 Foundational Natural Resource Data and Information 14 Appropriations	\$12,601,000	21.30%
Subd. 04 Water Resources 9 Appropriations	\$3,175,000	5.37%
Subd. 05 Environmental Education 9 Appropriations	\$4,421,000	7.47%
Subd. 06 Aquatic and Terrestrial Invasive Species 6 Appropriations	\$4,721,000	7.98%
Subd. 07 Air Quality, Climate Change, and Renewable Energy 8 Appropriations	\$4,738,000	8.01%
Subd. 08 Methods to Protect or Restore Land, Water, and Habitat 12 Appropriations	\$10,808,000	18.27%
Subd. 09 Land Acquisition, Habitat, and Recreation 9 Appropriations	\$17,357,000	29.34%
Subd. 10 Administration and Contract Agreement Reimbursement 2 Appropriations	\$1,335,000	2.26%
TOTAL \$ RECOMMENDATION	\$59,156,000	100.00%

Fund Source	\$ Recommended
FY 2017 - Environment and Natural Resources Trust Fund (ENRTF)	\$8,428,000
FY 2018 - Environment and Natural Resources Trust Fund (ENRTF)	\$50,728,000
Total \$	\$59,156,000

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
Subd. 03 Foundational Natural Resource Data and Information (14 Recommendations - Subtotal = \$12,601,000)							
03a	001-A	County Geologic Atlases - Continuation	\$4,729,000	\$0	U of MN - Minnesota Geological Survey	Dale Setterholm	Statewide
03b	002-A	Assessment of Public Benefits of Protecting Source Water	\$0	\$320,000	U of MN	Bonnie Keeler	Statewide
03c	004-A	Preserving Minnesota Prairie Plant Diversity – Phase II	\$0	\$900,000	U of MN	Ruth Shaw	Central, SE, SW, NW
03d	006-A	Minnesota Biological Survey - Continuation	\$0	\$2,900,000	MN DNR	Bruce Carlson	Statewide
03e	007-A	Minnesota Wildflowers Online Botanical Reference – Phase II	\$0	\$270,000	Minnesota Wildflowers Information	Katy Chayka	Statewide
03f	009-A	Assessment of Microbes for Improving Wild Rice Restoration	\$0	\$334,000	U of MN - Duluth NRRI	Chanlan Chun	NE
03g	011-A	Drainage Records Modernization Cost Share - Phase II	\$0	\$540,000	Board of Water and Soil Resources	Timothy Gillette	Statewide
03h	012-A	Groundwater Contamination Mapping	\$0	\$400,000	MPCA	Hans Neve	Statewide
03i	013-A	Landslide Susceptibility, Mapping, and Management Tools	\$0	\$500,000	U of MN	Karen Gran	Statewide
03j	015-A	Moose Calf Surveys and Monitoring	\$0	\$348,000	U of MN	Mark Ditmer	NE
03k	016-A	Cedar Creek Natural Area Wolf Recolonization Assessment	\$0	\$398,000	U of MN	Forest Isbell	Metro
03l	017-A	Effects of Wolf Predation on Beaver, Moose, and Deer	\$0	\$293,000	Voyageurs National Park	Steve Windels	NE
03m	031-A	Mapping Taxonomy and Environmental Toxicology of Minnesota Freshwater Sponges	\$0	\$258,000	U of MN	Venugopal Mukku	Statewide
03n	188-I	Analyzing Climate Data to Aid Local Planning Implementation Efforts	\$0	\$411,000	U of MN	Peter Snyder	Statewide
Foundational Natural Resource Data and Information Subtotal =			\$4,729,000	\$7,872,000			

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
Subd. 04 Water Resources (9 Recommendations - Subtotal = \$3,175,000)							
04a	033-B	Assessment of Household Chemicals and Herbicides in Rivers and Lakes	\$0	\$236,000	U of MN	William Arnold	Statewide
04b	034-B	Wastewater Nitrogen Removal Technology to Protect Water Quality	\$0	\$450,000	U of MN	Paige Novak	Statewide
04c	035-B	Rearing Native Mussels for Reintroduction and Expanding Water Quality Awareness	\$0	\$591,000	Minnesota Zoo	Allan Maguire	Statewide
04d	044-B	Water Quality Monitoring in Southeastern Minnesota Trout Streams	\$0	\$500,000	Winona State University	Neal Mundahl	SE
04e	048-B	Reassessing Toxicity of Petrochemical Spills on Groundwater and Surface Waters	\$0	\$300,000	University of St. Thomas	Dalma Martinovic-Weigelt	NW
04f	055-B	Assessment of Water Quality for Reuse	\$0	\$148,000	U of MN	Satoshi Ishii	Statewide
04g	059-B	Identification of Chemicals of Emerging Concern in Minnesota Fish	\$0	\$400,000	Grand Portage Band of Lake Superior Chippewa	Seth Moore	NE
04h	183-I	Techniques for Water Storage Estimates in Central Minnesota	\$0	\$250,000	U of MN	John Neiber	Statewide
04i	184-I	Assessing Release of Mercury and Sulfur on Aquatic Communities	\$0	\$300,000	U of MN	Ed Nater	Statewide
Water Resources Subtotal =			\$0	\$3,175,000			
Subd. 05 Environmental Education (9 Recommendations - Subtotal = \$4,421,000)							
05a	079-C	Connecting Youth to Minnesota Waterways through Outdoor Classrooms	\$0	\$1,200,000	Wilderness Inquiry	Meg Krueger	Statewide
05b	081-C	Youth Convening Minnesota –Phase II	\$0	\$300,000	Climate Generation: A Will Steger Legacy	Kristen Poppleton	Statewide
05c	082-C	Increasing Diversity in Environmental Careers	\$0	\$1,487,000	MN DNR	Denise Legato	Statewide
05d	083-C	Interactive Water Resource Programs for Planetariums in Minnesota	\$0	\$500,000	U of MN - Bell Museum of Natural History	George Weiblen	Statewide
05e	084-C	Expanding Raptor Center Online Education	\$0	\$270,000	U of MN	Julia Ponder	Statewide

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
05f	092-C	Local Planning and Implementation Efforts for Bird Habitat	\$0	\$280,000	Audubon Minnesota	Joanna Eckles	Statewide
05g	100-C	Developing Youth Watershed Stewardship in Northwest Minnesota	\$0	\$121,000	Headwaters Science Center	Susan Joy	NW
05h	101-C	Increasing Residential Environmental Learning Center Opportunities	\$0	\$130,000	Audubon Center of the North Woods	Bryan Wood	NE
05i	185-I	Workshops and Outreach to Protect Raptors from Lead Poisoning	\$0	\$133,000	U of MN	Julia Ponder	Statewide
Environmental Education Subtotal = \$0 \$4,421,000							
Subd. 06 Aquatic and Terrestrial Invasive Species (6 Recommendations - Subtotal = \$4,721,000)							
06a	106-D	Aquatic Invasive Species Research Center - Phase II	\$2,700,000	\$0	U of MN	Nicholas Phelps	Statewide
06b	108-D	Emerald Ash Borer Biocontrol - Phase III	\$0	\$729,000	Minnesota Department of Agriculture	Jonathan Osthus	Statewide
06c	114-D	Invasive Bighead and Silver Carp and Native Fish Evaluation – Phase II	\$0	\$500,000	MN DNR	Bradford Parsons	Central, Metro, SW, SE
06d	119-D	Adapting Stream Barriers to Remove Common Carp	\$0	\$301,000	U of MN	Przemyslaw Bajer	Statewide
06e	122-D	Tactical Invasive Plant Management Plan Development	\$0	\$296,000	Minnesota Department of Agriculture	Monika Chandler	Statewide
06f	123-D	Maximize Value of Water Impoundments to Wildlife	\$0	\$195,000	Audubon Minnesota	Kristin Hall	NW
Aquatic and Terrestrial Invasive Species Subtotal = \$2,700,000 \$2,021,000							
Subd. 07 Air Quality, Climate Change, and Renewable Energy (8 Recommendations - Subtotal = \$4,738,000)							
07a	128-E	Solar Cells Manufacturing Research	\$0	\$388,000	U of MN	Tianhong Cui	Statewide
07b	129-E	Community-Scale Energy Storage Guide for Renewable Energy	\$0	\$500,000	U of MN	Ellen Anderson	Statewide
07c	131-E	Extraction of Solar Thermal Energy in Minnesota	\$0	\$250,000	U of MN	Filippo Coletti	Statewide

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
07d	132-E	Assessment of Urban Air Quality	\$0	\$700,000	MPCA	Monika Vadali	Metro
07e	147-E	Generation, Storage, and Utilization of Solar Energy	\$0	\$500,000	U of MN - West Central Research and Outreach Center in Morris	Bradley Heins	Statewide
07f	150-E	District Heating with Renewable Biomass at Camp Ripley Training Center	\$0	\$1,000,000	Department of Military Affairs	Josh Pennington	Central
07g	189-I	Geotargeted Distributed Clean Energy Initiative	\$0	\$800,000	Center for Energy and Environment	Carl Nelson	Statewide
07h	193-K	Develop Solar-Powered Robots for Weed Control in Agricultural Fields	\$0	\$600,000	U of MN	Michael Reese	Statewide
Air Quality, Climate Change, and Renewable Energy Subtotal = \$0 \$4,738,000							
Subd. 08 Methods to Protect or Restore Land, Water, and Habitat (12 Recommendations - Subtotal = \$10,808,000)							
08a	152-F	Optimizing the Nutrition of Roadside Plants for Pollinators	\$0	\$815,000	U of MN	Emilie Snell-Rood	Central, Metro, NW, SW, SE
08b	153-F	Promoting Conservation Biocontrol of Beneficial Insects	\$0	\$400,000	U of MN	Vera Krischik	Statewide
08c	154-F	Evaluating the Use of Bison to Restore and Preserve Savanna Habitat	\$0	\$388,000	U of MN - Cedar Creek Ecosystem Science Reserve	David Tilman	Central
08d	155-F	State Park Pollinator Habitat Restoration	\$0	\$672,000	MN DNR	Edward Quinn	Central, Metro, NW, SW, SE
08e	156-F	Enhancing Spawning Habitat Restoration in Minnesota Lakes	\$0	\$294,000	U of MN - St. Anthony Falls Laboratory	William Herb	Statewide
08f	157-F	Prescribed-Fire Management for Roadside Prairies	\$0	\$345,000	Minnesota Department of Transportation	Ken Graeve	Central, Metro, NW, SE
08g	158-F	Minnesota Bee and Beneficial Species Habitat Restoration	\$0	\$732,000	Pheasants Forever Inc.	Steven Burdick	Statewide
08h	160-F	Mississippi and Vermillion Rivers Restoration of Prairie, Savanna, and Forest Habitat - Phase X	\$0	\$213,000	Friends of the Mississippi River	Tom Lewanski	Metro
08i	161-F	Community Stewardship to Restore Urban Natural Resources - Phase X	\$0	\$524,000	Great River Greening	Wiley Buck	Metro

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
08j	162-F	Economic Assessment of Precision Conservation and Agriculture	\$0	\$400,000	Pheasants Forever Inc.	Tanner Bruse	Central, NW, SW, SE
08k	167-F	Mississippi River Habitat Restoration Planning at Halls Island	\$0	\$25,000	Minneapolis Park and Recreation Board	Adam Arvidson	Metro
08l	196-K	Conservation Reserve Enhancement Program (CREP) Outreach and Implementation	\$0	\$6,000,000	BWSR	Tabor Hoek	Statewide
Methods to Protect or Restore Land, Water, and Habitat Subtotal = \$0 \$10,808,000							
Subd. 09 Land Acquisition, Habitat, and Recreation (9 Recommendations - Subtotal = \$17,357,000)							
09a	169-G	Metropolitan Regional Parks System Land Acquisition	\$0	\$1,500,000	Metropolitan Council	Deborah Streets Jensen	Metro
09b	170-G	Scientific and Natural Areas Acquisition and Restoration, Citizen Science, and Engagement	\$0	\$4,500,000	MN DNR	Peggy Booth	Statewide
09c	171-G	Minnesota State Parks and State Trails Land Acquisition	\$0	\$1,500,000	MN DNR	Jennifer Christie	Statewide
09d	171-G	Minnesota State Trails Acquisition, Development, and Enhancement	\$999,000	\$39,000	MN DNR	Kent Skaar	TBD
09e	172-G	Native Prairie Stewardship and Prairie Bank Easement Acquisition	\$0	\$3,500,000	MN DNR	Judy Schulte	Central, NW, SW, SE
09f	174-G	Leech Lake Acquisition	\$0	\$1,500,000	Leech Lake Division of Resource Management	Levi Brown	Central
09g	176-G	Mesabi Trail Development	\$0	\$2,269,000	St Louis and Lake Counties Regional Railroad Authority	Robert Manzoline	NE
09h	180-G	Tower Trailhead Boat Landing and Habitat Improvement – Phase II	\$0	\$600,000	City of Tower	Linda Keith	NE
09i	192-K	Land Acquisition for Voyageurs National Park Crane Lake Visitors Center	\$0	\$950,000	Town of Crane Lake	Jim Janssen	NE
Land Acquisition, Habitat and Recreation Subtotal = \$999,000 \$16,358,000							

M.L. 2017 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY2017 and FY2018)

Subd.	ENRTF Proposal ID	Title	Total LCCMR \$ Recommended	Total LCCMR \$ Recommended	Organization	Program Manager	Region of Impact*
			FY2017	FY2018			
Subd. 10 Administration and Contract Agreement Reimbursement (2 Recommendations - Subtotal = \$1,335,000)							
10a	181-H	Contract Agreement Reimbursement	\$0	\$135,000	MN DNR	Katherine Sherman-Hoehn	Statewide
10b	n/a	Legislative-Citizen Commission on Minnesota Resources (LCCMR) Administration	\$0	\$1,200,000	LCCMR	Susan Thornton	Statewide
Administration and Contract Agreement Reimbursement Subtotal =			\$0	\$1,335,000			
Total \$ Recommending =			\$8,428,000	\$50,728,000			

* 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.

VI. Revenues and Distributions

“the source and amount of all revenues collected and distributed by the commission, including all administrative and other expenses;”

Dollars Available from the Environment and Natural Resources Trust Fund

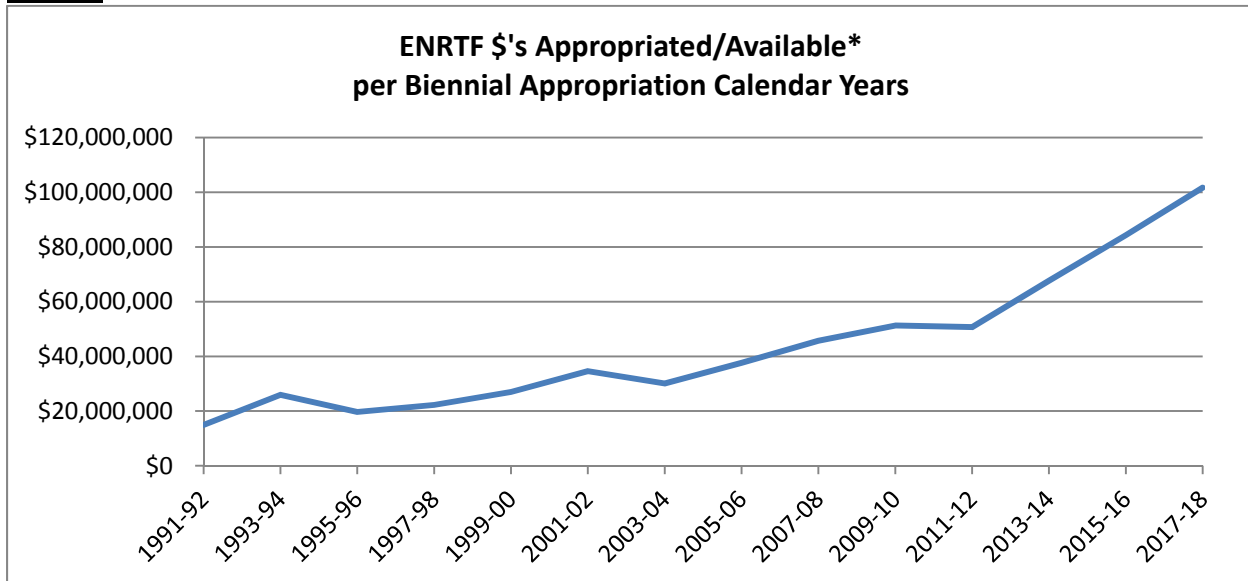
Total \$'s Available for FY 18-19 Recommendations: up to \$101,656,000

Basis

The Minnesota Constitution provides that up to 5.5% of the market value of the Environment and Natural Resources Trust Fund can be utilized for projects each year. This 5.5% value is determined for both years of each fiscal biennium based on the market value of the Trust Fund on June 30 one year prior to the start of the next fiscal biennium. Thus the dollars available for appropriation during fiscal years 2018 (beginning July 1, 2017) and 2019 (beginning July 1, 2018) was determined on June 30, 2016.

Value of the Environment and Natural Resources Trust Fund on June 30, 2016 =	\$924,152,297.79
5.5% of value on June 30, 2016 =	\$50,828,376.38
\$ Amount to be used for FY 2018-2019 LCCMR recommendations (rounded down to nearest thousandth) =	\$50,828,000/year
Total \$'s available for recommendation during fiscal 2018-2019 biennium =	\$101,656,000

History



Biennial Appropriation Calendar Years	\$'s Appropriated/Available*
1991-92	\$ 14,960,000
1993-94	\$ 25,946,000
1995-96	\$ 19,649,000
1997-98	\$ 22,270,000
1999-00	\$ 27,001,000
2001-02	\$ 34,620,000
2003-04	\$ 30,100,000
2005-06	\$ 37,657,000
2007-08	\$ 45,732,000
2009-10	\$ 51,244,000
2011-12	\$ 50,656,000
2013-14	\$ 67,620,000
2015-16	\$ 84,292,000
2017-18	\$ 101,656,000
TOTAL	\$ 613,403,000

*\$ amount for all bienniums except 2017-18 reflects the actual dollar amounts appropriated. \$ amount for 2017-18 reflects the dollars available to be appropriated.

1. 1991-2006: Biennial appropriations
2. 2007-2010: Annual appropriations
3. 2011-2012: Biennial appropriation
4. 2013-2018: Annual appropriatio

Appropriations from Revenue Sources

Appropriation Year		Environment and Natural Resources Trust Fund	Future Resources Fund	Oil Overcharge Money	Land & Water Conservation (LAWCON)	Great Lakes Protection Account	Totals
LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES (LCMR) - Biennial funding cycle							
1991							
Ch 254 Art. 1 Sec. 14		14,960,000	16,534,000	3,500,000		0	34,994,000
1993							
Ch 172 Sec. 14		24,600,000	14,662,000	2,012,000		0	41,274,000
1994							
Ch 632 Art. 2 Sec. 6		1,346,000	1,404,000	0		0	2,750,000
1995							
Ch 229 Sec. 19, 20, 21		17,844,000	15,083,000	2,055,000		130,000	35,112,000
1st. Sp.Ses., Ch. 2, Sec. 5		175,000					175,000
1996							
Ch 407 Sec. 8		1,630,000	3,258,000	0		0	4,888,000
1997							
Ch 216 Sec. 15		22,270,000	14,668,000	150,000		120,000	37,208,000
Ch 246, Sec. 32			150,000				150,000
1999 *	(1)						
Ch 231, Sec. 16		26,010,000	16,040,000	0		200,000	42,250,000
Ch 231, Sec. 17		991,000					991,000
2001	(2)						
1st. Sp.Ses.,Ch. 2, Sec. 14		34,620,000	15,385,000	180,000		87,000	50,272,000
2002							
Ch. 220, Art. 8, Sec. 1 & 8		316,000	0	0		0	316,000
2003	(3)						
Ch. 128, Art. 1, Sec. 9		30,100,000	47,870,000 (3)	519,000	2,000,000 (4)	56,000	50,545,000
			0				32,675,000
2005	(5)						
1st. Sp.Ses.,Ch. 1, Art. 2, Sec. 11		33,560,000	0	0	1,600,000 (4)	0	35,160,000
2006							
Ch. 243, Sec. 19 & 20		4,097,000	0	0	0	28,000	4,125,000
LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR) - Annual funding cycle							
2007							
Ch. 30, Sec. 2		22,866,000	0	0	500,000 (4)	0	23,366,000
2008							
Ch.367, Sec. 2		22,866,000	0	0	0	86,000	22,952,000
2009							
Ch.143, Sec. 2	(6)	25,622,000	0	0	400,000	66,000	26,088,000
2010							
Ch.362, Sec. 2	(7)	25,622,000	0	0	0	0	25,622,000
2011 (Biennial)							
1st. Sp.Ses.,Ch. 2, Art. 3, Sec. 2		50,656,000	0	0	750,000	0	51,406,000
2013							
Chp. 52, Sec. 2		38,160,000	0	0	0	0	38,160,000
2014							
Chp. 226, Sec. 2		28,970,000	0	0	0	0	28,970,000
Chp. 312, Art. 12, Sec. 8		1,460,000	0	0	0	0	1,460,000
2015							
Chp. 76, Sec. 2		46,324,000	0	0	0	59,000	46,383,000
2016							
Chp. 186, Sec. 2	(8)	37,909,000	0	0	0	0	37,909,000
2017							
(includes \$8,428,000 from 2016 vetoes)		59,156,000	0	0	0	0	59,156,000
		572,130,000	97,184,000	8,416,000	5,250,000	832,000	683,812,000

NOTES:

Does not reflect vetoes below.

(1) 1999 Veto	350,000 TF	(6) 2009 Veto	275,000 TF
	200,000 TF		143,000 TF
	1,200,000 FRF		418,000
	1,750,000		
(2) 2001 Veto	275,000 FRF	(7) 2010 Veto	143,000 TF
	455,000 TF	(8) 2016 Veto	8,428,000 TF (7 Appropriations)
	730,000		

(3) 2003 Future Resource Fund was redirected to the General Fund, not to be recommended by the LCMR per ML 2003, Ch. 128, Art. 1, Sec. 146 & Sec. 155.

(4) Previous to 2003, the LAWCON money was included in the Future Resource Fund appropriation for purposes of this chart.

(5) Note: Does reflect the vetoes
2005 Veto

4,098,000 TF
28,000 GLPA
4,126,000

Appropriations for LCMR and LCCMR Administrative Expenses

Statutory reference MS 116P

The amounts shown here are part of the total appropriation

	Appropriation Year	Environment & Natural Resources Trust Fund	% of Total Appropriations	Carryforward	Future Resources Fund	Biennium Total
LCMR	1991	0	0.00%		850,000	850,000
LCMR	1993	270,000	1.04%		425,000	695,000
LCMR	1995	394,000	2.01%		308,000	702,000
LCMR	1997	472,000	2.12%		304,000	776,000
LCMR	1999	567,000	2.10%		333,000	900,000
LCMR	2001	738,000	2.13%		389,000	1,127,000
LCMR	2003	672,000	2.23%	172,000 *	0 **	672,000
LCMR	2005 (annual)	449,000	2.38%		0	449,000 ***
LCCMR	2006 (annual)	550,000	2.92%	63,000 ****	0	550,000
LCCMR	2007 (biennial)	1,278,000	2.79%		0	1,278,000
LCCMR	2009 (biennial)	1,254,000	2.48%		0	1,254,000
LCCMR	2011 (biennial)	946,000	1.87%		0	946,000
LCCMR	2013 (biennial)	990,000	1.46%		0	990,000
LCCMR	2015 (biennial)	1,072,000	1.16%		0	1,072,000
LCCMR	2017 Proposed (biennial)	1,200,000	1.18%		0	1,200,000
	Total	10,852,000	1.75%	235,000	2,609,000	13,461,000

NOTES:

- 1991-2003 reflects a biennial appropriation
- 2005 and 2006 are annual appropriations
- The administrative budget from the Trust Fund is capped at 4% of the Trust Fund available each year, M.S. 116P, Subd. 5

* Carryforward from administrative budget appropriation 02-03 (Trust Fund)

** Future Resources Fund was redirected to the General Budget, not to be recommended by the LCMR per ML 2003, Ch. 128, Art. 1, Sec. 146 & Sec. 155.

*** This amount reflects only first year funding. The governor vetoed the second half of the biennium funding of the administrative budget (\$450,000).

**** Carryforward from 2005 administrative appropriation for LCMR and the "Citizen Advisory Committee for the Trust Fund"

VII. Assets & Liabilities

“a description of the assets and liabilities of the trust fund;”

The documents include the State Board of Investment
2015 and 2016 Annual Reports.

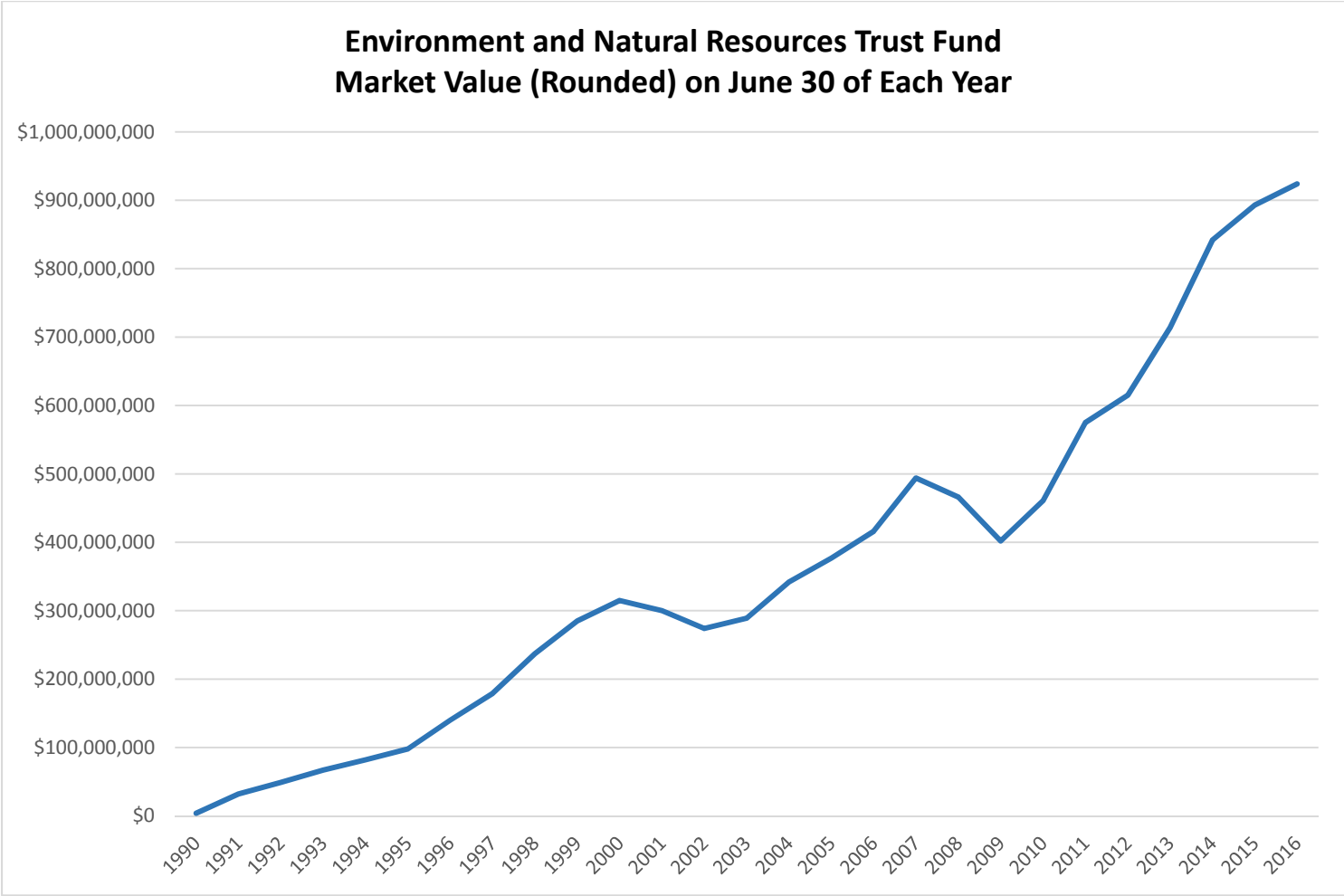
Historical Market Value of the Environment and Natural Resources Trust Fund

Background

The assets in the Environment and Natural Resources Trust Fund (ENRTF) originate from a combination of contributions and investment income. Forty percent of the net proceeds from the Minnesota State Lottery, or more than six cents of every dollar spent on playing the lottery, are contributed to the ENTRTF each year; this source of contribution is guaranteed by the Minnesota Constitution through December 31, 2024. The ENRTF may also receive contributions from other sources, such as private donations. Once deposited into the ENRTF, contributions become part of the principal balance and are invested in a combination of stocks and bonds by the Minnesota State Board of Investment. The income generated from those investments is reinvested back into the ENRTF.

For FY 1992-1999, investment earnings of the ENRTF and up to 25% of the Minnesota Lottery’s annual contributions to the ENRTF were available for appropriation each year. A constitutional amendment in 1998 altered this rule so that beginning in FY 2000, through the present, up to 5.5% of the ENRTF’s market value (determined by the market value of the ENRTF on June 30 one year before the start of a biennium) is available for appropriation each year.

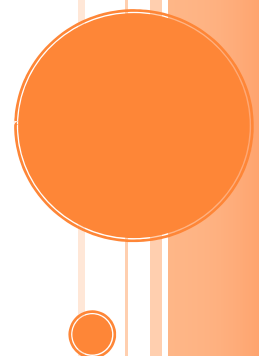
History



ENRTF Market Value (Rounded) on June 30 of each year	
1990	\$4,000,000
1991	\$32,000,000
1992	\$49,000,000
1993	\$67,000,000
1994	\$82,000,000
1995	\$98,000,000
1996	\$140,000,000
1997	\$179,000,000
1998	\$237,000,000
1999	\$285,000,000
2000	\$315,000,000
2001	\$300,000,000
2002	\$274,000,000
2003	\$289,000,000
2004	\$342,000,000
2005	\$377,000,000
2006	\$416,000,000
2007	\$494,000,000
2008	\$466,000,000
2009	\$402,000,000
2010	\$461,000,000
2011	\$575,000,000
2012	\$615,000,000
2013	\$714,000,000
2014	\$842,000,000
2015	\$893,000,000
2016	\$924,000,000

MINNESOTA STATE BOARD OF INVESTMENT

2015 Annual Report



The Environmental Trust Fund was established in 1988 by the Minnesota Legislature to provide a long-term, consistent and stable source of funding for activities that protect and enhance the environment. On June 30, 2015, the market value of the Fund was \$893 million.

By statute, the State Board of Investment invests the assets of the Environmental Trust Fund. The Legislature funds environmental projects from a portion of the market value of the Fund.

Investment Objective

The Environmental Trust Fund's investment objective is long-term growth in order to produce a growing level of spending within the constraints of maintaining adequate portfolio quality and liquidity.

A constitutional amendment passed in November 1998 continues the mandate that 40 percent of the net proceeds from the state lottery be credited to the Fund through 2025.

The amendment provides for spending 5.5 percent of the Fund's market value annually. The amendment eliminated accounting restrictions on capital gains and losses and the provision that the principal must remain inviolate.

Asset Allocation

After the constitutional amendment was adopted in November 1998, SBI staff worked with the Legislative Citizen Commission on Minnesota Resources to establish an asset allocation policy that is consistent with the Commission's goals for spending and growth of the Fund. The allocation positions the Fund for the best long-term

growth potential while meeting the objective of the Fund to produce a growing level of spending.

The current long term asset allocation targets for the Fund are:

Domestic Stocks	70%
Domestic Bonds	28
Cash	2

Figure 41 presents the actual asset mix of the Fund at the end of fiscal year 2015.

Investment Management

SBI staff internally manages all assets of the Environmental Trust Fund. Management by SBI staff is considered to be the most cost effective at this time.

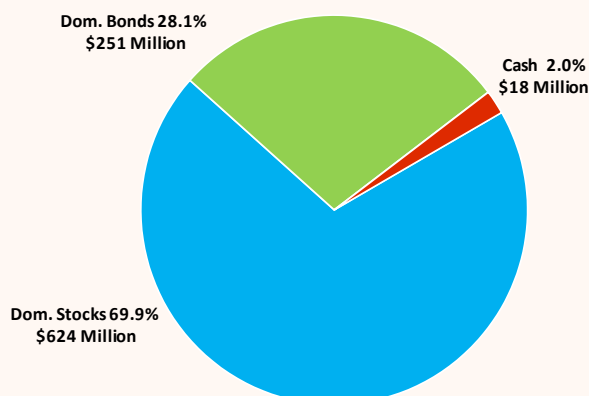
Stock Segment

The stock segment of the Fund is passively managed to track the performance of the S&P 500.

Bond Segment

The bond segment is actively managed to add incremental value through sector, security and yield curve decisions, and its performance is measured against the Barclays Capital Aggregate Bond Index.

Figure 41. Environmental Trust Fund Asset Mix as of June 30, 2015



Environmental Trust Fund

Investment Performance

During the fiscal year, the *stock* segment underperformed its benchmark by 0.1 percentage point.

The *bond* segment outperformed its benchmark by 0.6 percentage points during the fiscal year, primarily due to the overweight to the corporate sector and a short duration position relative to the benchmark.

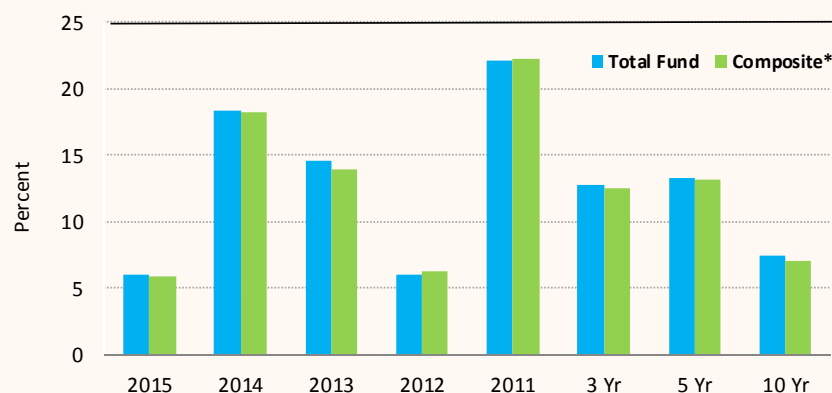
Overall, the Environmental Trust Fund provided a return of 6.0% for fiscal year 2015 and outperformed its composite index by 0.2 percentage point. The Fund outperformed its composite index over the most recent three, five and ten years due to the incremental value added by bonds.

Performance results are presented in Figure 42.

Spendable income generated by the Fund over the last five fiscal years is shown below:

<u>Fiscal Year</u>	<u>Millions</u>
2011	\$26
2012	\$25
2013	\$25
2014	\$34
2015	\$34

Figure 42. Environmental Trust Fund Performance For Periods Ending June 30, 2015



	2015	2014	2013	2012	2011	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Total Fund	6.0%	18.3%	14.6%	6.0%	22.1%	12.8%	13.2%	7.4%
Composite*	5.8	18.2	13.9	6.3	22.2	12.5	13.1	7.0
Stock Segment	7.5	24.5	20.5	5.5	30.8	17.3	17.4	8.0
S&P 500	7.4	24.6	20.6	5.4	30.7	17.3	17.3	7.9
Bond Segment	2.5	5.0	1.4	6.5	4.3	3.0	3.9	5.1
Barclays Agg.	1.9	4.4	-0.7	7.5	3.9	1.8	3.3	4.4

* Weighted 70% S&P 500/ 28% Barclays Capital Aggregate/ and 2% 3 month T-Bill.

**State Board of Investment
2016 Annual Report
Pending**

VIII. Findings

“any findings or recommendations that are deemed proper to assist the legislature in formulating legislation;”

No recommendations at this time.

IX. Gifts and Donations

“a list of all gifts and donations with a value over \$1,000;”

No gifts or donations were received.

X. Environmental Spending Comparisons

“a comparison of the amounts spent by the state for environment and natural resources activities through the most recent fiscal year;”

The following document “All Funds Biennial Spending by Agency and Fund” prepared by the Minnesota State Senate Office of Senate Counsel, Research, and Fiscal Analysis on 11/22/2016.

Environmental Spending
All Funds Biennial Spending by Agency & Fund
(dollars in thousands)

<u>By Agency/Fund</u>	FY 2014-15 Spending	FY 2016-17 February Forecast	2016 Legislative Changes*	Current FY 2016-17 Budget
ENVIRONMENT & AGRICULTURE AGENCIES				
Pollution Control Agency				
General Fund	9,335	16,903	1,918	18,821
State Govt Special Revenue Fund	153	152	-	152
Special Revenue Fund	56,157	64,995	-	64,995
Environmental Fund	145,691	153,018	702	153,720
Remediation Fund	68,307	63,684	-	63,684
Federal Funds	46,715	51,595	30	51,625
Env & Natural Resources Trust Fund	574	169	180	349
Clean Water Fund	57,565	54,698	192	54,890
Expenses in Multiple Funds	(47,371)	(50,764)	-	(50,764)
Total Pollution Control Agency	337,126	354,450	3,022	357,473
Board of Water and Soil Resources				
General Fund	33,222	27,112	479	27,591
Special Revenue Fund	13,820	12,084	-	12,084
Federal Funds	6,643	2,424	575	2,999
Env & Natural Resources Trust Fund	4,376	2,964	543	3,507
Outdoor Heritage Fund	76,358	27,390	22,016	49,406
Clean Water Fund	69,858	121,430	(1,665)	119,765
Total Board of Water and Soil Resources	204,277	193,404	21,948	215,352
Transfer to Closed Landfill Inv. Fund				
General Fund	61,276	71,315	-	71,315
Department of Natural Resources				
General Fund	185,466	199,847	11,166	211,013
Natural Resources Fund	171,852	185,452	4,755	190,207
Game & Fish Fund	205,075	229,650	780	230,430
Special Revenue Fund	245,314	274,993	-	274,993
Remediation Fund	538	2,302	-	2,302
Gift Fund	2,690	3,470	-	3,470
Permanent School Fund	428	407	-	407
Federal Funds	29,075	42,998	375	43,373
Env & Natural Resources Trust Fund	31,764	32,005	20,082	52,087
Outdoor Heritage Fund	173,718	120,253	87,831	208,084
Parks & Trails Fund	53,452	61,634	-	61,634
Clean Water Fund	20,434	26,858	(1,042)	25,816
Expenses in Multiple Funds	(86,014)	(180,668)	-	(180,668)
Total Department of Natural Resources	1,033,792	999,200	123,947	1,123,147
Minnesota Conservation Corps				
General Fund	910	910	-	910
Natural Resources Fund	980	980	-	980
Total MN Conservation Corps	1,890	1,890	-	1,890

Environmental Spending
All Funds Biennial Spending by Agency & Fund

(dollars in thousands)

<u>By Agency/Fund</u>	FY 2014-15 Spending	FY 2016-17 February Forecast	2016 Legislative Changes*	Current FY 2016-17 Budget
Metropolitan Council Parks				
General Fund	5,815	6,140	-	6,140
Natural Resources Fund	11,790	11,340	-	11,340
Env & Natural Resources Trust Fund	3,126	1,125	-	1,125
Parks & Trails Fund	33,774	35,304	-	35,304
Clean Water Fund	4,087	2,450	-	2,450
Total Metropolitan Council Parks	58,592	56,359	-	56,359
Minnesota Zoological Board				
General Fund	12,200	16,500	-	16,500
Natural Resources Fund	320	320	-	320
Special Revenue Fund	29,087	21,550	-	21,550
Gift Fund	6,645	4,914	-	4,914
Federal Funds	8	52	14	66
Env & Natural Resources Trust Fund	164	432	568	1,000
Arts & Cultural Heritage Fund	4,039	3,694	-	3,694
Expenses in Multiple Funds	(399)	(900)	-	(900)
Total Minnesota Zoological Board	52,064	46,562	582	47,144
Department of Agriculture				
General Fund	67,205	99,657	1,333	100,990
Agricultural Fund	51,944	57,021	750	57,771
Special Revenue Fund	13,355	15,457	-	15,457
Remediation Fund	2,847	3,896	-	3,896
Gift Fund	174	41	-	41
Federal Funds	14,775	26,979	5,087	32,066
Env & Natural Resources Trust Fund	843	926	511	1,437
Clean Water Fund	13,743	17,421	1,849	19,270
Expenses in Multiple Funds	(9,099)	(9,123)	-	(9,123)
Total Dept. of Agriculture	155,786	212,276	9,530	221,806
Animal Health Board				
General Fund	10,058	12,871	-	12,871
Special Revenue Fund	160	189	-	189
Federal Funds	1,364	2,054	350	2,404
Total Animal Health Board	11,582	15,115	350	15,465
Agriculture Utilization Research Inst.				
General Fund	7,286	7,286	-	7,286
Special Revenue Fund	1,000	-	-	-
Total AURI	8,286	7,286	-	7,286
Science Museum				
General Fund	2,158	2,158	-	2,158
Env & Natural Resources Trust Fund	210	1,380	679	2,059
Total Science Museum	2,368	3,538	679	4,217

Environmental Spending
All Funds Biennial Spending by Agency & Fund

(dollars in thousands)

<u>By Agency/Fund</u>	FY 2014-15 Spending	FY 2016-17 February Forecast	2016 Legislative Changes*	Current FY 2016-17 Budget
Totals by Fund				
General Fund	394,931	460,701	14,896	475,597
State Govt Special Revenue Fund	153	152	-	152
Special Revenue Fund	358,893	389,267	-	389,267
Environmental Fund	145,691	153,018	702	153,720
Remediation Fund	71,692	69,882	-	69,882
Natural Resources Fund	184,942	198,092	4,755	202,847
Game & Fish Fund	205,075	229,650	780	230,430
Agricultural Fund	51,944	57,021	750	57,771
Gift Fund	9,509	8,425	-	8,425
Permanent School Fund	428	407	-	407
Federal Funds	98,580	126,102	6,431	132,534
Env & Natural Resources Trust Fund	41,057	39,001	22,563	61,564
Outdoor Heritage Fund	250,076	147,642	109,847	257,489
Clean Water Fund	165,687	222,857	(666)	222,191
Parks & Trails Fund	87,226	96,938	-	96,938
Arts & Cultural Heritage Fund	4,039	3,694	-	3,694
Expenses in Multiple Funds	(142,883)	(241,455)	-	(241,455)
Total for Budget Area	1,927,040	1,961,395	160,058	2,121,454
GRAND TOTAL ALL BUDGET AREAS	67,696,848	74,967,023	507,799	75,474,822
Environment and Agriculture Agencies as a percentage of Grand Total	2.8%	2.6%		2.8%

* The 2016 Legislative Changes column also contains Federal Funds changes that have been approved by the Legislative Advisory Commission.

XI. Compliance Audit

“a copy of the most recent compliance audit.”

The most recent compliance audit was released by the Office of the Legislative Auditor on February 11, 2016. The LCCMR has addressed all of the findings and recommendations identified in the audit. A letter dated November 10, 2016 from the University of Minnesota summarizes the joint actions of the LCCMR and University of Minnesota.

UNIVERSITY OF MINNESOTA

Twin Cities Campus

*Office of the Vice President and Chief
Financial Officer / Treasurer*

Office of the President

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November 10, 2016

Susan Thornton, Director
Legislative-Citizen Commission on Minnesota Resources
100 Rev Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear Ms. Thornton:

The Office of the Legislative Auditor's Report on the Environment and Natural Resources Trust Fund (ENTRF) issued February 11, 2016 found, "The statute governing how the state pays money appropriated from the Environment and Natural Resources Trust Fund to the University of Minnesota is in conflict with the statute governing the investment of trust fund money." The audit report went on to state:

We think the state has a duty to reduce the time between when the money leaves the trust fund and when the university spends it, so that earnings to the trust fund can be maximized and added to the trust fund's balance for future appropriation by the Legislature. Alternatively, the university could return to the state income earned through investment of unspent money from the trust fund.

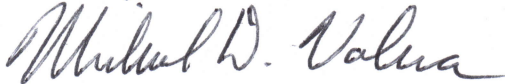
The University responded to the Legislative Auditor's report by supporting a statutory change to modify the State's payment schedule for ENTRF appropriations. The University preferred this option rather than submitting long-term payments to the state related to future appropriations. To implement the statutory change, the University worked with the Legislative-Citizen Commission on Minnesota's Resources (LCCMR), the Legislature, and MN Management and Budget to amend Minnesota Statutes 137.025, the University's appropriation statute. This statutory change became law in 2016 Session, Chapter 186. Beginning in FY 2017, all University ENTRF appropriations will be made on a reimbursement basis; therefore, the Legislative Auditor's recommendation was implemented.

Because the University continues to earn interest on unspent funds from past appropriations, the University also agreed to submit quarterly payments to the State for interest earned from the date the University became aware of the issue until unspent funds drawn under the old method are expended. The University made its first interest payment in August 2016 for \$217,343, and the second interest payment will be made in late November for \$24,624. The University will continue to make interest payments until all funds drawn under the old method are expended. Additional details on these payments were submitted to you in a letter on April 19, 2016.

In a July 22, 2016 letter to President Kaler, the LCCMR also requested the University of Minnesota submit a payment to the State for \$511,714 for interest the University earned prior to the release of the Legislative Auditor's report. This payment was made to the State of Minnesota on November 2, 2016.

Based on your July 22nd correspondence and the University's actions to date, we understand this issue to be resolved. Please contact me with any questions on the University of Minnesota's actions to date.

Sincerely,

A handwritten signature in cursive script, reading "Michael D. Volna". The signature is written in dark ink and is positioned above the printed name.

Michael Volna

Interim Vice President and Chief Financial Officer



FINANCIAL AUDIT DIVISION REPORT

**Environment and Natural
Resources Trust Fund**

**Internal Controls and
Compliance Audit**

July 2012 through February 2015

February 11, 2016

Report 16-03

FINANCIAL AUDIT DIVISION

Centennial Building – Suite 140

658 Cedar Street – Saint Paul, MN 55155

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E-mail: auditor@state.mn.us • Website: <http://www.auditor.leg.state.mn.us>

Through Minnesota Relay: 1-800-627-3529 or 7-1-1

Financial Audit Division

The Financial Audit Division annually audits the state's financial statements and, on a rotating schedule, audits agencies in the executive and judicial branches of state government, three metropolitan agencies, and several "semi-state" organizations. The division has a staff of about 30 auditors, most of whom are CPAs. The division conducts audits in accordance with standards established by the American Institute of Certified Public Accountants and the Comptroller General of the United States.

The Office of the Legislative Auditor (OLA) also has a Program Evaluation Division, which evaluates topics periodically selected by the Legislative Audit Commission.

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To offer comments about our work or suggest an audit, investigation, or evaluation, call 651-296-4708 or e-mail legislative.auditor@state.mn.us.

Conclusion on Internal Controls

The Financial Audit Division bases its conclusion about an organization's internal controls on the number and nature of the control weaknesses we found in the audit. The three possible conclusions are as follows:

Conclusion	Characteristics
Adequate	The organization designed and implemented internal controls that effectively managed the risks related to its financial operations.
Generally Adequate	With some exceptions, the organization designed and implemented internal controls that effectively managed the risks related to its financial operations.
Not Adequate	The organization had significant weaknesses in the design and/or implementation of its internal controls and, as a result, the organization was unable to effectively manage the risks related to its financial operations.



OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA • James Nobles, Legislative Auditor

February 11, 2016

Representative Sondra Erickson, Chair
Legislative Audit Commission

Members of the Legislative Audit Commission

Representative John Persell, Co-Chair, Legislative-Citizen Commission on Minnesota Resources
Senator David Tomassoni, Co-Chair, Legislative-Citizen Commission on Minnesota Resources
Nancy Gibson, Co-Chair, Legislative-Citizen Commission on Minnesota Resources
Members of the Legislative-Citizen Commission on Minnesota Resources

Susan Thornton, Director
Legislative-Citizen Commission on Minnesota Resources

Richard B. Beeson, Chair, University of Minnesota Board of Regents
Members of the University of Minnesota Board of Regents
Eric Kaler, President, University of Minnesota

Adam Duininck, Chair, Metropolitan Council
Members of the Metropolitan Council

Thomas Landwehr, Commissioner
Department of Natural Resources

This report presents the results of our internal controls and compliance audit of the Environment and Natural Resources Trust Fund (trust fund) for the period from July 2012 through February 2015. The objectives of this audit were to determine if the Department of Natural Resources, University of Minnesota, and the Metropolitan Council had adequate internal controls to ensure they used trust fund appropriations for the intended purposes and complied with applicable legal requirements.

This audit was conducted by Brad White, CPA, CISA, CFE (Audit Director), Carmen Marg-Patton, CPA, CFE (Audit Supervisor), and auditors Sandy Ludwig and Nick Ludwig, CPA.

We received the full cooperation of the staff from each organization while performing this audit.

James R. Nobles
Legislative Auditor

Cecile M. Ferkul, CPA, CISA
Deputy Legislative Auditor

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Report Summary

Background

The Office of the Legislative Auditor conducted an audit of the Environment and Natural Resources Trust Fund (trust fund) to determine whether entities spent money from the trust fund in accordance with state law. The audit assessed internal controls over the use of trust fund money at the Department of Natural Resources, Metropolitan Council, and University of Minnesota. The audit examined expenditures from the trust fund from July 2012 through February 2015. During that period, the State of Minnesota spent over \$77 million of trust fund money, and the three entities we audited received about \$70 million of the amount that was spent.

The voters of Minnesota established the Environment and Natural Resources Trust Fund through a constitutional amendment in 1988 for the purpose of protecting, conserving, preserving, and enhancing the state's air, water, land, fish, wildlife, and other natural resources. The trust fund receives its money from proceeds of the Minnesota State Lottery and investment income earned by the fund. Forty percent of the net proceeds of the state lottery are deposited in the trust fund and 5.5 percent of the market value of the trust fund can be appropriated by the Legislature each year. Since 1991, the Legislature has appropriated approximately \$500 million for about 1,000 projects around the state. As of March 2015, the market value of trust fund investments was \$894 million.

Conclusion

The Metropolitan Council did not have adequate internal controls over monitoring grant recipients' use of money from the Environment and Natural Resources Trust Fund appropriations. The projects and grants we tested at the Metropolitan Council generally complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes contained in the state constitution, state statutes, and appropriation laws. However, we found some costs that did not comply with specific legal requirements.

The Department of Natural Resources generally had adequate internal controls to ensure it used money from the Environment and Natural Resources Trust Fund appropriations for the intended purposes; however, the department had some weaknesses in internal controls. In addition, projects and grants we tested at the Department of Natural Resources generally complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes

contained in the state constitution, state statutes, and appropriation laws. However, we found some costs that did not comply with specific legal requirements.

The University of Minnesota had adequate internal controls to ensure that it used money from the Environment and Natural Resources Trust Fund appropriations for the intended purposes. In addition, the projects and grants we tested at the University of Minnesota complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes contained in the state constitution, state statutes, and appropriation laws. However, the statutory requirement for how the state pays money from the trust fund to the university conflicts with the statutory requirement for investment of money in the trust fund.

Findings

- The Metropolitan Council did not have adequate internal controls and did not sufficiently monitor whether grant recipients used Environment and Natural Resources Trust Fund money in compliance with state laws. ([Finding 1, page 11](#))
 - Land purchased by a Metropolitan Council grant recipient did not comply with legal requirements prohibiting the use of Environment and Natural Resources Trust Fund money for the purchase of residential structures. ([Finding 2, page 14](#))
 - The Metropolitan Council did not ensure its grant recipients complied with a statute requiring entities to record a notice of funding restrictions when purchasing land with money from the Environment and Natural Resources Trust Fund. ([Finding 3, page 15](#))
 - The Department of Natural Resources could not show how administrative costs allocated to the Environment and Natural Resources Trust Fund complied with the requirement that all costs must be “directly related to and necessary for” specific projects or activities listed in the appropriation law. ([Finding 4, page 16](#))
 - The statute governing how the state pays money appropriated from the Environment and Natural Resources Trust Fund to the University of Minnesota is in conflict with the statute governing the investment of trust fund money. ([Finding 5, page 19](#))
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Background

Environment and Natural Resources Trust Fund

In 1988, Minnesota voters approved a constitutional amendment to establish the Environment and Natural Resources Trust Fund (trust fund) for the purpose of protecting, conserving, preserving, and enhancing the state's air, water, land, fish, wildlife, and other natural resources.¹ The trust fund receives its money from proceeds of the Minnesota State Lottery and investment income earned by the fund. The constitutional amendment specified that until 2025, not less than 40 percent of the net proceeds of the state lottery must be deposited in the trust fund. The Minnesota State Board of Investment invests the trust fund's assets and reinvests the income generated from these investments back into the trust fund. As of March 2015, the State Board of Investment had recorded the market value of trust fund investments at \$894 million.

The constitutional amendment allows the Legislature to appropriate up to 5.5 percent of the market value of the trust fund each year. The Legislative-Citizen Commission on Minnesota Resources (the commission), a committee of 17 legislators and citizens, assists the Legislature by making funding recommendations and monitoring trust fund projects. The commission employs a director, Susan Thornton, and three other staff members. The commission issues annual or biennial requests for proposals that are open to any entity, including all state agencies, quasi-state agencies, and nonprofit organizations. Commission members review, evaluate, and rank submitted project proposals. The commission, as a whole, selects the projects to recommend for funding and submits the recommendations to the Legislature. Based on the commission's recommendations, the Legislature appropriates funding to entities for the proposed projects.

Table 1 summarizes the trust fund appropriations for fiscal years 2010-2015.²

¹ *Minnesota Constitution*, Article XI, Section 14.

² An appropriation is a legislative action that authorizes money for a specific purpose.

Table 1
Environment and Natural Resource Trust Fund Appropriations
Fiscal Years 2010 through 2015^{Note 1}
(In thousands)

Entity	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
Department of Natural Resources	\$15,148	\$14,554	\$18,421	\$18,432	\$16,892	\$12,630	\$ 96,077
University of Minnesota	1,980	7,796	3,215	3,882	11,767	16,640	44,280
Board of Water and Soil Resources	3,425	2,235	1,781	1,106	3,771	957	13,275
Metropolitan Council	1,290	0	1,125	1,125	0	1,500	5,040
Legislative-Citizen Commission on Minnesota Resources	1,054	0	473	473	990	100	3,090
Department of Commerce	2,000	0	0	0	0	0	2,000
Department of Agriculture	0	0	250	250	590	621	1,711
Science Museum of Minnesota	300	0	0	0	0	900	1,200
Pollution Control Agency	425	0	0	0	0	743	1,168
Others ^{Note 2}	<u>0</u>	<u>894</u>	<u>63</u>	<u>60</u>	<u>0</u>	<u>689</u>	<u>1,706</u>
Total	<u>\$25,622</u>	<u>\$25,479</u>	<u>\$25,328</u>	<u>\$25,328</u>	<u>\$34,010</u>	<u>\$34,780</u>	<u>\$170,547</u>

Note 1. While we limited the scope of our audit to Trust Fund expenditures occurring from July 2012 through February 2015, appropriations authorizing those expenditures were available as early as fiscal year 2010.

Note 2. Others include the Department of Health, Minnesota Zoological Garden, University of Minnesota-Duluth, Department of Education, Minnesota State Colleges and Universities, and Legislative Coordinating Commission.

Source: *Laws of Minnesota* 2009, chapter 143; *Laws of Minnesota* 2010, chapter 362; *Laws of Minnesota* 2011, First Special Session, chapter 2, art. 3; *Laws of Minnesota* 2012, chapter 264, art. 4; *Laws of Minnesota* 2013, chapter 52; and *Laws of Minnesota* 2014, chapter 226 and chapter 312, art. 12, sec. 8.

After the Legislature appropriates money for a project, the commission requires the recipient of the appropriation to submit a work plan for the commission's approval before beginning work on the project. The commission continues to monitor the project by reviewing biannual status updates and final reports submitted by the recipient of the appropriation.

Audit Objective, Scope, and Methodology

The objective for our audit of Environment and Natural Resources Trust Fund expenditures made during the period from July 2012, through February 2015, was to answer the following questions:³

- Were the audited entity's internal controls adequate to ensure that it used money from the Environment and Natural Resources Trust Fund appropriations for the intended purposes?

³ Our audit did not assess the quality of the oversight provided by the Legislative-Citizen Commission on Minnesota Resources, examine Trust Fund expenditures made by the commission, determine whether appropriation goals were met, or evaluate the State Board of Investment's practices related to its investment of the trust fund's assets.

- For the items tested, did the audited entity spend money from the Environment and Natural Resources Trust Fund in compliance with the state constitution, state statutes, and appropriation laws?

To meet the audit objective, we gained an understanding of the various finance-related legal provisions, including the state's constitution, statutes, and appropriation laws. We considered the risk of noncompliance with these finance-related legal requirements and the risk of ineligible expenditures occurring without detection. We analyzed the state's accounting data to understand how money from the trust fund had been used, to identify transactions requiring further review because they seemed inappropriate based on the nature of the project, and to identify unusual trends or significant changes in financial operations. Based on the type, dollar amount, and analysis of the expenditures, we selected the following three entities for testing:

- Department of Natural Resources - The department used money from the trust fund for a variety of project types, including grants, land purchases, restorations, and research.⁴
- University of Minnesota - The university used trust fund money mostly for research projects.
- Metropolitan Council - The council used trust fund money solely for grants to other entities for land purchases.⁵

Table 2 identifies the total expenditures recorded on the state's accounting system by entity for fiscal years 2013, 2014, and 2015. Please note that amounts shown for the University of Minnesota and the Metropolitan Council represent the state's payments to those entities, not the entities' subsequent use of the money. The entities we audited are in bold.

⁴ We coordinated the audit work of the Environment and Natural Resources Trust Fund at the Department of Natural Resources and Metropolitan Council with a separate, but similar, audit of the Legacy Amendment - Parks and Trails Fund.

⁵ Ibid.

Table 2
Environment and Natural Resources Trust Fund
Expenditures by Entity
July 2012 through June 2015 ^(Note 1)
By Fiscal Years

<u>Entity</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015¹</u>	<u>Total</u>
Department of Natural Resources	\$16,562,633	\$13,603,188	\$14,705,249	\$44,871,070
University of Minnesota ^(Note 2)	3,882,000	11,767,000	16,940,000	32,589,000
Board of Water and Soil Resources	1,450,632	1,814,704	1,991,758	5,257,094
Metropolitan Council ^(Note 2)	0	2,878,299	0	2,878,299
Legislative Entities ^(Note 3)	393,131	472,731	461,981	1,327,843
Department of Agriculture	185,152	248,169	314,316	747,637
Other Entities ^(Note 4)	307,009	129,440	339,246	775,695
Total Expenditures	\$22,780,557	\$30,913,531	\$34,752,550	\$88,446,638

Note 1. For fiscal year 2015, our audit scope included expenditures (through February 2015) totaling \$23,283,571. The table above shows fiscal year 2015 expenditures through the end of the fiscal year, June 30, 2015.

Note 2. Amounts shown for the University of Minnesota and the Metropolitan Council represent the state's payments to those entities, not the entities' subsequent use of the money. The state paid money to the university in 12 monthly installments, as required by statute. The state provided money to the Metropolitan Council on a reimbursement basis.

Note 3. Legislative entities that used money from the trust fund include the Legislative-Citizen Commission on Minnesota Resources and the Legislative Coordinating Commission.

Note 4. Other entities include departments of Health and Education, Pollution Control Agency, Minnesota State Colleges and Universities, Minnesota Zoological Garden, and Science Museum of Minnesota.

Source: State of Minnesota's accounting system.

To accomplish our objective, we interviewed staff at the entities to gain an understanding of their internal controls over expenditures from the trust fund. We selected a sample of appropriations, grants, and financial transactions and reviewed supporting documentation to determine whether the entities' controls were effective and if the transactions complied with the state constitution, state statutes, appropriation laws, and grant and contract provisions.

For trust fund money spent by the University of Minnesota, we coordinated our work with the university's Office of Internal Audit. We selected the appropriations for the audit and oversaw the design and completion of the audit procedures. We reviewed the Office of Internal Audit's findings and supporting audit documentation.⁶

We conducted the audit in accordance with generally accepted government auditing standards applicable to performance audits. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives.

⁶ Office of Internal Audit, University of Minnesota, *Environment and Natural Resources Trust Fund*, Report 1602, September 2015 (Minneapolis, MN).

Audit Criteria

We used various criteria to evaluate internal controls and compliance. We used, as our criteria to evaluate internal controls, the most recent edition of the internal control standards published by the U.S. Government Accountability Office.⁷ We used various legal resources to assess compliance and whether project costs were allowable, including the following:

- *Minnesota Constitution*, art. XI, sec.14
- *Minnesota Statutes* 2014, chapter 116P
- Laws appropriating money from the Trust Fund
 - *Laws of Minnesota* 2009, chapter 143
 - *Laws of Minnesota* 2010, chapter 362
 - *Laws of Minnesota* 2011, First Special Session, chapter 2, art. 3
 - *Laws of Minnesota* 2012, chapter 264, art. 4
 - *Laws of Minnesota* 2013, chapter 52
 - *Laws of Minnesota* 2014, chapter 226
 - *Laws of Minnesota* 2014, chapter 312, art. 12, sec. 8

Legal Compliance Challenges. Entities using money from the trust fund face challenges to ensure compliance with two specific legal requirements. These two requirements, discussed further below, parallel requirements established for money used from the state's four Legacy funds.⁸ We discussed these compliance challenges in a 2011 program evaluation report about the Legacy funds⁹ and, because of the similarities, we considered our analysis in that report to help us apply the requirements for the trust fund. Understanding these requirements has been challenging primarily because they are subject to conflicting interpretations.

⁷ Comptroller General of the United States, Government Accountability Office, *Standards for Internal Control in the Federal Government*, (Washington D.C., September 2014). The Department of Management and Budget has adopted these federal standards as the internal control framework for the executive branch. In addition, the Metropolitan Council is in the process of adopting these federal standards as its internal control framework.

⁸ The state's four Legacy funds (Outdoor Heritage Fund, Clean Water Fund, Parks and Trails Fund, and Arts and Cultural Heritage Fund) were established by a constitutional amendment in 2008 and are funded through an increase in the state's sales tax.

⁹ Office of the Legislative Auditor, Program Evaluation Division, *The Legacy Amendment*, November 2011, pages 45-58 (St. Paul, MN).

- **Costs must be directly related to and necessary for the purposes of the appropriation.** The Legislature and the Legislative-Citizen Commission on Minnesota Resources have worked to limit the use of trust fund money for administrative costs.¹⁰ The objective has been to use as much trust fund money as possible for costs directly associated with the purposes of an appropriation and to limit the use of trust fund money for administrative costs. However, the line that separates direct costs and administrative costs is not often clear and can be different from project to project.

For the trust fund, the appropriation language limiting administrative costs has evolved over the years as the Legislature has refined its requirements on this complicated issue. In the 2010 and 2011 appropriation laws,¹¹ the Legislature included the following language:

Money appropriated in this section may not be spent on activities unless they are directly related to the specific appropriation and are specified in the approved work program. Money appropriated in this section must not be spent on indirect costs or other institutional overhead charges.¹²

In the 2013 and 2014 appropriation laws, the Legislature expanded this language by adding:

Costs that are directly related to and necessary for an appropriation, including financial services, human resources, information services, rent and utilities, are eligible only if the costs can be clearly justified and individually documented specific to the appropriation's purpose and would not be generated by the recipient but for the receipt of the appropriation. No broad allocations for costs in either dollars or percentages are allowed.¹³

¹⁰ Administrative costs (also sometimes referred to as indirect or overhead costs) are costs associated with the general administration and daily operation of an entity. Examples include human resources, management services, financial services, information technology, and communications.

¹¹ The 2009 trust fund appropriation law was silent on the issue of limiting the use of trust fund money for administrative costs.

¹² *Laws of Minnesota* 2010, chapter 362, sec. 2, subd. 9 and *Laws of Minnesota* 2011, First Special Session, chapter 2, art. 3, sec. 2, subd. 11.

¹³ *Laws of Minnesota* 2013, chapter 52, sec. 2, subd. 9 and *Laws of Minnesota* 2014, chapter 226, sec. 2, subd. 11.

In applying these legal requirements to the entities that used money from the trust fund, we followed *Minnesota Statutes* 2015, 645.46, which provides guidance on interpreting and applying state law. It says, in part:

The object of all interpretation and construction of laws is to ascertain and effectuate the intention of the legislature. Every law shall be construed, if possible, to give effect to all its provisions. When the words of a law in their application to an existing situation are clear and free from all ambiguity, the letter of the law shall not be disregarded under the pretext of pursuing the spirit.¹⁴

We believe the language of this law is clear and “the letter of the law” must be applied. Therefore, we expect entities using money from the trust fund to be able to demonstrate that they used the money for costs that are “directly related to and necessary for” the purposes of the appropriation and that they have complied with statutory administrative cost limitations.

- **Money must be used to supplement not substitute for traditional sources of funding.** Entities must also show that they have complied with a requirement in state statutes that trust fund money “may not be used as a substitute for traditional sources of funding environmental and natural resources activities, but the trust fund shall supplement the traditional sources.”¹⁵

Unfortunately, the meaning of the “supplement not substitute” requirement is difficult to interpret since laws do not define what constitutes “traditional sources of funding.” We examined this question as it relates to use of money from the Legacy funds, in a 2011 program evaluation report.¹⁶ A key question that has not been answered is: How many years must an expense be funded from a particular revenue source for that source to be considered “traditional”?

The lack of clarity in these legal requirements makes it difficult for entities to comply and difficult for OLA to assess whether agencies complied. In our 2011 report related to the Legacy funds, we acknowledged that entities would need to put forth greater effort to justify and document how costs met requirements such as these. We believe that greater effort is what the law requires. Despite the challenges, we assessed entities’ compliance with these requirements during this audit.

¹⁴ *Minnesota Statutes* 2015, 645.16.

¹⁵ *Minnesota Statutes* 2014, 116P.03(a).

¹⁶ Office of the Legislative Auditor, Program Evaluation Division, *The Legacy Amendment*, November 2011, pages 45-53 (St. Paul, MN).

Conclusion

The Metropolitan Council did not have adequate internal controls over monitoring grant recipient use of money from the Environment and Natural Resources Trust Fund appropriations. The projects and grants we tested at the Metropolitan Council generally complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes contained in the state constitution, state statutes, and appropriation laws. However, we found some costs that did not comply with specific legal requirements.

The Department of Natural Resources generally had adequate internal controls to ensure it used money from the Environment and Natural Resources Trust Fund appropriations for the intended purposes; however, the department had several weaknesses in internal controls. In addition, projects and grants we tested at the Department of Natural Resources generally complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes contained in the state constitution, state statutes, and appropriation laws. However, we found some costs that did not comply with specific legal requirements.

The University of Minnesota had adequate internal controls to ensure that it used money from the Environment and Natural Resources Trust Fund appropriations for the intended purposes. In addition, the projects and grants we tested at the University of Minnesota complied with significant finance-related legal requirements and used money from the Environment and Natural Resources Trust Fund appropriations in compliance with the legal purposes contained in the state constitution, state statutes, and appropriation laws. However, the statutory requirement for how the state pays money from the trust fund to the university conflicts with the statutory requirement for investment of money in the trust fund.

The following *Findings and Recommendations* section provides further explanation about the exceptions noted above.

Findings and Recommendations

The Metropolitan Council did not have adequate internal controls and did not sufficiently monitor whether grant recipients used Environment and Natural Resources Trust Fund money in compliance with state laws.¹⁷

Finding 1

The Metropolitan Council did not adequately assess the risks related to the Park Acquisition Opportunity grant program and did not ensure it had adequate internal controls to address those risks. Through the Park Acquisition Opportunity grant program, the Metropolitan Council combined money from the Environment and Natural Resources Trust Fund with proceeds from the sale of the council's general obligation bonds to provide grants to the ten regional park implementing agencies for purchases of land.^{18, 19} The council required regional park implementing agencies to provide a 25 percent local match. Since the Legislature directed trust fund appropriations to the Metropolitan Council, we think the council has the responsibility to monitor the regional park implementing agencies' use of this money.

The council had not identified or assessed the risks related to noncompliance with state laws that could occur by the grant recipient (a regional park implementing agency) and had not developed controls to monitor grant recipients' compliance. The internal control framework being implemented by the council states that management "should identify, analyze, and respond to risks related to achieving its defined objectives"²⁰ The framework also states that management "should design control activities to achieve objectives and respond to risks."²¹

The council had assessed some risks, had many control activities in place, and had performed some activities to monitor the performance and effectiveness of those controls. However, without an adequate assessment of the risks and effective internal controls designed to address those risks over the grant program, the

¹⁷ We had a similar finding related to the Metropolitan Council's grants of money from the Parks and Trails Fund, one of the state's four Legacy funds. See Office of the Legislative Auditor, Financial Audit Division Report 16-04, *Parks and Trails Fund*, issued February 11, 2016, Finding 1.

¹⁸ The Metropolitan Council funds 60 percent of its Park Acquisition Opportunity grant program (about \$3.2 million) with money from the Environment and Natural Resources Trust Fund and 40 percent (or \$2.4 million) with money from the sale of Metropolitan Council bonds.

¹⁹ The ten regional park implementing agencies own and operate regional parks and trails in the Twin Cities Metropolitan Area. The regional park implementing agencies are Anoka County, City of Bloomington, Carver County, Dakota County, Minneapolis Parks & Recreation Board, Ramsey County, City of St. Paul, Scott County, Three Rivers Park District, and Washington County.

²⁰ Comptroller General of the United States, Government Accountability Office, *Standards for Internal Control in the Federal Government*, (Washington D.C., September 2014), page 37.

²¹ *Ibid.*, page 45.

council increased the chance that significant errors or noncompliance could occur without detection through its normal course of operations.

We tested all grants made to the regional park implementing agencies during fiscal years 2012 through 2015. The ten grants awarded \$6 million to six of the regional park implementing agencies; expenditures from these awards totaled about \$5.6 million through February 2015.

The council had the following deficiencies in its monitoring of these grants:

- The council did not have specific language in its grant agreements for some statutory and appropriation requirements related to the use of money from the trust fund.²² For example, the council did not include in the grant agreements the legal requirements for when money from the trust fund is used to acquire an interest in land. State statutes require the grant recipient to report land purchases to the Legislative-Citizen Commission on Minnesota Resources (the commission), record a notice of funding restrictions on the deed held by the county, and prepare a land restoration and management plan.²³ These actions help to ensure the continued use of the property for the purpose for which it was acquired. (Findings 2 and 3 identify specific noncompliance with legal requirements found through our testing.)
- The council did not obtain or review regional park implementing agencies' land appraisals and appraisal reviews to ensure the agencies planned to pay a reasonable price for the land.²⁴ (An appraisal is an opinion about the value of real property; an appraisal review is verification of the appraiser's qualifications and appraisal methods.)

Because the council did not have the information, we obtained from the regional park implementing agencies the appraisals and appraisal reviews related to the land purchases. We had the following concerns about the appraisals we reviewed:

- One appraisal was over three years old by the time the regional park implementing agency purchased the land.
- Another appraisal did not cover the entire acreage included in the land purchase.

²² *Minnesota Statutes* 2014, 116P, and *Laws of Minnesota* 2014, chapter 226.

²³ A notice of funding restrictions is a provision in a deed limiting or prohibiting certain uses of the land. The notice of funding restriction is recorded in the same local government office where the ownership transfer of the land is filed.

²⁴ A similar finding was also included in the Office of the Legislative Auditor Financial Audit Division Report 16-04, *Parks and Trails Fund*, issued February 4, 2016, Finding 1.

- In three cases, regional park implementing agencies paid more for land than the appraised values. Had the council reviewed the appraisals, it could have ensured there were legitimate reasons for the higher costs by requiring the regional park implementing agencies to provide justifications for their purchase prices.
- For eight of the ten land purchases, the regional park implementing agencies did not conduct an appraisal review to ensure the appraiser was qualified and used appropriate appraisal methods.

Legislative-Citizen Commission on Minnesota Resources' staff told us they were unaware that the council was not obtaining and reviewing appraisals or appraisal reviews. They told us they thought this was a fundamental level of oversight expected of the council when it granted money from the trust fund for land purchases.

- The council did not routinely visit regional park implementing agencies for the purpose of monitoring how the agencies administered the council's grants.²⁵ Without monitoring visits, the council did not have assurance, for example, that a regional park implementing agency's internal controls over land acquisitions were adequate, or that it had procedures in place to identify and avoid any conflicts of interest.

For state agencies, the state's Office of Grants Management requires at least one monitoring visit per grant period on all grants over \$50,000 and at least annual monitoring visits of grants over \$250,000.²⁶ While the policy is not applicable to the council, it sets a reasonable standard and expectation that monitoring visits are an important part of the oversight responsibilities of entities that grant public money.

These deficiencies increased the risk that regional park implementing agencies might use grant money inappropriately and not comply with grant agreements and state law. Findings 2 and 3 also identify deficiencies in the council's internal control procedures and specific instances of noncompliance with legal requirements.

Recommendations

- *The Metropolitan Council should clearly document and periodically review its risks and internal control activities related to its grant oversight responsibilities.*

²⁵ A similar finding was also included in the Office of the Legislative Auditor Financial Audit Division Report 16-04, *Parks and Trails Fund*, issued February 4, 2016, Finding 1.

²⁶ Department of Administration, Office of Grants Management, Operating Policy and Procedure Number: 08-10, *Policy on Grant Monitoring*.

- *The Metropolitan Council should include specific applicable legal requirements in its grant agreements with regional park implementing agencies.*
- *The Metropolitan council should develop procedures for reviewing appraisals to ensure regional park implementing agencies obtain current and complete appraisals that support the purchase price when acquiring land with money from the Environment and Natural Resources Trust Fund.*
- *The Metropolitan Council should conduct annual monitoring visits of the regional park implementing agencies.*

Finding 2

Land purchased by a Metropolitan Council grant recipient did not comply with legal requirements prohibiting the use of Environment and Natural Resources Trust Fund money for the purchase of residential structures.

Through its monitoring activities, the Legislative-Citizen Commission on Minnesota Resources questioned a May 2012 land purchase made by a regional park implementing agency with money from the trust fund (received through a grant from the Metropolitan Council.) The commission questioned the purchase (which used \$382,744 of trust fund money) because there were residential structures on the land. The regional park implementing agency allowed a portion of the grant to be used to pay for the removal of the residential structures after the purchase of the property. The appropriation law authorizing the use of trust fund money specifically stated, “This appropriation may not be used for the purchase of residential structures.”²⁷

In May 2014, commission staff sent a letter to the council requesting that it return the trust fund money used for the acquisition. In August 2014, the council sent a letter to the regional park implementing agency requesting the return of the money to comply with the commission staff’s request. When the agency did not return the money, the commission and the council asked the OLA to review whether the purchase was an allowable use of money from the trust fund.

We concluded that the purchase of the parcel containing the residential structures did not comply with the appropriation law and was a misuse of money from the Environment and Natural Resources Trust Fund.

Recommendation

- *The Metropolitan Council should work with the regional park implementing agency to return \$382,744 to the Environment and Natural Resources Trust Fund.*

²⁷ *Laws of Minnesota 2009, chapter 143, sec. 2, subd. 4(c).*

The Metropolitan Council did not ensure its grant recipients complied with a statute requiring entities to record a notice of funding restrictions when purchasing land with money from the Environment and Natural Resources Trust Fund.²⁸

Finding 3

State statutes require entities that acquire an interest in real property with trust fund money to record a notice of funding restrictions in the local government office where the ownership transfer of the land is filed.²⁹ According to the statutes the notice must contain: (1) a legal description of the land, (2) a reference to the underlying funding agreement (i.e., the appropriation language or grant agreement), (3) a reference to the statute, and (4) specific language included in the statute. Land purchased with money from seven of the ten grants we tested did not comply with the statute. For two of the seven grants, the regional park implanting agencies did not record a funding restriction notice. For five of the seven grants, the agencies recorded a notice but did not include a reference to the statute or the language required by the statute.

The notice protects the trust fund's interests; the land cannot be sold without the Legislative-Citizen Commission on Minnesota Resources' approval, and ownership of the land transfers to the state if the land is used in a way other than intended. Without a filed notice, it would be possible for the land to be sold and/or used for unintended purposes.

Recommendation

- *The Metropolitan Council should ensure regional park implementing agencies comply with state statutes requiring the recording of a notice of funding restrictions with the required language.*

The Department of Natural Resources could not show how administrative costs allocated to the Environment and Natural Resources Trust Fund complied with the requirement that all costs must be “directly related to and necessary for” specific projects or activities listed in the appropriation law.³⁰

Finding 4

The Department of Natural Resources developed a methodology to estimate and allocate administrative costs to the Environment and Natural Resources Trust

²⁸ A notice of funding restrictions is a provision in a deed limiting or prohibiting certain uses of the land. The notice of funding restriction is recorded in the same local government office where the ownership transfer of the land is filed.

²⁹ *Minnesota Statutes* 2014, 116P.15 subd. 2(c).

³⁰ We had a similar finding related to the Metropolitan Council's grants of money from the Parks and Trails Fund, one of the state's four Legacy funds. See Office of the Legislative Auditor, Financial Audit Division Report 16-04, *Parks and Trails Fund*, issued February 11, 2016, Finding 2.

Fund appropriations that was generally reasonable; however, the department could not show how this methodology limited the allocation of administrative costs to those that were directly related to and necessary for each specific appropriation.³¹

Over the last couple years the Legislature and the Legislative-Citizen Commission on Minnesota Resources have modified the appropriation language to clarify the “directly related to and necessary for” limitation on the use of trust fund money for administrative costs, adding:

Costs that are directly related to and necessary for an appropriation, including financial services, human resources, information services, rent and utilities, are eligible **only if the costs can be clearly justified and individually documented specific to the appropriation’s purpose and would not be generated by the recipient but for the receipt of the appropriation. No broad allocations for costs in either dollars or percentages are allowed.**³² [Emphasis added.]

In response to the changing language, the department reassessed its allocation methodology every year. Despite the department’s efforts to develop an allocation methodology that appropriately limits administrative costs charged to the trust fund, we believe the department did not achieve compliance.

The department used the following methodologies for its allocations of administrative costs:

- For two appropriations authorized by *Laws of Minnesota* 2011, the department used the same allocation methodology that it used for appropriations from other funds.³³ The department did not analyze individual administrative costs to ensure those costs were directly related to and necessary for the trust fund appropriations. We think the “directly related to and necessary for” language requires the department to analyze and document the direct relationship and necessity of the administrative costs to the specific appropriations. The department did not document how certain administrative costs, totaling \$505,390 for the two projects, met the requirement.

³¹ Administrative costs (also sometimes referred to as indirect or overhead costs) are costs associated with the general administration and daily operation of an entity. Examples include human resources, management services, financial services, information technology, and communications.

³² *Laws of Minnesota* 2013, chapter 52, sec. 2, subd. 9, and *Laws of Minnesota* 2014, chapter 226, sec. 2, subd. 11.

³³ The two appropriations are *Laws of Minnesota* 2011, First Special Session, chapter 2, art. 3, sec. 2, subd. 4(a) and 9(c). These two appropriations did not require commission oversight and submission of a work plan required by *Minnesota Statutes* 2014, 116P.05, subd 2(b).

- For appropriations authorized by *Laws of Minnesota* 2013, the department changed its allocation methodology for trust fund appropriations.³⁴ The department used a methodology that did not allocate administrative costs to appropriations that involved projects that they felt required fewer administrative resources.³⁵ However, for the appropriations to which it did allocate administrative costs, the department used a percentage allocation method. Its methodology used percentages to distribute cost pools to the various operating divisions in proportion to their use of the services.³⁶ The department had not documented its analysis to substantiate how the allocated costs directly benefited and were necessary for each specific appropriation. The law prohibited the use of “broad allocations for costs in either dollars or percentages.”
- For appropriations authorized by *Laws of Minnesota* 2014, the department used different methodologies to allocate division-level administrative costs and department-level administrative costs.³⁷ The allocation of division-level administrative costs continued to follow prior methodology, which continued to have the deficiencies noted in the previous bullet.

The allocation of department-level administrative costs, however, used a new methodology that correlated how a specific appropriation created incremental increases in specific administrative costs (such as human resources, procurement, financial, and computer services). We think the new department-level methodology sufficiently demonstrated how the department would not have generated these administrative costs but for the receipt of the appropriation from the trust fund.

- For 2012 through 2014 grants to recipients named in law, the department received an accompanying appropriation from the trust fund to cover the cost of administering these grants. The department charged costs to these appropriations using a rate that it applied to hours worked by employees to administer the grants. The rate the department developed included some administrative costs that the Legislative-Citizens Commission on Minnesota Resources had categorized as “ineligible unless otherwise authorized”, such as rent, out of state travel, and equipment usage. When

³⁴ *Laws of Minnesota* 2013, chapter 52.

³⁵ Examples of projects that require fewer administrative resources include: legislatively mandated grants (grants where the Legislature selects and specifically names the grant recipient in the appropriation law; the department does not need to go through the request for proposal process), land or easement acquisitions, or single-source contracts (contracts where only one company is available to fulfill the needs of the contract; the department does not need to go through the bidding process).

³⁶ The department is organized into seven divisions, including Land and Minerals, Ecological and Water Resources, Forestry, Parks and Trails, Fish and Wildlife, Enforcement, and Operations Services.

³⁷ *Laws of Minnesota* 2014, chapter 226.

requesting authority for these costs, the department did not adequately identify generally ineligible costs for the commission's specific authorization. Using these rates, the department charged costs totaling \$27,795 to the trust fund.

Department management told us they believe all administrative costs incurred by the department and its divisions are directly related to and necessary for the trust fund appropriations. They assert that the trust fund appropriations benefit from all administrative activities and that the trust fund appropriations should pay their fair share of the costs. Management believes the current allocation methodologies for trust fund appropriations actually cause the trust fund to pay less than its fair share and requires other funds to pay more for administrative costs. We disagree with the Department of Natural Resources' broad assertion because it does not provide the type of detailed analysis or documentation expected to ensure compliance.

In a 2011 report where we examined the "directly related to and necessary for" requirement for money spent from one of the state's Legacy funds, we acknowledged that it might be difficult for organizations to show how indirect costs meet the "directly related to and necessary for" test.³⁸ But, we also emphasized that agencies could not ignore this legal requirement. We acknowledged that justifying the use of money at a detailed level may require additional staff time. But, in our view, that greater level of effort and documentation is what the law requires. We think this expectation also holds true for entities that receive Environment and Natural Resources Trust Fund money. They must be able to show that all costs – including all administrative costs – charged to a trust fund appropriation are "directly related to and necessary for" the specific appropriation they received.

Further, department management stated that their allocation methodologies were reviewed by the Legislative-Citizen Commission on Minnesota Resources. However, we reviewed documentation of communications over several years between the department and the commission detailing the commission's efforts to get a clear explanation and understanding of the department's allocation methodologies and costs included in the rates used for certain appropriations.

Recommendation

- *The Department of Natural Resources should implement cost allocation policies and procedures that ensure that it only uses money from the Environment and Natural Resources Trust Fund for costs that are "directly related to and necessary for" the administration of trust fund projects and would not have been generated "but for the receipt of the appropriation."*

³⁸ Office of the Legislative Auditor, Program Evaluation Division, *The Legacy Amendment*, November 2011 (St. Paul, MN).

The statute governing how the state pays money appropriated from the Environment and Natural Resources Trust Fund to the University of Minnesota is in conflict with the statute governing the investment of trust fund money.

Finding 5

The state pays money appropriated from the trust fund to the University of Minnesota following a statute that requires the state to pay the university 1/12th of the appropriation each month.³⁹ This required payment schedule does not typically correspond to the university's use of the trust fund money, resulting in an accumulation by the university of unspent trust fund money. The university invests the unspent trust fund money along with its other investments, and credits any investment earnings to its overall investment accounts. As of the end of February 2015, the university held about \$17.7 million of unspent trust fund money in its investment accounts.⁴⁰

The statutory requirement governing the investment of the trust fund money states, "*All money earned by the trust fund must be credited to the trust fund.*"⁴¹ We think the state has a duty to reduce the time between when the money leaves the trust fund and when the university spends it, so that earnings to the trust fund can be maximized and added to the trust fund's balance for future appropriation by the Legislature. Alternatively, the university could return to the state income earned through investment of unspent money from the trust fund. These options require change to state statutes.

Recommendation

- *The Legislative-Citizen Commission on Minnesota Resources should consider a statutory change to:*
 - *Modify the state payment schedule for appropriations from the Environment and Natural Resources Trust Fund to the University of Minnesota so that payments more closely match the university's need for the money; or*
 - *Require the university to return to the trust fund any investment earning on unspent trust fund money.*

³⁹ *Minnesota Statutes* 2014, 137.025, subd. 1.

⁴⁰ The university's accumulated unspent trust fund balance has grown because appropriations to the university have increased (\$3.9 million for fiscal year 2013, \$11.8 million for fiscal year 2014, and \$17.7 million for fiscal year 2015) and because the projects for which the trust fund money was provided can span several years.

⁴¹ *Minnesota Statutes* 2014, 116P.04, subd. 1.

LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES

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Susan Thornton, Director

February 5, 2016

Mr. James Nobles
Legislative Auditor
Office of the Legislative Auditor
Rm. 140 Centennial Building
658 Cedar Street
St. Paul, MN 55155

Dear Mr. Nobles,

This letter is in response to the letter and draft report sent to our office on February 1, 2016 from Cecile Ferkul, Deputy Legislative Auditor, regarding the results of the internal controls and compliance audit of the Environment and Natural Resources Trust Fund (ENRTF) for the period of from July 2012 through February 2015.

Regarding Finding 5 and the recommendation that the Legislative-Citizen Commission on Minnesota Resources (LCCMR) should consider a statutory change to "Modify the state payment schedule for appropriations from the Environment and Natural Resources Trust Fund to the University of Minnesota so that payments more closely match the university's need for the money; or Require the university to return to the trust fund any investment earning on unspent trust fund money," it is my responsibility as the Director of the LCCMR to bring this recommendation for a statutory change to the LCCMR for consideration as a recommendation to the MN Legislature in the 2016 legislative session. Minnesota Management and Budget (MMB) is the state agency responsible for the payments from these appropriations. The LCCMR will consult with MMB and the University on the most prudent statutory option to implement this recommendation.

Regarding Findings and Recommendations 1, 2, and 3 pertaining to the Metropolitan Council expenditures; over the past year, upon discovery of noncompliance of the state statutes cited, the staff of the LCCMR have been working with the Metropolitan Council staff to ensure retroactive and future compliance of the cited state statutes by recipients of the funding.

In addition, the LCCMR, after discovering that there had been acquisitions purchased with ENRTF dollars in amounts over 100% of the appraised value, adopted the following language that was incorporated into the 2015 and 2016 session laws applicable to the ENRTF funding appropriations:

"For any acquisition of lands or interest in lands, a recipient of money appropriated under this section shall not agree to pay more than 100 percent of the appraised value for a parcel of land using this money to complete the purchase, in part or in whole, except that up to ten percent above the appraised value may be allowed to complete the purchase, in part or in whole, using this money if permission is received in advance of the purchase from the Legislative-Citizen Commission on Minnesota Resources."

In response to this action by the LCCMR, the Metropolitan Council Parks and Open Space staff in consultation with LCCMR staff and the regional park implementing agencies, proposed a process and criteria to be used by the Council and regional park implementing agencies, to seek such a review by the LCCMR. This proposed process and criteria was presented to the LCCMR and incorporated into the Council work plan documents for the ENRTF.

Jeff Broberg, Sen. Gary Dahms, Sen. Kari Dziedzic, William Faber, Nancy Gibson, Rep. Tom Hackbarth, Bonnie Harper-Lore, John Hoffman, Gary Lamppa, Rep. Denny McNamara, Norman Moody, Rep. John Persell, Sen. David Tomassoni, Rep. Paul Torkelson, Rep. Jean Wagenius, Sen. Torrey Westrom, Della Young

LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES

Page 2

Regarding Finding 4 to the Department of Natural Resources, the LCCMR has and will continue to seek information of the cost allocation methodologies used by the Department.

On behalf of the LCCMR members and staff I want to thank the staff of the Office of the Legislative Auditor in conducting this audit of the Environment and Natural Resources Trust Fund.

Sincerely,

/s/ Susan Thornton

Susan A. Thornton
Director, LCCMR

CC: Cecile Ferkul, Deputy Legislative Auditor
LCCMR Co-Chairs Tomassoni, Persell, and Gibson

February 5, 2016

James Nobles
Legislative Auditor
Office of the Legislative Auditor
Room 140 Centennial Building
658 Cedar Street
Saint Paul, MN 55155-1603

RE: Environment and Natural Resources Trust Fund
Internal Controls and Compliance Audit

Dear Mr. Nobles,

We appreciate the opportunity to review and respond to the Internal Controls and Compliance Audit for the Environment and Natural Resources Trust Fund. We understand our oversight responsibility for Parks funding and have a long established, transparent grant award and approval process through the Metropolitan Parks and Open Space Commission, our Community Development Committee, and the full Metropolitan Council. We acknowledge the recommendations in the Legislative Auditors report strengthen our internal review and control processes.

As noted in the report, the Council uses funding from the Environment and Natural Resources solely for grants to regional parks implementing agencies for land acquisitions.

Finding 1: The Metropolitan Council did not have adequate internal controls and did not sufficiently monitor whether grant recipients used Environment and Natural Resources Trust Fund money in compliance with state laws.

Recommendations:

- *The Metropolitan Council should clearly document and periodically review its risks and internal control activities related to its grant oversight responsibilities.*
- *The Metropolitan Council should include specific applicable legal requirements in its grant agreements with regional park implementing agencies.*
- *The Metropolitan Council should develop procedures for reviewing appraisals to ensure regional park implementing agencies obtain current and complete appraisals that support the purchase price when acquiring land with money from the Environment and Natural Resources Trust Fund.*
- *The Metropolitan Council should conduct annual monitoring visits of the regional park implementing agencies.*

Response:

The Council's Program Evaluation and Audit Department conducts an annual Council-wide risk assessment and presents it to our Audit Committee. This assessment is the result of meetings with management from each of the Council's Divisions. An annual Audit Plan is developed based upon risks identified through this assessment. While each year grant specific internal audits are conducted in accord with our Audit Plan, we will enhance our risk assessment process to include identification and documentation of funding sources, changes in legislation, and staff responsible for grant oversight.

Parks program staff are reviewing and updating standard operating procedures for our parks grant programs with Council's Controller to assure adequate controls are in place and staff are effectively trained on grant oversight roles and responsibilities. For all new grant awards staff will utilize our new grants management system to track and document oversight activities, including appraisal reviews, and an appraisal summary now accompanies every business item recommending award of ENRTF grants. Previously awarded and active grants are also in process of conversion into our grants management system.

While Council staff have frequent contact with regional park implementing agencies at the monthly Metropolitan Parks and Open Space Commission meetings and routine interactions through regularly scheduled meetings and phone conversations, annual site visits focused on monitoring internal controls over grant administration will be incorporated into our overall parks grant program.

Grant agreement templates have been updated to include specific applicable legal requirements and staff are reviewing prior ENRTF grants to confirm compliance with provisions then in effect.

Person(s) Responsible/Expected Completion:

- Arlene Schilling - Director Program Evaluation and Audit – Risk Assessment to be completed in 2016 for our 2017 Audit Plan
- Emmett Mullin - Manager, Parks and Open Space; Marie Henderson - Controller – Review and update parks program standard operating procedures/site visits to be completed during 2016.

Finding 2: Land purchased by a Metropolitan Council grant recipient did not comply with legal requirements prohibiting the use of Environment and Natural Resources Trust Fund money for the purchase of residential structures.

Recommendation:

- *The Metropolitan Council should work with the regional park implementing agency to return \$382,744 to the Environment and Natural Resources Trust Fund.*

Response:

We agree, use of ENRTF grant funds by the regional park implementing agency to pay for removal of residential structures was an improper use and we requested repayment in August, 2014. Given the Legislative Auditor's concurrence of improper use, we will renew our request for the regional park implementing agency to return \$382,744 to the Council to repay ENRTF Fund.

Finding 3: The Metropolitan Council did not ensure its grant recipients complied with a statute requiring entities to record a notice of funding restrictions when purchasing land with money from the Environment and Natural Resource Trust Fund.

Recommendation:

- *The Metropolitan Council should ensure regional park implementing agencies comply with state statutes requiring the recording of notice of funding restrictions with the required language.*

Grant agreement templates have been updated to include specific applicable legal requirements, standard operating procedures are being updated to include confirmation of notice filing by the park implementation agency, and staff are reviewing prior ENRTF grants to confirm compliance with filing provisions then in effect.

Person Responsible/Expected Completion: Emmett Mullin - Manager, Parks and Open Space - June 2016.

Again, thank you for the opportunity to review and respond to the audit findings and recommendations for the Metropolitan Council.

Sincerely,

A handwritten signature in black ink, appearing to read "Mary Bogie".

Mary Bogie
Chief Financial Officer

Minnesota Department of Natural Resources

Office of the Commissioner
500 Lafayette Road • St. Paul, MN • 55155



February 3, 2016

Mr. James Nobles, Legislative Auditor
Office of the Legislative Auditor
Centennial Office Building, Room 140
658 Cedar Street
St. Paul, Minnesota 55155-1603

Dear Auditor Nobles:

RE: OLA Audit Report on Environment and Natural Resources Trust Fund Internal Controls and Compliance Audit, July 2012 through February 2015

Thank you for the opportunity to review and respond to the Office of Legislative Auditor's (OLA) findings and recommendations resulting from the recent audit of the Environment and Natural Resources Trust Fund (ENRTF). We appreciate the professional review conducted by the OLA audit.

The audit identified a number of the challenges state agencies face for funding administrative costs with ENRTF funds. These challenges include analyzing and documenting how costs are directly related to and necessary for the specific appropriation and how the department would not have generated these administrative costs but for the specific appropriation. It is important for the Department of Natural Resources (DNR) to demonstrate these costs as being eligible for funding within the ENRTF appropriations. Not being able to charge for administrative costs can lead to other programs, including programs funded with dedicated funds, paying a disproportionate share of the costs.

We have invested a lot of time and careful thought in creating operational orders, policies and guidelines for the ENRTF and other programs, to ensure fair distribution of administrative costs across all programs. We have been thoughtful and transparent in our approach, working extensively with the Legislative Citizen Commission on Minnesota Resources (LCCMR) to clarify and refine our processes to meet the commission requirements as well as legal requirements. We appreciate the report acknowledging this work and acknowledging that the current allocation methodology for department-wide administrative costs meets requirements of the appropriation.

We have made other changes to address the items outlined in the report regarding cost allocation methodologies used in fiscal years 12 through fiscal year 14, demonstrating our continued efforts to meet the ENRTF appropriation requirements, including:

- DNR is maintaining the formula used for Laws of 2014 for Laws of 2015.
- Beginning with the Laws of 2015 (fiscal year 2016), DNR has discontinued the use of division administration cost allocation.
- Beginning with the Laws of 2015 (fiscal year 2016), DNR has provided additional detail in the documentation on costs for grant administration hourly rates per LCCMR funding guidelines.

The final item outlined in the report was related to a one-time appropriation for operational activities. The appropriation was exempt from Minnesota Statutes 116P.05 Subdivision 2. We interpreted this exemption to allow for us to use our traditional cost allocation formula. If a similar appropriation is enacted in the future, we will work with the LCCMR and the Legislature to ensure clarity in the appropriation language.

The DNR offers the following specific responses regarding the audit finding and recommendation in the audit for the DNR:

Audit Finding

The Department of Natural Resources could not show how the administrative costs allocated to the Environment and Natural Resources Trust Fund complied with the “directly related to and necessary for” specific projects or activities listed in the appropriation law..

Audit Recommendation

The Department of Natural Resources should implement cost allocation policies and procedures that ensure that it uses money from the Environment and Natural Resources Trust Fund for costs that are “directly related to and necessary for” the administration of trust projects and would not have been generated “but for the receipt of the appropriation.”

DNR Response: We agree with the recommendation and consider it resolved. The current allocation formula for department administrative costs has been reviewed and approved by the LCCMR through our presentations and work plans and meets the current appropriation requirements. In addition, we will continue to include detailed costs for grant administration hourly rate costs, complying with the LCCMR funding guidelines. We look forward to the continued conversation with the LCCMR, Legislature, the OLA and MMB as issues arise to ensure clarity of requirements and appropriate implementation.

Sincerely,



Tom Landwehr
Commissioner

Copy: Cecile M. Ferkul, Deputy Legislative Auditor, OLA
Barb Juelich, Chief Financial Officer
Katie Shea, Internal Audit Manager

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and Chief Financial Officer
Treasurer*

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February 5, 2016

James Nobles, Legislative Auditor
State of Minnesota
Office of the Legislative Auditor
658 Cedar Street
Centennial Building 1st Floor
St Paul MN 55155

Re: Audit of the Environment and Natural Resources Trust Fund

Dear Mr. Nobles:

In response to Finding 5 of the above mentioned audit:

“The statute governing how the state pays money appropriated from the Environment and Natural Resources Trust Fund to the University of Minnesota is in conflict with the statute governing the investment of trust fund money.”

The University supports a statutory change to modify the state payment schedule for appropriations from the Environment and Natural Resources Trust Fund to the University of Minnesota (option one under the “recommendations” section of Finding 5). The University will work directly with Minnesota Management and Budget (MMB), and with any other state office that should be involved, to determine the most appropriate state payment schedule. The University has processes in place for handling the receipt of federal and private grants that share the same goal of timing the receipt of revenues with project spending requirements. These processes could be a model for developing the statutory change for the payments referred to in Finding 5, or we could modify them if necessary to accommodate specific requirements of the state. Either way, we believe changes could be accommodated that satisfy the recommendations in the audit. We will contact our budget officer in MMB to discuss next steps.

Sincerely,

Richard H. Pfutzenreuter

Richard H. Pfutzenreuter III
Vice President & Chief Financial Officer

Appendix A

Funding Source Reference:

Environment and Natural Resources Trust Fund

- MN Constitution – Amendment Article 11, Sec. 14
- M.S. 116P

Great Lakes Protection Account

- M.S. 116Q.02

Minnesota Constitution – Article XI, Section 14

Sec. 14. **ENVIRONMENT AND NATURAL RESOURCES FUND.** A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]

CHAPTER 116P

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

116P.01	FINDINGS.	116P.11	AVAILABILITY OF FUNDS FOR DISBURSEMENT.
116P.02	DEFINITIONS.	116P.12	WATER SYSTEM IMPROVEMENT LOAN PROGRAM.
116P.03	TRUST FUND NOT TO SUPPLANT EXISTING FUNDING; APPROPRIATIONS.	116P.13	MINNESOTA FUTURE RESOURCES FUND.
116P.04	TRUST FUND ACCOUNT.	116P.15	LAND ACQUISITION RESTRICTIONS.
116P.05	LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES.	116P.16	REAL PROPERTY INTEREST REPORT.
116P.07	INFORMATION GATHERING.	116P.17	ACQUIRING LANDS OR INTEREST IN LANDS; COMMISSIONER APPROVAL.
116P.08	TRUST FUND EXPENDITURES.	116P.18	LANDS IN PUBLIC DOMAIN.
116P.09	ADMINISTRATION.	116P.19	DONATIONS.
116P.10	ROYALTIES, COPYRIGHTS, PATENTS, AND SALE OF PRODUCTS AND ASSETS.	116P.20	EASEMENT MONITORING AND ENFORCEMENT REQUIREMENTS.

116P.01 FINDINGS.

The legislature finds that all Minnesotans share the responsibility to ensure wise stewardship of the state's environment and natural resources for the benefit of current citizens and future generations. Proper management of the state's environment and natural resources includes and requires foresight, planning, and long-term activities that allow the state to preserve its high quality environment and provides for wise use of its natural resources. The legislature also finds that to undertake such activities properly, a long-term, consistent, and stable source of funding must be provided.

History: 1988 c 690 art 1 s 5

116P.02 DEFINITIONS.

Subdivision 1. **Applicability.** The definitions in this section apply to this chapter.

Subd. 2. [Repealed, 2006 c 243 s 22]

Subd. 3. **Board.** "Board" means the State Board of Investment.

Subd. 4. **Commission.** "Commission" means the Legislative-Citizen Commission on Minnesota Resources.

Subd. 5. **Natural resources.** "Natural resources" includes the outdoor recreation system under section 86A.04 and regional recreation open space systems as defined under section 473.351, subdivision 1.

Subd. 6. **Trust fund.** "Trust fund" means the Minnesota environment and natural resources trust fund established under Minnesota Constitution, article XI, section 14.

History: 1988 c 690 art 1 s 6; 1989 c 335 art 1 s 269; 2003 c 128 art 1 s 146; 2006 c 243 s 2

116P.03 TRUST FUND NOT TO SUPPLANT EXISTING FUNDING; APPROPRIATIONS.

(a) The trust fund may not be used as a substitute for traditional sources of funding environmental and natural resources activities, but the trust fund shall supplement the traditional sources, including those sources used to support the criteria in section 116P.08, subdivision 1. The trust fund must be used primarily to support activities whose benefits become available only over an extended period of time.

(b) The commission must determine the amount of the state budget spent from traditional sources to fund environmental and natural resources activities before and after the trust fund is established and include a comparison of the amount in the report under section 116P.09, subdivision 7.

(c) For the fiscal year beginning July 1, 2007, and each year thereafter, the amount of the environment and natural resources trust fund that is available for appropriation under the terms of the Minnesota Constitution, article XI, section 14, shall be appropriated by law.

(d) The amount appropriated from the environment and natural resources trust fund may be spent only for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. Recommendations made by the commission under this chapter must be consistent with the Minnesota Constitution, article XI, section 14; this chapter; and the strategic plan adopted under section 116P.08, subdivision 3, and must demonstrate a direct benefit to the state's environment and natural resources.

History: 1988 c 690 art 1 s 7; 2006 c 243 s 3

116P.04 TRUST FUND ACCOUNT.

Subdivision 1. **Establishment of account and investment.** A Minnesota environment and natural resources trust fund, under article XI, section 14, of the Minnesota Constitution, is established as an account in the state treasury. The commissioner of management and budget shall credit to the trust fund the amounts authorized under this section and section 116P.10. The State Board of Investment shall ensure that trust fund money is invested under section 11A.24. All money earned by the trust fund must be credited to the trust fund. The principal of the trust fund and any unexpended earnings must be invested and reinvested by the State Board of Investment.

Subd. 2. [Repealed, 1990 c 610 art 1 s 59]

Subd. 3. **Revenue.** Nothing in sections 116P.01 to 116P.12 limits the source of contributions to the trust fund.

Subd. 4. **Gifts and donations.** Gifts and donations, including land or interests in land, may be made to the trust fund. Noncash gifts and donations must be disposed of for cash as soon as the board prudently can maximize the value of the gift or donation. Gifts and donations of marketable securities may be held or be disposed of for cash at the option of the board. The cash receipts of gifts and donations of cash or capital assets and marketable securities disposed of for cash must be credited immediately to the principal of the trust fund. The value of marketable securities at the time the gift or donation is made must be credited to the principal of the trust fund and any earnings from the marketable securities are earnings of the trust fund.

Subd. 5. **Audits required.** The legislative auditor shall audit trust fund expenditures to ensure that the money is spent for the purposes for which the money was appropriated.

History: 1988 c 690 art 1 s 8; 1990 c 610 art 1 s 44; 1991 c 343 s 1; 2006 c 243 s 4; 2009 c 101 art 2 s 109

116P.05 LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES.

Subdivision 1. **Membership.** (a) A Legislative-Citizen Commission on Minnesota Resources of 17 members is created in the legislative branch, consisting of the chairs of the house of representatives and senate committees on environment and natural resources finance or designees appointed for the terms of the

chairs, four members of the senate appointed by the Subcommittee on Committees of the Committee on Rules and Administration, and four members of the house of representatives appointed by the speaker.

At least two members from the senate and two members from the house of representatives must be from the minority caucus. Members are entitled to reimbursement for per diem expenses plus travel expenses incurred in the services of the commission.

Seven citizens are members of the commission, five appointed by the governor, one appointed by the Senate Subcommittee on Committees of the Committee on Rules and Administration, and one appointed by the speaker of the house. The citizen members are selected and recommended to the appointing authorities according to subdivision 1a and must:

- (1) have experience or expertise in the science, policy, or practice of the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources;
- (2) have strong knowledge in the state's environment and natural resource issues around the state; and
- (3) have demonstrated ability to work in a collaborative environment.

(b) Members shall develop procedures to elect a chair that rotates between legislative and citizen members each meeting. A citizen member, a senate member, and a house of representatives member shall serve as chairs. The citizen members, senate members, and house of representatives members must select their respective chairs. The chair shall preside and convene meetings as often as necessary to conduct duties prescribed by this chapter.

(c) Appointed legislative members shall serve on the commission for two-year terms, beginning in January of each odd-numbered year and continuing through the end of December of the next even-numbered year. Appointed citizen members shall serve four-year terms, beginning in January of the first year and continuing through the end of December of the final year. Citizen and legislative members continue to serve until their successors are appointed.

(d) A citizen member may be removed by an appointing authority for cause. Vacancies occurring on the commission shall not affect the authority of the remaining members of the commission to carry out their duties, and vacancies shall be filled for the remainder of the term in the same manner under paragraph (a).

(e) Citizen members are entitled to per diem and reimbursement for expenses incurred in the services of the commission, as provided in section 15.059, subdivision 3.

(f) The governor's appointments are subject to the advice and consent of the senate.

Subd. 1a. **Citizen selection committee.** The governor shall appoint a Trust Fund Citizen Selection Committee of five members who come from different regions of the state and who have knowledge and experience of state environment and natural resource issues.

The duties of the Trust Fund Citizen Selection Committee shall be to:

- (1) identify citizen candidates to be members of the commission as part of the open appointments process under section 15.0597;
- (2) request and review citizen candidate applications to be members of the commission; and
- (3) interview the citizen candidates and recommend an adequate pool of candidates to be selected for commission membership by the governor, the senate, and the house of representatives.

Members are entitled to travel expenses incurred to fulfill their duties under this subdivision as provided in section 15.059, subdivision 6.

Subd. 2. **Duties.** (a) The commission shall recommend an annual or biennial legislative bill for appropriations from the environment and natural resources trust fund and shall adopt a strategic plan as provided in section 116P.08. Approval of the recommended legislative bill requires an affirmative vote of at least 12 members of the commission.

(b) It is a condition of acceptance of the appropriations made from the Minnesota environment and natural resources trust fund, and oil overcharge money under section 4.071, subdivision 2, that the agency or entity receiving the appropriation must submit a work plan and semiannual progress reports in the form determined by the Legislative-Citizen Commission on Minnesota Resources, and comply with applicable reporting requirements under section 116P.16. None of the money provided may be spent unless the commission has approved the pertinent work plan. Modifications to the approved work plan and budget expenditures shall be made through the amendment process established by the commission. The commission shall ensure that the expenditures and outcomes described in the work plan for appropriations funded by the environment and natural resources trust fund are met.

(c) The peer review procedures created under section 116P.08 must also be used to review, comment, and report to the commission on research proposals applying for an appropriation from the oil overcharge money under section 4.071, subdivision 2.

(d) The commission may adopt operating procedures to fulfill its duties under this chapter.

(e) As part of the operating procedures, the commission shall:

(1) ensure that members' expectations are to participate in all meetings related to funding decision recommendations;

(2) recommend adequate funding for increased citizen outreach and communications for trust fund expenditure planning;

(3) allow administrative expenses as part of individual project expenditures based on need;

(4) provide for project outcome evaluation;

(5) keep the grant application, administration, and review process as simple as possible; and

(6) define and emphasize the leveraging of additional sources of money that project proposers should consider when making trust fund proposals.

Subd. 3. [Repealed, 2014 c 226 s 4]

History: 1988 c 690 art 1 s 9; 1989 c 335 art 1 s 269; 1990 c 594 art 1 s 56; 1991 c 254 art 2 s 39; 1991 c 343 s 2; 1993 c 4 s 15; 1994 c 580 s 1; 1997 c 202 art 2 s 36; 2003 c 128 art 1 s 147; 1Sp2005 c 1 art 2 s 135; 2006 c 243 s 5; 2009 c 143 s 3; 1Sp2011 c 2 art 4 s 23; 2013 c 52 s 3,4; 2015 c 76 s 3; 2016 c 186 s 3

116P.06 [Repealed, 2006 c 243 s 22]

116P.07 INFORMATION GATHERING.

The commission may convene public forums or employ other methods to gather information for establishing priorities for funding.

History: 1988 c 690 art 1 s 11; 1991 c 254 art 2 s 41; 1991 c 343 s 4; 2002 c 225 s 2; 2006 c 243 s 6

116P.08 TRUST FUND EXPENDITURES.

Subdivision 1. **Expenditures.** Money in the trust fund may be spent only for:

- (1) the reinvest in Minnesota program as provided in section 84.95, subdivision 2;
- (2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;
- (3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;
- (4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;
- (5) capital projects for the preservation and protection of unique natural resources;
- (6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise may be substantially impaired or destroyed in any area of the state;
- (7) administrative and investment expenses incurred by the State Board of Investment in investing deposits to the trust fund; and
- (8) administrative expenses subject to the limits in section 116P.09.

Subd. 2. **Exceptions.** Money from the trust fund may not be spent for:

- (1) purposes of environmental compensation and liability under chapter 115B and response actions under chapter 115C;
- (2) purposes of municipal water pollution control under the authority of chapters 115 and 116;
- (3) costs associated with the decommissioning of nuclear power plants;
- (4) hazardous waste disposal facilities;
- (5) solid waste disposal facilities; or
- (6) projects or purposes inconsistent with the strategic plan.

Subd. 3. **Strategic plan required.** (a) The commission shall adopt a strategic plan for making expenditures from the trust fund, including identifying the priority areas for funding for the next six years. The strategic plan must be reviewed every two years. The strategic plan must have clearly stated short- and long-term goals and strategies for trust fund expenditures, must provide measurable outcomes for expenditures, and must determine areas of emphasis for funding.

(b) The commission shall consider the long-term strategic plans of agencies with environment and natural resource programs and responsibilities and plans of conservation and environmental organizations during the development and review of the strategic plan.

Subd. 4. **Legislative recommendations.** (a) Funding may be provided only for those projects that meet the categories established in subdivision 1.

(b) The commission must recommend an annual or biennial legislative bill to make appropriations from the trust fund for the purposes provided in subdivision 1. The recommendations must be submitted to the governor for inclusion in the biennial budget and supplemental budget submitted to the legislature.

(c) The commission may recommend regional block grants for a portion of trust fund expenditures to partner with existing regional organizations that have strong citizen involvement, to address unique local needs and capacity, and to leverage all available funding sources for projects.

(d) The commission may recommend the establishment of an emerging issues account in its legislative bill for funding emerging issues, which come up unexpectedly, but which still adhere to the commission's strategic plan, to be approved by the governor after initiation and recommendation by the commission.

(e) Money in the trust fund may not be spent except under an appropriation by law.

Subd. 5. **Public meetings.** (a) Meetings of the commission, committees or subcommittees of the commission, technical advisory committees, and peer reviewers must be open to the public and are subject to chapter 13D. The commission shall attempt to meet throughout various regions of the state during each biennium. For purposes of this subdivision, a meeting occurs when a quorum is present and action is taken regarding a matter within the jurisdiction of the commission, a committee or subcommittee of the commission, a technical advisory committee, or peer reviewers.

(b) For legislative members of the commission, enforcement of this subdivision is governed by section 3.055, subdivision 2. For nonlegislative members of the commission, enforcement of this subdivision is governed by section 13D.06, subdivisions 1 and 2.

Subd. 6. **Peer review.** (a) Research proposals must include a stated purpose directly connected to the trust fund's constitutional mandate, this chapter, and the adopted strategic plan under subdivision 3, a timeline, potential outcomes, and an explanation of the need for the research. All research proposals must be peer reviewed before receiving an appropriation.

(b) In conducting research proposal reviews, the peer reviewers shall:

(1) comment on the methodology proposed and whether it can be expected to yield appropriate and useful information and data; and

(2) comment on the need for the research and about similar existing information available, if any.

(c) Peer reviewers' comments under paragraph (b) must be reported to the commission.

(d) The peer reviewers may review completed research proposals that have received an appropriation and comment and report upon whether the project reached the intended goals.

Subd. 7. **Peer reviewers.** (a) The peer reviewers must be knowledgeable in general research methods in the areas of environment and natural resources.

(b) Compensation of peer reviewers is governed by section 15.059, subdivision 3.

History: 1988 c 690 art 1 s 12; 1989 c 335 art 1 s 178; 1991 c 254 art 2 s 42,43; 1991 c 343 s 5,6; 1994 c 580 s 2,3; 2001 c 7 s 31; 2004 c 284 art 2 s 14; 2006 c 243 s 7-10; 2007 c 30 s 3; 2009 c 143 s 4; 2015 c 76 s 4-6; 2016 c 186 s 4

116P.09 ADMINISTRATION.

Subdivision 1. **Administrative authority.** The commission may appoint legal and other personnel and consultants necessary to carry out functions and duties of the commission. Permanent employees shall be in the unclassified service. In addition, the commission may request staff assistance and data from any other agency of state government as needed for the execution of the responsibilities of the commission and an agency must promptly furnish it.

Subd. 2. **Liaison officers.** The commission may request each department or agency head of all state agencies with a direct interest and responsibility in any phase of environment and natural resources to appoint, and the latter shall appoint for the agency, a liaison officer who shall work closely with the commission and its staff.

Subd. 3. **Appraisal and evaluation.** The commission shall obtain and appraise information available through private organizations and groups, utilizing to the fullest extent possible studies, data, and reports previously prepared or currently in progress by public agencies, private organizations, groups, and others, concerning future trends in the protection, conservation, preservation, and enhancement of the state's air, water, land, forests, fish, wildlife, native vegetation, and other natural resources. Any data compiled by the commission shall be made available to any standing or interim committee of the legislature upon the request of the chair of the respective committee.

Subd. 4. **Personnel.** Persons who are employed by a state agency to work on a project and are paid by an appropriation from the trust fund are in the unclassified civil service, and their continued employment is contingent upon the availability of money from the appropriation. When the appropriation has been spent, their positions must be canceled and the approved complement of the agency reduced accordingly. Part-time employment of persons for a project is authorized. The use of classified employees is authorized when approved as part of the work program required by section 116P.05, subdivision 2, paragraph (c).

Subd. 5. **Administrative expense.** The prorated expenses related to commission administration of the trust fund may not exceed an amount equal to four percent of the amount available for appropriation of the trust fund for the biennium.

Subd. 6. **Conflict of interest.** A commission member, a technical advisory committee member, a peer reviewer, or an employee of the commission may not participate in or vote on a decision of the commission, advisory committee, or peer review relating to an organization in which the member, peer reviewer, or employee has either a direct or indirect personal financial interest. While serving on the commission or technical advisory committee or as a peer reviewer or while an employee of the commission, a person shall avoid any potential conflict of interest.

Subd. 7. **Report required.** The commission shall, by January 15 of each odd-numbered year, submit a report to the governor, the chairs of the house of representatives appropriations and senate finance committees, and the chairs of the house of representatives and senate committees on environment and natural resources. Copies of the report must be available to the public. The report must include:

- (1) a copy of the current strategic plan;

- (2) a description of each project receiving money from the trust fund during the preceding biennium;
- (3) a summary of any research project completed in the preceding biennium;
- (4) recommendations to implement successful projects and programs into a state agency's standard operations;
- (5) to the extent known by the commission, descriptions of the projects anticipated to be supported by the trust fund during the next biennium;
- (6) the source and amount of all revenues collected and distributed by the commission, including all administrative and other expenses;
- (7) a description of the assets and liabilities of the trust fund;
- (8) any findings or recommendations that are deemed proper to assist the legislature in formulating legislation;
- (9) a list of all gifts and donations with a value over \$1,000;
- (10) a comparison of the amounts spent by the state for environment and natural resources activities through the most recent fiscal year; and
- (11) a copy of the most recent compliance audit.

Subd. 8. **Technical advisory committees.** The commission shall make use of available public and private expertise on environment and natural resource issues and may appoint necessary technical advisory committees to review funding proposals and evaluate project outcomes. Compensation for technical advisory committee members is governed by section 15.059, subdivision 6.

History: 1988 c 690 art 1 s 13; 1991 c 254 art 2 s 44-46; 1991 c 343 s 7-10; 1994 c 580 s 4; 2003 c 128 art 1 s 148-150; 2006 c 243 s 11-13; 2013 c 52 s 5; 2015 c 76 s 7,8

116P.10 ROYALTIES, COPYRIGHTS, PATENTS, AND SALE OF PRODUCTS AND ASSETS.

(a) This section applies to projects supported by the trust fund and the oil overcharge money referred to in section 4.071, subdivision 2, each of which is referred to in this section as a "fund."

(b) The fund owns and shall take title to the percentage of a royalty, copyright, or patent resulting from a project supported by the fund equal to the percentage of the project's total funding provided by the fund. Cash receipts resulting from a royalty, copyright, or patent, or the sale of the fund's rights to a royalty, copyright, or patent, must be credited immediately to the principal of the fund. Receipts from Minnesota future resources fund projects must be credited to the trust fund. The commission may include in its legislative bill a recommendation to relinquish the ownership or rights to a royalty, copyright, or patent resulting from a project supported by the fund to the project's proposer when the amount of the original grant or loan, plus interest, has been repaid to the fund.

(c) If a project supported by the fund results in net income from the sale of products or assets developed or acquired by an appropriation from the fund, the appropriation must be repaid to the fund in an amount equal to the percentage of the project's total funding provided by the fund. The commission may include in its legislative bill a recommendation to relinquish the income if a plan is approved for reinvestment of the

income in the project or when the amount of the original grant or loan, plus interest, has been repaid to the fund.

History: 1988 c 690 art 1 s 14; 1993 c 172 s 79; 2003 c 128 art 1 s 151; 2008 c 367 s 3; 2009 c 143 s 5

116P.11 AVAILABILITY OF FUNDS FOR DISBURSEMENT.

(a) The amount annually available from the trust fund for the legislative bill developed by the commission is as defined in the Minnesota Constitution, article XI, section 14.

(b) Any appropriated funds not encumbered in the biennium in which they are appropriated cancel and must be credited to the principal of the trust fund.

History: 1988 c 690 art 1 s 15; 1990 c 594 art 1 s 57; 1990 c 612 s 14; 1992 c 513 art 2 s 27; 1992 c 539 s 10; 1993 c 300 s 10; 1994 c 580 s 5; 1995 c 220 s 111; 2002 c 225 s 3; 2006 c 243 s 14

116P.12 WATER SYSTEM IMPROVEMENT LOAN PROGRAM.

Subdivision 1. **Loans authorized.** (a) If the principal of the trust fund equals or exceeds \$200,000,000, the commission may vote to set aside up to five percent of the principal of the trust fund for water system improvement loans. The purpose of water system improvement loans is to offer below market rate interest loans to local units of government for the purposes of water system improvements.

(b) The interest on a loan shall be calculated on the declining balance at a rate four percentage points below the secondary market yield of one-year United States Treasury bills calculated according to section 549.09, subdivision 1, paragraph (c).

(c) An eligible project must prove that existing federal or state loans or grants have not been adequate.

(d) Payments on the principal and interest of loans under this section must be credited to the trust fund.

(e) Repayment of loans made under this section must be completed within 20 years.

(f) The Minnesota Public Facilities Authority must report to the commission each year on the loan program under this section.

Subd. 2. **Application and administration.** (a) The commission must adopt a procedure for the issuance of the water system improvement loans by the Public Facilities Authority.

(b) The commission also must ensure that the loans are administered according to its fiduciary standards and requirements.

History: 1988 c 690 art 1 s 16

116P.13 MINNESOTA FUTURE RESOURCES FUND.

Subdivision 1. **Revenue sources.** The money in the Minnesota future resources fund consists of revenue credited under section 297F.10, subdivision 1, paragraph (b), clause (1).

Subd. 2. **Interest.** The interest attributable to the investment of the Minnesota future resources fund must be credited to the fund.

Subd. 3. **Revenue purposes.** Revenue in the Minnesota future resources fund may be spent for purposes of natural resources acceleration and outdoor recreation, including but not limited to the development,

maintenance, and operation of the state outdoor recreation system under chapter 86A and regional recreation open space systems as defined under section 473.351, subdivision 1.

History: 1988 c 690 art 1 s 17; 1989 c 335 art 1 s 179; 1997 c 106 art 2 s 4; 2016 c 189 art 3 s 53

NOTE: This section is repealed by Laws 2016, chapter 189, article 3, section 53, effective July 1, 2018, and any funds remaining in the Minnesota future resources fund on July 1, 2018, are transferred to the general fund. Laws 2016, chapter 189, article 3, section 53, the effective date.

116P.14 [Repealed, 1Sp2011 c 2 art 4 s 36]

116P.15 LAND ACQUISITION RESTRICTIONS.

Subdivision 1. **Scope.** A recipient of an appropriation from the trust fund or the Minnesota future resources fund who acquires an interest in real property with the appropriation must comply with this section. For the purposes of this section, "interest in real property" includes, but is not limited to, an easement or fee title to property.

Subd. 2. **Restrictions; modification procedure.** (a) An interest in real property acquired with an appropriation from the trust fund or the Minnesota future resources fund must be used in perpetuity or for the specific term of an easement interest for the purpose for which the appropriation was made. The ownership of the interest in real property transfers to the state if: (1) the holder of the interest in real property fails to comply with the terms and conditions of the grant agreement or work plan; or (2) restrictions are placed on the land that preclude its use for the intended purpose as specified in the appropriation.

(b) A recipient of funding who acquires an interest in real property subject to this section may not alter the intended use of the interest in real property or convey any interest in the real property acquired with the appropriation without the prior review and approval of the commission or its successor. The commission shall notify the chairs and ranking minority members of the legislative committees and divisions with jurisdiction over the trust fund or Minnesota future resources fund at least 15 business days before approval under this paragraph. The commission shall establish procedures to review requests from recipients to alter the use of or convey an interest in real property. These procedures shall allow for the replacement of the interest in real property with another interest in real property meeting the following criteria:

(1) the interest must be at least equal in fair market value, as certified by the commissioner of natural resources, to the interest being replaced; and

(2) the interest must be in a reasonably equivalent location, and have a reasonably equivalent useful conservation purpose compared to the interest being replaced, taking into consideration all effects from fragmentation of the whole habitat.

(c) A recipient of funding who acquires an interest in real property under paragraph (a) must separately record a notice of funding restrictions in the appropriate local government office where the conveyance of the interest in real property is filed. The notice of funding agreement must contain:

- (1) a legal description of the interest in real property covered by the funding agreement;
- (2) a reference to the underlying funding agreement;
- (3) a reference to this section; and
- (4) the following statement:

"This interest in real property shall be administered in accordance with the terms, conditions, and purposes of the grant agreement controlling the acquisition of the property. The interest in real property, or any portion of the interest in real property, shall not be sold, transferred, pledged, or otherwise disposed of or further encumbered without obtaining the prior written approval of the Legislative-Citizen Commission on Minnesota Resources or its successor. The ownership of the interest in real property transfers to the state if: (1) the holder of the interest in real property fails to comply with the terms and conditions of the grant agreement or work plan; or (2) restrictions are placed on the land that preclude its use for the intended purpose as specified in the appropriation."

History: *1Sp2001 c 2 s 141; 2002 c 225 s 4; 2006 c 243 s 21; 2013 c 52 s 6*

116P.16 REAL PROPERTY INTEREST REPORT.

By December 1 each year, a recipient of an appropriation from the trust fund, that is used for the acquisition of an interest in real property, including, but not limited to, an easement or fee title, must submit annual reports on the status of the real property to the Legislative-Citizen Commission on Minnesota Resources or its successor in a form determined by the commission. The responsibility for reporting under this section may be transferred by the recipient of the appropriation to another person who holds the interest in the real property. To complete the transfer of reporting responsibility, the recipient of the appropriation must:

- (1) inform the person to whom the responsibility is transferred of that person's reporting responsibility;
- (2) inform the person to whom the responsibility is transferred of the property restrictions under section 116P.15; and
- (3) provide written notice to the commission of the transfer of reporting responsibility, including contact information for the person to whom the responsibility is transferred.

After the transfer, the person who holds the interest in the real property is responsible for reporting requirements under this section.

History: *1Sp2005 c 1 art 2 s 136; 2006 c 243 s 21; 2013 c 52 s 7*

116P.17 ACQUIRING LANDS OR INTEREST IN LANDS; COMMISSIONER APPROVAL.

Subdivision 1. **Commissioner approval.** (a) A recipient of an appropriation from the trust fund who acquires an interest in real property must receive written approval from the commissioner of natural resources prior to the acquisition, if the interest is acquired in whole or in part with the appropriation. A recipient must request the commissioner's approval at least ten business days before the proposed acquisition. When a recipient requests approval under this subdivision, the recipient must simultaneously submit the same information to the commission. Conservation easements to be held by the Board of Water and Soil Resources and acquisitions specifically identified in appropriation laws are not subject to commissioner approval under this section.

- (b) The commissioner shall approve acquisitions under this section only when the interest in real property:
 - (1) is identified as a high priority by the commissioner and meets the objectives and criteria identified in the applicable acquisition plan for the intended management status of the property; or
 - (2) is otherwise identified by the commissioner as a priority for state financing.

Subd. 2. **Value assessment.** At least ten business days prior to acquiring an interest in real property with an appropriation from the trust fund, a recipient of an appropriation must submit the most recent tax assessed value and most recent tax statement of the real property and the amount the recipient plans to offer for the interest in real property to the commission and the commissioner of natural resources. Conservation easements to be held by the Board of Water and Soil Resources are not subject to the requirements of this section. The board shall keep a record of the tax assessed value of the real property at the time of acquisition and the most recent tax statement.

History: 2010 c 362 s 3; 2013 c 52 s 8; 2014 c 226 s 3

116P.18 LANDS IN PUBLIC DOMAIN.

Money appropriated from the trust fund must not be used to purchase any land in fee title or a permanent conservation easement if the land in question is fully or partially owned by the state or a political subdivision of the state or was acquired fully or partially with state money, unless:

(1) the purchase creates additional direct benefit to the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources; and

(2) the purchase is approved, prior to the acquisition, by an affirmative vote of at least 12 members of the commission.

History: 2013 c 52 s 9

116P.19 DONATIONS.

A recipient of money from the trust fund must not accept a monetary donation or payment from an owner of land that is acquired in fee in whole or in part with an appropriation from the trust fund that exceeds the documented expenses that are directly related to and necessary for activities specified in the work plan approved by the commission, unless expressly approved by the commission in the work plan. This section does not apply to:

(1) donations that are not connected with the acquisition transaction; or

(2) bargain sales, as defined by Code of Federal Regulations, title 26, section 1.1011-2, provided that the purchase price reimbursed by the state does not exceed the purchase price paid by the recipient.

History: 2016 c 186 s 5

116P.20 EASEMENT MONITORING AND ENFORCEMENT REQUIREMENTS.

A recipient of money appropriated from the trust fund for easement monitoring and enforcement may spend the money only on activities included in an easement monitoring and enforcement plan contained within the work plan. Money received for monitoring and enforcement, including earnings on the money received, must be kept in a monitoring and enforcement fund held by the recipient and dedicated to monitoring and enforcing conservation easements in Minnesota. A recipient of an appropriation for easement monitoring and enforcement must, within 120 days after the close of the recipient's fiscal year, provide an annual financial report to the commission or the commission's successor on the easement monitoring and enforcement fund as specified in the work plan. Money appropriated from the trust fund for monitoring and enforcement of easements and earnings on the money appropriated revert to the state if:

(1) the easement transfers to the state;

(2) the recipient fails to file an annual financial report and then fails to cure the default within 30 days of notification of the default by the state; or

(3) the recipient fails to comply with the terms of the monitoring and enforcement plan contained within the work plan and fails to cure the default within 90 days of notification of the default by the state.

History: *2016 c 186 s 6*

116Q.02 STATE RECEIPTS FROM FUND.

Subdivision 1. **Great Lakes protection account.** Any money received by the state from the Great Lakes protection fund, whether in the form of annual earnings or otherwise, must be deposited in the state treasury and credited to a special Great Lakes protection account. Money in the account must be spent only as specifically appropriated by law for protecting water quality in the Great Lakes. Approved purposes include, but are not limited to, supplementing in a stable and predictable manner state and federal commitments to Great Lakes water quality programs by providing grants to finance projects that advance the goals of the regional Great Lakes toxic substances control agreement and the binational Great Lakes water quality agreement.

Subd. 2. **LCCMR review.** The legislature intends not to appropriate money from the Great Lakes protection account until projects have been reviewed and recommended by the Legislative-Citizen Commission on Minnesota Resources. A work plan must be prepared for each project for review by the commission. The commission must recommend specific projects to the legislature.

History: 1990 c 594 art 1 s 59; 2006 c 243 s 21

