LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES
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Susan Thornton, Director

January 16, 2009

Governor Tim Pawlenty
Secretary of the Senate – Legislative, Peter Wattson
Secretary of the Senate – Administrative, JoAnne Zoff
Chief Clerk of the House, Albin A Mathiowetz
Chair, Senate Finance Committee, Senator Richard Cohen
Chair, Senate Environment and Natural Resources, Senator Satveer Chaudhary
Chair, Senate Environment, Energy and Natural Resources Budget Division, Senator Ellen Anderson
Chair, House Ways and Means, Representative Loren Solberg
Chair, House Finance, Representative Lyndon Carlson
Chair, House Environment Policy and Oversight, Representative Kent Eken
Chair, House Environment and Natural Resources Finance Division, Representative Jean Wagenius
Chair, House Cultural and Outdoor Resources Finance Division, Representative Mary Murphy
Legislative Reference Library (2 copies)

Dear Governor Pawlenty and Legislative Chairs:

Transmitted herewith is the biennial report as required in M.S. 116P.09, Subd. 7 of the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

The LCCMR acted on portions of the Biennial Report on January 9, 2009. The Commission finalized its funding recommendations, six-year strategic plan and 2009 Biennial Report on January 16, 2009. The slight change in schedule in the adoption of the Biennial Report was due to the wish of the Commission to carefully review their 2009 recommendations to ensure that these natural resource appropriations provide a positive impact and stimulus to Minnesota's economy.

This report covers LCCMR actions from Jan. 15, 2007 (date of the previous biennial report) to January 16, 2009 including summaries of past funding accomplishments.

There is $25,622,000 available for expenditure in each year of the FY10-11 biennium from the Environment and Natural Resources Trust Fund (the Trust Fund). The LCCMR is to make annual funding recommendations to the Legislature from the Trust Fund. In addition to recommendations from the Trust Fund, $400,000 is recommended from Federal Land and Water Conservation Funds (LAWCON) M.S. 116P.14 and $66,000 is recommended from the Great Lakes Protection Account (GLPA) M.S. 116Q.02 in FY2010.

The FY2010 recommendations were made using a two step process. The first step was completed on December 10, 2008 when a list of projects and recommended funding levels were adopted by the LCCMR with a vote of 13-2. The second step is the approval of the legislative bill for funding recommendations. The LCCMR approved the legislative bill with an 11-2 vote, representing a super majority of seated commission members. However, it was not adopted with the statutorily required 12 votes (MS 116P.05 Subd. 2 states "Approval of the recommended legislative bill requires an affirmative vote of at least 12 members of the commission"). At the time of the January 16, 2009 meeting, the Commission had only 14 members. There were three vacancies: two House of Representative members from the minority party and one non-legislative Governor appointee.

The list of projects and recommended funding levels adopted on December 10, 2008 is provided in "Section V. Recommendations."

The LCCMR will be making a funding recommendation to the Legislature for FY2011 expenditure in January 2010.

We would like to call your attention the executive summary and list of recommendations from the recently completed *Statewide Conservation and Preservation Plan*. This plan was prepared by the University of Minnesota Institute on the Environment with support from the Trust Fund and can be found as part of the LCCMR Strategic Plan, located in Section I of the biennial report.

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,

Susan Thornton, Director
On behalf of the LCCMR

2007-2008
Biennial Report
Overview

January 15, 2009

LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR)

Special points of interest:

- 2007-2008 was the first biennium following reorganization into a commission of legislators and citizens.
- $46.3 million was recommended and approved to go toward 143 natural resources projects around the state (ML 2007, ML 2008).
- For FY 2010, an additional $26.1 is being recommended to fund 66 projects around the state.
- LCCMR heard from numerous public and private sector natural resources experts and visited natural resources sites around the state.

Inside

Overview: January 1, 2007—December 31, 2008

The period between January 1, 2007 and December 31, 2008 was the first biennium since what was formerly the Legislative Commission on Minnesota Resources (LCMR) was reorganized into the Legislative-Citizen Commission on Minnesota Resources (LCCMR) with the addition of citizen members to the commission. During this period, the LCCMR:

- Issued two Requests for Proposals (RFP) to conduct their selection process for funding recommendations to the 2008 Legislature and 2009 Legislature (the process for recommendations to the 2007 Legislature was conducted prior to January 1, 2007).
- Submitted and received passage of two funding recommendations bills—one each to the 2007 Legislature and 2008 Legislature—providing $46.3 million to 143 natural resources projects around the state (the recommendations bill to the 2009 Legislature was submitted after December 31, 2008).
- Developed a 6-year strategic plan for the Environment and Natural Resources Trust Fund.
- Funded and received the Statewide Conservation and Preservation Plan.

Prickly pear cacti growing on rare rock outcrop near Flora Township, Renville County, MN—LCCMR site visit, 07/11/07.

- Visited natural resources sites around the state.
- Gathered public input and heard from numerous natural resources experts from both the public and private sector.
- Received final reports from a total of 95 completed projects begun in 2003 (2), 2005 (86), 2006 (6), and 2007 (1).
- Continued support for activities protecting and enhancing Minnesota's natural resources and providing benefit over an extended period of time.

LCCMR Process

The LCCMR makes annual 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 year a Request for Proposals (RFP) is issued for selected funding priorities based on a 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 natural resources projects with a distinct public benefit.

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.

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 program approved, provide ongoing project updates, and deliver a final report upon project completion.

In response to the three RFPs issued for 2007, 2008, and 2009, a total of 428 proposals requesting a combined $264.6 million were received and, from those, a total of 209 projects were recommended for some portion of the $72.4 million available.

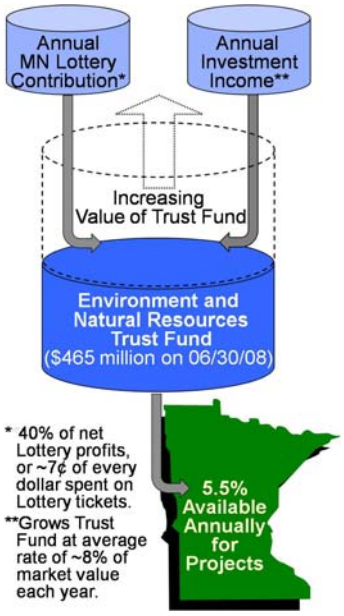

Figure: Inputs and Expenditures from the Environment and Natural Resources Trust Fund.

2009: Project Recommendations (to begin July 1, 2009)

Approximately $26.1 million is being recommended to fund 66 individual projects around the state to begin July 1, 2009.

Natural Resource Inventory and Planning: ~$7.9 million to allow for efforts to obtain critical information and guide relevant decisions and efforts over time. Examples include the MN County Biological Survey, MN County Geologic Atlas program, MN Soil Survey, inventorying of restorable wetlands in MN, mapping and measurement of springsheds, identification and prioritization of critical lands, and plans for conservation and natural resource management.

Land and Habitat Acquisition: ~$9 million to allow for a combination of fee-title and easement acquisition of ~2,000 acres of land and habitat to protect forests, wetlands, shoreline, prairie, and other habitat for both human and animal benefit.

Land and Habitat Restoration: ~$2.2 million to allow for restoration activities—including soil preparation, native vegetation installation, structural improvements, and exotic and invasive species removal—to be performed on ~5,100 acres.

Natural Resource Research and Analysis: ~$3.1 million to allow for efforts to advance our knowledge and provide recommendations for addressing problems relating to ballast water, endocrine disruptors, invasive species, artificial drainage, energy production, climate change, and resource management.

Environmental Education and Outreach: ~$2.5 million to allow for efforts to assist communities with local conservation efforts and develop and pilot programs for increasing residential energy efficiency statewide.

Administration: ~$1.4 million for FY 2010-2011 LCCMR administration ($1,254,000) and DNR project contract management ($158,000).

During the 2007-2008 biennium, funding was provided to 143 projects around the state protecting Minnesota's air, land, water, fish, wildlife, and other natural resources.

2008: Projects Funded (MN Laws 2008, Chapter 367, Section 2)

Approximately $23.4 million was appropriated to 72 individual projects around the state.

Land Acquisition: ~$12 million is allowing for a combination of fee-title and easement acquisition of ~3,400 acres of land to protect forests, wetlands, and other habitat for human and animal benefit.

Land Restoration: ~$2.5 million is allowing for restoration activities—including soil preparation, native vegetation installation, and exotic and invasive species removal—to be performed on ~12,900 acres.

Natural Resource Planning, Inventory, and Analysis: ~$5.7 million is allowing for efforts providing planning, inventory, and/or analysis of natural resources to obtain critical information and guide relevant decisions and efforts over time. Examples include the MN Soil Survey, MN County Biological Survey, and MN County Geologic Atlas program.

Natural Resource Research: ~$2 million is allowing for research advancing our knowledge and providing recommendations to address issues in the areas of climate change, energy production, wildlife and habitat, and water resources.

Environmental Education and Outreach: ~$1.2 million is allowing for environmental education and outreach efforts to foster increased citizen involvement in key environmental issues and facilitate better communication and understanding in natural resource planning, protection, and management.

Sugar Hills Forest Legacy property near Grand Rapids, MN—LCCMR site visit, 06/13/07.

2007: Projects Funded (MN Laws 2007, Chapter 30, Section 2)

Approximately $22.9 million was appropriated to 71 individual projects around the state.

Land Acquisition: ~$12.7 million is allowing for a combination of fee-title and easement acquisition of ~10,400 to protect forests, prairies, wetlands and other habitat for human and animal benefit.

Land Restoration: ~$1.8 million is allowing for restoration activities—including soil preparation, native vegetation installation, and exotic and invasive species removal—to be performed on 6,200 acres.

Natural Resource Inventory and Analysis: ~$4.1 million is allowing for inventory and analysis of natural resources to obtain critical information and guide relevant decisions and efforts over time.

Natural Resource Research: ~$3 million is allowing for research advancing our knowledge and providing recommendations to address issues in the areas of invasive species, water resources, and energy.

Administration: ~$1.3 million for FY 2008-2009 LCCMR administration ($1,278,000) and DNR project contract management ($73,000).

Projects Completed: January 1, 2007—December 31, 2008

Between January 1, 2007 and December 31, 2009 a total of 95 projects funded through the LCCMR process reached completion. The majority of these were projects begun in 2005 and 2006.

Major accomplishments resulting from the projects completed include:

- Foundational natural resource data acquired pertaining to soils, species distribution, ecology, and land cover around the state.
- Expansion of parks and trails around the state by nearly 3,000 acres.
- Protection of more than 6,000 acres of habitat through fee-title and easement acquisition.
- Habitat restoration activities performed on more than 7,500 acres.
- Research and analysis furthering goals for invasive species control, water quality, and renewable energy.
- More than 160 sub-grants provided to facilitate local conservation and outdoor recreation efforts around the state.
- Planning and outreach efforts on sustainable natural resource uses and practices in the areas of energy, recreation, working lands, and water resources.

Weaver Bottoms on Mississippi River near Weaver, MN—LCCMR site visit ,09/16/08.

Highlights of Projects Completed or Underway

Statewide Conservation and Preservation Plan *[ML 2006: completed]:* Collaborative public/private effort between more than 125 experts that evaluated Minnesota's natural resources, identified key issues affecting them, and made recommendations for long-term strategies to conserve and protect them.

MN County Biological Survey *[ML 2005: completed; ML 2007, ML 2008: underway]:* Ongoing, county-by-county effort to identify significant natural areas and to collect and interpret data on the distribution and ecology of plants and animals throughout the state.

MN Soil Survey *[ML 2005: completed; ML 2007, ML 2008: underway]:* Ongoing, county-by-county analysis and mapping of the state's soils providing critical data for protecting and managing Minnesota habit, wetlands, and water resources.

Control of Common Carp *[ML 2005, ML 2008: underway]:* Breakthrough research into new and better options for controlling one of the most damaging invasive fish species in Minnesota because of its effects on water quality in lakes and rivers.

Metro Conservation Corridors (MeCC) and Minnesota Habitat Conservation Partnership (HCP) *[ML 2005: completed; ML 2007, ML 2008: underway]:* Partnerships of conservation organizations in the metro area and outstate that combine efforts to restore, enhance, and conserve critical land and habitat around the state.

MN County Geologic Atlas *[ML 2007, ML 2008: underway]:* Ongoing, county-by-county effort to map the location, size, boundaries, and vulnerability of the state's groundwater to support wise use and protection of groundwater.

Perennial Biofuels Research *[ML 2007, ML 2008]:* Innovative research into the ability of perennial plants to provide raw material for bioenergy while simultaneously providing wildlife habitat, pollutant capture, and greenhouse gas reduction.

Parks, Trails, and Open Space *[ML 2005: completed; ML 2007, ML 2008: underway]:* Numerous, ongoing efforts expanding state and local outdoor recreation opportunities throughout the state.

The LCCMR follows a mission of providing long-term secure support for activities whose benefits are realized only over an extended period of time.

LCCMR: 2009-2010 and Beyond

- In addition to recommendations currently before the 2009 Legislature, the LCCMR will continue its annual funding recommendations process, including recommendations to be made to the 2010 Legislature.
- In response to the recently passed Clean Water, Land, and Legacy Amendment, the LCCMR will give consideration to the unique and strategic role it can play in the protection and enhancement of Minnesota's natural resources and the ways in which its future activities can best complement and assist with initiatives to be supported by these new funds.
- The LCCMR will continue to use the Statewide Conservation and Preservation Plan as a "living document" and will continue support for efforts expanding, adapting, updating, and enhancing the plan.
- Public outreach on behalf of the Environment and Natural Resources Trust Fund will be expanded with the launch of a public-oriented website featuring information and education about projects funded and benefits provided to Minnesota by way of the Trust Fund.

View from Pondview Trail in Sibley State Park near New London, MN—LCCMR site visit, 07/10/07.

Legislative-Citizen Commission
on Minnesota Resources (LCCMR)

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LCCMR Staff

Susan Thornton, Director
Shelley Shreffler, Assistant Director
Michael McDonough, Manager Research and Planning
Mike Banker, Communications/Outreach Manager
Diana Griffith, Commission Assistant

About LCCMR

The LCCMR is made up of 17 members (5 Senators, 5 Representatives, 5 citizens appointed by the governor, and one citizen appointed by each the Senate and the House). The function of the LCCMR (formerly LCMR) 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. These projects help maintain and enhance Minnesota's environment and natural resources. The LCCMR developed from a program initiated in 1963. Since 1963, over $600 million has been appropriated to more than 1,250 projects recommended by the Commission to protect and enhance Minnesota's environment and natural resources.

Commission Members (Jan 1, 2007—Dec 31, 2008)

Sen. Ellen Anderson
Alfred Berner
Jeff Broberg
Rep. Lyndon Carlson
Sen. Satveer Chaudhary
Rep. Ron Erhardt
Sen. Dennis Frederickson
Nancy Gibson
David Hartwell
John Herman
John Hunt
Mary Mueller
Sen. Pat Pariseau
Rep. Tom Rukavina,
Rep. Kathy Tingelstad
Sen. Jim Vickerman
Rep. Jean Wagenius

Information Gathering: January 1, 2007—December 31, 2008

Over the past two years, the LCCMR engaged in numerous activities that informed its strategic planning, the priorities of its RFPs, and the projects it recommended for funding.

Natural resource sites around the state were visited:

- 2007 included a visit to northeastern MN to examine issues surrounding sustainable forest management and forest easements; a visit to western MN to examine issues pertaining to prairies, shallow lake ecology, alternative energy, and conservation easements.
- 2008 included a visit to north central MN to examine issues relating to peatland ecology, climate change, forestry, outdoor recreation, and shoreland management; a visit to southeastern MN to learn more about Mississippi River management, prairie and forest protection, and groundwater movement, contamination, and use; visits to multiple metro area locations to gather information on issues including stream restoration and bioenergy.

Seminars and presentations by experts were heard:

- 2007 included topics pertaining to natural resources data, invasive species, forest fragmentation, and native prairies.
- 2008 included topics pertaining to land use practices, transportation, climate change, invasive species, land and aquatic habitat, and energy.

Public input was gathered through:

- Online public survey pertaining to prioritization of Environment and Natural Resources Trust Fund expenditures.
- Participation in forums for gathering public input on the Statewide Conservation and Preservation Plan.
- Participation in a workshop that brought legislators, state agency representatives, scientists, and citizens from around the state together with LCCMR members to think strategically about the future of MN.

LCCMR members talking with Mike Carroll and Kent Skaar of DNR at Shingobee Island near Walker, MN—LCCMR site visit, 08/13/08.

Legislative-Citizen Commission on Minnesota Resources

Biennial Report
January 16, 2009

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, 2007 – January 1, 2009

REPRESENTATIVES	SENATORS	APPOINTED NON-LEGISLATIVE CITIZENS
Rep. Lyndon Carlson	Sen. Ellen Anderson	Alfred Berner, Gov. appt. *(term ends – 1/5/2009)*
Rep. Ron Erhardt *(term ends – 1/5/2009)*	Sen. Satveer Chaudhary	Jeff Broberg, House appt. *(term ends – 1/4/2010)*
Rep. Tom Rukavina	Sen. Dennis Frederickson*	Nancy Gibson*, Gov. appt. *(term ends – 1/2/2012)*
Rep. Kathy Tingelstad* *(term ends – 1/5/2009)*	Sen. Pat Pariseau	David Hartwell*, Gov. appt. *(resigned as of 1/3/2009)*
		John Herman, Senate appt. *(term ends – 1/4/2010)*
Rep. Jean Wagenius*	Sen. Jim Vickerman*	John Hunt, Gov. appt. *(term ends – 1/5/2009)*
		Mary Mueller, Gov. appt. *(term ends – 1/4/2010)*

*Denotes Executive Committee Members

LCCMR Staff

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Shelley Shreffler, Assistant Director
Michael McDonough, Manager Research and Planning
Mike Banker, Communications/Outreach Manager and 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 16, 2009

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"a copy of the current strategic plan…"

A. Six Year Strategic Plan – Adopted January 16, 2009

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- Funding Priorities adopted June 26, 2007 for FY2009
- Funding priorities adopted June 11, 2008 and July 18, 2008 for FY2010
- Application Process

LEGISLATIVE-CITIZEN COMMISSION

ON

MINNESOTA RESOURCES
(LCCMR)

Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund

Adopted
January 16, 2009

Sen. Ellen Anderson, Al Berner, Jeff Broberg, Rep. Lyndon Carlson, Sen. Satveer Chaudhary, Sen. Dennis Frederickson, Nancy Gibson, John Herman, John Hunt, Mary Mueller, Rep. Tom Rukavina, Sen. Pat Pariseau, Sen. Jim Vickerman, Rep. Jean Wagenius

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I. Trust Fund Vision and Mission Statements

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 for future generations. The 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 both the bountiful and the 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.

Trust Fund Mission Statement

The mission of the 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.

Future Funding Focus Areas

In implementing the Six-Year Strategic Plan, the Commission will identify annual focus areas for funding through the RFP process. In selecting the areas of funding focus, the LCCMR will maintain a continuing awareness of issues identified by the Statewide Conservation and Preservation Plan developed by the University of Minnesota, Institute on the Environment, public input, the Commission's evaluation of natural resource issues, and major funding initiatives identified by the MN legislature.

II. Background

MN Constitution Art. XI, 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]

Minnesota Statutes 2008, Chapter 116P.02

116P.02 Definitions

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.

Minnesota Statutes 2008, Chapter 86A

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."

Minnesota Statutes 2008, Chapter 473

473.351 METROPOLITAN AREA REGIONAL PARKS FUNDING
Subd. 1.Definitions.

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

Minnesota Statutes 2008, Chapter 116P.08

116P.08 Trust fund expenditures; exceptions; plans

Subd. 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.

III. Six-year Strategic Plan for the Environment and Natural Resources Trust Fund

A. PROCESS FOR DEVELOPMENT OF THE SIX-YEAR STRATEGIC PLAN -- as required in M.S. 116P.08, Subd. 3

The Six-Year Strategic Plan is to guide the work and process used by the LCCMR in making recommendations for Trust Fund expenditures. Specifically, the Six-Year Strategic Plan, as required by statute, is to provide short and long-term goals and strategies for the Trust Fund expenditures, require measurable outcomes for the expenditures, and identify areas of emphasis for funding.

In developing the Six-Year Strategic Plan, the LCCMR used the Statewide Conservation and Preservation Plan, developed with financial support from the Environment and Natural Resources Trust Fund by the University of Minnesota Institute on the Environment, along with information gathered during 2007 and 2008 natural resource presentations and site visits. The LCCMR continues to request information from technical experts, citizens, agencies, local units of government, private, and nonprofit organizations to assist it in identifying the most pressing natural resources issues facing Minnesota and the opportunities to address them.

The LCCMR will continue to use the Statewide Conservation and Preservation Plan as a guide in developing Requests for Proposals (RFPs).

B. SUMMARY OF KEY NATURAL RESOURCE ISSUES AND STRATEGIC FRAMEWORK USED TO IDENTIFY STRATEGIC PLAN GOALS

Summary of Key Natural Resource Issues identified in the Preliminary Statewide Conservation and Preservation Plan are:

- Land and water habitat fragmentation, degradation, loss and conversion
- Land use practices
- Transportation
- Energy Production and Use
- Toxic contaminants
- Impacts on resource consumption
- Invasive species

These are the issues that, if addressed, would protect and conserve Minnesota's natural resources of air, water, land, wildlife, fish and outdoor recreation to the greatest degree.

The Statewide Conservation and Preservation Plan focuses on the first four key natural resource issues. The remaining three issues are not included in the plan due to budget and time factors and will be given consideration in future plan updates.

Five Areas of the Strategic Framework in the Statewide Conservation and Preservation Plan are:

- Integrated Planning
- Critical Land Protection
- Land and Water Restoration and Protection

- Sustainability Practices
- Economic Incentives for Sustainability

The recommendations in the Statewide Conservation and Preservation Plan were organized into the Strategic Framework and provide a comprehensive and integrated environmental strategic plan.

The recommendations within the Strategic Framework are designed to conserve and protect Minnesota's six statutorily defined natural resources in a comprehensive approach, while being mindful of demographic change, public health, the state's economy, and climate change.

Future elements of a Statewide Conservation and Preservation Plan will include additional in-depth review of natural resource issues such as toxic contaminants, invasive species, groundwater and surface water sustainability, mining, and emerging natural resource issues.

C. GOALS - SIX-YEAR STRATEGIC PLAN

The strategic framework laid out in the Statewide Conservation and Preservation Plan provides 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, groundwater 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).
- 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 and 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.

Public Education and Information

- Provide public dissemination of important natural resource information so that we have informed citizens able to assist public and private planners and resource managers in managing our natural resources.

- Promote environmental literacy of Minnesota's students and citizens so that they can apply informed decision-making processes to maintain a sustainable lifestyle.

Selection Criteria

- Review projects based on the following criteria: meeting priority goals, leverage, technical standards, capabilities to manage projects, multiple benefits, and the likelihood of meaningful results.

D. STRATEGIES - SIX-YEAR STRATEGIC PLAN

Priority will be given to projects providing benefits to multiple natural resources or to projects providing multiple benefits:

- 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.

- 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.

E. OUTCOMES

- Funding recommendations are consistent with and accelerate implementation of the Statewide Conservation and Preservation Plan and other related natural resource plans or recommendations, including

    - Forest Resource Council Guidelines
    - Minnesota Governor's Council on Geographic Information
    - Minnesota Department of Natural Resources plans
        - Scientific and Natural Areas Program Long Range Plan
        - Prairie Pothole Joint Venture Implementation Plan
        - Aquatic Management Area Acquisition Plan
        - Wildlife Strategic Plan
        - State Comprehensive Outdoor Recreation Plan

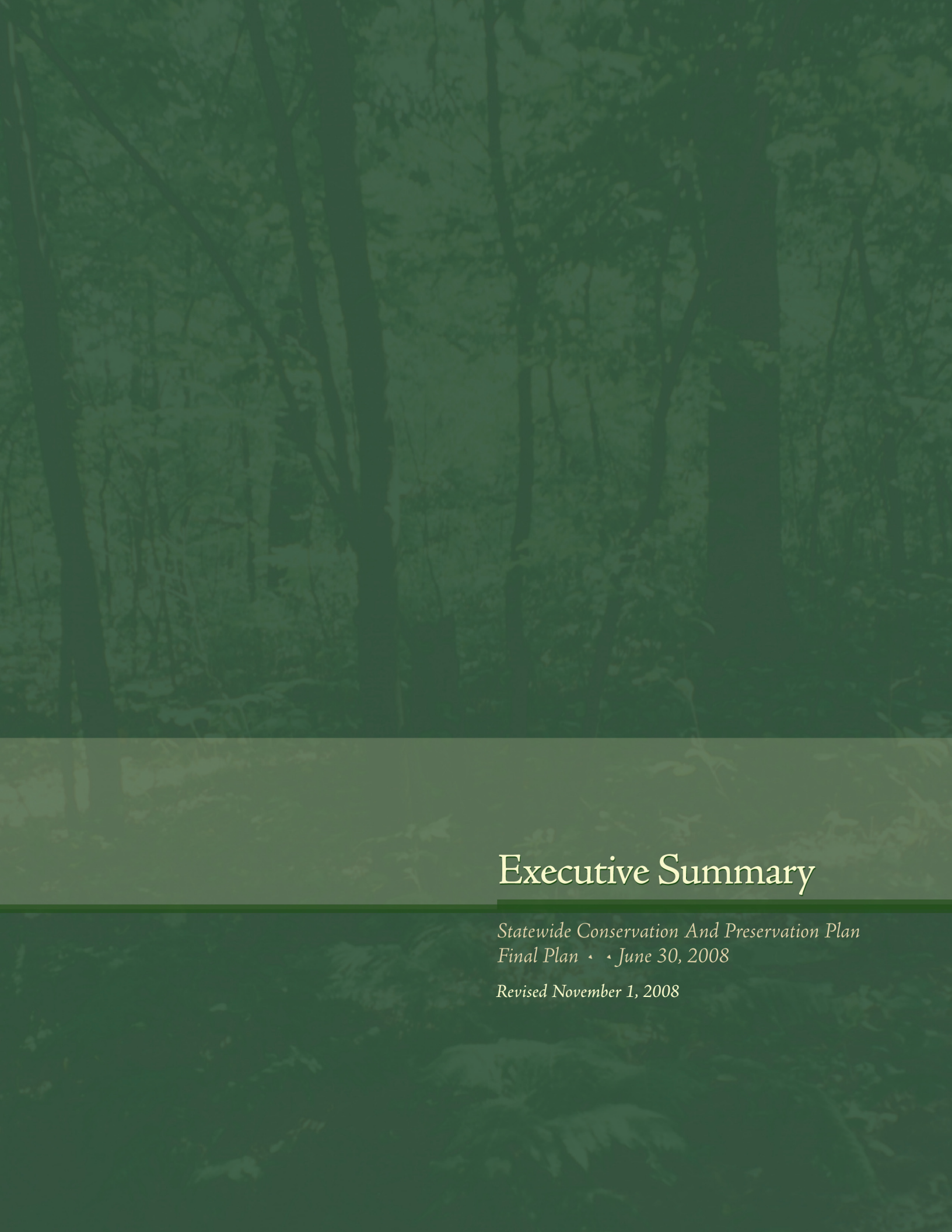
  - Minnesota Pollution Control Agency GreenPrint for Minnesota: State Plan for Environmental Education
  - Minnesota Climate Change Advisory Group final report
  - Minnesota Invasive Species Advisory Council priorities
  - Metropolitan Council 2030 Regional Park Policy Plan

- Complete acquisition of baseline natural resource data, including the County Biological Survey, Soil Survey, wetlands inventory, restorable wetlands inventory, and the 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.

Appendix A

Statewide Conservation and Preservation Plan:

Executive Summary and Short Description of Recommendations



Executive Summary

Statewide Conservation And Preservation Plan
Final Plan • • June 30, 2008

Revised November 1, 2008

Executive Summary

The remarkable place known as Minnesota is situated at the convergence of the Great Lakes, the Great Rivers, and the Great Plains. The citizens of Minnesota cherish and take pride in the abundant and varied natural resources of this place. We also value our quality of life and our standard of living, and desire the same for our children. All of these values and desires are intricately connected: continued economic prosperity depends on a healthy and sustainable environment, and vice versa. To foster the conditions we value, we must balance long-term plans for conserving and protecting our priceless natural resources with those for ensuring a healthy public and healthy economy. This document, the Minnesota Statewide Conservation and Preservation Plan (SCPP), lays out a deliberate strategy for doing so in a unified, integrated fashion, that employed an interdisciplinary approach with multiple perspectives and expertise.

The Environmental and Natural Resources Trust Fund funded a unique partnership among the University of Minnesota and the consulting firms of Bonestroo and CR Planning to evaluate the state's natural resources, identify key issues affecting those resources, and make recommendations for improving and protecting them. More than 125 experts, including University scientists and public and private natural resource planners and professionals, participated in the 18-month effort.

The team addressed Minnesota's Constitutionally identified natural resources of air, water, land, wildlife, fish, and outdoor recreation in two distinct phases. In the first phase of the project, the project team assessed the past and present condition of each of these six natural resources. They identified and described (where possible) the drivers of change immediately impacting them, and identified key issues that could be addressed to protect and conserve them in an integrated fashion. This information was published as the Preliminary Plan (http://www.lccmr.leg.mn). In the second phase of the project, the team addressed the key issues in depth, developing recommendations that would positively impact as many natural resources as possible while taking into account demographic change, public health, economic sustainability, and climate change. These recommendations then were synthesized into a framework with five strategic areas. Recommendations were identified as being either policy and action recommendations (those that could be put into effect directly by the legislature) or recommendations that add to our knowledge infrastructure (research needs, data gathering and monitoring needs, or educational activities). This framework and its recommendations were published as the Final Plan (http://www.lccmr.leg.mn). The steps and outcomes for the entire project are shown in Figure 1.

Preliminary Plan. Initially the team identified drivers of change that negatively impact each natural resource. These included both proximate drivers, those that are closest to and have the most direct impact on the resource (e.g., nutrient loading impacting water quality) and higher-order drivers, which are those that are further removed from the resource and impact the resource through other drivers of change (e.g., shoreline development causing the nutrient loading that impacts water quality). The team mapped these relationships among each other, noting that many drivers of change impact multiple resources and a given resource is impacted by multiple drivers of change. Finally, the team used a matrix prioritization process to objectively identify the key issues that, if addressed, would benefit the greatest number of natural resources to the greatest degree. The seven key areas identified were:

- Land and water habitat fragmentation, degradation, loss, and conversion

- Land use practices
- Transportation
- Energy production and use
- Toxic contaminants
- Impacts on resource consumption
- Invasive species

Each of these key issues is more fully described in the Preliminary Plan.

Final Plan. A subset of these issues was chosen for investigation in the second phase of the project. The key issues for which recommendations are made in this report are:

- Land and water habitat fragmentation, degradation, loss, and conversion
- Land use practices
- Transportation
- Energy production and use, and mercury as a toxic contaminant related to energy production

Figure 2 shows the action or policy recommendations for each of the key issues, arranged according to the degree of integrated benefits across all values associated with natural resources. The knowledge infrastructure and mercury recommendations were not evaluated by this process, and are not included in this figure. This gives an overall snapshot of how much integrated value a given recommendation has. For example, the first recommendation under the key issue of habitat has significant impact across the majority of the resource values, and has little impact on air quality and human health. This figure also identifies which recommendations benefit a given resource value the most. For example, habitat and land use–forestry recommendations have the most impact on biodiversity.

The Final Plan is organized in such a way as to take the reader through the project evolution in great detail. Following this Executive Summary and an Introduction section, the overall Strategic Framework is presented and described (also see below) to provide a context for the series of sections that follow, in which each of the key issues is described in detail. The section on land and water Habitat Recommendations contains a unique approach to priority mapping that combines geo-spatial data on a series of stress indicators that culminate in maps showing areas of the state with highest water and land habitat quality superimposed with areas of highest ecological stress. These maps help decision makers and natural resource managers prioritize which parts of the state to protect, conserve, or restore in order to best address our water and habitat natural resources. The Land Use Recommendations section is organized around three main types of land use, including urban/community land use practice, agricultural land use practice, and forest land use practice. Recommendations focus on water management, crop management, low impact development, and adoption of best practices for all types of land use. This is followed by a section on Transportation Recommendations, which stresses how transportation development choices are interwoven with land use choices, and have multiple impacts on water quality, habitat fragmentation, energy use, and air quality. This section also recognizes the current inefficiencies in permitting for transportation projects. The next section on Energy Recommendations focuses specifically on the strategies for renewable energy and conservation practices that will reduce dependence on fossil fuels and promote environmental co-benefits. It also links these recommendations directly to promoting a health economy. This section also addresses how decreases in fossil fuel use might change mercury emissions in the state, and how changes in these emissions translate to changes in concentrations of this toxic chemical in fish as a result.

The Final Plan contains nine appendices. The first contains a list of the recommendations that resulted from the Preliminary Plan; the second contains a list of the project participants and their affiliations; the third is a detailed report on the mercury assessment referenced in the Energy Recommendations section; the fourth is a summary of a study that predicts the future impacts of climate change on biodiversity in

Minnesota; the fifth is a cost benefit analysis of 7 of the major recommendations; the sixth is the result of an expert panel discussion of the value and investment prioritization of the action and policy recommendations; the seventh is a summary of the public engagement and outreach efforts and a summary of the public comments; the eighth is a list of the sources used in preparing the Plan; and the ninth is a short description of each of the recommendations in the Final Plan.

The Strategic Framework

The collection of recommendations was organized into a comprehensive framework, the Strategic Framework for Integrated Resource Conservation and Preservation, as shown in Figure 3. The five strategic areas of the framework identified at the top of the five boxes, are:

- Integrated Planning
- Critical Land Protection
- Land and Water Restoration and Protection
- Sustainability Practices
- Economic Incentives for Sustainability

Recommendations for each of these strategic areas are listed within a given box. Action or policy recommendations are at the top, with recommendations having the broadest impact across multiple resources listed first, followed by those that are more targeted or specific in their scope. Recommendations for building the knowledge infrastructure for that strategic area are at the bottom of the box. All of these recommendations are described in detail in the Final Plan.

This framework is a comprehensive and integrated environmental strategic plan. The recommendations taken together provide a holistic look, and are not meant to be viewed in isolation or to be acted on in a piecemeal fashion. Each of the strategic areas is summarized below.

Strategic Areas

Integrated Planning

Natural resource management is interwoven within a larger fabric of economic health, complex regulatory frameworks, human health, and changing demographics and climate. No one agency can address this comprehensively, nor can it be done in individual agency stovepipes. In addition, there are multijurisdictional responsibilities on the geographic scale, from communities to small units of government to soil and watershed districts to statewide agencies.

Planning, whether for transportation, energy, community development, water resources, agriculture, or forestry, should be integrated across all agencies and across the multijurisdictional scale. Doing so can make planning more efficient by removing redundancies. Our strongest, most effective federal environmental laws require cross-agency review or partnership, and this approach should be embraced on the state level for holistic natural resource protection.

Our recommendations address land use practices, transportation policy, and energy production and use policy as related to natural resource protection. For example, we specifically recommend the development of a state land use, development, and investment guide to align investment objectives across social, environmental, and economic sectors. We recommend that the state embrace a conservation-based community planning approach. Enhanced cross-consultation in governance and planning for transportation, land development, and energy projects is essential for protecting and conserving our natural resources.

Critical Land Protection

Be it farmland, wetlands, greenways in urban areas, or forestland, a clear and comprehensive strategy must be developed that establishes long-term and short-term protection and acquisition priorities. An array of perspectives should inform this strategy, integrating needs for biodiversity protection, critical agricultural land protection, ecological services, recreational opportunities, and opportunities for climate change adaptation and/or mitigation.

This strategy should build on the excellent work already accomplished by the DNR critical habitat studies, the Metro and Outstate Conservation Corridors initiatives, and the work of many nonprofit land-protection organizations.

Our recommendations in this strategic area focus on the protection by easement or acquisition of critical stream and lake shorelines, priority land habitats, and large blocks of forestland.

Land and Water Restoration and Protection

This strategic area addresses both the restoration of critical land and water habitat and the protection of strategic land and water habitat that has not yet been degraded. It not only addresses the inherent and intrinsic direct benefits of habitat restoration and protection, but also emphasizes the benefits of such strategy for strengthening biodiversity and enhancing resilience to climate change. The recommendations in this area reinforce and strengthen Minnesota cultural values, ethics, appreciation of outdoor recreation, and economic health.

The recommendations include specific actions to restore shallow lakes, wetlands and wetland associated watersheds, and the habitats contained within lakes and rivers, as well as actions to protect critical landscapes.

Sustainability Practices

A healthy environment requires a healthy economy, and a sustainable economy requires a sustainable environment. To reach both goals requires promoting, facilitating, encouraging, and regulating practices that will lead to a sustainable environment and economy. These sustainable practices must cross multiple fronts - sustainable agriculture, sustainable forestry, sustainable water resources, and sustainable economy and standard of living - all in the context of energy production, shifting demographics, and climate change.

Specific recommendations promote the sustainable management of forestlands and action to keep water on the landscape. These include reviewing drainage policy and actions to move water more slowly across and through the landscape to return to more natural conditions to reduce flooding, improving water quality, and improving biological diversity through habitat protection.

Economic Incentives for Sustainability

Moving toward sustainable practice requires specific incentives to move the state and its citizens and stakeholders in a transformative direction. These are broad-scale ideas for achieving a sustainable economy specifically through natural resource policies: Energy policy, agricultural policy, forestry policy, and transportation policy can be used to grow and nurture Minnesota's economic future. For example, the team recommends the development and implementation of incentive programs to develop renewable energy programs and to promote a successful transition of Minnesota's vehicle fleet to electric power.

Minnesotans share a vision for a healthy and sustainable future. This framework of strategic recommendations is a collective roadmap for moving forward to achieve this future. We hope that the citizens, resource managers, and policy-makers of the state embrace this opportunity to deliberately protect and conserve Minnesota's remarkable natural resources before they are futher degraded or lost.

Figure 1. Process and outcomes of the Statewide Conservation and Preservation Plan

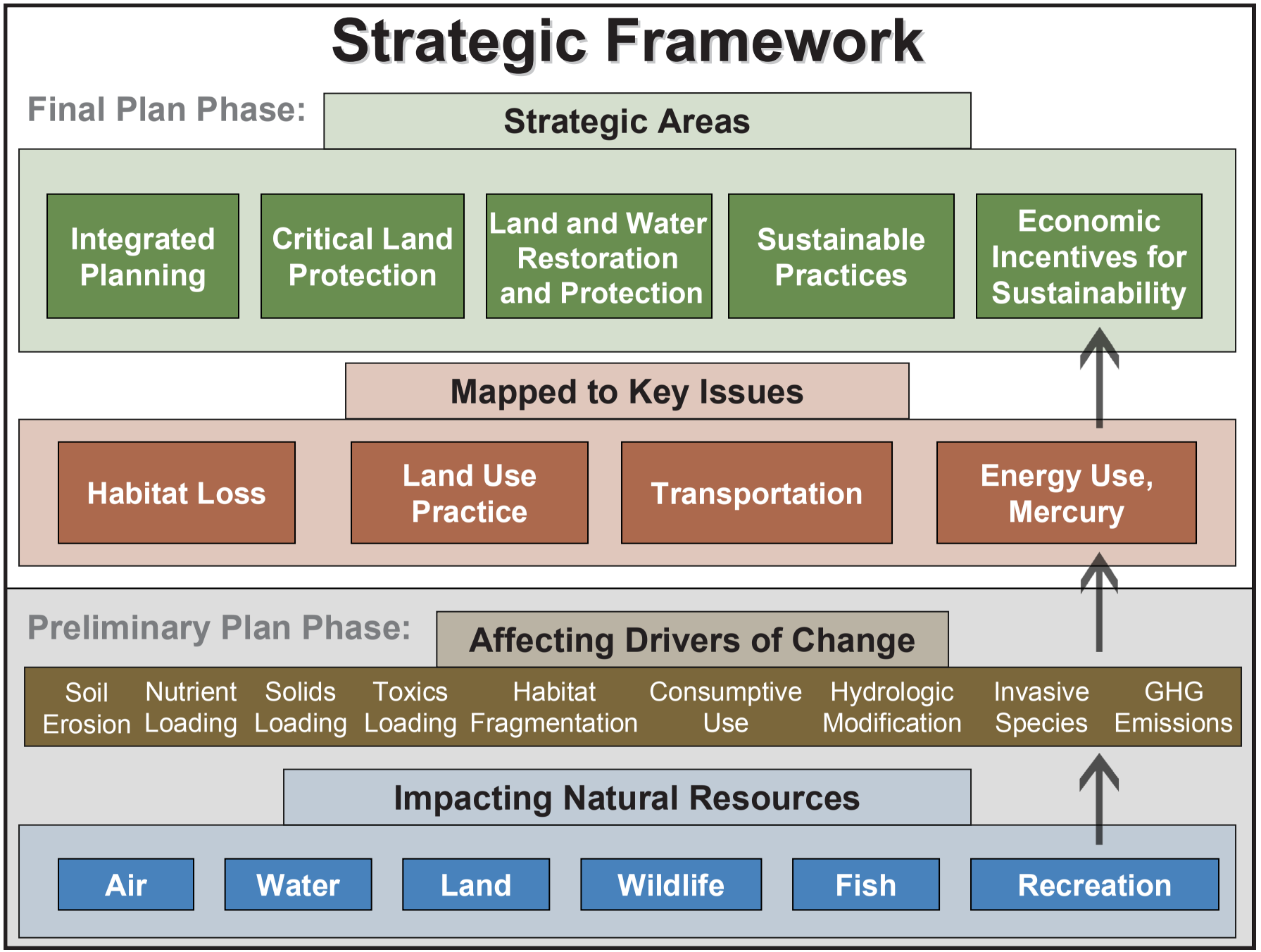


Figure 2. Natural resource values assessment of policy and action recommendations

Natural Resource Values Assessment of Recommendations

LEGEND: ● = Critical Impact ◑ = Significant Impact ○ = Negligible Impact

	Number	Recommendation	Air Quality	Water Quality/Quantity	Terrestrial Habitat Quality	Soil/Land Quality	Human Health	Biodiversity	Community Health	Aquatic Economic Health	Recreational/Cultural/ Spiritual/Aesthetic Value	Climate Change Mitigation/Adaptation	
HABITAT	H2	Protect critical shoreland of streams and lakes	○	●	●	●	○	●	●	●	●	●	
	H1	Protect priority land habitats	○	●	●	●	○	●	●	◑	●	●	
	H4	Restore and protect shallow lakes	○	●	●	◑	○	●	●	●	●	◑	
	H5	Restore land, wetlands and wetland-associated watersheds	○	●	◑	◑	◑	●	●	◑	●	●	
	H6	Protect and restore critical in-water habitat of lakes and streams	○	●	◑	◑	◑	●	●	◑	●	●	
	H7	Keep water on the landscape	○	●	◑	●	○	●	●	◑	◑	●	
	H8	Review and analyze drainage policy (ditch laws)	○	●	◑	●	○	◑	●	◑	◑	●	
	H3	Improve connectivity and access to recreation	○	○	◑	○	●	◑	○	●	●	○	
LAND USE	LU1	Fund and implement a state Land Use Development and Investment Guide	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	
	LU2	Support local and regional conservation-based community planning	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	
	LU3	Ensure protection of water resources in urban areas	○	◑	○	◑	○	◑	◑	◑	◑	◑	
	LU4/E4	Transition renewable fuel feedstocks to perennial crops	○	◑	◑	◑	○	◑	◑	◑	◑	◑	
	LU5	Reduce streambank erosion through reduction in peak flows	○	◑	◑	◑	○	◑	◑	◑	◑	◑	
	LU6	Reduce upland and gully erosion through soil conservation practices	○	◑	◑	◑	○	◑	◑	◑	◑	◑	
	LU8	Protect large blocks of forest land	○	◑	◑	◑	○	◑	◑	◑	◑	◑	
	LU10	Support and expand sustainable practices on working forested lands	○	◑	◑	◑	○	◑	◑	◑	◑	◑	
TRANSPORTATION	T1	Align transportation planning across all agencies; streamline and integrate environmental transportation project review	●	◑	◑	◑	●	◑	◑	●	●	●	
	T2	Reduce per capita vehicle miles of travel	◑	◑	◑	○	◑	○	○	◑	◑	●	
	T3	Develop and implement transportation polices that minimize impacts on natural resources	○	●	◑	○	○	◑	●	◑	◑	◑	
ENERGY	E1	Develop coordinated laws, policies and procedures across state agencies	◑	●	●	●	◑	◑	●	●	◑	●	
	E13	Invest in research and policies for "green payment" program	○	●	●	●	○	●	●	○	◑	●	
	E17	Promote policies and incentives that encourage C-neutral businesses, homes, communities and other institutions	●	◑	◑	◑	◑	◑	◑	●	◑	●	
	E2	Invest in farm and forest preservation to prevent fragmentation due to development	○	◑	●	●	○	◑	◑	◑	◑	◑	
	E18	Implement policies and incentives to lower energy use of housing stock	◑	◑	○	○	●	○	◑	●	◑	●	
	E16	Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production	●	◑	○	○	●	○	○	◑	○	●	
	E21	Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options	◑	◑	○	○	◑	○	◑	◑	◑	◑	
	E19	Promote policies and strategies to implement smart meter and smart grid technologies	◑	○	○	○	◑	○	○	●	◑	●	
	E14	Investigate opportunities to provide tax incentives for individual renewable energy investors	◑	◑	○	○	◑	○	○	◑	○	●	
	E20	Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction	◑	◑	○	○	◑	○	○	◑	○	●	
	E15	Invest in efforts to develop community-based energy platforms	○	◑	○	○	○	○	○	●	◑	◑	

Note: Policy and action recommendations are grouped by topic (Habitat, Land Use, etc.) and then ordered starting with those recommendation having the broadest impact across multiple resource values followed by those having more targeted impact.

Strategic Framework For Integrated Resource

INTEGRATED PLANNING IP		CRITICAL LAND PROTECTION LP		LAND AND WATER RESTORATION AND PROTECTION RP	
Rec. No.	**Broad Policy and Action Recommendations**	**Rec. No.**	**Broad Policy and Action Recommendations**	**Rec. No.**	**Broad Policy and Action Recommendations**
E1	Develop coordinated laws, policies and procedures across state agencies	**H2**	Protect critical shorelands of streams and lakes	**H4**	Restore and protect shallow lakes
LU1	Fund and implement a state Land Use Development and Investment Guide	**H1**	Protect priority land habitats	**H5**	Restore land, wetlands, and wetland-associated watersheds
LU2	Support local and regional conservation-based community planning	**LU8**	Protect large blocks of forest land	**H6**	Protect and restore critical in-water habitat of lakes and streams
T1	Align transportation planning across all agencies; streamline and integrate environmental transportation project review				
E23	Develop mercury reduction strategies for out-of-state sources				
Rec. No.	**Targeted Policy and Action Recommendations**	**Rec. No.**	**Targeted Policy and Action Recommendations**	**Rec. No.**	**Targeted Policy and Action Recommendations**
LU3	Ensure protection of water resources in urban areas	**E2**	Invest in farm and forest preservation to prevent fragmentation due to development	**LU5**	Reduce streambank erosion through reduction in peak flows
T3	Develop and implement transportation polices that minimize impacts on natural resources	**H3**	Improve connectivity and access to recreation	**LU6**	Reduce upland and gully erosion through soil conservation practices
Rec. No.	**Knowledge Infrastructure Recommendations**	**Rec. No.**	**Knowledge Infrastructure Recommendations**	**Rec. No.**	**Knowledge Infrastructure Recommendations**
LU2C	Provide communities with the tools and technical assistance for conservation-based planning	**H9**	Invest in overall research on land and aquatic habitats	**H10**	Invest in research on near-shore aquatic habitat vulnerability
E24	Continue state enforcement programs to reduce mercury contamination of the environment	**T3A**	Develop research programs in habitat fragmentation	**H11**	Improve understanding of groundwater resources
LU3B	Simplify modeling for TMDLs	**LU9**	Assess tools for forest land protection	**LU5A**	Invest in research that quantifies the relationship between artificial drainage and stream flows
LU3C	Monitor TMDL BMP implementation			**H12**	Improve understanding of watershed responses to multiple drivers of change
LU2D	Invest in databases and tools needed to support land use and conservation decisions			**E11**	Invest in research and enact policies to protect existing prairies from genetic contamination
LU2A	Fund demonstration projects for conservation-based community planning			**LU10E**	Develop and test new management policies to test ecosystem resilience
				H13	Encourage conservation education and training programs for all MN citizens
				E12	Invest in efforts to develop sufficient seed stocks for large scale plantings of perennial crops
				LU3D	Expand water quality media campaign

Figure 3. Strategic framework for integrated resource conservation and preservation

Conservation And Preservation

SUSTAINABLE PRACTICES SP

ECONOMIC INCENTIVES FOR SUSTAINABILITY ES

Rec. No.	Broad Policy and Action Recommendations				
LU10	Support and expand sustainable practices on working forested lands				
H7	Keep water on the landscape				
H8	Review and analyze drainage policy (ditch laws)				
T2	Reduce per capita vehicle miles of travel				
Rec. No.	**Targeted Policy and Action Recommendations**	**Rec. No.**	**Targeted Policy and Action Recommendations**	**Rec. No.**	**Targeted Policy and Action Recommendations**
E13	Invest in research and policies for "green payment" program	E19	Promote policies and strategies to implement smart meter and smart grid technologies	E16	Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production
E17	Promote policies and incentives that encourage C-neutral businesses, homes, communities, and other institutions	E20	Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction	E21	Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options
LU4/E4	Transition renewable fuel feedstocks to perennial crops	E15	Invest in efforts to develop community-based energy platforms	E14	Investigate opportunities to provide tax incentives for individual renewable energy investors
E18	Implement policies and incentives to lower energy use of housing stock				
Rec. No.	**Knowledge Infrastructure Recommendations**	**Rec. No.**	**Knowledge Infrastructure Recommendations**	**Rec. No.**	**Knowledge Infrastructure Recommendations**
E3	Invest in perennial biofuel crop research and demonstration projects on a landscape scale	E22	Invest in public education focusing on benefits and strategies for energy conservation		
E6	Invest in research to determine removal rates of corn stover and to establish incentives and BMPs	E25	Develop public education on actions that individuals and communities can take to reduce mercury contamination of the environment		
E7	Invest in research to review thermal flow maps	LU7	Invest in statewide high resolution digital elevation data, watershed delineation, maps of artificial drainage network, and other data to support decision making		
E8	Invest in applied research to reduce energy and water consumption and emissions in ethanol plants	LU10B	Educate landowners and forest managers on BMPs to protect working forests		
E9	Invest in research to determine the life cycle impacts of renewable energy production systems				
E10	Invest in research and demonstration projects to develop, and incentives to promote, combination electricity production projects				
T3B	Reduce non-point source pollution to surface and ground waters from transportation infrastructure				
LU4A	Invest in research on parameters that control successful perennial feedstocks				
E5	Invest in data collection to support energy production assessment				

Note: Recommendations having the broadest impact across multiple resources are listed first in each column followed by those having more targeted impact, and supported by knowledge infrastructure recommendations.

The following icons are used throughout the plan to quickly identify recommendations by type:

Integrated Planning Recommendations

Critical Land Protection Recommendations

Land and Water Restoration and Protection Recommendations

Sustainable Practices Recommendations

Economic Incentives for Sustainability

Appendix IX

Short Descriptions of Recommendations

Appendix IX Table of Contents

Habitat Recommendations

Land Protection

Habitat Recommendation 1: Protect priority land habitats **LP**

Description of recommended action. The SCPP has identified many critical land habitats throughout the state based on an integrated approach that considers such issues as SGCN, outdoor recreation such as hunting and fishing, protection of water quality, and threats to these resources (Figure H7). Critical land habitats were identified through a combination of existing government, UM, and selected private data sets. These data sets were spatially explicit and, with rare exception, statewide (Table H1). The criteria for critical habitat identification were developed by a group of public and private stakeholders and optimized to provide the most benefit to the most constituents.

These areas have been prioritized for conservation and preservation. A variety of public and private mechanisms are available to protect these areas, including acquisition, conservation easements, and restoration/remediation of impacted habitats. Public education will play an important role in protecting priority land habitats, and coordination among public, nonprofit, and private entities to protect critical habitats will be increasingly paramount.

The SCPP outlines important land habitats that benefit wildlife, fish, water quality, and outdoor recreation in the context of threats to these important natural resources. The SCPP allows considerable flexibility for conservation of lands and appropriate protection of economic activity such as logging or other compatible uses. Conservation and protection of these land areas will require multiple mechanisms and a coordinated effort among local, county, regional, state, and national public agencies; nonprofits; and private entities. Of particular importance are rare land features and areas such as native prairie and savanna that have been converted to other land uses. This is among the reasons that SOBS received a relatively high weight in the integrated analysis (Table H1).

The state must further strengthen its leadership to coordinate and stimulate efforts for the protection of these critical land areas among current and potential partners. This activity would include identification of relevant landowners; identification of the most cost-effective measures for protection, restoration, and education on the importance of the area; and development of a comprehensive plan to ensure the economic, environmental, and social benefits of protection.

The integrated mapping analyses provide a basis for and opportunity to develop regionally specific strategies for conservation and preservation of Minnesota's critical habitats, using the suite of policy and incentive options from voluntary implementation of BMPs to permanent land acquisition. Implicit within this recommendation is continued support for ongoing programs such as acquisition of the 54,000 acres of private land within state parks. Acquisition of these lands should remain a high priority because they reduce fragmentation and help to maintain large, intact ecosystems.

Habitat Recommendation 2: Protect critical shorelands of streams and lakes **L P**

Description of recommended action. A holistic approach is needed for shoreline protection that integrates acquisition with diverse private-land protection strategies such as conservation tax credits, trading of conservation tax credits, BMPs, shoreland regulations and incentives, zoning ordinances, conservation development, and technical guidance for shoreland owners. Fully funded acquisition programs are essential, but not sufficient to protect large enough areas of shoreland to ensure water quality and habitat protection, and thus sustain healthy lake, river, and stream ecosystems. It is doubly important to protect these aquatic habitats at a large scale to make them more resilient to the significant warming and altered precipitation projected for Minnesota over the next century (Appendix IV). Therefore, the state needs a diversity of economic incentives and other tools for private landowners.

2A. Acquire high-priority shorelands

The highest priority shorelands within each of Minnesota's 22 ecological subsections should be permanently protected through acquisition. This is one essential component of a multistrategy approach to preserving the clean water legacy that Minnesota's citizens and visitors are used to experiencing. Acquisition may protect critical shoreland habitats from degradation; assure public access for fishing, hunting, wildlife viewing, and natural resource management, which is especially important given the continuing loss of access to natural shores; and provide areas for education and research. Suggestions for prioritizing shoreland acquisition appear in several recent reports, including DNR's 2008 aquatic management area (AMA) acquisition plan, the DNR long-range duck recovery plan, and a 2008 report identifying lake conservation priorities for The Nature Conservancy (TNC).

2B. Protect private shorelands via economic incentives and other tools

Minnesota should greatly increase the use of economic incentives and other tools for private landowners to protect shorelines and other sensitive land along lakes, especially along shallow lakes and shallow bays of deep lakes, and streams and rivers throughout Minnesota. This is also needed for riparian buffers around sinkholes in agricultural lands in southeastern Minnesota (see further discussion under habitat recommendation 7).

Protection of private shorelands should combine various tools, such as tax credits, conservation easements for shoreland protection and restoration, BMPs, technical guidance to shoreland owners, shoreland regulations, and zoning ordinances. It is especially important to scale up and combine these tools, for example, by providing technical guidance to landowners on how to implement BMPs on shorelands put under a tradeable conservation tax credit.

Tax credits could dramatically catalyze private shoreland protection. The idea is to provide state income tax credit for conservation easements. In their simplest form, conservation tax credits are applied to perpetual conservation easements or donations of fee-title land. Perpetual conservation easements could be donated to the state or legal land trusts. A further innovation is to allow trade of conservation tax credits among taxpayers: Landowners with

low state tax liability could sell their credits to landowners with higher tax liability, thereby giving landowners with low tax liability an incentive to become interested in making land conservation donations. Although conservation tax credits were initially conceived as a protection strategy for shallow lake habitats in agricultural areas, this approach could expand to protecting a broader array of shorelands (streams, rivers, lakes, wetlands) throughout the state.

Habitat Recommendation 3: Improve connectivity and access to outdoor recreation **L P**

Outdoor recreation was not one of the three focal issues chosen for the final SCPP; however, the State Comprehensive Outdoor Recreation Plan (SCORP) has already provided a comprehensive plan and the SCPP preliminary plan provided recommendations for research to support quality outdoor recreation in the future (see Appendix I). To complement these recommendations, the habitat team offers an additional recommendation regarding the important connection between habitat conservation and recreation and considering the distribution of historical and cultural resources in the state.

Description of recommended action. Land use patterns are changing in Minnesota. Lakeshore development is increasing, urban areas are expanding, and forests are being divided into small, privately owned parcels. These changes and others are affecting outdoor recreation. Land needs to be acquired, protected, and restored to provide Minnesotans and visitors an outdoor system where they can recreate.

Action should be taken to improve connectivity of and access to outdoor recreation areas (parks, natural areas, wildlife management areas, etc., Figure H30) and document the connectivity and experience opportunities through a statewide recreation system. Such connectivity would require enhancing connections among state, federal, and local government lands and facilities. Prioritization for acquisition, protection, and restoration of the natural resource base that supports outdoor recreation should focus on large, contiguous land areas suitable for: natural resource–based outdoor recreation; shorelands; threatened habitat areas with opportunities to improve connectivity of underserved areas; and rapidly growing areas or areas where land use changes may limit future outdoor recreation opportunities.

The trends in recreational use and changes in land use patterns all support this recommendation. These primary drivers include land use conversion patterns and changes in population demographics in areas such as the Twin Cities metropolitan area and locations with lakes, rivers, and forests. Participation in hunting and fishing continues to decline, while nonconsumptive activities such as wildlife watching and hiking remain stable or are growing. Increasing human population is projected to lead to an estimated rise in state park visitors, from 8.6 million in 1998 to 9.2 million by 2025. If energy costs continue to increase, there will be a growing demand for outdoor opportunities that limit the need to travel great distances for recreation.

Habitat Recommendation 4: Restore and protect shallow lakes **R P**

Description of recommended action. Minnesota should accelerate efforts to restore and improve shallow-lake habitat (including shallow bays of deep lakes) in priority watersheds in order to reduce the number of lakes in a turbid-water state, and to restore some of the 1,000-plus drained shallow lakes in the state. Active management of Swan, Christina, and Thief Lakes shows that many shallow lakes with poor water quality and little habitat can be restored through active management.

Sensitive shallow lakes frequently winterkill (fish); are subject to mixing from wind, surface use, and large fish (carp); and typically exist in either a turbid- or clear-water state. Unfortunately, most shallow lakes in the prairie and forest-prairie transi-

tion zones of Minnesota are in the turbid-water state. This is due to the combination of increased flows of water and nutrients into them from intensively drained and cultivated landscapes that surround them, and abundant populations of invasive fish (e.g., carp and black bullhead) that result from increased connectivity (i.e., ditches) and persist due to lack of natural winterkill. Some shallow lakes are so turbid that they are listed as impaired by the MPCA. Dense human housing development and inappropriate surface uses are also increasing threats to shallow lakes.

Funding is needed to purchase conservation easements around shallow lakes to restore their lakesheds (small wetlands and grass buffers) and prevent development. Funding is also needed to install fish barriers to keep out invasive species such as carp. Finally, funding is needed for water control structures that state agency managers can use to conduct temporary drawdowns to consolidate and aerate sediments, induce natural winterkill of fish, and rejuvenate aquatic plants. The level of development and management of the landscapes around shallow lakes necessitates active in-lake management in order to maintain water quality and good habitat.

Habitat Recommendation 5: Restore land, wetlands, and wetland-associated watersheds **R P**

Description of recommended action. Minnesota must invest in prioritized areas to restore degraded and rare land features, wetlands (especially many that have been drained and converted), and watersheds associated with wetlands. This will provide benefits for wildlife, SGCN, water quality, and important ecological processes. This is especially imperative in the prairie and prairie-forest transition zones of the state. Restoration should consider the need to encourage landowners to restore these lands and compensate them above and beyond the fair market value of the land, since most sites are not for sale and high crop prices inhibit conversion of land from agriculture to other uses. Consideration must also be given to using easements on private lands to achieve habitat restoration goals. It is imperative to recognize the huge loss of native prairie and small wetlands in the prairie region of Minnesota (99% and 90%, respectively). Wildlife does not require restored lands to be in public ownership to benefit from them as critical habitat. Restoration, however, is not only needed in the prairie regions, though it is of high priority there. Other land uses such as savanna and forests are also in need of attention. For instance, riparian forests need restoring, and regeneration of oak, white cedar, and white pine requires attention. Similarly, restoration of wetlands alone cannot restore their appropriate structure and function; restoration efforts must also consider the watersheds that drain into wetlands.

Habitat Recommendation 6: Protect and restore critical in-water habitat of lakes and streams **R P**

Description of recommended action. Accelerate and expand the relatively small current efforts to restore critical habitat for aquatic communities in near-shore areas of lakes, in-stream areas of rivers and streams, and deep-water lakes with exceptional water quality.

6A. Restore habitat structure within lakes

We recommend developing a program to restore the natural features of lakeshore habitats (shoreland, shoreline, and near-shore areas). The program would add woody habitat where it has been removed, and restore emergent and floating vegetation where it has been lost. The program would also work with lake-home owners and lake associations to achieve restoration goals.

Increasing development pressure along lakeshores has negative impacts on these species and water quality—and Minnesota's lakeshores are being developed at a rapid rate. The shallow areas in large lakes are crucial to fish, wildlife, and water quality.

An estimated 20% to 28% of the near-shore emergent and floating-leaf coverage has been lost due to development in bass and walleye lakes. On average, there is a 66% reduction in aquatic vegetation coverage with shoreland development. These declines in aquatic vegetation coincide with lower fish production and reduced water quality in lakes. Woody habitat losses are also occurring in Minnesota lakes but have not been quantified. Many fish depend on aquatic vegetation, woody habitat, and shorelines to provide spawning habitat, cover, and refuge from predators. Downed trees provide important in-lake structure, habitat, food, and shelter for fishes, frogs, turtles, water birds, and mammals. This woody habitat is also important for aquatic invertebrates such as snails and bryozoans. Turtles need to bask on deadfalls or floating logs. Near-shore downed trees also blunt waves and ice action that scour the lake bed. Because trees often grow slowly and their density has been reduced due to past shoreline alterations, this important habitat element in Minnesota lakes may not be replenished without substantial efforts.

6B. Protect and restore in-stream habitats

A priority for rivers, particularly the Mississippi River, is to reduce the negative effects of recreational boat traffic, especially from medium to large cruisers, on sensitive shoreline habitats. Stream-bank erosion from recreational boat wakes adds large sediment loads, which increases water turbidity and disrupts the growth of beneficial aquatic plants and reproduction of native mussels and some fish. Other habitat impacts include breakage of aquatic plants; impingement and various disturbances of fish and wildlife; and dislodging of woody debris that normally provides important cover and food production for fish, as well as habitat structure for turtles and birds. Systemic solutions include enforcing no-wake zones or no-wake periods in sensitive habitats, which requires revision of local, state, or federal surface water use regulations; and design of more river-friendly boats, which requires engineering research and development. Past education efforts and voluntary no-wake zones have not worked.

A priority for former prairie zones of Minnesota is to reverse the negative effects of stream channelization on in-stream habitats for fish and other aquatic organisms. Channelization has changed the hydrology of streams, which has then made them wider and more deeply incised. In many locations, negative effects of stream channelization have been exacerbated by removal of riparian vegetation and wetlands, and altered upland land use. Several approaches can be implemented to protect and restore in-stream habitats. Riparian vegetation can be restored to stabilize stream banks (several state and federal programs, such as RIM, CRP, CREP and CSP, can provide financial assistance). Two-stage channels (Figures H33 and H34) can be constructed where streams have been channelized to provide a flood plain to dissipate stream energy and allow the channel to remeander, which will provide more diverse habitat for aquatic organisms. Restoring wetlands and altering upland vegetation (state and federal programs provide financial assistance) will hold water on the landscape or allow for increased infiltration, both of which can help mitigate the altered hydrology of streams.

Minnesota has hundreds of low-head dams and culverts that restrict movement of aquatic organisms. Inappropriately sized culverts also may contribute to localized flooding. Removal of dams and installing culverts with increased capacity would improve connectivity of aquatic systems. An alternative approach to removal of low-head dams is to provide for fish passage through the dam (e.g., recent construction providing passage for lake sturgeon in the Wild Rice River). Opportunities to remove higher dams or alter them to provide fish passage should also be explored.

6C. Protect deep-water lakes with exceptional water quality

Clear lakes with large, oxygen-rich deep-water zones provide critical habitat for native cold-water fish such as cisco, lake whitefish, and lake trout in

Minnesota. In the summer, lakes stratify into three layers; an uppermost epilimnion, which is warmest and oxygen poor; a middle thermocline; and the lowest hypolimnion, which is coldest and oxygen rich. During warm summers, cold-water fish find refuge in the cold hypolimnion if it has sufficient oxygen. Only lakes with the most exceptional water quality maintain enough oxygen in the hypolimnion for cold-water fish to thrive. Climate warming and poor land use in Minnesota pose imminent threats to oxygen levels in these deep-water zones. First, increased duration of stratification from climate warming decreases their oxygen content late in the summer. Second, oxygen concentrations are reduced by poor land use when decaying organic matter from algae and plants, stimulated by high nutrient loading, consumes oxygen in deep water. Both of these threats have the potential to severely limit habitat for cold-water fish in Minnesota.

Deep lakes with exceptional water quality will represent important sanctuaries for cold-water fish as the climate warms in Minnesota. However, future deterioration of water quality would greatly jeopardize the ability of these lakes to provide that refuge. These potential refuge lakes are being identified by the DNR and the UM. Many of these lakes are the "crown jewels" of Minnesota and deserve special status in addition to their value as refuges from climate change. Examples include Ten Mile Lake in Cass County, Big Trout Lake in Crow Wing County, Big Sand Lake in Hubbard County, and Trout and Wabana Lakes in Itasca County. Also, these types of lakes are not completely limited to forested ecoregions. Big Watab Lake, located in agricultural Stearns County, and Square Lake, located in the Twin Cities metropolitan area, also represent lakes with excellent oxygen resources in the hypolimnion.

Once identified, lake watershed protection efforts should be initiated with a special commitment. These protection efforts could include land purchase, easement protection, and BMP implementation. Many are already "high-profile" lakes with active and dedicated lake associations and local users. Implementation of high-intensity watershed and shoreland protection efforts would largely be welcomed. Protection of these lakes may actually be cost effective (high value for modest investment). Many are characterized by small, forested watersheds and protection efforts can be targeted at relatively few parcels with great cost efficiency.

Sustainable Practice

Habitat Recommendation 7: Keep water on the landscape **S P**

Description of recommended action. Retaining water on the landscape over broader areas and for longer periods is critical for improving water quality, reducing flooding, maintaining habitat for wildlife and game species, and enhancing biological diversity. The intent of this recommendation is to have water move more slowly across and through the landscape to return to more natural conditions. This need is acute in agricultural and urban landscapes of Minnesota. We suggest three strategies that complement other landscape-focused recommendations in this plan:

- Perennial vegetation
- Storm water controls
- Riparian buffers

Habitat Recommendation 8: Review and analyze drainage policy **S P**

Description of recommended action. The state should invest in a comprehensive review and analysis of laws relating to drainage, including Minnesota Statutes Chapter 103E, and recommend changes to the legislature that would remove barriers and facilitate the restoration of critical wetlands in order to improve water quality and aquatic habitats.

Knowledge Infrastructure

Habitat Recommendation 9: Overall research on land and aquatic habitats

LP

Description of recommended action. The SCPP has developed and implemented a mechanism to integrate a portfolio of spatial data layers summarizing important natural resources and environmental threats in Minnesota. These data layers quantify the loss of native biodiversity, distribution of important outdoor resources (e.g., fish and wildlife populations), impairments to aquatic resources, degradation of critical ecological processes (e.g., nutrient cycling, predator-prey interactions), and locations of biologically significant and large, intact natural ecosystems. The spatial data layers were also examined in relation to where housing development was most likely to occur in the future, locations of road networks, current and future agricultural-bioenergy activity, and land ownership (Figures H2–H16).

Research is essential to improve understanding of the risk of extinction of Minnesota's native biological diversity; continuing availability of quality outdoor recreation; and confidence in the ability to protect aquatic resources in the face of risks such as climate change, invasive species, and expanding human population. Information on important historical and cultural resources should also be researched and incorporated into decision making on conservation, protection, or restoration efforts.

The state of Minnesota should continue to appropriate funds for improving understanding of fish and wildlife populations, native biological diversity, and water quality, and mitigating the stressors that affect them.

Habitat Recommendation 10: Research on near-shore habitat vulnerability

RP

Description of recommended action. There is a need to increase understanding of near-shore habitat vulnerability. This would be best accomplished through research on the human behaviors that degrade and destroy near-shore habitat, as well as pilot policies or programs that preserve or restore near-shore fish and wildlife habitat. Research can also address historic and cultural resources associated with near-shore habitat.

Habitat Recommendation 11: Improve understanding of ground water resources

RP

Description of recommended action. Ground water is an indispensable natural resource for human activities and human health. Partly because ground water is a hidden resource, Minnesota has not yet adequately answered critical questions about it. We need to understand how much ground water we have, where we can find it, its quality, how it moves, where it is recharged, where it discharges, and how much we can safely tap, both seasonally and long term.

The state needs to make a major, sustained investment in the collection and assessment of information about ground water and its connection to surface waters. We need to fill information gaps at the site-specific scale and the scale of entire hydrologic systems, including aquifers and watersheds. Given the relatively complex hydrology in our state, Minnesota may be decades away from acquiring sufficient information to inform site-specific decisions about ground-water usage throughout the state. Filling critical information gaps at both scales is essential for achieving sustainable management of ground water that meets the needs of humans and habitats.

The overall goal of this recommendation is to develop a large-scale, hydrologic-system framework for understanding how today's decisions may affect

tomorrow's needs. This systems approach will offer insights into the more strategic questions that are beyond the reach of the current site-by-site focus of decision-making for ground-water use. A systems approach will make it possible to answer questions about (1) how much water can be committed to human activities without adversely affecting ecosystems, (2) how much growth a specific region can sustain based upon its water budget, and (3) how land use changes and climate change may shift the whole equation.

Habitat Recommendation 12: Improve understanding of watersheds' response to multiple drivers of change **R P**

Description of recommended action. Effective water quality protection and restoration will require additional monitoring, research, and evaluation of aquatic and land responses to land use, climate, and other changes. While much is known within various spatial and temporal scales, interactions and responses across scales are not well understood. Research is needed to build the capacity of resource managers to understand and evaluate the multitude of factors that affect these resources across the state.

To accomplish this recommendation, investment is needed for research across many watershed scales to improve understanding of pollutants, pollution sources, movement across the watershed (e.g., hydrology), and physical, chemical, and biological responses. There have been significant advances in monitoring methods and technologies, plus increased funding (e.g., through the Clean Water Legacy Act). The use of biological monitoring has become better integrated with water quality. The next step to achieve a better understanding of watershed systems and an assessment of their health is to gain a more holistic and comprehensive understanding of how a water body and its watershed function. This would result in more effective protection, restoration, and conservation for both land and aquatic habitats.

A formal physical watershed evaluation monitoring effort is also needed to assess habitat and underlying geomorphic conditions as a component of Clean Water Legacy monitoring and assessment activities. Greater use of geographic information system (GIS) data layers and analysis tools is essential as data layers become more detailed and analytical techniques improve. The DNR Watershed Assessment Tool should be improved to enable the identification of priority habitat investment areas. Use of tools such as the U.S. Environmental Protection Agency (USEPA) Watershed Assessment of River Stability and Sediment Supply (WARSSS) procedures should be supported for developing and completing physical channel, bank, and watershed condition monitoring and evaluation.

The state lacks the basic information needed to understand how multiple drivers of change affect Minnesota's watersheds. The state should conduct a rapid assessment to gather baseline information on the physical, biological, and chemical conditions of streams important to understanding these effects.

Attention is also needed in the evaluation of the potential impacts of climate change on land and aquatic habitats. State-level studies are needed to improve projections of how climate change will alter habitats, the distributions of species, and the stressors that affect both. Studies are also needed to inform strategies that will support adaptation of biodiversity to a changed climate (see Appendix IV).

Habitat Recommendation 13: Habitat and landscape conservation and training programs for all citizens **R P**

Description of recommended action. The state should invest in education to improve public understanding of the need for better conservation, protection, and restoration of Minnesota's habitats and landscapes. Expanded education, information, and training efforts are needed to bring focus to the complexity of land, water, and land-water interactions in

a landscape context. These efforts must be directed to all citizens from K–12 educational levels to higher education, and the general public. A broad range of teaching and information sharing materials has been developed. Means of delivering the materials, goals for communicating them, and ways to measure success need yet to be developed.

As people have migrated to cities over the past 50 years, awareness of natural resources has declined. To attain a more informed constituency, whether as interested citizens or as professionals doing natural resources work, investment is needed. Technical information and transfer of that information is needed for people to grow an awareness of natural resources, and appreciation for monitoring, assessment, and data evaluation.

Land Use Recommendations

Community Land Use

Land Use Recommendation 1: Fund and implement a state land use, development, and investment guide

Description of recommended action. The state spends billions of dollars each year on infrastructure, local government and business assistance, and regulation in order to safeguard the environment, help business and communities thrive, and improve the quality of life in Minnesota. However, there is no system or guide in place to provide an overview of how these funds are spent across agencies, to track how these dollars come together on the land and in communities, and to determine whether investments in one sector put those in another at risk.

In addition, while most land use decisions are made at the local level, state-level vision and leadership are needed on many natural resource issues. The state needs to clearly define its interests and use its resources to engage others in securing those interests for the long term. Therefore the preparation and implementation of a state land use, development, and investment guide should be funded. The guide would provide a way to define, quantify, and unify state goals and investment objectives across social, economic and environmental sectors. It would offer the opportunity to reconcile conflicting goals and preserve Minnesota's natural resources. This is more important than ever, given the intense competition for land and resources and the chronic scarcity of state funds coupled with the uncertainties introduced by climate change.

Land Use Recommendation 2: Support local and regional conservation-based community planning

Description of recommended action. The objective of this recommendation is to promote land use planning that advances the permanent protection and restoration of Minnesota's natural resources, important agricultural areas, and open space by supporting conservation-based planning in local and regional communities. The recommendation contains four elements:

- Demonstration (pilot projects)
- Incentives
- Tools and technical assistance
- Investment in base data

This strategy builds on the broader vision, goals, and criteria established under land use recommendation 1—the state land use, development, and investment guide—and refines it for local and regional use. Local governments and conservation organizations can be key agents in implementing the SCPP and local stewardship significantly expands the state's capacity to protect and restore natural areas. Supporting local and regional communities in conservation-based planning will help communities establish long-term goals that are consistent with the state's goals, and allow communities to implement those goals as development occurs.

In order to support conservation-based planning in local and regional communities, four elements are needed: Demonstration, incentives, tools and technical assistance, and base data. The following subrecommendations describe each of these elements.

2A. Demonstrate conservation-based planning through pilot projects

Pilot projects that embody all the elements of good conservation-based planning, as outlined above, would help create an understanding among local and regional communities of the processes involved, identify barriers, and demonstrate benefits. The projects would also generate feedback on adapting strategies for optimal function and effect. Different approaches may be appropriate in different parts of the state, depending on the issues of concern to a particular community or region. Therefore, funding for three types of pilot projects is recommended.

- Conservation-based planning in a variety of local communities
- Conservation-based planning along a rapidly developing transportation corridor (involving multiple communities)
- Conservation-based planning resulting in an AUAR-certified comprehensive plan

2B. Provide incentives to local governments and conservation organizations for conservation-based planning

Recent trends in decreasing federal and state natural area grant programs and decreases in general state aid to local governments have undermined local planning and stewardship capacity, even as growth pressures on natural resources have increased. Financial incentives are needed to engage local partners in planning and implementation that meets local and statewide conservation goals.

- Provide financial assistance to communities to undertake conservation-based planning
- Provide financial assistance to communities to support implementation of conservation-based plans

2C. Provide tools and technical assistance for conservation-based planning

To develop conservation-based plans, communities must have access to appropriate tools and technical assistance. These include:

- Carbon calculator for communities
- Improve agricultural land preservation tools
- Develop and deliver outreach materials
- Establish a Minnesota natural resources and development partnership
- Invest in building state assistance capabilities

2D. Invest in generating base data and information necessary to support conservation-based planning

Accurate information about the type and quality of natural resources is essential for making sound planning decisions. Improved planning that uses land cover and other types of natural resources information can identify areas in need of restoration, areas for protection, areas for landscape connectivity, and areas more suitable to development that minimize or avoid environmental degradation and loss. Nearly all of these proposed land use recommendations require accurate, reliable, and standardized information about the type, location, and quality of existing resources as well as an understanding of general land cover type. However, this information is currently severely lacking in the majority of the state, particularly in critical areas.

- Develop appropriate MLCCS data in areas vulnerable to near-term development or conversion of land cover
- Update statewide land-cover databases and remote sensing capabilities

Land Use Recommendation 3: Ensure protection of water resources in urban areas by evaluating and improving current programs

IP

Description of recommended action. Changes to surface water runoff due to new development and redevelopment have significant impacts on most of the major drivers of change of Minnesota's natural resources. The state of Minnesota has a set of powerful surface water regulatory programs that are largely directed at controlling land use change and development practices to improve and protect water quality. These programs are supported and driven by federal and state statutes and rules, and include:

- Impaired waters and Total Maximum Daily Loads (TMDLs)
- National Pollutant Discharge Elimination System (NPDES) storm-water permitting
  - Municipal separate storm sewer systems (MS4)
  - Construction sites
  - Industrial sites
- Nondegradation for all waters
- Shoreland management

3A. Credit system for storm-water and LID BMPs

For a limited number of storm-water BMPs, such as storm-water National Urban Runoff Program (NURP) ponds, a strong system of credits is integrated into the storm-water regulatory framework at multiple levels. This system of credits needs to be extended to a much wider range of BMPs, including low-impact development (LID) practices, conservation design, and nonstructural BMPs.

NURP developed a system that was very effective in supporting the design and installation of storm-water ponds.

The result of this effort was the universal adoption and acceptance of storm-water ponds across all sectors. Designers working on projects could use the design guidelines to include storm-water ponds in their projects in order to meet permit and design standards from multiple reviewing and approving government entities.

This system needs to be extended to a wide range of relatively new BMPs. Many of the design standards are currently incorporated into the Minnesota Stormwater Manual. What is missing is a credit system for implementing the BMPs. A well-defined and strongly-supported credit system is needed to motivate developers, builders, and local government units (LGUs) to include these practices in their projects.

This credit system must apply to multiple levels of the landscape. In a manner similar to NURP ponds, the credit system should apply to individual sites and construction projects. The credit system should also function at the regional and statewide levels. The Lake Pepin TMDL, for example, will probably call for a significant phosphorus reduction across the 60% of the lake's watershed in Minnesota. An effective credit system should function at this level to enable cities to determine whether their storm-water BMP programs are sufficient to meet the waste load allocation from the TMDL.

3B. Simple modeling protocols for TMDL compliance

TMDL studies produce waste-load allocations and load allocations for pollutants. These allocations result in a responsibility for implementation of restoration measures by cities, other LGUs, and other landowners. In the case of municipal wastewater treatment plants and cities covered under the NPDES MS4 storm-water program, these responsibilities take the form of permit requirements.

This simple modeling system would consist of a load estimating model based on land use and loading rates combined with a total load reduction model based on load removal rates and volume reduction rates appropriate for a wide range of BMP systems. This simple model could be used by all cities

and other landowners with relatively low technical knowledge and manageable input requirements.

3C. TMDL BMP implementation monitoring

Draft and implement a program of detailed BMP monitoring in selected representative watersheds with TMDL studies and implementation plans. In addition to monitoring the water body itself, this program would involve monitoring throughout the watershed to determine the effectiveness of BMP systems implemented by various entities and types of entities (agriculture, silviculture, cities, storm-water, wastewater, etc). It would also involve detailed in-stream or in-lake monitoring to better understand processes in the water bodies themselves, as well as contributions from the landscape and municipal infrastructure.

This monitoring program may include some BMP implementation monitoring – simply counting and documenting the extent of the implementation of BMP systems across the landscape. The main focus, though, will be water-quality monitoring to directly measure the impact and effectiveness of BMPs by measuring water-quality parameters at discharge points and in water bodies near or adjacent to the BMP systems.

This scale of monitoring would provide an important accountability framework for all parties involved in implementing BMPs and meeting water-quality standards (cities, watershed organizations, agriculture, etc.). This type of monitoring program has also been referred to as "sentinel watershed" or "representative watershed" monitoring.

The equipment to perform this monitoring, if purchased using state funds, should be owned by the state. This will significantly expand the state's monitoring capacity.

3D. Water quality media campaign

Further develop and expand the reach of Minnesota Water—Let's Keep It Clean!, a storm-water pollution prevention campaign produced by a coalition of cities, nonprofits, agencies, watersheds, and others working to develop pollution prevention resources for the Twin Cities metropolitan area.

This campaign is designed to enhance public education and awareness of storm-water pollution prevention strategies by disseminating messages in mass media and providing educational materials for educators and municipal staff through the www.cleanwatermn.org Web site.

Agricultural Land Use

Land Use Recommendation 4: As much as possible, transition renewable fuel feedstocks to perennial crops **S P**

Perennial species protect the soil from erosion throughout the year and reduce the volume of early-season water runoff (related to stream-bank erosion) because of a longer annual duration of evapotranspiration and increased infiltration. Additionally, the use of perennial cellulosic crops as feedstock for biofuels can significantly reduce life-cycle GHG emissions relative to grain-based ethanol production systems. Because an appropriate selection of perennials is less sensitive to risks such as temporary flooding and drought, and presents less risk of erosion and nutrient runoff, it can complement annual food and feed crops by occupying the more vulnerable land areas, stabilizing incomes and protecting the environment.

Conservation and protection of water quality and soils are strongly influenced by land cover. Perennial species protect the soil from erosion throughout the year and reduce the volume of water runoff (related to stream-bank erosion) because of a longer annual duration of evapotranspiration and increased infiltration. Additionally, the use of perennial crops as

feedstock for biofuels can significantly reduce life-cycle GHG emissions relative to grain-based ethanol production systems.

4A. Invest in research on parameters that control successful perennial feedstocks

Description of recommended action. Invest in research to determine ecoregion and site-specific suitability and management of perennial species for use as feedstock for biofuels and other products. Minnesota agro-ecoregions (Figure L9) differ significantly in suitability for perennial species that can serve as feedstocks for biofuels and other products. Growing season length and temperature, precipitation, and soil characteristics are important determinants of species suitability. Research is necessary to help producers select site-specific perennial species for use as cellulosic feedstocks.

4B. Investigate policy changes on fuel feedstock transition

Description of recommended action. Investigate, analyze, and adopt policy that will gradually transition biofuel feedstocks produced for the Minnesota ethanol mandate to perennial crops. The transition should be matched to availability of processing technology and requirements for infrastructure development.

Land Use Recommendation 5: Reduce stream-bank erosion through reductions in peak flows **R P**

Reductions in peak and total flows by modification of drainage systems, and constructing and restoring wetlands and riparian areas in strategic locations, will reduce attendant stream-bank and near-channel erosion, a major source of sediment in the Minnesota River basin. While agricultural drainage is necessary, research-based modifications such as shallower tile placement can reduce downstream impacts. With placement guided by more accurate digital elevation data, strategically located water storage would lessen the impact of both surface and subsurface drainage systems on stream channels and reduce nutrients in water. Some water storage areas could be occupied by biomass crops not sensitive to temporary flooding.

5A. Invest in research that quantifies the relationship between artificial drainage and stream flows

Description of recommended action. Invest in research to determine the quantitative relationship among trends in precipitation, artificial drainage systems, and stream hydrology.

Determination of the quantitative relationship among trends in precipitation, artificial drainage systems, land cover, and stream hydrology would allow more precise targeting of mitigation strategies, since the relationships are complex and strategies will be site specific.

5B. Investigate policy changes for goals for peak flow reductions

Description of recommended action. Set research-based goals for peak-flow reductions through hydrologic detention, wetland and riparian zone restoration, and other measures.

5C. Invest in targeted water detention

Description of recommended action. Invest in strategically targeted programs for reduction of peak flows through increased water detention in agricultural drainage systems, including wetland construction and restoration, in-ditch storage, and conservation drainage.

Targeted drainage water detention will reduce peak flows and attendant stream-bank erosion. It will also reduce sediment and nutrient contributions from uplands through sediment deposition and denitrification. Hydrologic detention measures should

complement programs and policies to reduce flows through more perennial crops and buffers.

5D. Investigate policy changes for peak flow reduction

Description of recommended action. Investigate, analyze, and adopt science-based policy that strengthens mitigation of peak flows from artificial drainage systems.

Land Use Recommendation 6: Reduce upland and gully erosion through soil conservation practices **R P**

Education, targeted incentives, and practice-flexible, outcome-based soil and water conservation plans where needed would reduce soil erosion from fields and areas of concentrated flows. The result would be reduced sediment and phosphorus delivery to water and protection of soil productivity. Certified crop consultants already deliver conservation-related services (nutrient and pest management) and can provide other field-based services in support of soil conservation to augment services provided by the USDA, NRCS and Soil and Water Conservation Districts (SWCDs).

Soil erosion from sloping fields, especially those near unbuffered streams, is a significant source of sediment and associated phosphorus. Current federal Farm Bill and energy policies and incentives are increasing row-crop production (Figure L8), especially on the sloping soils of southeastern Minnesota, where a high proportion of land has been in pasture and perennial crops. The increased width of tillage, planting, and spraying implements makes maintenance of erosion-control structures such as terraces and grassed waterways more difficult and less likely. The increased prevalence of corn following corn for ethanol production increases the prevalence of intense tillage to reduce crop-residue effects on corn early growth and yields. The percentage of cropland operated by renters, many of them with short-term leases and cash rents, exceeds 40% (2002 Census of Agriculture), lessening the incentive for long-term soil stewardship. Reductions in upland and gully erosion will require stronger incentives and standards for soil conservation if the trends above continue.

6A. Invest in soil conservation practices

Description of recommended action. Invest in education and incentive programs, leveraging federal, state, and local resources when possible, that target landowners in critical sediment source areas.

Landscape areas differ in potential to deliver sediment and nutrients to water, based on proximity, slope, and other factors. Education and incentive programs that target high-contributing areas will achieve more mitigation per dollar invested than nontargeted programs (Figure L5).

6B. Investigate policy changes to reduce upland and gulley erosion

Description of recommended action. Investigate the feasibility of developing or amending policy, such as water quality rules, to phase in outcome-driven, practice-flexible soil and water conservation plans for all farms with potential to deliver sediment and nutrients to water bodies. The phase-in priority could begin with farms in watersheds with sediment and phosphorus-related impairments.

Land Use Recommendation 7: Enable improved design and targeting of conservation through improved and timely data collection and distribution **S P**

Determination of sediment source areas, targeting of conservation practices, determination of effectiveness of practices, and installation of conservation structures all require adequate resource data. These include high-resolution digital elevation data, land cover, crop residue coverage, and conservation practice effectiveness monitoring.

7A. Invest in data collection

Description of recommended action. Invest in the following basic information to support soil and water protection:

- Statewide high-resolution digital elevation data (LIDAR) and associated high-resolution watershed delineation
- Statewide updated land-cover data
- Maps of the artificial drainage network
- A long-term program monitoring the effectiveness of BMPs on critical source areas
- An annual crop residue survey (following planting) of sloping lands near streams
- A periodic detailed survey of benchmark sampling sites to determine trends in soil erosion, as was carried out previously by the NRCS for the National Resources Inventory
- Periodic remote sensing by aircraft and/or satellite for land cover and other attributes

Forestry Land Use

Land Use Recommendation 8: Protect large blocks of forested land **L P**

Description of recommended action. The objective of this recommendation is to identify, prioritize, and promote protection of large blocks of forested land, focused on areas that are adjacent to large publicly held blocks and that are at risk of parcelization, conversion, and fragmentation.

8A. Identify forestlands for protection

Research is needed to indicate the location and characteristics of land that should be targeted for protection. Specifically, research is needed to:

- Provide a detailed map of land parcelization trends in Minnesota
- Identify targeted blocks of threatened land near large blocks of publicly held land

8B. Prioritize forest lands for protection

Prioritization should be based on proximity to large blocks of already protected land (both public and private) to maximize the resiliency of the forests, and should include a specific focus on protecting working forests so that forest products can continue to support regional economies of Minnesota. Protection should focus on at-risk and high-priority lands (generally 100 acres or more) in both the Laurentian mixed forests and eastern broadleaf forests.

8C. Support and promote permanent protection of forest lands

Permanent protection of forestlands through fee title acquisition or conservation easements will need to be supported and promoted to landowners through financial incentives, education, and technical assistance.

Land Use Recommendation 9: Assess tools for forest land protection **L P**

Description of recommended action. This recommendation is focused on identifying, examining, and monitoring the impacts of diverse tools in order to assess their effectiveness for forest land protection.

The state can make a spectrum of investments to protect forestland. Some directly support permanent protection of forestland, such as fee title acquisitions, conservation easements, and tax policies. Others, such as cost share, forest certification, and forest stewardship planning, support forestland protection indirectly by supporting sustainable management practices.

Each tool has a role in protecting Minnesota's forests, and the choice of tools depends on many factors, including site-specific conditions and cost effectiveness. Protection tools have been successful in protecting critical forest lands in Minnesota, but a comprehensive assessment of their appropriateness in various settings is lacking.

Land Use Recommendation10: Support and expand sustainable practices on working forested lands SP

Description of recommended action. The objective of this recommendation is to promote and implement sustainable forest practices in working forests in Minnesota. This strategy builds on the accomplishments of the MFRC voluntary guidelines. Strategies include education, financial incentives to landowners, research and demonstration, and direct investment in specific management strategies.

10A. Educate consumers on benefits of certified wood to increase the demand for sustainably raised timber in Minnesota

10B. Educate landowners and forest managers on best management practices to protect working forests

10C. Promote collective/cooperative management of forestlands at a landscape level in order to increase the multiple benefits of forests (timber, air quality, carbon sinks, water quality, etc.)

10D. Provide incentives for sustainable forestry practices

10E. Develop and test new management practices to improve ecosystem resilience

Invest in research and demonstration areas that identify, examine, and monitor the impact of management scenarios on ecosystem resilience and increase understanding of the impact of climate change and other key drivers on forested ecosystems.

10F. Support the use of fire to increase forest health and biodiversity

Use of fire is supported by management strategies currently being developed by DNR for newly updated Ecological Classification System (ECS) plant community classifications.

Transportation Recommendations

Transportation Recommendation 1: Align transportation planning across state agencies and integrate development and review across state, regional, metropolitan and county/local transportation, land use and conservation programs IP

1A. Institute interagency alignment of planning to coordinate transportation with other state planning cycles

The state should coordinate cyclical statewide plans across state agencies (e.g., MnDOT, Minnesota Pollution Control Agency [MPCA], DNR) and provide environmental data coordination and analysis, including determination of vulnerable ecological areas by resource, cumulative impact analysis and projection, performance standards and best practices research, and recommendations for land acquisition. MnDOT would continue to have the role of responsible governing unit (RGU) for surface transportation projects.

If implemented, integration would provide incentive for feedback systems through monitoring and strategic research programs, organize and align early review of projects, and promote nonstructural and structural practices and performance measures.

1B. Integrate streamlined statewide environmental transportation project review with other statewide and cross-jurisdictional planning, design, budgeting, and review programs

Adopt environmental interagency stakeholder involvement (streamlining) project planning protocols through coordination across state, metropolitan, and county/local transportation, land use, and conservation decision-making responsibilities.

Modify the highway project development process (HPDP) to create a cross-consultative regional

and local forum and an environmental team to lead federal- and state-mandated impact assessment. MnDOT and the EQB would create the forum and teams with participation of other review agencies, including MPCA, DNR, the Minnesota State Historic Preservation Office (SHPO), and metropolitan and county units.

Description of recommended action. A coordinated statewide interagency planning process around transportation and other statewide initiatives will enhance efficiencies and coherence of funding and other efforts with resource conservation objectives.

Once a project is approved in the annual review process associated with the STIP, the purpose and need statements that formed their environmental assessment parameters will have been set. Since these projects have already been prioritized at the MnDOT district level through the regional ATP using the STIP projection of costs of minimization/mitigation, they would be potential candidates for streamlined environmental review. When streamlined environmental assessment occurs, EQB and MnDOT (and in the cases of transit corridors, the Metropolitan Council and/or the counties that are the joint RGUs for the project) are responsible to align all interagency environmental processes and to set and coordinate project performance standards and best practices and develop monitoring. This process will have local coordination based on analysis and cross-consultation via a new ETAT process.

Transportation Recommendation 2: Reduce per capita vehicle miles of travel (VMT), through compact mixed-use development and multi- and intermodal transportation systems

Description of recommended action. The principal means by which VMT can currently be reduced are through reducing growth in lane miles and increasing intermodal and multimodal (including nonmotorized) transportation access and use. In the context of an automobile and truck fleet that cannot turn over (i.e. be replaced by more efficient vehicles and new fuels) in less than a decade regardless of other conditions, current efforts should concentrate on supporting planning and design of compact, mixed-use urban and suburban development and corresponding intermodal and multimodal transportation networks. Existing and proposed MnDOT plans and processes (e.g., interregional corridor plan, ATP, ETAT) should be used as foundations for support of compact urban and suburban development.

2A. Use alternative transportation planning and design processes and tools to support compact mixed-use development

Incorporate expanded transportation demand modeling (TDM) and Access Management modeling and other related strategies in statewide and local planning and project design to enhance local multimodal and passenger intermodal access that supports compact mixed-use development and resource conservation. For example, expanded Transportation Demand Management (TDM) analysis of MnDOT interregional corridor commutesheds, (i.e., areas of service at peak across modes) could suggest alternatives to usual applications of the functional classification standards. It is also important to have uniformity among expanded TDM requirements across neighboring communities so cities that implement expanded transit and nonmotorized TDM are not penalized budgetarily for their efforts by placing themselves at a disadvantage compared to civil divisions that do not implement TDM.

2B. Provide incentives for compact mixed-use development

Encourage and prioritize qualified transit and nonmotorized system fiscal investments in the STIP for regions that integrate local resource planning and performance-standard based design for compact development (Figure T6). Incorporate economic and employment development into resource protection.

For example, focus these approaches on the Twin Cities metropolitan area and other employment and service centers.

2C. Augment and communicate information on practices and performance of compact mixed-use development and transportation

Conduct interdisciplinary research (e.g., case studies) to correlate VMT changes with types, locations and scales of development in relation to transportation demand and planning for systems and modes. Establish databases on VMT-related statistics for resource-sensitive roadway network design and for patterns, intensities and combinations of land uses in multimodal and passenger intermodal development. EQB could provide research coordination of state agencies (e.g., MnDOT, MPCA); counties and localities (including minor civil divisions), educational institutions, and nonprofit stakeholders and foundations. Use this information to develop planning and design toolkits for the state, counties, metropolitan and local communities, developers, and citizens that include performance standards scorecards of structural and nonstructural approaches to VMT minimization/mitigation (e.g., based on models of per capita/per household VMT by land use configuration).

Transportation Recommendation 3: Develop and implement sustainable transportation research, design, planning, construction practices, regulations, and competitive incentive funding that minimize impacts on natural resources, especially habitat fragmentation and nonpoint source water pollution

Description of recommended action. This recommendation seeks to minimize, adapt, and mitigate habitat fragmentation and nonpoint source pollution from surface transportation (and related land uses) through research and design linkages via EQB, MPCA, and other stakeholders with MnDOT, and through expanded regulation and funding incentives for innovative project approaches and increased environmental innovation on roadway design standards.

3A. Develop research programs on habitat fragmentation and planning, design, and construction techniques for adaptation, minimization, mitigation, and restoration

Roads fragment habitat. Some species are more or less impacted by road network configuration, width, pavement and shoulder treatments, bridging, and sizes and types of culverts. Species are generally also benefited by vegetated edge design and management and grade-separated crossings such as bridges or culverts. While there is a body of existing research around the academic efforts of Richard Forman, Daniel Sperling, and others, the main foci of environmental mitigation of habitat loss are still largely practice-based. See, for example, the FHWA CSS Web site (http://www.fhwa.dot.gov/context/index.cfm). For cases, see http://www.contextsensitivesolutions.org/.

Research is needed to explain land-cover and species relationships to local and regional impacts of road functional classification changes (widening and/or curbing), new routes, bridges, culverts, and other projects. Further research is needed to document effectiveness of innovative techniques including hybridizations of the functional classification, CSD/CSS, and innovative crossings of water.

3B. Develop research and design linkages of nonpoint source pollution to surface and ground waters from right-of-way and adjacent land uses that would improve performance of roadway-based infrastructure in relation to hydrological resource resilience and overall stability

In this state, water is always close, whether on the surface or in the ground. The cumulative and spatial impacts of transportation and associated land use development on water quality and aquatic habitat

are only beginning to be understood (Figure T7). Research is needed to develop a finer understanding of the spatial and biophysical dynamics and metrics of transportation-induced contamination of water, especially surface water, but in areas of high permeability, also ground water. Research on fate to ground and surface waters by land cover, land use, and soil types is needed to improve statewide storm-water performance standards for sediments and contaminants TMDLs. These standards could inform review of all transportation projects for NPDES permits as recommended here. The research would identify issues and model and test hypothetical conservation planning, design, implementation, and management practices across scales.

3C. Implement a standard baseline of habitat fragmentation and nonpoint discharge review for all projects that increase impervious highway roadway or drainage infrastructure surface in Minnesota

Require all new roadway projects or functional classification upgrade projects on existing roads to secure NPDES permits.

This recommendation could link project development more closely to comprehensive habitat data and impact analysis via the connection between the MnDOT statement of project purpose and need and environmental review. The statement of purpose and need provides the basis for developing a range of reasonable alternatives and, ultimately, identification of the preferred alternative. It also sets budgetary frameworks. If properly described, it also limits the range of alternatives that may be considered reasonable, prudent, and practicable in compliance with Council on Environmental Quality (CEQ) regulations, Section 4(f) of the Executive Order on Wetlands and Floodplains, and the Section 404(b)(1) guidelines. Further, it demonstrates the problems that will result if the no-build alternative is selected (http://www.dot.state.mn.us/tecsup/xyz/plu/hpdp/book1/2b/class1/purpose-need.html).

3D. Pilot incentive program grants for habitat and water-quality conservation design and construction innovations in transportation projects

The state should consider creating a grant program which would offer grants to MnDOT, counties, and local governments for transportation projects that demonstrate new or catalytic conservation approaches to road and related drainage design, development or (re)construction (Figure T8).

Energy Recommendations

Goal A

Promote alternative energy production strategies that balance or optimize production of food, feed, fiber, energy and other products with protection or improvement of environmental quality, including:

- water quality and water resource supply
- wildlife habitat
- greenhouse gas emissions
- soil quality and critical landscapes

Energy Recommendation 1: Develop coordinated laws, policies, and procedures for governmental entities to assess renewable energy production impacts on the environment

IP

Develop laws, policies, and procedures for governmental entities to assess and manage the cumulative impacts on the environment of proposed and established energy production facilities, focusing on both individual and combined impacts. Information from this effort should be used to develop a biennial report to the legislature that informs the direction of the statewide conservation planning strategy.

Description of recommended action. Minnesota Statutes 116D.10-.11, require state agencies and the governor to prepare a biennial report to the legislature on efforts to address Minnesota's energy and environmental policies, programs, and needs. This requirement provides an ongoing vehicle within state government for internalizing, integrating, and tracking implementation of recommendations developed by the SCPP. Further, while the SCPP lays much of the foundation for future strategy reports, these reports will need to address other issues and describe how SCPP recommendations fit with them. For example, biofuel production initiatives are one component of a proposed package for meeting state greenhouse gas emission reduction goals. In addition, they are potentially a significant vehicle for addressing impaired waters. The biennial strategy report must ensure that these efforts complement one another (along with other state goals, such as enhancement of wildlife habitat) and that they are kept on track. This report would integrate information coming out of the permitting process for individual biofuel plants to paint a statewide picture of how energy production in Minnesota impacts state resources.

Two actions are needed. First, the law should be amended to explicitly reference the SCPP and to streamline requirements. Second, strategic investments are required to build state capability to develop biennial assessments and track progress across issues. A third package of actions, those investments needed to follow up on other conservation strategy recommendations, will contribute to the foundation upon which biennial assessments will be based.

Energy Recommendation 2: Invest in farm and forest preservation efforts to prevent fragmentation due to development guided by productivity and environmental vulnerability research

Description of recommended action. Farm and forest fragmentation is a serious threat to wildlife habitat and ecosystem biodiversity. Expansion of urban and agricultural areas often produces fragmentation of forests, and urban expansion reduces the land resource available for producing food, feed, fiber, and fuel. Strategies and policies are needed to protect farms and forests, and prevent fragmentation. The 2008 legislature provided a $53,000 grant to the Minnesota Forest Resources Council (MFRC) to match $150,000 in funding from the Blandin Foundation and Iron Range Resources for a study of forest parcelization and development, an assessment of available policy responses, and policy recommendations to the 2010 legislature. The 2007 legislature provided a $40,000 grant to the UM Institute on the Environment that built on earlier MFRC research to assess potential impacts of parcelization and development on wildlife habitat and biodiversity in northern Minnesota. The state should consider recommendations from these studies relative to potential changes in policy or law, and relative to potentially funding specific proposals to prevent forest and farmland fragmentation due to development.

Energy Recommendation 3: Invest in perennial biofuel and energy crop research and demonstration projects on a landscape scale

Invest in research and demonstration projects on a landscape scale to evaluate management and harvest techniques and yield potentials for various perennial biofuel crops (including monocultures of perennial grasses or woody biomass and polycultures) on different soils and agroecoregions throughout the state.

Description of recommended action. Based on nationwide analyses of potential biomass resources done by the U.S. Department of Energy (DOE) and USDA, energy crops are expected to play a major role in development of biomass resources for next-generation biofuels or carbon-neutral electrical generation. Coordinated research and policy experimentation should be carried out to develop and refine renewable energy production systems based on diversified biomass farming that emphasizes perennial

biomass crops. This initiative has great potential to improve environmental quality and support economic revitalization in rural Minnesota, while providing large amounts of biomass for renewable energy and bio-products. Developed properly, diversified biomass farming can help support current production agriculture while enhancing rural economic opportunities, producing locally grown renewable energy, and addressing important statewide water quality and environmental issues. In order to make energy crops a practical reality in the state, work is needed to improve yields through genetics and through identification of the optimal sites and BMPs for these crops. The state should support demonstration projects that bracket the various parts of the state so both yield and environmental questions associated with perennial crop production for given state locations can be ascertained in a timely manner. Existing data generated by the MFRC on forestry issues and county-based agricultural production data developed by the Center for Energy and Environment may be used to determine biomass availability. Opportunities and limitations associated with use of these resources should be identified. The effects of various assumptions about environmental impacts and biomass availability should be analyzed.

To move forward on commercial-scale pilot renewable-energy projects based on diversified biomass farming, it will be necessary to take a comprehensive approach to establish a bio-refining system that integrates production, processing, feedstock conversion/refining, and end-use market applications including but not restricted to energy production.

Energy Recommendation 4: Develop policies and incentives to encourage perennial crop production for biofuels in critical environmental areas S P

Invest in research and develop policies and financial incentives to encourage perennial crop production for biofuels on expiring CRP lands and other environmentally sensitive or low-productivity lands. These research efforts, policies, and incentives should result in a balance between profitability and productivity on one hand, and benefits to the environment and wildlife habitat on the other hand.

Description of recommended action. The state should develop firm policies that would encourage the growth of energy crops on conservation lands and marginal farmlands and also reflect environmental and ecological needs for animal habitat and water resource conservation. There is currently an economic incentive for producers to plant productive expiring CRP land with row crops and small grains. Currently, there do not appear to be economic incentives for farmers or growers to grow perennial energy crops on these expiring environmentally sensitive lands. Policies and incentives are needed to encourage perennial biofuel crops on the most productive expiring CRP lands. Managers of low-productivity CRP lands should be encouraged to re-enroll them in conservation programs.

Energy Recommendation 5: Invest in data collection to support the assessment process S P

Invest in data collection to support the assessment process described in energy and mercury recommendation 1.

Data collection is needed in the following areas:

- Water quality
- Water resource sustainability (surface and ground water)
- Wildlife habitat and biodiversity
- Invasive species
- Land use changes
- Soil compaction, cover, and residue levels
- Infrastructure and storage needs for alternative fuel strategies
- GHG emissions

Description of recommended action. Minnesota needs a comprehensive approach to monitoring the cumulative impact of its energy production on the state environment. Data collection to support the monitoring and assessment of energy production should cover every step of the production process, and has the potential to inform the biennial report described in energy recommendation 1. Currently, many of the data needs listed above are incomplete or lacking entirely. Minnesota should fund data collection in these categories in locations around the state.

Energy Recommendation 6: Invest in research to determine sustainable removal rates of corn stover and to establish incentives and Best Management Practices (BMPs)

Invest in research to determine sustainable removal rates of corn stover for animal feed and biofuel production, and to establish incentives and BMPs for mitigating the adverse impacts of corn stover removal on soil carbon and erosion.

Description of recommended action. There is currently a debate among researchers and practitioners regarding how much corn stover may be removed from a field for biofuel or animal feed processing without significant negative impacts on soil carbon and erosion rates. Since the corn stover biofuel industry is close to being operational, the answer to this question in the Minnesota context is needed as soon as possible. If negative impacts of corn stover removal may be mitigated through farmer-installed BMPs (riparian buffer strips or cover crops), the state should encourage adoption of these BMPs.

Energy Recommendation 7: Invest in research to review thermal flow maps for Minnesota

Invest in research to review current thermal flow maps for Minnesota to assess their validity/accuracy, and if necessary develop improved thermal flow maps, with the goal of informing geothermal power development in Minnesota

Description of recommended action. As a first step, the existing heat flow map for the state that was produced some years ago should be critiqued by experts from the Minnesota Geological Survey and their counterparts at the NRRI. Recent investigations of the current map seem to indicate that the existing projections for heat flow may be significantly underestimated due to the sampling technique used in the original data collection effort. Other countries at similar or higher latitudes, most notably Germany and Denmark, are adopting deep geothermal energy systems in order to produce necessary electrical power while reducing GHG emissions. A critical tool for assessing the viability of deploying this environmentally friendly energy technology is a thermal flow map for the state that relates the depth of the resource to the expected energy capture that may be possible.

Energy Recommendation 8: Invest in applied research to reduce energy and water consumption and green house gas emissions in present and future ethanol plants, and enact policies to encourage implementation of these conservation technologies

Description of recommended action. Minnesota should invest in applied research and demonstration projects that reduce water consumption, energy use, and CO_2 emissions at corn-based ethanol plants.

Energy Recommendation 9: Invest in research to determine the life cycle impacts of renewable energy production systems

Invest in research to determine the life-cycle impacts of renewable energy production systems on the rural economy, greenhouse gas emissions, water sustainability, water quality, carbon sequestration, gene flow

risks, and wildlife populations at landscape and regional scales while building on previous studies. This research should be used to direct the development of the renewable energy industry in Minnesota, including the storage and infrastructure needs associated with alternative fuels.

Description of recommended action. This recommendation is compatible with energy recommendations 1 and 5 in that it aims to estimate the cumulative impact of Minnesota's renewable energy development through data collection and analysis. Basically, the recommendation is that energy policy and incentives at the state level take a systems view, accounting for the resource benefits and impacts associated with each stage of energy production, transport, consumption, and associated waste processing. Research will be needed for legislators, citizens, and industry to make informed decisions about these benefits and impacts. Language to this effect should be added to legislation relevant to alternative energy development.

Energy Recommendation 10: Invest in research and demonstration projects to develop, and incentives to promote, combined wind power/biomass, wind power/ natural gas, and biomass/coal co-firing electricity projects

Description of recommended action. Integration of various energy production techniques that can help optimize the energy production system is an important opportunity for local communities, medium-size commercial and industrial users, and institutions in the state. As shown with the energy modeling work at the UM Morris, campus, a combined wind and biomass energy system allows overall optimization of energy production and the potential of almost complete energy self-sufficiency for the institution. The adoption of combined systems allows energy storage, peak loading, and stable energy generation issues to be addressed in a holistic fashion. For rural applications where biomass availability is high and wind conditions are favorable, systems can be envisioned where a wind turbine system is coupled with a biomass gasification system to enhance the storage of off-peak power through generation of hydrogen and oxygen using water electrolysis. The produced gases then can be utilized to help facilitate improved gasifier operations. The stored oxygen can be used to displace air in the gasifier combustion process, and the hydrogen can be added to the producer gas to enhance its chemical potential to produce a syngas for natural gas replacement or additional power generation. The enhanced syngas can also be utilized to produce liquid fuels for use locally. Additionally, wind power/natural gas and biomass/coal electrical generation projects should be demonstrated that will allow GHG reductions while stabilizing electrical generation capacity in the state.

Energy Recommendation 11: Invest in research and enact policies to protect existing native prairies from genetic contamination by buffering them with neighboring plantings of perennial energy crops

Description of recommended action. In developing Minnesota's perennial biofuel industry (see energy recommendation 3), varieties may be selected for widespread planting that are not native to Minnesota, or that have been genetically modified from native plants. These biofuel plantings have the potential to genetically contaminate the state's native prairie remnants if they are close to these ecosystems. Research should be undertaken on the potential for this contamination, and policies should be developed to prevent it through mandated buffer plantings.

Energy Recommendation 12: Invest in efforts to develop sufficient seed or seedling stocks for large-scale plantings of native prairie grasses and other perennial crops

Description of recommended action. If perennial crops are to become a significant component of biofuel production in Minnesota, sufficient genetic stock for large-scale plantings will be necessary.

Goal B

Promote a healthy economy, including strategies that promote local ownership of alternative energy production and processing infrastructure, where appropriate.

Energy Recommendation 13: Invest in research and policies regarding "green payments" SP

Invest in research and policies on implementation strategies and optimal pricing schemes for green payments. These payments may be applied to perennial energy crop production on expiring CRP land, in impaired watersheds, on environmentally sensitive or low-productivity land, on DNR working lands, and on annual cropland. Multiple tiered payments for water quality, carbon, wildlife, fuel production, and other benefits may be considered, and special attention should be paid to helping producers through the transition period for perennial energy crop production. Knowledge and insights gained from previous multifunctional fuelshed experiments (at Waseca, Madelia, and UM Morris, for example) should be applied.

Description of recommended action. This recommendation fits well with energy recommendation 2. If adopted together, these two recommendations would strengthen the state's efforts to protect environmentally sensitive land from intensive production, while providing benefits to farmers, local communities, natural resources, and wildlife. A green payment program should be informed by the most up-to-date scientific information on how biofuel production strategies impact natural resources. Farmers should be encouraged to plant perennial energy crops appropriate to their region (see energy recommendation 1).

Energy Recommendation 14: Investigate opportunities to provide tax incentives for individual investors in renewable energy (e.g., individuals who wish to install solar panels) ES

Description of recommended action. The state should make it easy and cost effective for individual homeowners or businesses to get their electricity from solar, geothermal, or wind power sources they install themselves. The specific financial mechanism needed to accomplish this goal should be developed in consultations between economists, policy makers, and citizen stakeholders. Other states (such as Massachusetts) have programs that might serve as an example.

Energy Recommendation 15: Invest in efforts to develop, and research to support, community-based energy platforms for producing electricity, transportation fuels, fertilizer, and other products that are locally/cooperatively owned SP

Description of recommended action. Many renewable energy sources (e.g., wind, biomass, and solar power) are located in the rural parts of the state. The localized development of alternative energy systems that can be placed at the source or nearby the source of the biomass materials will reduce the problems associated with logistical movement of unconsolidated biomass and reduce the transportation costs for biomass energy conversion. At the same time, the production and use of energy and energy products on a local basis will reduce infrastructure costs associated with power and fuels distribution. Both factors should allow localized development of smaller scale alternative energy systems that will benefit the local rural communities and add valued products to their economies. The state should encourage the development of these localized alternative energy systems by adoption of policies and incentives to facilitate their adoption. In addition, research and demonstration for systems that can facilitate the implementation of

this localized energy solution should be supported. Part of this support will involve transferring the lessons learned from successful community-based energy platforms (e.g., at UM, Morris; and Madelia, Coleraine Minerals Laboratory) to other communities interested in developing their own renewable energy platforms. The integration of local waste streams into energy production mechanisms is a key part of this recommendation.

Goal C

Promote efforts to improve energy conservation and energy efficiency among individuals, businesses, communities, and institutions.

Energy Recommendation 16: Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power, while simultaneously increasing renewable electricity production for transportation

ES

Description of recommended action. Powering Minnesota's current transportation fleet solely with biofuels or fossil fuels is not feasible in the long term. Fueling our vehicles predominantly with ethanol would place enormous pressure on the state's land resources, and would take land out of food production and conservation. Gasoline -powered vehicles contribute substantially to global climate change, and the rising price of gasoline creates an economic burden for Minnesota residents and businesses. Therefore, a state goal should be to transition the vehicle fleet away from dependence on both fossil fuels and biofuels. Powering vehicles with electricity derived from renewable sources makes sense from an ecological and sustainability standpoint, but is not yet economically viable. Several automakers have announced plans to sell electric vehicles within the next two years. However, the up-front cost for these vehicles will likely be more than for a conventional gas-powered vehicle. Minnesota should therefore provide appropriate incentives to encourage state residents and businesses to purchase electric vehicles, with the goal of creating a robust electric vehicle sector in the state. The use of electric vehicles for commuting to work and while shopping locally in metropolitan environments where the commuting distances are relatively short should especially be encouraged.

These vehicles will require more capacity in the electricity sector, which should be provided with renewable sources (wind, solar, and geothermal). Some of this excess capacity may be mitigated by encouraging electric vehicle owners to charge their vehicles during off-peak hours (i.e., at night).

Energy Recommendation 17: Promote policies and incentives that encourage carbon-neutral businesses, homes, communities, and other institutions with an emphasis on learning from institutions already working toward this goal (e.g., UM, Morris)

SP

Description of recommended action. Energy conservation and renewable fuel goals should be advanced simultaneously in Minnesota. Much more could be done to encourage businesses, homes, communities, and other institutions in Minnesota to dramatically reduce their carbon footprint through energy conservation and low-carbon fuel use. This recommendation fits well with energy recommendation 14—providing incentives for individuals to take advantage of solar, wind, and geothermal technologies would help them to become carbon neutral. Most likely, achieving carbon neutrality will require a portfolio of energy technologies and lowered energy consumption like that seen at UM, Morris (wind, biomass, etc.). Policies and incentives should be targeted to help individuals, businesses, communities, and institutions develop renewable energy portfolios appropriate for their situation.

Energy Recommendation 18: Implement policies and incentives to lower energy use of housing stock while monitoring the performance of improvements and calling on the utility industry to join in the effort SP

Description of recommended action. The envisioned housing improvements should consist of locally manufactured building material resources, especially those that use industry byproducts as their primary production feedstock. It is further recommended that the state develop specific policies and incentives to greatly improve construction practices for new residential homes. This can be accomplished by employing regional, sustainable building materials, and promoting the application of breakthrough systems approaches to new housing construction in an effort to drive down residential energy consumption. The UM has developed new technologies that present alternative means and methods for achieving vastly improved energy code compliance; these technologies should be further investigated to overcome implementation barriers.

Energy Recommendation 19: Promote policies and strategies to implement smart meter and smart grid technologies SP

Description of recommended action. Smart meter and smart grid technology is the next generation of electrical distribution technology. It provides for more local management and control of the energy used in the region and on site.

- The use of both smart meter and grid technology requires a series of advancements and changes in the current distribution practices. On a national level, there should be a uniform interconnection standard that would allow for a more robust mix of distributed and central-based power generation.
- At a state level, guidelines should be established for purchase of backup and supplemental power so that distributed combined heat and power (CHP) plants are not put at an economic disadvantage when negotiating with investor-owned utilities.
- At a state level, investor-owned and electric cooperatives should be encouraged to move to smart grid technology and economic studies should be carried out to determine the benefit of incorporating distributed generation into the state's transmission grid.

Energy Recommendation 20: Develop incentives to encourage the widespread adoption of passive solar and shallow geothermal heat pump systems in new residential and commercial building construction; invest in research to develop improved technology for storing renewable energy SP

Description of recommended action. It is recommended that policies be adopted to encourage the widespread adoption of passive solar and shallow geothermal heat pump systems in new residential and commercial construction. Furthermore, it is recommended that incentives be developed to allow more widespread adoption of these technologies in existing structures where it is deemed to be a practical method for reducing water and habitat heating and cooling requirements. Utilities should be asked to incorporate specific programs to encourage structure owners to adopt these technologies in order to help meet the state's conservation goal as noted in existing Minnesota statutes.

Energy Recommendation 21: Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options for MSW ES

Description of recommended action. A state mandate should be established that requires the capture of energy units from municipal solid waste (MSW) or municipal sanitary waste generated in the state. Appropriate statutory actions should be taken to establish targets for MSW use and minimization of landfill options for this waste material.

Energy Recommendation 22: Invest in public education focusing on benefits and strategies for energy conservation targeted toward individual Minnesota residents and businesses SP

Description of recommended action. Individual action is critical in reducing state energy demand, which will lower GHG emissions and reduce pressure on the land resource to provide alternative fuels. Specific examples of actions that should be encouraged may be found in the MCCAG recommendations. These include bicycle/pedestrian/public transit commuting, slower highway driving speeds, and purchasing energy-efficient appliances. There is a need to educate the public about lifestyle choices to reduce their energy consumption, particularly related to homes and transportation. Advertising and communications experts should be brought into this effort to disseminate the carbon reduction message in a creative way that reaches the broadest segment of the population possible.

Goal D (see related Appendix III)

Promote regulations, policies, incentives, and strategies to achieve significant reductions in mercury deposition in Minnesota.

Energy Recommendation 23: Develop mercury reduction strategies for out-of-state sources IP

Minnesota state agencies should work closely with the U.S. Environmental Protection Agency (USEPA) to develop mercury reduction strategies and assessment tools for the state, with the goal of meeting federal Clean Air Act and Clean Water Act standards. A mercury-reduction strategy should be developed that includes reduction of in-state demand for coal-powered electricity, and addresses mercury deposited in Minnesota from out-of-state sources.

Description of recommended action. Development of the national program that regulates mercury emissions from existing and future sources is very important in addressing the overwhelming contribution by sources from outside of Minnesota to the Minnesota environment (e.g., Minnesota water bodies). A federal mercury emissions program would minimize competitive disadvantage that regulations on the state levels potentially could create. Coordinated and joint efforts between the state agencies and the EPA would strengthen existing laws and reduce environmental loads of mercury.

Energy Recommendation 24: Continue state enforcement programs to reduce mercury loads IP

The MPCA should be provided with adequate resources to continue to enforce/support existing mercury regulations and programs that lead to reduced emissions of mercury in Minnesota through market restrictions, pollution control techniques, and disposal requirements.

Description of recommended action. Existing regulations reduce product-sector emissions. The MPCA works closely with and provides education to the industry sectors on mercury reduction strategies and new control technologies. The voluntary/enforcement programs have been successful in reducing mercury air and water emissions.

Energy Recommendation 25: Develop public education on actions that individuals and communities can take to reduce mercury loads SP

Minnesota should develop a strong public education and outreach effort focusing on the health risks associated with mercury pollution and on techniques for reducing mercury loads (including energy conservation and proper disposal of light bulbs) in the environment.

Description of recommended action. Currently there are a number of state-sponsored and community-based public education and outreach programs addressing mercury emissions. They are specific to certain industries (e.g., energy producing facilities), activities (e.g., disposal of light bulbs) or public health advisories (e.g., mercury fish concentrations). Although beneficial, the programs are often inaccessible by many Minnesota citizens because they are not greatly publicized. Creation of a single, large, well-coordinated interagency public-outreach and education program could potentially address many issues more effectively and efficiently. Promotion and recognition of a single program may be easier to achieve.

On an annual basis the LCCMR identifies funding priority areas based on its Six Year Strategic Plan and publishes an Environment and Natural Resources Trust Fund Request for Proposals (RFP). A summary of the 2008 (for FY 2009) and 2009 (for FY 2010) funding priorities, project criteria, and background information is included here.

2008 RFP Funding Priorities (for FY 2009)

I. SELECTED TOPICS

Proposals were requested in following five areas:

Native Prairies, Water Quality, Shoreland and Riparian Lands, Invasive Species and Natural Resource Data.

A. Native Prairies – Defined in M.L. 2007, Chp. 57, Art. 1, Sec. 17 (84.02)

- Protect, restore and enhance native prairies
  - ✓ Create prairie seed banks of local ecotypes
  - ✓ Old growth prairie protection and restoration
  - ✓ Working prairies
    - Biofuels production
    - Seed banks
    - Impacts on wildlife and water quality
- Develop a program to certify that prairie seeds are of a local ecotype

B. Water Quality

- Address contaminants in ground water through better understanding of the contaminants and ways to reduce them.
- Address water quality at a watershed level through changes in land use practices to improve water quality, including monitoring and evaluation components. (Funding may be proposed for more than 3 years to ensure sufficient time for monitoring and evaluation of the project.

C. Shoreland and Riparian Lands

- Creative and innovative efforts to preserve, protect and restore shoreland and riparian lands.

D. Invasive Species

- Develop effective ways to reduce the threat of harmful aquatic invasive species.
- Develop effective ways to stop or prevent the spread of viral hemorrhagic septicemia (VHS).

E. Natural Resource Data

- Continue efforts to collect baseline (foundation) natural resource information such as the county geologic atlas, soil survey, and national wetlands inventory (NWI) with an effort to increase accuracy, efficiency and cost effectiveness of data collection and the ability to coordinate data collection

and use. The data must be in the public domain and be easy to access and share.

- Develop a statewide GIS plan with strategies for the coordination of collecting and distributing natural resource data.

II. INVITED PROPOSALS

There were two categories of invited proposals: A. Specific Natural Resource Projects and B. Regional Grant Programs.

Specific public agencies, organizations and the University of Minnesota, Initiative for Renewable Energy and the Environment (IREE) were requested to submit proposals for specific projects. Proposals were review and considered for funding. A funding commitment was not made by the RFP.

A. Specific Natural Resource Projects:

1) Minnesota Forest Legacy Program, 2) Metro Conservation Corridors and Minnesota Habitat Corridors Partnership, 3) Minnesota County Biological Survey (MCBS), 4) Minnesota State Parks and Trails, and 5) Conservation Easement Stewardship and Enforcement.

1. Forest Conservation Easements, including the MN Forest Legacy Program

Forest conservation easements that help reduce fragmentation of important forest lands in Minnesota, excluding mining with the exception of limited aggregate mining for road maintenance on the easement property.

2. Conservation Corridors

Efforts should focus on reducing habitat loss, fragmentation and degradation to benefit wildlife and protect and improve water quality.

a. Metro Conservation Corridors

b. Minnesota Habitat Corridors Partnership (Outstate)

3. Minnesota County Biological survey (MCBS) – DNR

Accelerate the Minnesota county biological survey program that identifies significant natural areas and systematically collects and interprets data on the distribution and ecology of native plant communities, rare plants, and rare animals.

4. Minnesota State Parks and Trails

- Acquire inholdings within approved state park boundaries.
- Acquire land for state trails according to approved master plans.

5. Conservation Easement Stewardship and Enforcement Program – DNR and Board of Water and Soil Resources (BWSR)

DNR and BWSR are requested to submit a proposal to address long-term stewardship, monitoring and enforcement of state held conservation easements.

The proposal must specifically address conservation easements funded by the LCMR and the LCCMR and may be applicable to other state held conservation easements. The Legislative Auditor and Attorney General must be consulted on the proposal before it is submitted.

B. Regional Grant Programs

M.S. 116P allows and encourages some form of block grants to the various regions of the state, to be administered by an existing organization for regranting to projects that meet local needs but that are also consistent with the Strategic Plan.

For the 2008 funding, LCCMR considered recommending an allocation for state and regional matching grant programs listed below targeted to local units of government and nonprofits. The programs must contain a competitive process with careful evaluation and thorough management and evaluation.

The programs identified for consideration of 2008 funding were requested to submit a proposal for review and evaluation.

For acquisition: Priority was given to acquiring lands with high quality natural resources and conservation lands that provide natural buffers to water resources. Conservation easements must be perpetual.

The LCCMR did not accept proposals that were eligible for existing state and regional matching grant programs.

1. Local Initiative Matching Grants Program – DNR

- **Regional Park Matching Grant Program**

(for cities, counties, townships located outside the seven-county metropolitan area) for acquisition costs of regional parks.

- Natural and Scenic Area Matching Grant Program

(for cities, counties, townships and school districts) for acquisition of natural and scenic areas

- **Conservation Partners Matching Grant Program**

(for private/nonprofit organizations and local governments, including cooperative projects involving local governments) Small grants for projects that enhance fish, wildlife and native plant habitat or for research or survey projects related to habitat enhancement.

- **Environmental Partnerships Matching Grant Program**

(for private/nonprofit organizations) Small grants to help carry out a variety of projects to help protect and enhance our natural environment.

2. Metropolitan Regional Park and Open Space Program – Metropolitan Council

Metropolitan Regional Parks and Trail Acquisition for the metropolitan seven-counties through the Metropolitan Council (40% match provided by the Council) for acquisitions identified in the adopted Metropolitan Regional Park Plan.

3. Local Water Management Matching Challenge Grants – Board of Water and Soil Resources (BWSR)

The Board of Water and Soil Resources (BWSR) program for Local Water Management Matching Challenge Grants for implementation of priority activities identified in approved local water management plans.

Eligible applicants were counties, watershed management organizations, watershed districts and soil and water conservation districts that have been delegated under the M.s.103B.301 local water management program.

Potentially fundable implementation categories and some example activities include:

- **Land and Water Treatment** includes activities applied to the land or a water resource such as erosion control structures, shoreline protection measures, in-lake restoration projects.
- **Planning and Environmental Controls** includes the development of lake and watershed management plans, official controls relating to water, linking comprehensive plans to land use plans.
- **Monitoring and Modeling** includes activities such as citizen monitoring networks, modeling ground water flow or surface water runoff.
- **Inventory and Mapping** includes conducting detailed inventories of drainage systems, wetlands or feedlots.
- **Education and Information** includes workshops and seminars.

4. Global Climate Change: Carbon Emission Reduction and Renewable Alternative Energy Grant Projects

University of Minnesota, Initiative for Renewable Energy and the Environment (IREE)

- Set up a competitive grant program to provide funds to universities, colleges and high scholls to take actions to move toward being carbon neutral through carbon reductions and carbon sequestering, include curriculum development on global climate change and carbon reduction.
- Set up a competitive grant program to provide funds to communities and local community groups to take actions to move toward being carbon neutral and to develop locally based alternative renewable energy.

II. CREATIVE IDEAS – Disruptive Technology and Disruptive Innovation

Proposals were requested for creative ideas on improving Minnesota's environment and natural resources. The intent was to receive proposals that could be described as "disruptive technology or disruptive innovation". The proposal were to provide a dramatically different approach to improving natural resource conservation and protection.

- Must be creative! Must be specific!
- Must describe the idea and potential ways to implement it.

  There must be a proposed method to evaluate the potential benefits to Minnesota's environment and natural resources.

2009 RFP Funding Priorities (for FY 2010)

As part of the transition to an annual funding cycle, proposals were solicited in two phases: Phase 1 selected ongoing projects and Phase 2 targeted issue areas.

Phase 1: Selected Ongoing Projects

For Phase 1 funding priorities, all existing Trust Fund funded projects were reviewed, ongoing projects that might benefit from additional funding were identified, and a selection of those projects identified were chosen as priorities for the LCCMR to consider for additional funding based on the guidelines listed below. Specific individual projects within this selection were asked to submit a proposal requesting additional funds that outlines how the funds could extend, accelerate and/or enhance their existing efforts.

Projects submitting a proposal under Phase 1 were not guaranteed additional funding. Phase 1 proposals were evaluated and considered for funding at the same time as Phase 2 proposals.

GUIDELINES: Projects selected as priorities to submit a proposal for Phase 1 were chosen based on the following guidelines. Projects or programs that:

1. Continue efforts to maintain significant progress to complete a previously defined multi-phase project/program.
2. Continue a multi-phase project that will provide timely and relevant research or baseline data.
3. Are part of a continuum of researching, demonstrating, piloting, or refining natural resources practices that can be scaled up for broader implementation.
4. Are part of a coherent plan that is well developed and generally accepted by natural resource professionals.
5. Update or expand important statewide natural resource data or information.
6. Enhances the outdoor recreation system (M.S. Chapter 86A), the metropolitan regional park system and the Local Grants Program administered by the DNR for non-metro regional and local parks.

The existing projects listed below were specifically selected by the LCCMR as priorities to consider for additional funding for Phase 1 of the 2009 RFP. The goal of this selection was to extend, accelerate, enhance, and/or advance these existing efforts to their next logical stage or scope of work directly in accordance with the intent of the existing project. Each of these individual projects was asked to submit a proposal requesting additional funds that outlines how additional funds could be used.

A. Natural Resource Data and Information

Project Title	Organization	Project Overview	Appropriations since 2005
Minnesota County Biological Survey	MN Department of Natural Resources	County-by-county survey, interpretation, and mapping of the state's natural habitats and the species they contain.	ML 2005-06 (08a) ML 2007 (6a) ML 2008 (3m)

County Geological Atlas and Groundwater Monitoring*	MN Department of Natural Resources & MN Geological Survey	County-by-county survey, interpretation, mapping, and monitoring of the state's groundwater resources.	ML 2007 (5j) ML 2008 (4h)
Soil Survey	MN Board of Water and Soil Resources	County-by-county survey, interpretation, and mapping of the state's soil resources.	ML 2005-06 (08b) ML 2007 (6b) ML 2008 (5b)
Innovative Springshed Mapping for Trout Stream Management	University of MN	Identification, assessment, and mapping of springs and recharge areas supplying trout streams in SE Minnesota.	ML 2007 (5g)
Updating the National Wetlands Inventory for Minnesota	MN Department of Natural Resources	Update of information on the characteristics, extent, and status of wetlands and deepwater habitats in MN.	ML 2008 (5a)
Restorable Wetlands Inventory	Ducks Unlimited	Identification and mapping of drained wetlands in MN to help prioritize wetland restoration.	ML 2008 (5e)

* Actual project titles for individual appropriations to this ongoing effort were "County Geologic Atlas Acceleration" (ML 2007) & "South-Central MN Groundwater Monitoring & County Geological Atlas" (ML 2008).

B. State Parks, Trails, and Natural Areas Acquisition & Restoration

Project Title	Organization	Project Overview	Appropriations since 2005
State Park Acquisition**	MN Department of Natural Resources	Acquisition of privately held land within existing state park boundaries.	ML 2005-06 (6a) ML 2007 (4e) ML 2008 (3h)
State Trail Acquisition**	MN Department of Natural Resources	Acquisition of parcels of land along state trail corridors.	ML 2005-06 (06f,g,h) ML 2007 (4e) ML 2008 (3h)
Metropolitan Regional Park System Land Acquisition	Metropolitan Council	Subgrants for acquisition of land for metropolitan regional park system.	ML 2005-06 (6e) ML 2007 (4f) ML 2008 (3i)

Non-Metropolitan Regional Parks and Natural and Scenic Area Acquisition	MN Department of Natural Resources	Subgrants for acquisition of parkland outside the metropolitan area and natural and scenic areas statewide.	ML 2005 (6j) ML 2007 (4g)
Scientific and Natural Area Acquisition	MN Department of Natural Resources	Acquisition of MN lands containing rare natural features and resources of exceptional scientific and educational value.	ML 2005 (5c) ML 2008 (3f)
Forest Legacy Conservation Easements	MN Department of Natural Resources	Acquisition of permanent easements on private forest land that allow existing uses but prevent habitat degradation.	ML 2005-06 (9c) ML 2006 (11) ML 2007 (4a)
MN Habitat Conservation Partnership (HCP)	MN Department of Natural Resources, NGOs, Fed. agencies	Acquisition and restoration of lands to connect quality habitat in 11 major landscape corridors in outstate MN.	ML 2005-06 (05a) ML 2007 (4b) ML 2008 (3c)
Metro Conservation Corridors (MeCC)	MN Department of Natural Resources, NGOs	Acquisition and restoration of lands to connect quality habitat in 7 county metro area and surrounding counties.	ML 2005-06 (05b) ML 2007 (4c) ML 2008 (3a)

** Past state park and trail acquisitions were sometimes included under the same appropriation and actual project titles differed from those indicated here to reflect this; specifically, this includes “State Parks and Trails Land Acquisition” (ML 2007) and “State Park and Trail Land Acquisition” (ML 2008). For the purposes of this document and Phase 1 request, “State Park Acquisition” and “State Trail Acquisition” are being indicated as separate projects.

C. Water-Related Research

Project Title	Organization	Project Overview	Appropriations since 2005
Unwanted Hormone Therapy: Protecting Water and Public Health	University of MN	Research to determine where behavior-altering estrogenic compounds come from and how they are distributed through wastewater treatment plant systems.	ML 2005-06 (07e)
Climate Change Impacts on Minnesota's Aquatic Resources	University of MN	Research measuring long-term trends in the MN’s climate, ecology, and water resources; making projections about impacts of change; and	ML 2006 (07) ML 2007 (5k)

		identifying indicators to monitor changes.	
Improved River Quality Monitoring Using Airborne Remote Sensing	Minnesota State University - Mankato	Research improving methods for monitoring and studying river water quality and riparian habitat in MN.	ML 2007 (5e)
Water Resource Sustainability	University of MN	Research improving surface water and groundwater resources planning in MN.	ML 2007 (5i)
Cedar Creek Groundwater Project using Prairie Biofuel Buffers	University of MN	Research on ability of native prairie plants to provide cellulosic biofuel feedstock while creating wildlife habitat, protecting groundwater, and reducing greenhouse gas emissions.	ML 2007 (5n)
Future of Energy and Minnesota's Water Resources	University of MN	Research assessing water demand in MN under various energy production scenarios.	ML 2008 (4a)

Additional guidance for these specific projects:

1. **Minnesota Habitat Conservation Partnership (HCP) &**
2. **Metro Conservation Corridors (MeCC)**

   The LCCMR requested that HCP and MeCC projects address the following in their Phase 1 proposals:

   a. Prioritization of Acquisition and Restoration – Utilize the *Statewide Conservation and Preservation Plan* mapping efforts to help further identify the highest priority lands for protection, conservation, and restoration. Acquisitions must be based on protecting the highest ecological value in addition to willing sellers.

   b. Shoreland – Shoreland areas should be given a very high priority of protection and restoration because of their ecological importance as the interface between land and water.

   c. Shallow lakes – Shallow lake restoration proposed for funding should include innovative restoration pilots, evaluation and monitoring components for the restorations, and address the upland impacts on the shallow lakes.

3. **The Minnesota County Geologic Atlas**

   The LCCMR requested that the proposal submitted address updating geothermal heat flow maps for Minnesota to assist in assessing the potential for shallow and deep geothermal energy options.

Phase 2: Targeted Issue Areas

Projects were sought that provide multiple ecological and other public benefits. Proposals were requested in the following four areas:

- Land and Habitat
- Water Quality
- Invasive Species
- Energy

A. Land and Habitat

1. **Critical Lands Analysis**
   Use applicable data to identify the Conservation Reserve Program (CRP) lands and other ecologically sensitive lands, at local and regional levels, that have the highest ecological value and provide multiple other benefits. The data must be provided in a prioritized listing and ranked in order of conservation values.

2. **Conservation Reserve Program (CRP) Lands**
   Develop and implement a program to permanently protect and retain the conservation status of lands in the Conservation Reserve Program (CRP) with contracts due to expire in the near future and that have the highest ecological value and provide multiple other benefits, focusing on lands with lower crop productivity potential, as indicated by applicable data.

3. **Technical Assistance for Conserving Land**
   Provide landowners, land managers, planners, and conservationists with information and evaluation tools pertaining to various land conservation options in order to permanently protect lands in the Conservation Reserve Program (CRP) with contracts due to expire in the near future and/or other ecologically sensitive lands. Efforts should focus on lands that have the highest ecological value and provide multiple other benefits, as indicated by applicable data.

B. Water Quality

1. **Reduce Soil Erosion**
   Reduce nutrient, solids, and toxics loading in surface waters by addressing streambank, shoreland, and other erosion on a watershed basis through analysis of the loading and its causes. Develop and implement a demonstration of effective best management practices (BMPs) to mitigate the nutrient, solids, and toxics loading. Proposals must include an evaluation and monitoring component for the implementation of the BMPs.

2. **Reduce Peak Water Flows**
   On a watershed basis, help control peak flows to improve surface water quality, reduce flooding, and facilitate infiltration of water to groundwater systems by developing and implementing methods to keep water on the land longer for both working lands and habitat.

3. **Minnesota Drainage Law Analysis and Evaluation**
   Conduct a legal analysis of Minnesota drainage laws (M.S. Chapter 103E and other applicable drainage law) to determine the economic costs and benefits and

environmental impacts of the laws and consider alternative strategies that would best serve the collective needs of public waters and property owners alike.

4. Deep Water Lakes

Protect and enhance the lakesheds and aquatic communities of high quality deep water lakes in Minnesota through inventory and evaluation of cold water aquatic communities in the lakes; development and implementation of effective best management practices (BMPs); and/or implementation of other protection efforts for uplands, shoreland, and groundwater. All proposals implementing shoreland protection must include monitoring and evaluation components.

C. Invasive Species

1. Aquatic and Terrestrial Invasive Species

Address the threat of aquatic and terrestrial invasive species by developing new, innovative, and more effective control methods. Potential efforts could include:

a. Preventing introductions of new invasive species.
b. Providing early detection of new invasive species.
c. Reducing the spread of invasive species along transportation routes and other vectors.
d. Containing or suppressing invasive species already present in Minnesota, including Curly-leaf Pondweed and Eurasian Watermilfoil. **This <u>does not</u> include funding typical maintenance activities such as harvesting and annual chemical treatments*.
e. Restoring or reestablishing terrestrial or aquatic habitats impacted by invasive species. Priority will be given to habitats located on public lands or private lands covered by permanent conservation easements.

D. Energy

1. Renewable Energy Life Cycle Costs and Impacts

Using new and existing data, research and evaluate over-arching climate change and life cycle costs and impacts of renewable energy options in Minnesota. Relevant factors include effects on the economy, greenhouse gas emissions, water consumption, water quality, carbon sequestration, gene flow risks, wildlife populations, native pollinators, transport and delivery, and utilization by the transportation sector.

2. Residential Energy Conservation

Develop innovative pilot or demonstration programs to increase the implementation and effectiveness of residential energy conservation efforts, including delivery of creative financing options for residential energy customers.

PROJECT SELECTION CRITERIA

Project managers and partners must be accountable and able to complete project objectives.

All proposals should, as appropriate:

- **demonstrate innovative approaches** to solving natural resource issues
- have approaches that are **measurable and reflect current scientific standards** so that they can be evaluated to determine the most effective approaches
- have approaches that are **replicable** on future projects to more effectively and efficiently solve specific natural resource issues
- have **broad applicability** on a regional and/or statewide basis
- **add to the knowledge base** of addressing natural resource issues
- State **clear objectives** for what the proposal will accomplish

For acquisition and conservation easements, priority is to be given to acquiring lands with high quality natural resources and conservation lands that provide natural buffers to water resources. Conservation easements must be perpetual and include stewardship provisions to perpetually monitor and enforce the conditions of the conservation easements.

The use and protection of native species is required for all projects.

Restorations must utilize seeds and plants of the local ecotypes unless not available. The second preference is to have seeds and plants of the same eco-region, and the third preference is to have seeds and plants of an adjacent eco-region.

Criteria for scoring proposals:

The following seven criteria will be considered in evaluating Trust Fund proposals (in alphabetical order):

- Add to the knowledge base and disseminate information
- Broad applicability with long term impacts having statewide or regional significance
- Innovation
- Leverage
- Measurable and demonstrated outcomes
- Partnerships
- Urgency

Each of the criteria will be eligible for zero to ten points. Some of the criteria may not be relevant to all proposals and may be determined to be non-applicable (N/A). A minimum of five of the seven criteria will be used to evaluate each proposal.

Proposals that do not receive scores for all seven criteria will be equalized with those that do by determining what percentage of the total possible points each proposal receives.

BACKGROUND INFORMATION

ELECTRONIC SUBMISSION REQUESTED

SUBMIT PROPOSAL:

WEB-BASED SUBMISSION
Go to: www.lccmr.leg.mn

If unable to use the web-based form you can:

EMAIL SUBMISSION

Email proposal in MS Word format to: trustfundrfp@lccmr.leg.mn

ELIGIBILITY

The spirit and intent of the LCCMR is to provide access to EVERYONE who has innovative ideas for environment and natural resource projects with a distinct public benefit that reflect the Commission's adopted Request for Proposal and Six-Year Strategic Plan.

No grant-making or lobbying assistance is necessary for success. LCCMR staff are available to assist in proposal development.

ELIGIBLE EXPENSES:

For a complete list of eligible and non-eligible expenses see http://www.lccmr.leg.mn/manager/promanager.htm.

PROPOSAL ASSISTANCE:

LCCMR staff are available to assist proposers, answer questions, or review draft proposals. **Applicants are encouraged to use this service**. If you would like assistance with proposal development, staff can assist you by phone, e-mail, fax, or by appointment.

Phone: (651) 296-2406

Fax: (651) 296-1321

Email: lccmr@lccmr.leg.mn

Address:

Legislative-Citizen Commission
on MN Resources
Room 65, State Office Building
100 Rev Dr Martin Luther King Jr Blvd
St. Paul, MN 55155

II. Projects Funded Preceding Biennium

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

- The following documents are short abstracts for projects funded during the 2008-2009 biennium.
- The abstracts describe the general accomplishments of each project for completed projects.
See http://www.lccmr.leg.mn/projectabs.html
- Research projects have been marked as such in the description.
- Full work programs are available at the LCCMR, Room 65 - State Office Building. The abstracts are current as of 12/30/08.
- Legal Citations
  - M.L. 2007, Chapter 30, Section 2
  - M.L. 2008, Chapter 367, Section 2

2007 PROJECT ABSTRACTS - **with links to work programs**

MN Laws 2007, Chapter 30, Section 2 (beginning July 1, 2007)

The following documents are short abstracts for projects funded during the 2007 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 projects web site. The sites linked to this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature.

Subd. 3 LCCMR and Contract Administration

Subd. 4 Land

Subd. 5 Water Resources

Subd. 6 Natural Resource Information

6d For Analysis and Implementation of Critical State Natural Resource Data Collection and Mapping

Subd. 7 Establishment of an Emerging Issues Account

Funding Sources: (**note: all projects are TF, unless otherwise noted)
Environment and Natural Resources Trust Fund (TF)
State Land and Water Conservation Account (LAWCON)

ADMINISTRATION

Legislative-Citizen Commission on Minnesota Resources
Subd 3a $1,278,000
John Velin, Director
LCCMR
100 Rev. Dr. Martin Luther King Blvd.
Rm 65 State Office Bldg
St. Paul, MN 55155

Phone: (651) 296-2406
E-mail: john.velin@lccmr.leg.mn
Fax: (651) 296-1321
Web: www.lccmr.leg.mn

This funding provides for two years of the administration of the LCCMR, its project proposal and recommendation process, and the contract management and project reporting of Trust Fund funded projects. Since 1963, the program that LCCMR is a legacy of has played a foundational role in the appropriation of over $550 million to more than 1,250 projects directly benefiting Minnesota's environment and natural resources.
Project due to be completed: 6/30/2009

Contract Administration
Subd 3b $40,000

Bill Becker
DNR
500 Lafayette Rd
St.Paul, MN 55155

Phone: (651) 296-3093
E-mail: bill.becker@dnr.state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us

For agency Contract Administration
This funding provides for one year of the monetary administration and accounting of Trust Fund appropriations to projects by non-state entities.

Project due to be completed: 6/30/2009

LAND

Forest Legacy Conservation Easements
Subd 4a $2,000,000

Richard Peterson
DNR
1810 30th Street NW
Faribault, MN 55021

Phone: (507) 333-2012
E-mail: richard.peterson@dnr.state.mn.us
Fax: (507) 333-2008
Web: http://www.dnr.state.mn.us

Much of Minnesota's forests consist of large tracts of land held by private landowners. However, changing economics are making it increasingly attractive for these landowners to subdivide and sell off parcels of their forest. The development of roads and buildings that follows these sales can fragment the large amounts of unbroken forest that many species of wildlife need to thrive. This program will allow the Department of Natural Resources to acquire permanent conservation easements on private forests in southeastern Minnesota. These easements will allow existing uses of the forest, including sustainable timber harvesting, but will prevent development that could adversely affect the forest habitat.

Minimum Standards and Guidelines for State Forest Legacy Easements in Minnesota *(pdf file)*
Project due to be completed: 6/30/2009
Work Program

Minnesota's Habitat Corridors Partnership - Phase IV
Subd 4b $4,200,000

Matt Holland
Pheasants Forever, Inc
679 W River Dr
New London, MN 56273

Phone: (320) 354-4377
E-mail: mholland@pheasantsforever.org
Fax: (320) 354-4377
Web: http://www.pheasantsforever.org or http://www.mnha

The mission of the Partnership is to restore, enhance and conserve habitat corridors for the purpose of sustaining fish, wildlife, and native plant communities. This proposal restores, enhances and/or protects 16,731 acres by working in partnership to leverage additional resources in identified focus areas.

Project partners are DNR, Pheasants Forever; Minnesota Deer Hunters Association; Ducks Unlimited, Inc.; National Wild Turkey Federation; The Nature Conservancy; Minnesota Land Trust; The Trust for Public Land; Minnesota Valley National Wildlife Refuge Trust, Inc.; United States Fish and Wildlife Service; Red Lake Band of Chippewa; Leech Lake Band of Chippewa; Fond du Lac Band of Chippewa; USDA-Natural Resources Conservation Service; and the Board of Water and Soil Resources.

1a Project Coordination and Mapping
1b Drained Wetland Inventory
2a Hides for Habitat-Restoration
2b Partners for Fish and Wildlife
2c / 3c Living Lakes Enhancements and Easements
2d Shallow Lakes Assessment and Management
2e1 Lower Butcher Knife Chain Waterfowl Restoration Project
2e2 Shallow Lake and Impoundment Management
2e3 Wild Rice Habitat Restoration
2g Wildlife Areas Management

2h Fish and Wildlife Land Habitat Restoration
2i / 4f Set out Seedlings / Minnesota NWTF Land Acquisition
2j Lakescaping
2k Prairie Management
2n / 3g / 4g TNC's Campaign for Conservation - Restoration / Easements / Acquisition
2o Working Lands Partnership
3a Shorelands Protection Program
3d Wetlands Reserve Program
3f Habitat Encroachment Buffers
4a Critical Lands Conservation Initiative IV
4b Fish and Wildlife Land Acquisition
4c Critical Lands Protection Program
4h Habitat Acquisition for Minnesota Valley Wetland Management District, USFWS
4i Habitat Acquisition - Professional Services

Project due to be completed: 6/30/2009
Work Program

Metro Conservation Corridors (MeCC) - Phase III
Subd 4c $2,500,000

Sharon Pfeifer
DNR
1200 Warner Rd
St. Paul, MN 55106

Phone: (651) 772-7997
E-mail: sharon.pfeifer@dnr.state.mn.us
Fax: (651) 772-7977

Partner organizations will collaborate with local communities to protect/acquire approximately 630 acres and restore/enhance approximately 183 acres of significant upland/wetland and/or riparian habitat within scientifically identified and prioritized focus areas in the greater Metropolitan Region.

Project partners are DNR, Trust for Public Land, Ducks Unlimited, Inc., Friends of the Mississippi River, Great River Greening, Minnesota Land Trust, Minnesota Valley National Wildlife Refuge Trust, Inc., Pheasants Forever, Inc. and Friends of the Minnesota Valley

1.1 Coordination of MeCC program
2.1 Restore/Enhance Significant Watershed Habitat
2.2 Lower Minnesota River Watershed Restoration & Enhancement Project
2.3 Restore/Enhance Significant Habitat
2.4 / 3.4 Habitat Restoration/Enhancement Grants and Acquisition
2.5 / 3.6 Scientific & Natural Area (SNA) Restoration / Enhancement / Acquisition
2.6 Stream Habitat Restoration
3.1 Critical Land Protection Program Fee Title & Conservation Easement Acquisition
3.2 Protecting Significant Habitat by Acquiring Conservation Easements
3.3 Fee Acquisition for Minnesota Valley National Wildlife Refuge
3.5 DNR Fish & Wildlife Acquisition

Project due to be completed: 6/30/2009
Work Program

Prairie Stewardship Assistance for Private Landowners
Subd 4d $220,000

Jason Garms
DNR
175 County Rd 26
Windom, MN 56101

Phone: (507) 831-2900
E-mail: jason.garms@dnr.state.mn.us
Fax: (507) 831-2921
Web: www.dnr.state.mn.us

Less than 1% of Minnesota's native prairie survives, and much of it is privately owned. Landowners often recognize the value of preserving this critical habitat but lack the training or resources to best do so. This Department of Natural Resources program will work with approximately 40 landowners to develop 'stewardship plans' that will aid in the management of 3,200 privately owned acres and help approximately 50 landowners restore and improve another 1,500 acres of native prairie.

Project due to be completed: 6/30/2009

Work Program

State Parks and Trails Land Acquisition
Subd 4e $1,500,000

Larry Peterson (Parks) and Ron Potter (Trails)
DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5593 (Larry) or (651) 259-5632 (Ron)
E-mail: larry.peterson@dnr.state.mn.us or ron.potter@dnr.state.mn.us
Fax: (651) 296-6532 (Parks) or (651) 297-5475 (Trails)

Parks: http://www.dnr.state.mn.us/state_parks/index.html

Trails: http://www.dnr.state.mn.us/state_trails/index.html

This funding will help the Department of Natural Resources acquire privately held land within existing state park boundaries and parcels of land along state trail corridors. This includes land in William O'Brien State Park, Frontenac State Park, George Crosby Manitou State Park, the Gateway Trail, and Casey Jones State Trail.

Project due to be completed: 6/30/2009

Work Program

Metropolitan Regional Park System Land Acquisition
Subd 4f $2,500,000

Arne Stefferud
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

Phone: (651) 602-1360
E-mail: arne.stefferud@metc.state.mn.us
Fax: (651) 602-1674
Web: www.metrocouncil.org/parks/parks.htm

Overall Project Outcome and Results

This appropriation leveraged a total of $18.1 million of other funds to acquire 528 acres for the Metropolitan Regional Park System as follows:

- 61 acres on the southern shore of Cedar Lake for Cedar Lake Farm Regional Park in Scott County ($600,000 Environment Trust Funds, $400,000 Metro Council bonds and $3,526,192 of Scott County funds for a total of $4,526,192).
- 8.2 acres including shoreline on the Mississippi River for Grey Cloud Island Regional Park in Washington County ($109,256 Environment Trust Funds, $72,838 Metro Council bonds, and $273,141 Washington County funds for a total of $455,235).
- 3 acres including shoreline on Lake Waconia for Lake Waconia Regional Park in Carver County ($600,000 Environment Trust Funds, $400,000 Metro Council bonds and $1,530,000 Carver County funds for a total of $2,530,000).
- 456 acres which encompasses the entire park for Empire Wetlands Regional Park in Dakota County ($1,020,000 Environment Trust Funds, $680,000 Metro Council bonds, $800,000 other Metro Council grant approved in 2006, $6 million of 2006 State bonds, $3,444,000 of Dakota County funds for a total of $11,940,000).
- 47 acres including shoreline of St. Catherines Lake for Doyle-Kennefick Regional Park in Scott County ($170,744 Environment Trust Funds, $677,625 Metro Council bonds and $282,789 of FY 2009 Metro Greenways Grant for a total of $1,1131,158).

Project Results Use and Dissemination

Each regional park agency that received a grant or grants from this appropriation informs the public about the land acquisitionwith its own website and news releases. The Metropolitan Council also publishes a “Regional Parks Directory and Map” that informs the public about the recreation activities available at each regional park and trail and includes website addresses and phone numbers for each park agency for more information. Finally, the Metropolitan Council’s website includes an interactive parks map that contains the same information as the paper version of the “Regional Parks Directory and Map” at http://www.metrocouncil.org/parks/r-pk-map.htm

Project completed: 10/22/2008

Work Program

Non-Metropolitan Regional Parks and Natural and Scenic Area Acquisition

Subd 4g $1,000,000

Wayne Sames
DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5559
E-mail: wayne.sames@dnr.state.mn.us
Fax: (651) 296-6047

http://www.metrocouncil.org/parks/

Through this program, the Department of Natural Resources will provide matching grants to local governments to help acquire parkland outside the metropolitan area and natural and scenic areas statewide.

Project due to be completed: 6/30/2009

Work Program

LAWCON Federal Reimbursement

Subd 4h $500,000

Wayne Sames
DNR
500 Lafayette Rd
St. Paul, MN 55155

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E-mail: wayne.sames@dnr.state.mn.us
Fax: (651) 296-6047

Federal Land and Water Conservation Fund (LAWCON) reimbursements are used to fund state and local outdoor recreation projects and the costs of the required administration and planning activities.

Project due to be completed: 6/30/2010
Work Program

Biological Control of European Buckthorn and Garlic Mustard
Subd 4i $300,000

Luke Skinner
DNR
500 Lafayette Rd Box 25
St. Paul, MN 55155

Phone: (651) 259-5140
E-mail: luke.skinner@dnr.state.mn.us
Fax: (651) 296-1811
Web: www.dnr.state.mn.us

RESEARCH

http://www.dnr.state.mn.us/invasives

European buckthorn and garlic mustard are non-native plants that have rapidly spread throughout Minnesota to the detriment of native plants and wildlife. This program aims to identify and test insects that will help control these invasive species without causing harm to the native environment.

Project due to be completed: 6/30/2010
Work Program

Neutralization of Reed Canary Grass Root Exudates
Subd 4j $115,000

Bradley Cook
MN State University
242 Trafton S
Mankato, MN 56001

Phone: (507) 389-5728
E-mail: bradley.cook@mnsu.edu
Fax: (507) 389-2788
Web: http://cset.mnsu.edu/biology/people/cook/index.htm

RESEARCH

http://cset.mnsu.edu/biology/people/cook/index.html

Reed canary grass was first introduced into the United States in the 1800s as animal forage and to assist in erosion control. However, it has proven to be an extremely aggressive invader that chokes out native species in wetlands. Minnesota State University-Mankato researchers will study chemicals released through the roots of Reed Canary Grass that seem to enable the aggressive spread of the plant by interfering with the growth of native plants. With better understanding of these chemicals, it is possible that management practices can be developed to neutralize or limit the effects of the chemicals and thereby help remove or slow the spread of Reed Canary Grass.

Project due to be completed: 6/30/2009
Work Program

WATER RESOURCES

Local Water Management Matching Challenge Grants
Subd 5a $350,000

David Weirens
BWSR
520 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 297-3432
E-mail: david.weirens@bwsr.state.mn.us
Fax: (651) 297-5615
Web: www.bwsr.state.mn.us
http://www.bwsr.state.mn.us/grantscostshare/lwplanning/index.html
This project will help local governments fund the implementation of their water management plans.
Project due to be completed: 6/30/2010
Work Program

Protection of Rare and Unique Rock Outcrop Wetlands
Subd 5b $563,000

Thomas Kalahar
Renville Soil & Water
1008 W Lincoln
Olivia, MN 56277

Phone: (320) 523-1559
E-mail: kalahar@yahoo.com
Fax: (320) 523-2389
Web: www.renvilleswcd.com
The Minnesota River Valley contains ancient bedrock outcrops with associated wetlands that provide unique habitats for plant and animal communities rarely found elsewhere in Minnesota. These resources are threatened by mining and other development interests. The Renville and Redwood Soil and Water Conservation Districts will protect 200 acres of outcrops and wetlands by acquiring permanent conservation easements from willing landowners.
Project due to be completed: 6/30/2009
Work Program

Land Retirement Effects on Minnesota River Basin Streams
Subd 5c $275,000
Board of Water and Soil Resources for an agreement with the U.S. Geological Survey

Victoria Christensen
U.S. Geological Survey
2280 Woodale Drive
Mounds View, MN 55112

Phone: (763) 783-3100
E-mail: vglenn@usgs.gov
Fax: (763) 783-3103
Web: http://mn.water.usgs.gov/

RESEARCH

Does taking some land out of agricultural production improve water quality and wildlife habitat? The U.S. Geological Survey will study streams in the Minnesota River basin to evaluate the effectiveness of current land retirement efforts and help determine the highest priorities for future land retirement.

Project due to be completed: 6/30/2009
Work Program

Demonstrating Benefits of Conservation Grasslands on Water Quality
Subd 5d $374,000

James Almendinger
Science Museum of Minnesota
16910 152nd St N
Marine on St. Croix, MN 55047

Phone: (651) 433-5953
E-mail: dinger@smm.org
Fax: (651) 433-5924
Web: www.smm.org/scwrs

RESEARCH

http://www.smm.org/static/science/pdf/2007-2008highlights.pdf

Natural vegetation on lands adjacent to lakes, streams, and rivers provides important habitat and water quality benefits. The Science Museum of Minnesota will study the long-term benefits of lakeside grasslands to better understand the role such vegetation can play in helping reduce the pollutants that run into our lakes, streams, and rivers.

Project due to be completed: 6/30/2010
Work Program

Improved River Quality Monitoring Using Airborne Remote Sensing
Subd 5e $159,000

Fei Yuan
Mankato State University
Earth Science Program, 7 Armstrong Hall
Mankato, MN 56001

Phone: (507) 389-2617
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Fax: (507) 389-2980
Web: http://sbs.mnsu.edu/geography/

RESEARCH

http://sbs.mnsu.edu/geography/people/feiyuan.html

The Earth Science Program at Minnesota State University-Mankato will develop improved methods for monitoring and studying river water quality and riparian habitat in Minnesota.

Project due to be completed: 6/30/2009
Work Program

Evaluating Riparian Timber Harvesting Guidelines: Phase 3

Subd 5f $400,000

Charles Blinn
U of M
1530 Cleveland Avenue N
St. Paul, MN 55108

Phone: (612) 624-3788
E-mail: cblinn@umn.edu
Fax: (612) 625-5212

RESEARCH

http://www.forestry.umn.edu/people/facstaff/blinn/

Forested shoreland buffers can provide habitat and water protection. This University of Minnesota study will evaluate current guidelines for harvesting timber near Minnesota streams and rivers with an eye towards better protecting sensitive shoreland and aquatic environment.

Project due to be completed: 6/30/2009
Work Program

Innovative Springshed Mapping for Trout Stream Management

Subd 5g $270,000

E. Calvin Alexander, Jr.
U of M
Geology & Geophysics
310 Pillsbury Dr. SE
Minneapolis, MN 55455

Phone: (612) 624-3517
E-mail: alexa001@umn.edu
Fax: (612) 624-3819

RESEARCH

http://www.geo.umn.edu/people/profs/ALEXANDER.html

Trout streams depend on a steady supply of clean, cold water to exist. The University of Minnesota's Department of Geology will identify and map the springs and their recharge areas that supply Minnesota's trout streams in southeast Minnesota and then assess the impacts that both land and aquatic development are having on these springs.

Project due to be completed: 6/30/2009
Work Program

Intra-Lake Zoning to Protect Sensitive Lakeshore Areas

Subd 5h $110,000

Paul Radomski
DNR
1601 Minnesota Drive
Brainerd, MN 56401

Phone: (218) 833-8643
E-mail: paul.radomski@dnr.state.mn.us

Fax: (218) 828-6043
Web: http://www.dnr.state.mn.us

http://www.dnr.state.mn.us

Cass County and the Department of Natural Resources are collaborating to identify sensitive shorelines on area lakes and implement innovative zoning practices to protect water quality and lakeshore habitat.

Project due to be completed: 6/30/2009
Work Program

Water Resource Sustainability
Subd 5i $292,000

John Nieber
U of M
1390 Eckles Avenue Rm 203
Minneapolis, MN 55108

Phone: (612) 625-6724
E-mail: nieber@umn.edu
Fax: (612) 624-3005
Web: www.bbe.umn.edu

RESEARCH

http://www.bbe.umn.edu/staff/nieber.html

How much water can be taken from Minnesota's surface and groundwater resources without depleting critical water supplies? The University of Minnesota's Department of Bioproducts and Biosystems Engineering will attempt to answer this question by constructing models that integrate what we know about both surface water and groundwater systems. Researchers will produce a set of water resources atlases that will allow improved water resources planning.

Project due to be completed: 6/30/2009
Work Program

County Geologic Atlas Program Acceleration
Subd 5j $400,000

Dale Setterholm
MN Geological Survey
2642 University Ave W
St. Paul, MN 55114

Phone: (612) 627-4780
E-mail: sette001@umn.edu
Fax: (612) 627-4778
Web: www.geo.umn.edu/mgs

http://talc.geo.umn.edu/mgs/county_atlas/countyatlas.htm

The Minnesota Geological Survey will continue to map the location, size, boundaries, and vulnerability of the state's groundwater to support the sustainable use and protection of this critical resource.

Project due to be completed: 6/30/2009
Work Program

Minnesota's Water Resources: Impacts of Climate Change- Phase II

Subd 5k $300,000

Lucinda Johnson
U of M - NRRI
5013 Miller Trunk Highway
Duluth, MN 55811

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Web: www.nrri.umn.edu/cwe/directory/l_johnson.html

RESEARCH

http://www.nrri.umn.edu

Minnesota's climate is becoming increasingly warmer, wetter, and variable, and this is having extensive impacts on the State's infrastructure and ecosystems. The University of Minnesota's Natural Resources Research Institute will continue and expand a study measuring long-term trends in the state's climate and water resources. This phase of the project adds development of future climate scenarios specific to Minnesota, projections of potential economic and ecological impacts of those scenarios, and identification of key indicators that can be used to monitor changes in Minnesota's climate over time.

Project due to be completed: 6/30/2010
Work Program

Pharmaceutical and Microbiological Pollution

Subd 5l $302,000

Timothy LaPara
U of M
500 Pillsbury Drive SE
Minneapolis, MN 55455

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E-mail: lapar001@umn.edu
Fax: (612) 626-7750
Web: http://www.ce.umn.edu/people/faculty/lapara/index

RESEARCH

http://www.ce.umn.edu/people/faculty/lapara/

Human and veterinary antibiotics, hormones, and antibiotic resistant bacteria enter Minnesota waters through wastewater discharges, animal manure, and runoff. The University of Minnesota's Department of Civil Engineering is exploring a variety of practical, low cost technologies that can neutralize these substances before they enter the water supply.

Project due to be completed: 6/30/2009
Work Program

Threat of Emerging Contaminants to Upper Mississippi Walleye

Subd 5m $97,000

Heiko Schoenfuss
St. Cloud State University
720 Fourth Avenue South WSB-273
St. Cloud, MN 56301

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E-mail: hschoenfuss@stcloudstate.edu
Fax: (320) 308-4166
Web: http://web.stcloudstate.edu/hschoenfuss/

RESEARCH

http://web.stcloudstate.edu/aquatictox/

A 2006 survey of the Mississippi River in Minnesota identified several locations where pollutants were disrupting the endocrine (hormonal) systems in various species of fish, notably walleye. This St. Cloud State University study will further assess the threat this poses to the river's fish populations.

Project due to be completed: 6/30/2009
Work Program

Cedar Creek Groundwater Project using Prairie Biofuel Buffers
Subd 5n $659,000

Clarence Lehman
U of M
1987 Upper Buford Cir
St. Paul, MN 55108

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Fax: (612) 624-6777
Web: www.cedarcreek.umn.edu

RESEARCH

http://www.lter.umn.edu/

Biofuels-substitutes for petroleum-based fuel derived from vegetable crops-are currently largely derived from corn. However, native prairie plants have the potential to provide the raw material for high quality cellulosic biofuels, which require less water and agricultural chemicals. At the same time, these plants can provide wildlife habitat, capture pollutants before they enter groundwater, and help reduce greenhouse gas emissions. The University of Minnesota's Cedar Creek Natural History Area will study the ability of prairie plants to simultaneously achieve these various aims.
Project due to be completed: 6/30/2009
Work Program

Pyrolysis Pilot Project
Subd 5o $500,000

Roger Ruan
U of M
Rm 206 BAE Bldg, 1390 Eckles Ave
St. Paul, MN 55108

Phone: (612) 625-1710
E-mail: ruanx001@umn.edu
Fax: (612) 624-3005
Web: www.biorefining.cfans.umn.edu

http://biorefining.cfans.umn.edu/home.php

The University of Minnesota Department of Bioproducts and Biosystems Engineering will collaborate with Rural Advantage to test and demonstrate a portable, water-free process for local conversion of a variety of agricultural products into liquid and gas fuels that can be used to heat homes or generate electricity.

Project due to be completed: 6/30/2009

Work Program

NATURAL RESOURCE INFORMATION

Minnesota County Biological Survey

Subd 6a $1,500,000

Carmen Converse
DNR
500 Lafayette Rd
St Paul, MN 55155
Phone: (651) 259-5083
E-mail: carmen.converse@dnr.state.mn.us
Fax: (651) 296-1811
Web: www.dnr.state.mn.us/ecological_services/mcbs/index

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

For the past 20 years the Department of Natural Resources has been systematically surveying the state's natural habitats. This study identifies significant natural areas and collects and interprets data on the distribution of native plant communities, rare plants, and rare animals. Through 2007, project managers have completed surveys in 61 of Minnesota's 87 counties. During 2008 and 2009 work will begin or be continued in 12 counties.

Project due to be completed: 6/30/2009

Work Program

Soil Surveys

Subd 6b $400,000

Greg Larson
Board of Water and Soil Resources
520 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 296-3767
E-mail: greg.larson@bwsr.state.mn.us
Fax: (651) 297-5615
Web: www.bwsr.state.mn.us

http://soils.usda.gov/survey/printed_surveys/state.asp?state=Minnesota&abbr=MN

The Board of Water and Soil Resources in cooperation with the USDA Natural Resources Conservation Service will continue their ongoing study of the state's soils. This project will allow the mapping of soils covering 130,000 acres, including 30,000 acres in Crow Wing County .

Project due to be completed: 6/30/2009

Work Program

Field Guide for Evaluating Vegetation of Restored Wetlands

Subd 6c $53,000

Paul Bockenstedt
Bonestroo, Rosene, Anderlik, & Assoc., Inc.
2335 W Hwy 36
St. Paul, MN 55113

Phone: (651) 604-4812
E-mail: pbockenstedt@bonestroo.com
Fax: (651) 636-1311
Web: www.bonestroo.com

http://www.bonestroo.com/

This project will result in an easy-to-use field guide that will help conservationists, construction inspectors, farmers, government workers, and others evaluate the quality of restored wetlands.

Project due to be completed: 6/30/2009
Work Program

For Analysis and Implementation of Critical State Natural Resource Data Collection and Mapping
Subd 6d $49,000

John Velin
Legislative-Citizen Commission
Rm 65 State Office Bldg
St. Paul, MN 55155

Phone: (651) 296-2406
E-mail: john.velin@lccmr.leg.mn
Fax: (651) 296-1321
Web: www.lccmr.leg.mn

Natural Resources Data Collection and Mapping

BECAME:

Data Workshop: Democratizing access to Minnesota's data assets - a user friendly data integration and visualization tool - $49,000

http://gisdata.nrri.umn.edu/Tracker/DataWorkshop/

Minnesota has accumulated massive amounts of important data pertaining to successful management of its environment and natural resources, but currently much of it is not easily accessible to many of the organizations and local governments that could benefit from it. As part of the Trust Fund funded Statewide Conservation and Preservation Plan (SCPP), this project will create an interactive web-based tool that makes Minnesota's most current environment and natural resources data easily and readily accessible to all.

Project due to be completed: 6/30/2009

ESTABLISHMENT OF AN EMERGING ISSUES ACCOUNT

Emerging Issues Account
Subd 7 $160,000

John Velin , Director
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Rm 65 State Office Bldg

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Fax: (651) 296-1321
Web: www.lccmr.leg.mn

Emerging Issues Account

WENT TO:

Statewide Conservation and Preservation Plan (SCPP) - $160,000

http://www.mnconservationplan.net

The Trust Fund funded Statewide Conservation and Preservation Plan (SCPP) is a collaborative effort providing a long term vision and guide for Minnesota's environment and natural resources. This funding continues and expands this effort by enabling the SCPP team to do additional more in-depth analysis on transportation and mercury issues in Minnesota.

Project due to be completed: 6/30/2009

Last Updated:Tuesday, 06-Jan-2009 17:32:14 CST

send comments regarding this site to:
lccmr@lccmr.leg.mn

2008 PROJECT ABSTRACTS

MN Laws 2008, Chapter 367, Section 2 (beginning June 2008)
The following documents are short abstracts for projects funded during the 2008 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. 3 Land and Habitat

Subd. 4 Water Resources

Subd. 5 Natural Resource Information

Subd. 6 Environmental Information

Subd. 7 **Establishment of an Emerging Issues Account**

Funding Sources: (**note: all projects are TF, unless otherwise noted)

Environment and Natural Resources Trust Fund (TF)
Great Lakes Protection Account (GLPA)

LAND and HABITAT

Metro Conservation Corridors (MeCC) - Phase IV
Subd. 3a $3,150,000

Bill Becker
MN Department of Natural Resources (DNR)
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St. Paul, MN 55155

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

Seven partner organizations will collaborate efforts in scientifically identified and prioritized focus areas throughout the greater Metropolitan Region to: 1) restore/enhance an estimated 293 acres of significant upland and wetland habitat that help serve to buffer and/or reconnect existing habitat; 2) protect/acquire an estimated 493 acres of significant habitat through fee title and conservation easement acquisition; and 3) provide community assistance grants to local governments to help in developing and implementing local land protection and restoration efforts.
Project partners are the Minnesota Department of Natural Resources (DNR), Friends of the Mississippi River, Friends of the Minnesota Valley, Great River Greening, Minnesota Valley National Wildlife Refuge Trust, Minnesota Land Trust, and Trust for Public Land. Sub-projects within this partnership are:

1.1 Coordination and Administration of MeCC Partnership
2.1 Restore/Enhance Significant Watershed Habitat
2.2 Lower Minnesota River Watershed Restoration & Enhancement Project
2.3 Restore/Enhance Significant Habitat
2.4 / 3.4 /4.1 Habitat Restoration/Enhancement Grants
2.5 / 3.6 Scientific & Natural Area (SNA) Restoration, Enhancement, and Acquisition
3.1 Critical Land Protection Program: Fee Title & Conservation Easement Acquisition
3.2 Protecting Significant Habitat: Conservation Easement Acquisition
3.3 Minnesota Valley National Wildlife Refuge Fee Title Acquisition
3.5 DNR Fish & Wildlife Fee Title and Conservation Easement Acquisition

Project due to be completed: 6/30/2010
Work program

Vermillion River Corridor Acquisition and Restoration in Dakota County
Subd. 3b $400,000

Alan Singer
Dakota County
14955 Galaxie Ave
Apple Valley, MN 55124

Phone: (952) 891-7001
Email: al.singer@co.dakota.mn.us
Fax: (952) 891-7031
Web: http://www.co.dakota.mn.us

Funds enable Dakota County to develop and begin implementation of a comprehensive and integrated water quality, wildlife habitat, and outdoor recreational corridor system plan for the 335 square mile Vermillion River watershed, located in the counties of Dakota, Scott, and Goodhue. Implementation using these funds includes fee title and conservation easement acquisition to protect approximately 125 acres and restoration efforts to enhance approximately 40 acres.

Project due to be completed: 6/30/2011
Work program

Minnesota's Habitat Corridors Partnership - Phase IV
Subd 3c $3,150,000

Matt Holland
Pheasants Forever, Inc
679 W River Dr
New London, MN 56273

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Email: mholland@pheasantsforever.org
Fax: (320) 354-4377
Web: http://www.mnhabitatcorridors.org

Fifteen partner organizations will collaborate efforts in eleven identified project focus areas around the state to: 1) restore, enhance, and manage an estimated 4,296 acres of significant habitat, and 2) permanently protect an estimated 633 acres of significant habitat through fee title and conservation easement acquisition. Types of habitat include fisheries, native prairie, grassland, woodland, bluffland, lakeshore, shallow lake, wetland, river, and wild rice.

Project partners are the Minnesota Board of Water and Soil Resources (BWSR), Minnesota Department of Natural Resources (DNR), Ducks Unlimited, Fond du Lac Band of Chippewa, Friends of the Detroit Lakes Wetland Management District, Leech Lake Band of Ojibwe, Minnesota Deer Hunter's Association, Minnesota Land Trust, Minnesota Valley National Wildlife Refuge Trust, National Wild Turkey Federation, Pheasants Forever, Nature Conservancy, Trust for Public Land, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and U.S. Fish and Wildlife Service. Sub-projects within this partnership are:

1a Project Coordination and Mapping
2a Hides for Habitat Restoration
2b Partners for Fish and Wildlife Program
2c / 3c Living Lakes Enhancements and Easements
2d Shallow Lakes Management
2e Fond du Lac - Wild Rice Habitat Restoration
2f Habitat Enhancement on Shallow Lakes and Forested Impoundments
2g Wildlife Areas Management
2h Fish Habitat Improvement
2i Set out Seedlings
2j Lakescaping
2k Prairie Management
2n Campaign for Conservation
2o Working Lands Partnership
2p Bluffland Restoration
3a Shorelands Protection Program
3d Wetlands Reserve Program
3e RIM Reserve
4a Critical Lands Conservation Initiative
4b Fish and Wildlife Acquisition
4c Critical Lands Protection Program
4h Habitat Acquisition for Minnesota Valley Wetland Management District of USFWS
4i Habitat Acquisition - Professional Services

Project due to be completed: 6/30/2010
Work program

Preserving the Avon Hills Landscape
Subd. 3d $337,000

Thomas Kroll
Saint Johns Arboretum and University
Box 3000
Collegeville, MN 56321

Phone: (320) 363-3163

Email: tkroll@csbsju.edu
Fax: (320) 363-3202
Web: http://www.csbsju.edu/arboretum/avonhills

Saint John's Arboretum and University and the Minnesota Land Trust will work with local landowners, non-profit organizations, and local units of government to develop plans and implement land protection measures, including ordinances and conservation easements, that will benefit the Avon Hills landscape area (approximately 80 square miles in Stearns County) of central Minnesota. Implementation using these funds includes conservation easement acquisition to permanently protect approximately 450-1,000 acres. Conservation easements will be held and monitored by the Minnesota Land Trust.

Project due to be completed: 6/30/2010
Work program

Minnesota River Valley Green Corridor Land Protection
Subd. 3e $1,000,000

Nancy Fasching
Southwest Initiative Foundation
PO Box 428
Hutchinson, MN 55350

Phone: (320) 587-4848
Email: nancyf@swifoundation.org
Fax: (320) 587-3838
Web: http://www.swifoundation.org

Southwest Initiative Foundation will work with stakeholders and local landowners to develop and begin implementation of a land conservation plan in the Minnesota River Valley. Implementation using these funds includes fee title and conservation easement acquisition to permanently protect approximately 220 acres, particularly lands containing native prairie, unique geological features, fens, or wetlands.

Project due to be completed: 6/30/2010
Work program

Scientific and Natural Area Acquisition
Subd. 3f $1,000,000

Peggy Booth
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

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Fax: (651) 296-1811
Web: http://www.dnr.state.mn.us/snas

Approximately 180 acres of high quality native habitat will be acquired by the Department of Natural Resources (DNR) and designated as Scientific and Natural Area (SNA). SNA serves to protect elements of natural diversity of state importance - including rare and endangered plant and animal species, undisturbed plant communities, and geological features - for their use in scientific study, education, and nature observation.

Project due to be completed: 6/30/2010
Work program

State Land Acquisition Consolidation
Subd. 3g $500,000

Craig Engwall
MN Department of Natural Resources (DNR)

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Fax: (218) 327-4263
Web: http://www.dnr.state.mn.us

Establishment of a revolving account of funds the Department of Natural Resources (DNR) can use to consolidate state land ownership in Northern Minnesota in order to reduce forest fragmentation and enhance management efficiency. Funds in the account can finance the acquisition of lands of significant natural resource value adjacent to existing DNR forest lands; funds are replenished through the sale of isolated DNR parcels in difficult to manage areas.

Project due to be completed: 6/30/2011
Work program

State Park and Trail Land Acquisition
Subd. 3h $1,500,000

Larry Peterson (Parks) and Stan Linnell (Trails)
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: Larry Peterson: (651) 259-5593; Stan Linnell: (651) 259-5626
Email: larry.peterson@state.mn.us and stan.linnell@dnr.state.mn.us
Fax: (651) 296-6532 [Parks]; (651) 297-5475 (Trails)
Web: http://www.dnr.state.mn.us

Project funds will assist the Department of Natural Resources (DNR) in the acquisition of privately held land within existing state park boundaries and priority parcels along state trail corridors in order to preserve it for public use and benefit. Specific acquisitions include approximately 158 acres within Monsoon Lake State Park, approximately 400 acres within George Crosby State Park, and approximately 0.75 miles along the Mill Towns State Trail.

Project due to be completed: 6/30/2010
Work program

Metropolitan Regional Park System Land Acquisition
Subd. 3i $1,500,000

Arne Stefferud
Metropolitan Council
390 N Robert St
St. Paul, MN 55101

Phone: (651) 602-1360
Email: arne.stefferud@metc.state.mn.us
Fax: (651) 602-1467
Web: http://www.metrocouncil.org

The Metropolitan Council will grant these funds to metropolitan regional park agencies, along with a required minimum 40% match of non-state funds, to acquire approximately 225 acres within approved regional park unit boundaries in the Metropolitan Regional Park System.

Project due to be completed: 6/30/2011
Work program

Local Initiative Grants - Regional Parks and Natural Areas
Subd. 3j $1,000,000

Wayne Sames

MN Department of Natural Resources (DNR)
500 Lafayette Rd.
St. Paul, MN 55155

Phone: (651) 259-5559
Email: wayne.sames@dnr.state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us

Co- Project Manager:
Marc Mattice
Wright County Parks
1901 Highway 25 North
Buffalo, MN 55313

Phone: (763) 682-7693
Email: marc.mattice@co.wright.mn.us
Fax: (763) 682-7313
Web: http://www.co.wright.mn.us/department/parks/

Through this program, the Department of Natural Resources (DNR) provides matching grants to local governments for acquisition of regional parkland outside the Twin Cities metropolitan area and for natural and scenic area land statewide. Specifically, these funds are to be used for a regional park grant to Wright County to begin to acquire lands for a proposed regional park on the Bertram Chain of Lakes in Wright County.

Project due to be completed: 6/30/2011
Work program

Conservation Partners/Environmental Partnerships Matching Grant Program
Subd. 3k $150,000

Wayne Sames
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 10
St. Paul, MN 55155

Phone: (651) 259-5559
Email: wayne.sames@dnr.state.mn.us
Fax: (651) 296-6047
Web: http://www.dnr.state.mn.us/grants/habitat/env_cons_part.html

Through this program, the Department of Natural Resources (DNR) provides matching grants of up to $20,000 to local governments and private/nonprofit organizations for projects that enhance fish, wildlife, and native plant habitat; provide related research or surveys; and/or protect, enhance, or educate about our natural environment.

Project due to be completed: 6/30/2010
Work program

County Trail System Design
Subd. 3l $175,000

Mary Vogel
University of Minnesota
151 Rapson Hall
89 Church St SE
Minneapolis, MN 55455

Phone: (612) 626-7417
Email: vogel001@umn.edu
Fax: (612) 626-7424
Web: http://ccl.design.umn.edu/

The University of Minnesota will work with counties and communities to create plans and designs for recreational county trail systems in Brown, Lyon, Redwood, and Renville Counties.

Project due to be completed: 6/30/2010
Work program

Accelerated Prairie Management, Survey, Acquisition and Evaluation
Subd. 3m $1,250,000

Carmen Converse
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

Phone: (651) 259-5083
Email: carmen.converse@dnr.state.mn.us
Fax: 651) 296-1811
Web: http://dnr.state.mn.us/eco

Funds will be used by the Department of Natural Resources (DNR) to benefit the less than 1% of remaining prairie lands in the western and southern portions of the state. Specific work includes: 1) conducting a rapid assessment of the status of remaining native prairie sites in the state; 2) accelerating the Minnesota County Biological Survey (MCBS) in the prairie region of the state; 3) providing increased technical assistance to private prairie landowners; 4) accelerating management of public and private prairie lands; 5) monitoring and evaluating prairie condition and associated wildlife; and 6) acquiring approximately 150 acres of prairie natural areas, prairie bank easements, and buffers.

Project due to be completed: 6/30/2010
Work program

Prairie Ecosystem Restoration
Subd. 3n $80,000

Rich Perrine
Martin Soil and Water Conservation District
923 N State St, Ste 170
Fairmont, MN 56031

Phone: (507) 235-6680
Email: richard.perrine@mn.nacdnet.net
Fax: (507) 235-8171
Web: http://www.martinswcd.net

The Martin County Soil and Water Conservation District will collect seeds of declining and at-risk local ecotype native prairie plant species, propagate the plants, and then establish long term populations of the plants on suitable existing and perpetually protected prairie sites.

Project due to be completed: 6/30/2010
Work program

Best Practices for Native Prairie Management
Subd. 3o $45,000

Michelle Snider
Minnesota Recreation and Park Association
200 Charles Street NE
Fridley, MN 55432

Phone: (763) 571-1305 x100
Email: snider@mnrecpark.org
Fax: (763) 571-5204
Web: http://www.mnrpa.org

The Minnesota Recreation and Park Association will provide assistance to land managers and recreation professionals to work collaboratively to protect, restore, and sustain remaining native prairie areas throughout the state. Funds will be used to assemble and provide information on best practices for native prairie management through field demonstrations and regional workshops.

Project due to be completed: 6/30/2010
Work program

Impacts of Climate Change and CO2 on Prairie and Forest Production
Subd. 3p $180,000

Peter Reich
University of Minnesota
1530 Cleveland Ave N
St. Paul, MN 55108

Phone: (612) 624-4270
Email: preich@umn.edu
Fax: (612) 625-5212
Web: http://www.forestry.umn.edu/people/facstaff/reich/

RESEARCH

Biofuels from perennial plants could be an important part of Minnesota's energy future; however, much uncertainty surrounds the growth potential and carbon sequestration potential of different perennial biofuels, especially with respect to anticipated changes in climate and atmospheric chemistry over the next century. The University of Minnesota will accelerate research simulating future climate and atmospheric conditions to determine their impacts on biomass production, carbon sequestration, and water quality in prairie and tree species.

Project due to be completed: 6/30/2011
Work program

Biofuel Production and Wildlife Conservation in Working Prairies
Subd. 3q $500,000

Clarence Lehman
University of Minnesota
100 Ecology Building,1987 Upper Buford Circle
St. Paul, MN 55108

Phone: (612) 625-5734
Email: lehman@umn.edu
Fax: (612) 624-6777
Web: http://www.cbs.umn.edu/eeb/faculty/LehmanClarence/

RESEARCH

Biofuels are likely to be an important component of future energy production. Biofuel production in Minnesota and around the globe has the potential to either improve conditions for wildlife species or make conditions markedly worse. The University of Minnesota will identify and research management practices that promote wildlife conservation and associated habitat biodiversity on future working prairies used for renewable bioenergy production.

Project due to be completed: 6/30/2011
Work program

WATER RESOURCES

Future of Energy and Minnesota Water Resources
Subd. 4a $270,000

Sangwon Suh
University of Minnesota
1390 Eckles Ave.
Saint Paul, MN 55108

Phone: (612) 624-5307
Email: sangwon@umn.edu
Fax: 612) 624-3005
Web: http://www.bbe.umn.edu/Suh.html"

RESEARCH

Minnesota's water resources are critical to the state's economy, ecology, and culture. Several major changes already occurring or likely to occur in Minnesota - including demographic change, climate change, biofuel development, and electricity production - will significantly impact these water resources in the coming decades. The University of Minnesota is developing spatial models of water demand in Minnesota under differing scenarios and then integrating them into an interactive web-based tool for comparing the impacts and interactions of different policy scenarios on water resources in the state.

Project due to be completed: 6/30/2010
Work program

Accelerating Plans for Integrated Control of the Common Carp
Subd. 4b $550,000

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St. Paul, MN 55108

Phone: (612) 624-4997
Email: soren003@umn.edu
Fax: (612) 625-5299
Web: http://fwcb.cfans.umn.edu/sorensen/

RESEARCH

The common carp, first introduced and widely distributed across the United States in the late 1800s, is one of the most damaging invasive fish species in Minnesota and around the country. Common carp reduce food sources needed by native fish, stir up sediment and reduce water clarity, and harm underwater plants that maintain water quality and provide food and shelter for other fish. Various methods of control have proven either unsuccessful or environmentally damaging. These funds enable the University of Minnesota to continue, expand, and accelerate research into new and better options for controlling common carp by building upon major findings from a previous Environment and Natural Resources Trust Fund funded phase of this research [ML 2005, First Special Session, Chapter 1, Article 2, Section 11, Subd 5(g)], which identified recruitment (i.e. the process by which newly hatched fish survive to a year in age) as a key weakness in the life history of the common carp.

Project due to be completed: 6/30/2011
Work program

Testing Pesticides and Degradates in Public Drinking Water
Subd. 4c $368,000

John Hines
MN Department of Agriculture (MDA)
625 Robert St N
St Paul, MN 55155

Phone: (651) 201-6694
Email: JHines@mda.state.mn.us
Fax: (651) 201-6117
Web: http://www.state.mn.us

There is insufficient data on the impacts of pesticides on groundwater and drinking water in Minnesota to determine if risks are being posed to human health. Funds enable the Minnesota Department of Agriculture (MDA) to purchase necessary equipment and supplies that will accelerate sampling and analysis of statewide water supplies for the presence and concentration of pesticides and their degradates.

Project due to be completed: 6/30/2010
Work program

Assessment of Riparian Buffers in the Whitewater River Watershed
Subd. 4d $52,000

Linda Dahl
Whitewater Joint Powers Board
400 Wilson St, Box 39
Lewiston, MN 55952

Phone: (507) 523-2171
Email: linda.dahl@mn.nacdnet.net
Fax: (507) 523-3717
Web: http://www.whitewaterwatershed.org

Funds enable an effort in southeastern Minnesota led by the Whitewater Joint Powers Board that will assist in the prioritization of stream restoration efforts to improve water quality and habitat and in the enforcement of riparian buffers. An inventory of streams and adjacent land use and a survey of riparian landowners throughout the region will be conducted.

Project due to be completed: 6/30/2010
Work program

Intra-Lake Zoning To Protect Sensitive Lakeshore Areas
Subd. 4e $125,000

Paul Radomski
MN Department of Natural Resources (DNR)
1601 Minnesota Dr
Brainerd, MN 56401

Phone: (218) 833-8643
Email: paul.radomski@dnr.state.mn.us
Fax: (218) 828-6043
Web: http://www.dnr.state.mn.us

Funds continue and expand a previous Environment and Natural Resources Trust Fund funded cooperative effort [ML 2007, Chap. 30, Sec. 2, Subd. 5(h)] between Cass County and the Department of Natural Resources (DNR) to identify sensitive shorelines on highest priority area lakes and implement innovative zoning practices to protect water quality and lakeshore habitat.

Project due to be completed: 6/30/2010
Work program

Native Shoreland Buffer Incentives Program
Subd. 4f $225,000

Erika Rivers
MN Department of Natural Resources (DNR)
1201 E Highway 2
Grand Rapids, MN 55744

Phone: (218) 999-7914
Email: erika.rivers@dnr.state.mn.us

Fax: (218) 327-4263
Web: http://www.dnr.state.mn.us

Shoreline buffers of native vegetation filter excess nutrients and pollutants from runoff and provide habitat. Across Minnesota, thousands of shoreline miles of native vegetation buffers have been stripped because landowners lacked understanding of the important ecological function of buffers and any incentive for maintaining them. These funds enable the Department of Natural Resources (DNR) to accelerate a native shoreland buffer incentive program through market research, technical assistance, and competitive matching grants of $75,000 to local governments to craft and implement shoreland protection incentive programs that encourage maintaining and restoring native shoreland buffers.

Project due to be completed: 6/30/2011
Work program

Southeast MN Stream Restoration Projects
Subd. 4g $240,000

Jeff Hastings
Trout Unlimited
E7740 Hastings Ln
Westby, WI 54667

Phone: (608) 606-4158
Email: jhastings@tu.org
Web: http://www.tu.org/driftless

Early European settlement and agricultural practices from the 1850's to the 1930's left a legacy of erosion, flooding, and alteration on coldwater streams in southeast Minnesota that is still negatively impacting those streams today. Funds enable Trout Unlimited to accelerate streambank stabilization and restoration on at least six miles of stream in southeast Minnesota while simultaneously building the capacity of area government agencies and private citizens to implement future stream restoration projects.

Project due to be completed: 6/30/2011
Work program

South-Central MN Groundwater Monitoring and County Geologic Atlases
Subd. 4h $1,600,000

Part 1 ($706,000)
Dale Setterholm
Minnesota Geological Survey
University of Minnesota
2642 University Ave. W.
St. Paul, MN 55114

Phone: 612) 627-4780
Email: sette001@umn.edu
Fax: (612) 627-4778
Web: http://www.geo.umn.edu/mgs/

Part 2 ($894,000)
Jim Berg
MN Department of Natural Resources (DNR)
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5680
Email: jim.berg@dnr.state.mn.us
Fax: (651) 296-0445
Web: http://www.dnr.state.mn.us

The Minnesota Geological Survey and the Department of Natural Resources (DNR)will continue their joint long-term effort of mapping the location, size, boundaries, and vulnerability of the state's groundwater to support wise use and

protection of groundwater and other resources. In this phase of work, DNR will: 1) develop a plan for a statewide network of water level monitoring wells, and 2) investigate physical and recharge characteristics of the Mt. Simon Aquifer - the deepest bedrock aquifer of south central Minnesota and the Twin Cities metro area. In this phase of work, Minnesota Geologic Survey will: 1) initiate atlases in Blue Earth, Le Sueur, and Nicollet counties, and 2) provide processing and analysis support for the DNR's drilling work.

Project due to be completed: 6/30/2011
Work program - Dale Setterholm
Work program - Jim Berg

Lake Superior Research
Subd. 4i $86,000 (GLPA)

Steve Colman
University of Minnesota
Large Lakes Observatory, UMD
2205 E. 5th St.
Duluth, MN 55812

Phone: (218) 726-8522
Email: scolman@d.umn.edu
Fax: (218) 726-6979
Web: http://www.d.umn.edu/llo

RESEARCH

Since a 2006 appropriation from the Environment and Natural Resources Trust Fund, and an additional 2007 appropriation from the Great Lakes Protection Account, the University of Minnesota-Duluth's Large Lakes Observatory has been conducting a series of studies on Lake Superior waters to further understand the chemistry, water circulation, and biology of the world's largest freshwater lake. These funds are an additional appropriation from the Great Lakes Protection Account to expand this ongoing research to look further into the effects of regional climate on lake temperature and lake level.

Project due to be completed: 6/30/2011
Work program

NATURAL RESOURCE INFORMATION

Updating the National Wetlands Inventory for Minnesota
Subd. 5a $550,000

Doug Norris
MN Department of Natural Resources (DNR)
500 Lafayette Rd, Box 25
St. Paul, MN 55155

Phone: (651) 259-5125
Email: doug.norris@dnr.state.mn.us
Fax: (651) 296-1811
Web: http://www.dnr.state.mn.us/eco/wetlands/index.html

Wetland inventories are an essential tool for effective wetland management, protection, and restoration. The data is used at all levels of government, as well as by private industry and non-profit organizations, for wetland regulation and management, land use and conservation planning, environmental impact assessment, and natural resource inventories. The original National Wetland Inventory for Minnesota is outdated and updating the data for Minnesota has been identified as an important priority. Funds enable the DNR to begin a multi-phase process of updating the National Wetland Inventory statewide.

Project due to be completed: 6/30/2011
Work program

Soil Survey
Subd. 5b $400,000

Greg Larson
MN Board of Water and Soil Resources (BWSR)
520 Lafayette Road North
Saint Paul, MN 55155

Phone: (651) 297-7029
Email: greg.larson@bwsr.state.mn.us
Fax: (651) 297-5615
Web: http://www.bwsr.state.mn.us

The Board of Water and Soil Resources, in cooperation with the USDA Natural Resources Conservation Service, will continue their ongoing study of the state's soils. This phase of work will produce detailed soil survey information for seven counties (Cook, Crow Wing, Isanti, Koochiching, Lake, Pine, and St. Louis) and accelerate the availability of Minnesota soils data on the Internet.

Project due to be completed: 6/30/2010
Work program

Updating Precipitation Intensities for Runoff Estimation and Infrastructure Designs
Subd. 5c $100,000

Bruce Wilson
MN Pollution Control Agency (PCA)
520 N Lafayette Rd
Saint Paul, MN 55155

Phone: (651) 282-2619
Email: bruce.wilson@state.mn.us
Fax: (651) 297-8337
Web: http://www.pca.state.mn.us

Accurate estimates of rainfall intensities and duration are necessary for detection of climate change and related consequences for natural resources management and infrastructure design efforts. Most existing estimates are based on data that has not been updated since 1961, and which is believed to not reflect current rainfall patterns as altered by climate change. Funds enable to the Pollution Control Agency to participate in a multi-state cooperative effort with the National Oceanic and Atmospheric Administration to obtain updated climate change related rainfall frequencies. This data will have broad application for storm water conveyance and infrastructure design throughout Minnesota.

Project due to be completed: 6/30/2011
Work program

The MN Breeding Bird Atlas
Subd. 5d $270,000

Part 1 ($169,000)
Mark Martell
Audubon Minnesota
2357 Ventura Dr, Ste 106
St. Paul, MN 55125

Phone: (651) 739-9332
Email: mmartell@audubon.org
Fax: (651) 731-1330
Web: http://mn.audubon.org/

Part 2 ($101,000)
Gerald Niemi
Natural Resources Research Institute (NRRI) - University of Minnesota
5013 Miller Trunk Hwy

Duluth, MN 55811

Phone: (218) 720-4270
Email: gniemi@nrri.umn.edu
Fax: (218) 720-4328
Web: http://www.nrri.umn.edu

Minnesota is one of only six states that does not have a comprehensive, statewide survey of the breeding distribution of all bird species found in the state. These surveys, called Breeding Bird Atlases, are important tools used in conservation and preservation efforts throughout the world. Funds enable Audubon Minnesota and the University of Minnesota to begin coordinating a six-year effort amongst multiple partners to produce a Breeding Bird Atlas for Minnesota showing distribution and breeding status of all bird species in the state.

Project due to be completed: 6/30/2010
Work program - Mark Martell
Work program - Gerald Niemi

Restorable Wetlands Inventory
Subd. 5e $245,000

Darin Blunck
Ducks Unlimited, Inc.
2525 River Rd
Bismarck, ND 58503

Phone: (701) 355-3500
Email: dblunck@ducks.org
Fax: (701) 355-3575
Web: http://www.ducks.org

Funds enable Ducks Unlimited to continue its work inventorying and mapping basins of former wetlands in the southwest prairie region of Minnesota that have been completely drained but have the potential to be restored. This is a complement to the National Wetlands Inventory, which does not map wetland basins identified as being completely drained.

Project due to be completed: 6/30/2011
Work program

Wildlife Disease Data Surveillance and Analysis
Subd. 5f $100,000

Patrick Redig
University of Minnesota
1920 Fitch Ave
St. Paul, MN 55108

Phone: (612) 624-4969
Email: redig001@umn.edu
Fax: (612) 624-8740
Web: http://www.theraptorcenter.org

RESEARCH

Funds enable the University of Minnesota's Raptor Center to develop a searchable GIS and web-based database of health data from wildlife seen in animal hospitals for use as a tool in wildlife disease and health monitoring.

Project due to be completed: 6/30/2010
Work program

Conservation Easement Stewardship, Oversight and Maintenance
Subd. 5g $180,000

Kevin Lines
MN Board of Water and Soil Resources (BWSR)
520 Lafayette Rd
St. Paul, MN 55155

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Fax: (651) 297-5615
Web: http://www.bwsr.state.mn.us

Funds enable the Board of Water and Soil Resources (BWSR) to enhance long-term stewardship, oversight, and maintenance of conservation easements held by BWSR.

Project due to be completed: 6/30/2011
Work program

Conservation Easement Stewardship and Enforcement Program Plan
Subd. 5h $520,000

Kathy Lewis
MN Department of Natural Resources (DNR)
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St. Paul, MN 55155

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Co-Project Manager
Susan Damon
MN Department of Natural Resources (DNR)
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St. Paul, MN 55155

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

Funds enable the Department of Natural Resources (DNR) to inventory and digitize conservation easements held by DNR and to prepare a plan for long-term stewardship, monitoring, and enforcement of those easements.

Project due to be completed: 6/30/2011
Work program

ENVIRONMENTAL EDUCATION

Waters of Minnesota Documentary on Watersheds
Subd. 6a $349,000

Barbara Coffin
Bell Museum of Natural History - University of Minnesota
10 Church St SE
Minneapolis, MN 55455

Phone: (612) 624-4986
Email: bcoffin@umn.edu
Fax: (612) 626-7704
Web: http://www.historyoftheland.org

The Bell Museum will develop and create the first 1-hour episode of a public television educational documentary series on the waters of Minnesota. The series is designed to use storytelling and visual media to promote citizen understanding and action in protecting, restoring, and conserving Minnesota's water resources. The first episode of the series, Waters of Minnesota, will focus on the Upper Mississippi River watershed, which extends across approximately 70% of the state.

Project due to be completed: 6/30/2011
Work program

Global Warming - Reducing Carbon Footprint of Minnesota Schools
Subd. 6b $750,000

William Sierks
MN Pollution Control Agency (PCA)
520 N Lafayette Road, Ste. 200
Saint Paul, MN 55155

Phone: (651) 215-0290
Email: bill.sierks@state.mn.us
Fax: (651) 215-0246
Web: http://www.pca.state.mn.us

Funds will be used by the Pollution Control Agency (PCA) to provide information and technical assistance and to enact a grant program designed to help high schools, colleges, and universities to play a key role in addressing climate change. Up to 100 schools statewide will receive guidance and assistance identifying their carbon footprints and developing and implementing plans to reduce carbon emissions.

Project due to be completed: 6/30/2011
Work program

ESTABLISHMENT OF AN EMERGING ISSUES ACCOUNT

Emerging Issues Account
Subd 7 $155,000

Susan Thronton, Director
LCCMR
100 Rev. Dr. Martin Luther King Blvd.
Rm 65 State Office Bldg
St. Paul, MN 55155

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Email: susan.thrornton@lccmr.leg.mn
Fax: (651) 296-1321
Web: http://www.lccmr.leg.mn

Funds will be used by the LCCMR to provide assistance for an unexpected, urgent, or emergency need where time is of the essence, as authorized in Minnesota Statutes, section 116P.08, subdivision 4, paragraph (d).

Project due to be completed: 6/30/2010

III. Completed Research Projects

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

- The following documents are short abstracts for projects completed since the previous biennial report of January 15, 2007.
- The abstracts describe the general accomplishments of each project for completed projects.
See http://www.lccmr.leg.mn/projectabs.html
- Research projects have been marked as such in the description.
- Full work programs are available at the LCCMR, Room 65 - State Office Building. The abstracts are current as of 12/30/08.
- Legal Citations
  - M.L. 2005, First Special Session, Chp. 1, Art. 2, Sec. 11
  - M.L. 2006, Chapter 243, Section 20

LCMR 2005 PROJECT ABSTRACTS

MN Laws 2005, First Special Session, Chapter 1, Article 2, Section 11 (July 1, 2005 through June 30, 2007)

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 on this page are not created, maintained, or endorsed by the LCCMR office or the Minnesota Legislature. If you would like further information about specific projects, please contact the appropriate program manager at the address or phone number listed.

Subd. 03 - Administration

03a Legislative Commission on Minnesota Resources - PARTIAL VETO
See 2006 Project Abstracts

03b Contract Administration

Subd. 04 - Advisory Committee

04 Citizen Advisory Committee

Subd. 05 - Fish & Wildlife Habitat

05a Restoring Minnesota's Fish and Wildlife Habitat Corridors - Phase III

05b Metropolitan Area Wildlife Corridors - Phase II

05c Development of Scientific and Natural Areas

05d Prairie Stewardship of Private Lands

05e Local Initiative Grants - Conservation Partners and Environmental Partnerships

05f Minnesota Releaf Community Forest Development & Protection

05g Integrated and Pheromonal Control of Common Carp - *Research*

05h Biological Control of European Buckthorn and Garlic Mustard - *Research*

05i ~~Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties~~ - GOVERNOR VETO
See 2006 Project Abstracts

Subd. 06 - Recreation

06a State Park and Recreation Area Land Acquisition

06b LAWCON Federal Reimbursements

06c ~~State Park and Recreation Area Revenue-Enhancing Development~~ - GOVERNOR VETO

06d Best Management Practices for Parks and Outdoor Recreation

06e Metropolitan Regional Parks Acquisition, Rehabilitation, and Development

06f Gitchi-Gami State Trail

06g Casey Jones State Trail

06h Paul Bunyan State Trail Connection

06i Minnesota River Trail Planning

06j Local Initiative Grants-Parks and Natural Areas

06k Regional Park Planning for Nonmetropolitan Urban Areas

06l Local and Regional Trail Grant Initiative Program

06m Mesabi Trail

06n Cannon Valley Trail Belle Creek Bridge Replacement

06o Arrowhead Regional Bike Trail Connections Plan

06p Land Acquisition, Minnesota Landscape Arboretum

06q Development and Rehabilitation of Minnesota Shooting Ranges

06r Birding Maps

Subd. 07 - Water Resources

- 07a **Local Water Management Matching Challenge Grants**
- 07b **Accelerating and Enhancing Surface Water Monitoring for Lakes and Streams**
- 07c **Effects of Land Retirements on the Minnesota River** - *Research*
- 07d **Recycling Treated Municipal Wastewater for Industrial Water Use**
- 07e **Unwanted Hormone Therapy: Protecting Water and Public Health** - *Research*
- 07f ~~**Climate Change Impacts on Minnesota's Aquatic Resources**~~ - *Research* - **GOVERNOR VETO** See 2006 Project Abstracts
- 07g ~~**Green Roof Cost Share and Monitoring**~~ - **GOVERNOR VETO**
- 07h **Woodchip Biofilter Treatment of Feedlot Runoff** - *Research*
- 07i **Improving Water Quality on the Central Sands** - *Research*
- 07j **Improving Impaired Watersheds: Conservation Drainage Research** - *Research*
- 07k **Hydrology, Habitat, and Energy Potential of Mine Lakes**
- 07l **Hennepin County Beach Water Quality Monitoring Project**
- 07m **Southwest Minnesota Floodwater Retention Projects**
- 07n ~~**Upgrades to Blue Heron Research Vessel**~~ - **GOVERNOR VETO** See 2006 Project Abstracts
- 07o **Bassett Creek Valley Channel Restoration**
- 07p **Restoration of Indian Lake**

Subd. 08 - Land Use and Natural Resource Information

- 08a **Minnesota Biological Survey**
- 08b **Soil Survey**
- 08c ~~**Land Cover Mapping for Natural Resource Protection**~~ - **GOVERNOR VETO** See 2006 Project Abstracts
- 08d **Open Space Planning and Protection**

Subd. 09 - Agriculture & Natural Resource Industries

- 09a **Completing Third-Party Certification of DNR Forest Lands**
- 09b **Third-Party Certification of Private Woodlands**
- 09c **Sustainable Management of Private Forest Lands**
- 09d **Evaluating Riparian Timber Harvesting Guidelines: Phase 2** - *Research*
- 09e **Third Crops for Water Quality - Phase 2** - *Research*
- 09f **Bioconversion of Potato Waste into Marketable Biopolymers** - *Research*

Subd. 10 - Energy

- 10a **Clean Energy Resource Teams and Community Wind Energy Rebate Program**
- 10b ~~**Planning for Economic Development via Energy Independence**~~ - **GOVERNOR VETO**
- 10c **Manure Methane Digester Compatible Wastes and Electrical Generation**
- 10d **Dairy Farm Digesters**
- 10e **Wind to Hydrogen Demonstration**
- 10f **Natural Gas Production from Agriculture Biomass** - *Research*
- 10g **Biomass-Derived Oils for Generating Electricity and Reducing Emissions**
- 10h ~~**Phillips Biomass Community Energy Systems**~~ - **GOVERNOR VETO** See 2006 Project Abstracts
- 10i ~~**Laurentian Energy Authority Biomass Project**~~ - **GOVERNOR VETO** See 2006 Project Abstracts

Subd. 11 - Environmental Education

- 11a ~~**Enhancing Civic Understanding of Groundwater**~~ - **GOVERNOR VETO** See 2006 Project Abstracts
- 11b **Cedar Creek Natural History Area Interpretive Center and Restoration**
- 11c ~~**Environmental Problem-Solving Model for Twin Cities Schools**~~ - **GOVERNOR VETO**
- 11d **Tamarack Nature Center Exhibits**

Subd. 12 - Children's Environmental Education

- 12a **Children's Environmental Health**

Funding Sources: (**note: all projects are TF, unless otherwise noted)
Environment and Natural Resources Trust Fund (TF)
Oil Overcharge (OOC)
Great Lakes Protection Account (GLP)

SUBD. 03 - ADMINISTRATION

Legislative Commission on Minnesota Resources - PARTIAL GOVERNOR VETO
03(a) ~~$ 899,000~~ $449,000 (second year appropriation of $450,000 was vetoed)

John Velin, Director
LCMR

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For administration as provided in Minnesota Statutes, section 116P.09, subdivision 5.

Project completed: 6/30/2007

Contract Administration
03(b) $150,000

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Contract administration activities assigned to the commissioner for agreements with non-state agencies to receive project funding on a reimbursement basis.

Project completed: 6/30/2008

SUBD. 04 - ADVISORY COMMITTEE

Citizen Advisory Committee for the Trust Fund
04 $20,000

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For expenses of the citizen advisory committee as provided in Minnesota Statutes, section 116P.06. Notwithstanding Minnesota Statutes, section 16A.281, the availability of $15,000 of the appropriation from Laws 2003, Chapter 128, article 1,section 9, subdivision 4, advisory committee, is extended to June 30, 2007.

Project due to be completed: Funding changed to the newly created LCCMR M.L. 2006, Chp. 243, Section 19

SUBD. 05 - FISH AND WILDLIFE HABITAT

Restoring Minnesota's Fish and Wildlife Habitat Corridors - Phase III
05(a) $4,062,000

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DNR, Board of Water and Soil Resources, and for agreements with Pheasants Forever, Minnesota Deer Hunters Association, Ducks Unlimited, Inc., National Wild Turkey Federation, the Nature Conservancy, Minnesota Land Trust, the Trust for Public Land, Minnesota Valley National Wildlife Refuge Trust, Inc., U.S. Fish and Wildlife Service, Red Lake Band of Chippewa, Leech Lake Band of Chippewa, Fond du Lac Band of Chippewa, USDA-Natural Resources Conservation Service.

Overall Project Outcome and Results
The Habitat Conservation Partnership (HCP) restored, enhanced or protected 21,380.9 acres in defined project areas expending a total of $16,354,411, with $4,032,739 coming from the Environment and Natural Resources Trust Fund (ETF). Please see http://www.mnhabitatcorridors.org for complete information.

Partners restored or enhanced 14,721-acres, exceeding the goal of 11,685 acres. Work included 8,161-acres of grassland restoration/enhancement, 2,295-acres of wetland restoration, 526-acres of woodland restoration, and 2,886-acres of wetland enhancement. Other accomplishments included shallow lake surveys & lakescaping demonstration projects/workshops. A total of $4,193,879 ($972,203 ETF, $3,221,676 Other Funds) was expended.

Partners acquired 5,484 acres of perpetual conservation easements. HCP fell below the goal of 7,270 acres due to increased non-state funds spent on restoration. Easement protection priority was placed upon shoreline habitats of which over 5.2 miles were protected. Habitats protected were grasslands, wetlands, and woodlands. A total of $7,150,074 ($1,360,830 ETF, $5,789,244 Other Funds) was expended.

Partners acquired 1,176.5 acres in fee-title. HCP exceeded the goal of 984 acres. HCP achieved 437.3 acres of new WMA's, 15.2 acres of AMA's, 458.4-acres of WPA's, and 266.5-acres of private/local government lands. A total of $4,725,457 ($1,474,706 ETF, $3,250,751 Other Funds) was expended.

HCP Partners included: Ducks Unlimited, Fond du Lac Reservation, Leech Lake Band of Ojibwe, MN Board of Water and Soil Resources, MN Deer Hunters Association, MN Department of Natural Resources, MN Land Trust, MN Valley National Wildlife Refuge Trust, Inc, National Wild Turkey Federation, Pheasants Forever, Red Lake Band of Chippewa, The Nature Conservancy, Trust for Public Land, U.S. Fish and Wildlife Service, and U.S. Natural Resources Conservation Service.

Project completed: 6/30/2008

I
Metropolitan Area Wildlife Corridors - Phase II
05(b) $3,530,000

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DNR, and for agreements with Trust for Public Land, Ducks Unlimited, Inc., Friends of the Mississippi River, Great River Greening, Minnesota Land Trust, Minnesota Valley National Wildlife Refuge Trust, Inc., Pheasants Forever, Inc. and Friends of the Minnesota Valley

Overall Project Outcome and Results
The key objectives and results of this program are to accelerate agency programs and cooperative agreements with partner organizations for the purposes of planning, improving, and protecting important natural areas in the metropolitan region and portions of surrounding counties through grants, contracted services, conservation easements, and fee acquisition.

The primary results of the program were:

- Restoration of 2,026 acres of habitat
- Protection of approximately 2.4 miles of shoreline
- Fee and easement acquisition of 2,973 acres

Project Results Use and Dissemination
The Metro Corridors partnership distributed information about the program and projects through the widely broadcast e-mails to people on the Regional Greenways Collaborative (RGC) database, through the RGC quarterly meetings, and jointly held county meetings. As projects were completed, the partners publicized accomplishments through press releases and organization newsletters and websites.

Project completed: 6/30/2008

Development of Scientific and Natural Areas
05(c) $134,000

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Overall Project Outcome and Results
Ecological restoration and development projects were carried out on about 330 acres in 26 counties across the state at 37 of the state's 147 state Scientific and Natural Areas (SNA). This included:

- Prairie grassland improvement (exotics and woody encroachment removal) on 155 acres at 17 SNAs,
- Prairie restoration, including seed collection on 40 acres at 2 SNAs and 179 acres of prescribed burns and 31.35 miles of burn break development at 18 SNAs,
- Boundary signing along 19 miles of perimeter at 4 SNAs,
- Other development work, including deer enclosure construction, kiosk, gates, parking lots, and site cleanup at 8 SNAs.

This work is necessary to preserve and perpetuate the state's ecological diversity, including rare species and native plant communities in sites of biological diversity significance, in areas that are part of the state's SNA system and to enhance the value and usage of SNAs as part of the state's outdoor recreation system.

Project completed: 6/30/2008

Prairie Stewardship of Private Lands
05(d) $100,000

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Overall Project Outcome and Results
Native prairie is Minnesota's most threatened natural habitat. Less than 1%, or less than 170,000 acres, of the State's native prairie survives - and much of it is privately owned. Many of these remaining prairies have not received sustainable management activities since European settlement and subsequent removal of nature processes. In the absence of active management prairies frequently deteriorate from encroachment by woody species or competition from non-native plants. Landowners are almost always interested in improving the stewardship of their native prairie remnant, but often lack the expertise or resources to identify and address this backlog of needed management.

One project objective was to provide native prairie landowners with comprehensive Prairie Stewardship Plans that offer long-term guidance for the care of their native prairie. Natural resource professionals prepared plans that inventoried and evaluated the landowner's native prairie and other land resources, identified their goals and objectives, and recommended ecologically sound management strategies. Both DNR Prairie Specialists and qualified private-sector prairie professionals, who competitively bid their services, assisted landowners with completion of their Prairie Stewardship Plans. A total of 37 stewardship plans were written covering 4,459 total acres, 1,313 acres of which were prairie.

The second project objective was to implement existing Prairie Stewardship Plans. Landowners were able to request cost-share assistance for habitat improvement practices which they implemented themselves, or had DNR prairie staff carryout practices they did not feel qualified to do. Example habitat projects included prescribed burns, woody encroachment removal, invasive species control, and prairie reconstruction. In many cases, DNR packaged groups of projects, such as prescribed burns, into larger contracts for professional vendors to competitively bid on, thereby maximizing efficiencies and minimizing costs for landowners. A total of 23 stewardship projects were completed covering 1,043 total acres, which included 469 acres of which were prairie.

Since inception of the Scientific and Natural Area's Prairie Stewardship Program in 1999 there have been 144 Prairie Stewardship Plans written for prairie landowners. Future plans for the Prairie Stewardship Program include surveying past stewardship plan recipients to determine if plans have been fully implemented, and if not, what have been the obstacles to setting those plans in motion.

Project Results Use and Dissemination
Copies of Stewardship Plans have been provided to local DNR managers and used by the landowners as they work with other conservation agencies and programs.

One landowner participating in the cost-share assistance for habitat improvement took it upon himself to highlight the project in his local newspaper. The article was published in the January 24, 2008 issue of the Advocate Tribune (Granite Falls, MN). A scan of this article has been included with the final report.

Project completed: 6/30/2008

Local Initiative Grants (Conservation Partners and Environmental Partnerships)
05(e) $500,000

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Overall Project Outcome and Results
The objective of this program is to foster public/private and intergovernmental partnerships through state matching grants to private organizations and local governments for 'on the ground' fish, wildlife and native plant habitat improvement projects and related research and environmental service and conservation projects.

Grants totaling $404,911 were provided to private and non-profit organizations, educational institutions, local governments and soil and water conservation districts. Of that total, 19 Conservation Partners grants were made for 'on the ground' fish, wildlife and native plant habitat improvement projects and research or surveys of fish and wildlife directly related to specific habitat improvement. The remaining 18 Environmental Partnerships grants were made for community environmental service, education, information, and conservation projects.

A number of habitat restorations were completed, including lake, pond, river and stream shoreland restorations and prairie, oak forest, and oak savanna restorations. Other projects included invasive species control, research related to proposed fen restoration, and Dwarf Trout Lilly habitat protection. Among the Environmental Partnerships projects funded were educational exhibits, prairie restoration and homeowners natural habitat project guides, GIS modeling, resource assessments, stream and river clean-up projects, a Prairie Chicken video, water quality monitoring, and a stormwater treatment project.

These projects are located throughout the state, therefore many Minnesotans will benefit directly by having access to the project areas. Minnesotans will also benefit from information or research that may be applicable in many locations, such as the Prairie Restoration Guide, or habitat improvements that benefit fish and wildlife populations and help protect water quality. Environmental education, interpretation, and information projects also foster an appreciation for the need to conserve our natural resources, particularly for younger generations.

For more detailed information on any of the projects contact the DNR Local Grants Unit. A list of funded projects is included in the final report.

Project Results Use and Dissemination
Information from these projects has been used and/or disseminated in a number of ways. Some of the projects involve habitat improvement that can be accessed by the public. Other projects involved development of informational materials such as interpretive signing, written reports or guides, data bases, traveling educational trunks, field visits, videos, workshops, and training of community volunteers. Project managers sent copies of written materials, guides, etc., to the DNR with their final reports. See the individual project descriptions in the final report for more details.

Project completed: 6/30/2008

Minnesota ReLeaf Community Forest Development and Protection
05(f) $500,000

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Overall Project Outcome and Results
Since 1991, Minnesota ReLeaf Community Forestry Grants have helped over 350 communities to build sustainable tree care programs. The 2005-2007 program provided assistance to 57 projects statewide through matching grants and technical assistance to support community efforts.

The overall emphasis was to address current and potential community forest health problems by enabling communities to build their capacity to develop and sustain forest management programs that increase tree diversity and improve tree vigor.

Local matching grants were provided in three areas. Forest health protection projects focused on enhancing forest resilience against insects and disease. Tree planting projects focused on increasing the diversity of tree species and increasing forest canopy. Community forestry assessment projects conducted inventorying and assessment of existing forest resources to support better planning.

Grantees received technical assistance in the form of maps, workshops, in field training sessions, and printed resources.

Nearly one third of the projects included an assessment of public trees, resulting in management plans to guide planting a greater diversity of species, use of native trees and improved vigor of existing trees through proper maintenance. These activities provide valuable examples for residents and neighboring towns to emulate, thus multiplying and maximizing the many benefits healthy trees provide. Continued coordination and co-promotion with DNR, PCA and other grant programs would help provide one-stop assistance for local environmental management needs.

Project Results and Dissemination
Experience gained will improve:

- A web portal to offer tree care information to communities and homeowners: www.MNtrees.org
- Oak wilt control practice, community programs, and policies. Decreased Federal Oak Wilt Suppression dollars results in a move to demonstration projects in place of generally available matching grants.
- The Inventory Decision Model to guide cities considering this vital step toward management, and Inventory/Management plan guidelines being developed with private contractors.
- Use of I-Tree, a USDA Forest Service software suite of urban and community forestry analysis and benefits assessment tools.

All of these new tools are available via the DNR web page, www.dnr.state.mn.us or www.MNtrees.org

Project completed: 6/30/2008

Integrated and Pheromonal Control of Common Carp
05(g) $550,000

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RESEARCH

To research new options for controlling common carp.

Project due to be completed: 6/30/2009

Biological Control of European Buckthorn and Garlic Mustard
05(h) $200,000

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RESEARCH

Overall Project Outcome and Results
This project builds upon and continues work begun from a 2003 Trust Fund appropriation and has since received an additional 2007 Trust Fund appropriation to further continue and accelerate the work.

Buckthorn and garlic mustard are invasive species of highest priority for development of long-term management solutions, such as biological control (bio-control). This research aimed to help determine 1) if there are suitable insects that can be used to reduce impacts caused by buckthorn and 2) to implement introduction of insects to control garlic mustard and assess their establishment and success.

Buckthorn: Insects were collected and reared for carrying out host specificity testing. A total of 1,733 specimens (356 species) were collected from buckthorn infestations in this insect fauna survey. In total, 39 specialized arthopods were recorded from R. cathartica (common buckthorn) and F. alnus (glossy buckthorn) in Europe.

The reassessment of the potential for biological control of R. cathartica and F. alnus was conducted based on work done in Europe from 2002-2007 on potential biological control agents. A summary of 10 priority species for future research on biological control of R. cathartica is provided in Appendix A of the Work Program Final Report. This final suite of priority species are being tested for use as effective bio-control agents in future work.

Garlic mustard: Pre-release data is providing a greater understanding of normal year-to-year variation. To help differentiate normal fluctuation from changes due to the bio-control insect, data was collected over the course of this project. On average, less than 2% of the leaf area was damaged by herbivores. Garlic mustard plant populations do vary considerably from year to year. Two to three years of pre-release monitoring data have given us a good understanding of the year-to-year fluctuations in populations. At some sites, the population fluctuations are due to the changes in dominance between the seedling and adult stages.

After biological control insects are released we expect to see decreases in garlic mustard populations. With long-term data collection we can see long-term trends in garlic mustard populations (see Appendix B of Work Program Final Report).

Project Results Use and Dissemination
Information garnered from this study will be used to further our objective of developing an effective and efficient bio-control agent for buckthorn and garlic mustard. Effective bio-control agents will help reduce the damage and cost related to control of these invasive species. The information provided by this work helps to establish basic biological information pertaining to the types of species available for potential bio-control agents for buckthorn and narrow our efforts to a few priority species. The information gained on garlic mustard growth and impacts on native species will help us to assess the effectiveness of the current bio-control agents once they have been applied to the test sites. Without this type of baseline data a true understanding of the impacts the bio-control agent is having are impossible to attain. Information from these projects are being shared with multiple federal and state agencies to help the region better understand the potential control mechanisms for buckthorn and garlic mustard.

Information on this work has also been developed into peer reviewed scientific papers. The information has been presented at a variety of national and international conferences. Locally this information has been presented to a variety of interested practitioners and citizens at local conferences and meeting.

Project completed: 6/30/2008

~~**Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties -**~~ **GOVERNOR VETO**
~~05(i) $500,000~~
~~Roger Howard~~
~~Aitkin County~~
~~209 - 2nd Street NW~~
~~Aitkin, MN 56431~~
~~**Phone** 218-927-7364~~
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~~For a six-year revolving loan fund to improve public and private land-ownership patterns, increase management efficiency, and protect critical habitat in Aitkin, Cass, and Crow Wing counties. By June 30, 2011, Aitkin County shall repay the $500,000 to the Commissioner of Finance for deposit in the Environment and Natural Resources Trust Fund.~~

~~**Project due to be completed:** 6/30/2011~~

Received 2006 appropriation of $290,000: ML 2006, Chap., Sec. 20, Subd. 8 ("Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties"). See 2006 Abstracts for more information.

SUBD. 06 - RECREATION

State Park and Recreation Area Land Acquisition
06(a) $2,000,000

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Overall Project Outcome and Results
The purpose of this project was to acquire inholdings from willing sellers within state park and recreation area boundaries. Approximately 931 acres in the following locations were completed using the 2005 LCMR appropriation:

- Crow Wing State Park: 213 acres (also used 2003 Trust Fund funding)
- G. Crosby Manitou State Park: 420 acres (also used Coastal Zone Management Grant)
- Whitewater State Park: 218 acres
- Judge C.R. Magney State Park: 80 acres

This appropriation was significant in that it continued the progress toward acquiring critical private in-holdings within statutory state park boundaries. The Crow Wing State park acquisition protected additional lands along the Mississippi River wildlife corridor in an area that is experiencing rapid residential development. These parcels will also preserve the natural views from the park facilities and helped facilitate the connection of the Paul Bunyan State Trail. The George Crosby Manitou and Judge C.R. Magney State Park parcels were acquired to protect lands within the Lake Superior watershed and offer recreational opportunities such as hiking (one mile of hiking trail included), backpacking and birdwatching. The Whitewater State Park parcel protects the integrity of the valley and park by preserving the bluff above the park.

Project Results Use and Dissemination
Parcels acquired have been shown on updated state park boundary maps, and have been described in the Minnesota State Park Traveler newspaper and other publications.

Project completed: 1/18/2008

LAWCON Federal Reimbursements
06(b) $1,600,000

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Overall Project Outcome and Results
This project involves administration of the federal Land and Water Conservation Fund (LAWCON) allocation to the state. One-half of these funds are used to provide grants to local governments for local parks and are appropriated by statute. LAWCON funds are also used to reimburse state expenditures on state outdoor recreation facilities. These reimbursements, in turn, are used to fund additional state outdoor recreation projects recommended by the LCCMR. The cost of administering the program, including planning and related activity required to maintain eligibility, can also be funded from these reimbursements.

Two state projects were funded. An allocation of $800,000 was used to help purchase 470 acres of fish and wildlife habitat on the Vermillion River in Dakota County as part of the Vermillion Empire WMA/AMA. The second allocation of $384,000 was used to help purchase a 90 acre addition to the Pine Bend Bluffs Scientific and Natural Area located on the bluffs of the Mississippi River in Dakota County.

A total of $416,000 was used for administration costs related to implementing the LAWCON program. In addition to covering the administrative costs of grants administration, financial management, contract management and project monitoring, these funds were used to complete the State Comprehensive Outdoor Recreation Plan (SCORP). This plan is required to maintain eligibility for LAWCON funding. The plan was completed and has been forwarded to the National Park Service for final approval.

As part of the SCORP public involvement and information requirement a $30,000 contract was provided to Twin Cities Public Television (TPT) to produce a one-hour television program dealing with issues of changing outdoor recreation participation. The program, entitled "Outdoor Recreation in Decline", included interviews with outdoor professionals and a focus group of parents and teachers. The program has aired several times since its completion in 2007.

The 2005 local grants portion of the LAWCON funds was used to fund projects solicited during two annual grant rounds in 2004 and 2005. These funds are not part of the $1,600,000 LAWCON appropriation covered by this work program, but are included for informational purposes. Information on these projects is included in the 2005 Local Initiative Grants work program.

Project Results Use and Dissemination
The two state land acquisition project areas are open for public use.

The SCORP is posted on the DNR web site and may be downloaded (click on "Grants" on the DNR home page to find the link to the SCORP). Five hundred copies of the report were printed and approximately 200 copies have been distributed to date to a wide variety of individuals, agencies and organizations.

The TPL television program debuted in 2007 with two separate advertised airings on TPT Channel 17. It continues to be aired periodically on TPT channels. DVDs of the program were provided to the DNR and several copies have been distributed to DNR staff, local National Park Service staff and other individuals.

Project completed: 6/30/2008

~~**State Park and Recreation Area Revenue-Enhancing Development**~~ **- GOVERNOR VETO**
~~06(c) $200,000~~
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~~To enhance revenue generation in the state's park and recreation system.~~

~~**Project due to be completed:** 6/30/2007~~

Best Management Practices for Parks and Outdoor Recreation
06(d) $200,000

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Overall Project Outcome, Results, Use and Dissemination
This project was the result of the 2004 Legislative Commission on Minnesota Resources (LCMR) Parks Study and the 2003-2008 State Comprehensive Outdoor Recreation Plan (SCORP). Together, both of these studies pointed toward the value and importance of better coordination and collaboration across Minnesota 's outdoor recreation providers. The Best Management Practices for Parks and Outdoor Recreation grant project addressed these recommendations by engaging public and private outdoor recreation leaders to translate better coordination into concrete advice and on-the-ground action.

The project was successful in reaching a broad cross-section of professional outdoor recreation providers from city, county, state and federal agencies; private consultants; universities and non-profits. More than 1,250 professionals participated in nine events held throughout the state. These events, including a Best Practices Summit and regional workshops, provided participants with new ideas and ways of managing parks and outdoor recreation. The networking has been instrumental in better coordination and collaboration among outdoor recreation providers.

A website (www.bestpracticesmn.org) was developed during the project to enable professionals to share best practices in a wide variety areas – from facility maintenance to natural resource management to research. During the project, there were approximately 3,800 unique visitors to the website.

Prior to this project, there were no other forums for learning and collaboration at a cross-agency level. This project provided park and outdoor recreation professionals with the opportunity to learn from one another, share best practices and lessons learned. Project participants now have an enhanced set of tools in which to do their jobs more effectively and efficiently.

Project participants gained information to work more effectively and efficiently in many areas, including, but not limited to:

- Outdoor recreation trends
- Sustaining outdoor recreation facilities for the future
- Park, open space & trail system planning
- Surface & storm water management
- Innovative financing for operations & maintenance
- Innovative financing for land acquisition & development
- Contemporary approaches to natural resource stewardship
- Strategies for getting kids and young adults outdoors
- Case studies for successful cross-agency collaboration
- Energy efficiency in parks and recreation

A detailed report of project results can be obtained by contacting Kathy Schoenbauer at keschoenbauer@comcast.net or Michelle Snider at snider@mnrecpark.org.

Project completed: 6/30/2007

Metropolitan Regional Parks Acquisition, Rehabilitation and Development
06(e) $2,000,000

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Overall Project Outcome and Results
This appropriation leveraged $1,333,000 of Metropolitan Council bonds and $701,000 of 2005 State bonds in grants from the Metropolitan Council to regional park agencies to accomplish the following:

- Acquire 567 acres in 4 parks (0.8 acre for Long Lake Regional Park in Ramsey County , 543 acres for Rice Creek Chain of Lakes Park

Reserve in Anoka County , 18.6 acres for Lake Waconia Regional Park in Carver County , and 5 acres for Big Marine Park Reserve in Washington County).

- Acquire a permanent trail easement from Burlington Northern Railroad for a 0.8 mile of right-of-way for the Bruce Vento Regional Trail in Ramsey County .
- Partially finance trail and shoreline rehabilitation at Lake of the Isles in Minneapolis
- Replace 4 pit toilets with sewer-served restrooms for picnic areas at Keller Regional Park in Ramsey County
- Rehabilitate 0.7 miles of separated bike/pedestrian trails, lighting and landscaping along East Lakeshore Drive at Como Regional Park in St. Paul
- Build 2 classrooms, storage and reception areas for a visitor center at Gale Woods Special Recreation Feature in Three Rivers Park District
- Design/engineering for 1.5 miles of North Urban Regional Trail in Dakota County
- Build a picnic shelter at the Sucker Lake portion of Grass-Vadnais Regional Park in Ramsey County

A partial extension to the appropriation timeline is allowing Anoka County to use $524,000 remaining from a land acquisition grant to match $1,050,000 of Federal Transportation Enhancement grant funds to construct two linked sections of the Rice Creek North Regional Trail within Rice Creek Chain of Lakes Park Reserve that totals 4 miles.

Project Results Use and Dissemination
The parks and trails where these projects are located had 9,233,000 visits in 2007, which was 28% of all visits to the Metropolitan Regional Park System in 2007.

Each regional park agency that received a grant or grants from this appropriation informs the public about the land acquisition, or new or rehabilitated park facilities with its own website and news releases. The Metropolitan Council also publishes a "Regional Parks Directory and Map" that informs the public about the recreation activities available at each regional park and trail and includes website addresses and phone numbers for each park agency for more information. Finally, the Metropolitan Council's website includes an interactive parks map that contains the same information as the paper version of the "Regional Parks Directory and Map" at www.metrocouncil.org/parks/r-pk-map.htm

Project due to be completed: 6/30/2010

Gitchi-Gami State Trail
06(f) $500,000

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To design and construct approximately two miles of Gitchi-Gami state trail segments.

Project due to be completed: 6/30/2009

The Casey Jones State Trail
06(g) $1,200,000

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Windom, MN 56101

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For land acquisition and development of the Casey Jones State Trail in southwest Minnesota.

Project due to be completed: 6/30/2009

Paul Bunyan State Trail Connection
06(h) $400,000

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DNR - Bemidji

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Bemidji, MN 56601

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To acquire land to connect the Paul Bunyan State Trail within the City of Bemidji.

Project due to be completed: 6/30/2009

Minnesota River Trail Planning
06(i) $200,000

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Overall Project Outcome and Results
The community-engaged planning/design work on the Minnesota River State Trail was done in collaboration with the cities of Redwood Falls, New Ulm, and Saint Peter; the Dakota Community; local trail groups; local citizens; and the Trails and Waterways Division of the DNR. The work focused on identifying potential state trail alignments, making city trail systems that connected to the state trail, locating and designing state trailheads, creating signature trail elements that expressed the unique Minnesota River landscape and created a trail identity, and increasing environmental awareness in the Valley. Analysis of the natural and cultural landscape of the Minnesota River Valley, aspirations of the local communities and citizens, and the needs of the DNR's master planning efforts informed the work. Local community meetings were held to gather information, present preliminary design work for review and feedback, and present the final designs.

The work produced included:

- An analysis of the cultural and natural amenities and features of the Valley's landscape,
- Proposed state trail alignments that interpretive the landscape,
- Local trail systems that connect local features and provide local access to the state trail,
- Two trail head designs for each of the three cities that create a trail presence in the city, provide access to the city by visiting trail users, and tie the communities more closely and powerfully to the trail, the river, and the valley landscape,
- Designs for a state trail sign and kiosk/resting place that celebrate the Valley's changing geology and landscape,
- Site designs for resting places along the trail that honors the presence of the Dakota peoples in the Minnesota River, and
- A design for spaces along the route of the Commemorative March.

Project Results Use and Dissemination
The work has been presented in public meetings to Redwood Falls, Saint Peter, and New Ulm, and at a gathering of the Dakota Community. The Trails and Waterways Division of the Minnesota Department of Natural Resources, the Redwood Falls, Saint Peter, and New Ulm, local trail and citizen groups, and citizens have used and are using the work. The DNR has used and will continue use the work in the future in its Minnesota River State Trail master planning efforts. The local communities are using the work to inform local trail planning and local recreational and development scenarios. Local trail groups and citizens are using the work in their communities to promote trails and trailheads.

The work has been published in a 166-page report in printed and digital forms. The reports have been sent to the communities and the DNR and is available on the Center for Changing Landscapes website.

Project completed: 6/30/2007

Local Initiative Grants (Parks and Natural Areas)
06(j) $1,200,000

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Overall Project Outcomes and Results
The key objectives and results of the Local Initiative Grants program are to assist local governments in: 1) acquisition of regional parks outside the Metro Area; 2) acquisition of natural and scenic areas statewide; and 3) acquisition of local parks.

The primary results of the program were:

- Four grants totaling $900,000 for three county and one city administered regional parks resulted in the acquisition of 736.6 acres of park land. These grants protected high quality woods and prairie, wetlands, and a heron rookery to be added to Stanley Eddy Regional Park in Wright County; acquired agricultural land to be added to Robert Ney Regional Park in Wright County for restoration to prairie, forest and wetlands; acquired agricultural land to be added to the Hormel Nature Center for restoration to prairie; and protected one-half mile of undeveloped lake frontage and over 200 acres of high quality maple/basswood/oak forest recognized as a significant area by the state County Biological Survey in the new Kraemer Lake Regional Park in Stearns County
- One grant of $100,000 for a new city administered natural and scenic area at Pilot Knob in Mendota Heights totaling 8.25 acres . The area has significant scenic, historical, geological, natural and cultural values and offers one of the most striking vistas in the Twin Cities metro area. It is currently being restored to prairie and oak savanna.
- One grant of $100,000 for a new city administered park (McKinney Lake Park) protecting 1.88 acres of lake shore in Grand Rapids . The site will provide shore fishing and canoeing opportunities as well as a scenic stop along the Edge of the Wilderness Scenic Byway.
- Total acres acquired: 746.73.

Project Results Use and Dissemination
Information about most of these parks and natural and scenic areas has been added to the DNR website. Click on 'Profiles' under both the Regional Park Grants and Natural and Scenic Area Grants headings. The county web sites and the City of Austin web site also include information about these parks.

Project completed: 6/30/2008

Regional Park Planning for Nonmetropolitan Urban Areas
06(k) $86,000

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Overall Project Outcome and Results
The report, "Regional Parks for Minnesota's New Outstate Urban Complexes" discusses the need for regional park investments in the following outstate urban complexes: nine collar counties around the Twin Cities metro, the greater St. Cloud region, greater Rochester, the Central Lakes region, the Western Lakes region, greater Bemidji and greater Willmar.

The report identifies the most scenic places in the fastest-growing areas of Minnesota, and proposes sixteen Regional Recreation Districts distributed throughout the outstate urban complexes. These proposed districts contain about 2 million acres, approximately 4 percent of the state. The proposed districts represent the highest amenity locations (hills, trees, and water) in the fastest-growing outstate urban complexes.

Project completed: 6/30/2007

Report: Regional parks for Minnesota's outstate urban complexes

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Local and Regional Trail Grant Initiative Program
06(l) $700,000

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To provide matching grants to local units of government for the cost of acquisition, development, engineering services, and enhancement of existing and new trail facilities.

Project due to be completed: 6/30/2009

Mesabi Trail
06m $1,000,000

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To acquire and develop segments of the Mesabi Trail.

Project due to be completed: 6/30/2009

Cannon Valley Trail Belle Creek Bridge Replacement
06(n) $300,000

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Overall Project Outcome and Results
In order to maintain the natural and cultural resource based Cannon Valley Trail - a 20-mile paved recreational trail in Goodhue County, Minnesota - the old, rotting Belle Creek Bridge was replaced. The old wooden bridge structure was replaced with a steel bridge that spans 155 feet. The bridge project was completed in April 2006 just in time for the beginning of the 2006 biking season. Nearly 100,000 Minnesotans visit the Cannon Valley Trail annually.

Project completed: 6/30/2007

Arrowhead Regional Bike Trail Connections Plan
06(o) $83,000

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Overall Project Outcome and Results
The Arrowhead Regional Bike Trail Connections Plan objective is to guide to long-term transportation investments in the Arrowhead Region by recommending bicycle and pedestrian connections from communities and tourist facilities to the Region's three major trails-the Willard Munger State Trail, the Gitchi-Gami State Trail, and the Mesabi Trail, and to the Region's several shorter trail segments.

The project assessed the region's ten trails and inventoried 19 facilities and communities which were within five miles from the current regional trails. Five of these communities were identified as lacking adequate trail connections. ARDC guided these communities through a more detailed planning process to design connection that improved the public's trail access.

The project succeeded in producing a resource document that includes a trail assessment with maps, photos and descriptions, and the conditions of the trail connections for communities in proximity. This information resulted in five communities receiving detailed trail plans, who are now ready to work with ARDC's transportation planning program to implement the connections.

Project Results Use and Dissemination
The final Arrowhead Region Bike Connections Plan is being used by communities to improve their trail access. Local and regional planners are also using the Plan for related projects. The public and interested officials can view the document on ARDC Regional Planning Division website: www.arrowheadplanning.org/bikeconnections

Project completed: 6/30/2007

Land Acquisition, Minnesota Landscape Arboretum

06(p) $650,000*

**An equal match of non-state dollars was required for this project.*

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Overall Project Outcome and Results
A 90-acre parcel within the boundaries of the Minnesota Landscape Arboretum was acquired by combining these Trust Fund funds with some remaining funds from a ML 2003 Trust Fund appropriation. This particular land acquisition concludes a 25 year long process to acquire these lands. The acquisition provides an internal connection to the Horticultural Research Center and adds to the Arboretum additional big woods, high quality wetlands and valuable tillable land for future research and education programs.

Project completed: 10/07/2008

Development and Rehabilitation of Minnesota Shooting Ranges
06(q) $300,000

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To provide technical assistance and matching grants to local communities and recreational shooting and archery clubs for the purpose of developing or rehabilitating shooting and archery facilities for public use. Recipient facilities must be open to the general public at reasonable times and for a reasonable fee on a walk-in basis.

Project due to be completed: 6/30/2008 - **FINAL REPORT NOT YET RECEIVED**

Birding Maps
06(r) $100,000

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Overall Project Outcome and Results
In order to attract more birdwatchers, and their economic impacts, to Minnesota four birding trail guides were produced and nationally distributed. Nine thousand eight hundred (9,800) copies were created and printed of a new birding guide for the North Shore region, following US Hwy 61 from Duluth to Grand Portage. Two thousand five hundred (2,500) guides for the Minnesota River Valley watershed, from Big Stone Lake to the Twin Cities, and 5,500 guides for the Mississippi River (Great River Birding Trail) from Lake Itasca to the Iowa border were updated and printed. The guide to the Pine to Prairie trail extending from Warroad to Fergus Falls was updated and 67,500 copies were printed.

To facilitate distribution and retail sales, we contracted with Adventure Publications, located in Cambridge , MN to distribute the North Shore, Minnesota River, and Great River books nationally. The North Shore guide retails for $9.95, and the Minnesota River and Great River guides retail for $12.95 each. Proceeds from these sales will be placed in a special account at Audubon and be used for work consistent with the objectives of this project. The Pine to Prairie guide will continue to be free of charge and distributed through the Detroit Lakes Regional Chamber of Commerce.

Project Results Use and Dissemination
All of the Bird Trail Guides have national distribution through Audubon, the Detroit Lakes Chamber of Commerce and Adventure Publications. The North Shore, Minnesota River Valley, and Great River Guides are available at retail outlets.

Project completed: 6/30/2007

SUBD. 07 - WATER RESOURCES

Local Water Management Matching Challenge Grants
07(a) $1,000,000

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Overall Project Outcome and Results
The Board of Water and Soil Resources (BWSR) oversees the Local Water Management Program. The purpose of this program is to protect water resources through the adoption and implementation of water management plans by counties and soil and water conservation districts. BWSR has supported implementation of these plans with other state funds since 1990, and funds provided by the Environment and Natural Resources Trust Fund ("Trust Fund") since 2000.

In February 2005 BWSR solicited local units of government to apply for project funding via Trust Fund funds. A total of 78 project proposals were received; the ranking of these project proposals was conducted by a team consisting of staff from BWSR, Department of Agriculture, Minnesota Department of Health, Department of Natural Resources, and the Minnesota Pollution Control Agency. The review team recommended 35 projects be approved for funding. The BWSR Board approved these recommendations on May 25, 2005.

The funded projects undertook the following activities:

- 10 projects focused on drainage system planning and inventories
- 7 projects focused on the assessment and implementation of water quality plans and practices
- 4 projects focused on lake management planning
- 4 projects focused on designing and implementing stormwater management plans and practices
- The remaining 10 projects focused on water quality education, land conservation, development of a geologic atlas, on-site wastewater treatment, developing a drained wetland inventory, groundwater monitoring, and flood damage reduction.

The level of interest and financial need to implement these types of local management plans remains high, as evidenced by the number of applications received for this period of funding. Local governments continue to value their water resources, and State funding helps maintain a state-local partnership in protecting these important resources. Funding these projects makes local resource management a priority by encouraging and enabling the implementation of these plans.

Project Results Use and Dissemination
Detailed project work plans, budgets, and reports will be maintained by BWSR for successful grant applicants. These materials are available for inspection upon request. Final project results are available in an electronic format through the required use of BWSR's local government reporting system (eLINK).

Individual project proposers will be using the results of their projects to continue their water resource management programs, which include education of local citizens and public officials, and in addressing priorities as identified in their BWSR approved plans.

Project completed: 6/30/2008

Accelerating and Enhancing Surface Water Monitoring for Lakes and Streams
07(b)1 $350,000

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Overall Project Outcome and Results
Building upon and continuing work begun from a 2003 appropriation, this second appropriation for the Accelerating and Enhancing Surface Water Monitoring Project was designed to pilot new monitoring approaches for streams (biological and remotely sensed), and to educate and increase citizen participation in water monitoring efforts in Minnesota.

The Minnesota Pollution Control Agency's (MPCA) goal was to develop and pilot a systematic, intensive, watershed assessment monitoring system to identify waters exhibiting impairments. MPCA staff using Trust Fund funds sampled 57 sites in the Snake River Watershed using the intensive watershed assessment monitoring system. In addition, staff sampled 105 sites in the Rainy and Red River Basins to complete sampling needed to develop a state-wide index of biological integrity. The University of Minnesota Remote Sensing Laboratory's (RSL) objective was to develop and evaluate the potential of remote sensing for monitoring water quality of rivers. The RSL continued work started with 2003 Trust Fund funds to collect

hyperspectral remote sensing data and water quality data in 2004, 2005, and 2007 for 7 major river systems in Minnesota. Strong relationships were found between the remote sensed data and water quality data; this indicates an excellent potential for use of this technology in large river systems. The University of Minnesota Water Resources Center's (WRC) goal was to expand and support a network of volunteers monitoring macroinvertebrates and E. coli bacteria on lakes and streams in Minnesota. The WRC trained 66 volunteers in 9 workshops, resulting in 48 sites being monitored on 28 different lakes and streams in 18 Minnesota counties. In total, 369 bacteria samples were collected, with 22 samples exceeding state standards. Minnesota Waters' objective was to continue enhancement of the ability of volunteer citizen groups to collect water quality data that will be useful for local water management and/or state water quality assessment.

Project Results Use and Dissemination
The MPCA is currently using this intensive watershed monitoring framework to plan future MPCA stream sampling efforts funded under the Clean Water Legacy Act. Approximately 3,600 sites have been picked to sample state-wide over the next 10 years (2008 to 2017). The Snake River Watershed Assessment Report will be available online at: http://www.pca.state.mn.us/water/biomonitoring/bio-streams-fish.html#reports.

The RSL has received coverage from the Star Tribune and Kare 11 on the river remote sensing project. The information is also available online at: http://water.umn.edu/rivers/index.html. Leif Olmanson presented and had a poster on, "Use of Airborne Remote Sensing Imagery for Water Quality Assessment of Minnesota's Rivers," with the initial results at the North American Lake Management Society annual conference at Madison, Wisconsin on November 9-11, 2005 and included a summary of current results in a presentation entitled, "Using Remote Sensing Applications for Local Water Planning & Management," at the Minnesota Waters: Lakes and Rivers Conference at Duluth on September 7, 2006.

The WRC presented the project at the 2006 Minnesota Lakes and Rivers Conference in Duluth , MN and at the MPCA Lakes and Stream Team Meeting in January, 2007. Information and the training manual are available online at: http://wrc.umn.edu/outreach/ecolimonitoring/index.html. Two peer reviewed journal articles are in preparation on the project and articles were included in the WRC Minnegram and the Minnesota Sea Grant Seiche newsletters. In addition, data from Minnesota has been included in presentations at 8 different regional/national meetings in 2006 and 2007. Finally, based on the results of a year end survey of volunteers in 2006, over 60% said they shared results of monitoring efforts with neighbors/friends, 30% with lake association leaders, 30% with elected or appointed officials, and 25% with local resource managers.

Project completed: 6/30/2008

Accelerating and Enhancing Surface Water Monitoring for Lakes and Streams (Result 3)
07(b)2 $250,000

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*Minnesota Lakes Association and Rivers Council of Minnesota merged to Minnesota Water in 2006.

Result 3: Continued enhancement of the ability of volunteer citizen groups to collect water quality data that will be useful for local water management and/or state water quality assessment.

Overall Project Outcome and Results
When this project was started in 2005 the MPCA only had surface water assessment for 14% of Minnesota's lakes and 8% of its streams. At conclusion in 2008 the numbers have slowly climbed to 18% of lakes and 14% of streams. Citizen volunteers have been contributors to understanding the quality of Minnesota's surface waters; they have been able to gather data from lakes and rivers that state organizations, because of limited funding and staff, have not monitored. Minnesota Waters worked on Result 3 which is part of the continuation proposal: Accelerating and Enhancing Surface Water Monitoring. Minnesota Waters expanded the ability of individuals and organizations to collect useable data by developing and implementing training programs for citizen monitors and their leaders. Minnesota Waters believes that the best way to promote responsible stewardship of water resources is by engaging citizens, local and state policymakers, and other partners in the protection and restoration of Minnesota's lakes and rivers. Through various training programs we have helped citizen volunteers follow a data pathway from collecting the data, transforming the data to information, and finally to water quality protection / restoration action.

The programs that were offered included: Freshwater Mussel Monitoring, Putting Green, Design Your Monitoring Plan, Stream Health Evaluation Program (Benthic macroinvertebrate monitoring),Monitoring Data Assessment / Interpretation, Monitoring Rivers and Lakes for Road Salt, Lake Sampling Skills Training, Stream Sampling Skills Training, Aquatic Plant Identification.

The workshops produced: 405 monitoring volunteers (from 56 citizen groups) that drafted 16 monitoring plans and are active on 240 lakes and 52 streams.

Project Results Use and Dissemination
In addition to the training workshops, water quality monitoring in Minnesota was advanced by providing informational outreach to volunteers statewide. This outreach has been accomplished by producing:

- 5 newsletters with a distribution of approximately 4000 each mailing : These newsletters contain information on both water quality monitoring and effective volunteer group organization. These newsletters also share what other volunteer groups have accomplished across the state.
- 2006 Lakes and Rivers Conference with over 500 participants: Topics that were covered during the three day conference included shoreland restoration, citizen monitoring, lake management planning, increasing organizational effectiveness, stormwater runoff, impaired waters assessment, and low impact shoreland development.

- Production of "A Citizen's Guide to Using Monitoring Data": This booklet is designed to showcase volunteers across Minnesota involved in water quality monitoring and how their data has been used to affect change. The topics covered include the value of citizen monitoring, developing monitoring plans, lake monitoring, stream monitoring, wetland monitoring, and biological monitoring. Appendices include resource information for citizen monitors.
- Minnesota Waters website and monthly electronic newsletter *The Confluence :* The website keeps citizen monitors informed about workshops that are available during the year. Minnesota Waters has also provided downloadable informational materials as well as hosting websites for lake and river group association. *The Confluence* provides the latest information about water quality issues and events to over 3000 constituents monthly.

Project completed: 6/30/2008

Effects of Land Retirements on the Minnesota River
07(c) $300,000

Board of Water and Soil Resources (BWSR) for a cooperative agreement with the U.S. Geological Survey.

Board of Water and Soil Resources (BWSR) for a cooperative agreement with the U.S. Geological Survey.

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RESEARCH

Overall Project Outcome and Results
Three watersheds in the Minnesota River basin were selected to study effects of agricultural land retirement on stream quality. Site selections were based on similarities in hydrology, land use, soil type, and other characteristics and differences in land retirement percentages. Water samples were collected from 2005-2007 and analyzed for field measurements, nutrients, and sediment. Streamflow and continuous water-quality data were collected and disseminated (http://waterdata.usgs.gov/nwis/mn/rt). Biological sampling was conducted in August 2006 and 2007. The South Branch Rush River (representing little to no land retirement) had substantially higher nitrogen concentrations (mean=14.3 mg/L) than Chetomba Creek (mean= 11.3 mg/L) and West Fork Beaver Creek (mean=8.5 mg/L), watersheds with more riparian land retirement. Total phosphorus was highest (mean=0.26 mg/L) in West Fork Beaver Creek and lower in Chetomba Creek (mean=0.15 mg/L) and South Branch Rush River (mean=0.16 mg/L). A second monitoring site was established in Chetomba basin, downstream from substantial riparian land retirement. Nitrite plus nitrate, total nitrogen, and total phosphorus were lower for the downstream monitoring site, which may indicate that water-quality improved due to land retirement. Fish data indicate better resource quality for West Fork Beaver Creek than other streams likely due to several factors including habitat quality, food resources, and dissolved oxygen characteristics. Index of biotic integrity scores increased as local land-retirement percentages (50-and 100-ft buffers) increased. Information from this study can be used to evaluate land retirement programs for improving water quality.

Additional work will continue at these sites under another USGS/BWSR project funded through the Trust Fund and USGS (ML2007, [Chap. HF 293], Sec. [2], Subd. 5(c)). Biological data collected from these watersheds will be compared to existing data collected across the Minnesota River basin and GIS coverages of land retirement, allowing the results from this study to extend to other sites in the Minnesota River basin and address the relation of retired land characteristics and biological integrity.

Project Results Use and Dissemination
The streamflow and continuous, in-stream water-quality data for Chetomba Creek, West Fork Beaver Creek, and South Branch Rush River was disseminated to the public in real-time through the USGS National Water Information Website at http://waterdata.usgs.gov/nwis/mn/rt. In addition, the following products or presentations were given:

1. A poster presentation, *Effects of Land Retirement on Three Streams in the Minnesota River Basin*, was given to attendees of the Minnesota Water 2006 and Annual Water Resources Joint Conference at the Earl Brown Center, Brooklyn Center, Minn. On October 24-25, 2006 by Chad R. Anderson, Victoria G. Christensen, and Kathy E. Lee.
2. An informal presentation was held on July 11, 2007 at the Muetzel Farm in the Minnesota River basin to discuss the project with LCCMR, BWSR, local agencies and land owners. Jim Stark, USGS, provided to attendees a hand-out on how we are collecting the data, preliminary results, and analysis.
3. The presentation, *Effects of Agricultural Land Retirement on Quality of Streams of the Minnesota River Basin*, was given and an abstract published for the Soil and Water Conservation Society, Rocky Mountain Rendezvous II on July 25, 2007 by V.G.Christensen and K.E. Lee.
4. A presentation was given at the 2008 AWRA Summer Specialty Conference in Virginia Beach , Virginia on July 1, 2008. A proceedings paper also was published and provided to LCCMR (Christensen, V.G., and Lee, K.E., 2008, Effects of Agricultural Land Retirement in the Minnesota River Basin , *in* proceedings of the American Water Resources Summer Specialty Conference, June 30-July 2, 2008, Virginia Beach , VA , 6 p.).

Future presentations scheduled include a field tour in Olivia , MN hosted by the Board of Water and Soil Resources and the Renville Soil and Water Conservation District on August 27, 2008. A hand-out will be prepared and an informal presentation will be prepared. Additionally, an abstract has been accepted for a presentation at the Minnesota Water 2008 and Annual Water Resources Joint Conference in October 2008. The focus of this

presentation will be the benefits of continuous water-quality monitoring.

Project completed*: 6/30/2008
*Work continues via 2007 appropriation of $275,000: ML2007, Chap. 30, Sec. 2, Subd. 5(c) - "Land Retirement Effects on Minnesota River Basin Streams". See 2007 Abstracts for more information.

Recycling Treated Municipal Wastewater for Industrial Water Use
07(d) $300,000
I
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Overall Project Outcome and Results
Recycled treated municipal wastewater is an emerging non-potable water supply for Minnesota industries. Economic development, water supply limitations, and environmental regulations will increasingly drive the need to find alternative water supplies. Recycling treated municipal wastewater for industrial water use is feasible and, in some situations, cost competitive with other water supplies. Implementation issues are addressable. Recycling treated municipal wastewater can conserve water resources and support industries and economic development

Non-power industries in Minnesota use 442 million gallons per day (mgd) of water from their own permitted supplies. The quantity of treated municipal wastewater available statewide, estimated at 425 mgd, could fill a portion of this use. However, industries and wastewater plants are not always close to each other. Over half of the treated municipal wastewater, 255 mgd, is generated in the Twin Cities while industrial water demand in this area is estimated at 75 mgd.

Wastewater treatment technologies are available to meet the highest levels of water quality required by industries and protect public health. Treatment needs range from minimal additional disinfection to significant additional treatment. Typically, hardness and salt reduction would be required.

Recycled wastewater costs can be competitive with other water supplies for some industries, especially at capacities of 1 mgd or greater. Systems of this size would likely serve one large or several smaller industries or multiple recycled wastewater users, industrial and non-industrial.

Regulatory, industry, and broader-based stakeholders advised more public education to move recycling from unknown to accepted and positive. The current case-by-case regulatory approach matches the existing permit requests but unknowns associated with this approach may deter some projects. Addressing industry concerns regarding liability and providing economic incentives beyond the market value of water versus treated wastewater would support new recycling projects. Next steps could include demonstration projects with unilateral, partnered, or other approaches.

The study's results are presented in the report, 'Recycling Municipal Wastewater for Industrial Water Use'. This report posted on the Metropolitan Council website September 1, 2007 .

Project Results Use and Dissemination
The information the study developed has been used by state agencies and industries to evaluate and promote, as appropriate, the use of recycled wastewater as a water source for industries. Examples include:

- Metropolitan Council staff presented preliminary findings to an ethanol industry stakeholder meeting sponsored by the Minnesota Pollution Control Agency
- Department of Natural Resources staff used information to make recommendations to the Public Facilities Administration to provide grant funds for a project to demonstrate the use of recycled wastewater in an ethanol production plant.
- Stakeholder industries to evaluate if using recycled wastewater is feasible in their particular case.

The project results was disseminated in technical presentations, such as the Conference on the Environment in early November 2007 co-sponsored by the Central States chapter of the Water Environment Foundation and Air and Waste Management. Project results are disseminated to the general public through the Metropolitan Council newsletters and website.

Project completed: 6/30/2007

Unwanted Hormone Therapy: Protecting Water and Public Health
07(e) $300,000
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RESEARCH

Overall Project Outcome and Results
Endocrine disruptors have been linked to numerous problems in ecosystems and humans, particularly with respect to reproductive function and development. The effluent from the Western Lake Superior Sanitary District (WLSSD) Wastewater Treatment Plant in Duluth, Minnesota and the Metropolitan (Metro) Treatment Plant in St. Paul, Minnesota have been observed to be estrogenic. The goal of this project was to conduct mass balances across the two treatment plants to determine where estrogenic compounds come from and how they are distributed. For the Metro plant, the estrogenicity entering the plant was relatively consistent and was removed effectively, as measured by a receptor binding assay (the YES assay) (96% + or - 2%). The estrogenicity leaving the plant consisted mainly of estrone, nonylphenol, and bisphenol A. Hormones (estriol and ethynylestradiol) were detected on two occasions (410 and 18 ng/L, respectively). At the WLSSD plant, the estrogenicity throughout the plant varied extensively over time. This was expected as the plant receives about 2/3 of its flow from industrial sources. The estrogenicity in the effluent also varied, as measured by the YES assay (3-34 ng/L or 0.4-4.3 g/day estradiol equivalent), but did appear to be treated within the plant. The estrogenic compounds most often detected in the effluent were estrone, nonylphenol, and bisphenol A. Unlike the Metro plant, bisphenol A did not appear to degrade appreciably in two out of three samples. This could be a result of competition, as the levels of other organic compounds would be high. Therefore, more research is required to determine how the presence of competing organic compounds, such as phytoestrogens, affects the microbial transformation of problematic compounds such as bisphenol A. Other removal methods (*e.g.*, sorption for nonylphenol) will also be complicated by the presence of competing compounds; additional research will also be required to better facilitate such processes.

Project Results Use and Dissemination
Results have been disseminated at several conferences. In addition, two manuscripts are being written and will be submitted for publication in September, 2008. This project also resulted in the generation of three Master's theses.

Project completed: 6/30/2008

~~**Climate Change Impacts on Minnesota's Aquatic Resources -**~~ **GOVERNOR VETO**
~~07(f) $250,000~~
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~~U of M - NRRI~~
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~~**RESEARCH**~~

~~To quantify climate, hydrologic, and ecological variability and trends; and identify indicators of future climate change effects on aquatic systems.~~

~~**Project due to be completed:** 6/30/2008~~

Received 2006 appropriation of $250,000: ML 2006, Chap., Sec. 20, Subd. 7 ("Impacts on Minnesota's Aquatic Resources from Climate Change"). See 2006 Abstracts for more information.

~~**Green Roof Cost Share and MonitoringI-**~~ **GOVERNOR VETO**
~~07(g) $350,000~~
~~David Bauer~~
~~Ramsey Conservation District~~
~~1425 Paul Kirkwold Drive~~
~~Arden Hills, MN 55112~~
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~~To install green, vegetated roofs on four commercial or industrial buildings in Roseville and Falcon Heights and to monitor their effectiveness for stormwater management, flood reduction, water quality, and energy efficiency. The cost of the installations must be matched by at least 50 percent nonstate money.~~

~~**Project due to be completed:** 6/30/2007~~

Woodchip Biofilter Treatment of Feedlot Runoff
07(h) $270,000
I
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RESEARCH

Overall Project Outcome and Results
Animal agriculture has the potential to adversely affect surface water quality through the uncontrolled overland conveyance of manure particulates from feedlots to adjacent water bodies during the melting of the winter snow pack or from storm-water generated runoff. In undulating terrain of central Minnesota, more than half of the feedlots are located in close proximity to surface water and many of these locations have insufficient space for the installation of a vegetated filter strip. The two primary objectives of the two-year study financed by the Environment and Natural Resources Trust Fund were to: (I) characterize and evaluate the removal efficiency of nitrogen, phosphorus and *E.coli* from 10 different types of media in a controlled laboratory setting; and (II) construct a prototype woodchip biofilter and assess its performance at a feedlot site located at the West Central Research and Outreach Center in Morris. The initial studies both in the laboratory and field showed great potential for biofilters to serve as an alternative or addition to space-consuming vegetative filter strips (VFS) to treat feedlot runoff. The demonstration biofilter in Morris was able to reduce water discharge volume by 95% through absorption by the woodchip media. A subsequent potassium bromide injection test demonstrated the ability of the woodchip media to attenuate and absorb the conservative bromide tracer as it flowed through the biofilter. Based on the information learned in the laboratory and at Morris test site, refinements have been made to the biofilter design that should lead to increased nutrient removal and water absorption efficiencies at a dairy farm site in Melrose, Minnesota where additional design considerations will be evaluated. Based upon the positive results to date, it appears that a well-designed woodchip biofilter will provide a viable alternative option for some farmers with feedlots located near sensitive waters.

Project completed: 6/30/2008

Improving Water Quality on the Central Sands
07(i) $587,000

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RESEARCH

University of Minnesota and the Central Lakes College Agricultural Center

To reduce nitrate and phosphorus losses to groundwater and surface waters of sandy ecoregions through the development, promotion, and adoption of new farming and land management practices and techniques.

Project due to be completed: 6/30/2010

Improving Impaired Watersheds: Conservation Drainage Research
07(j) $300,000

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RESEARCH

To analyze conservation drainage systems at University of Minnesota research and outreach centers and for opportunities to retrofit drainage infrastructure with water quality improvement technologies.

Project due to be completed: 6/30/2009

Hydrology, Habitat and Energy Potential of Mine Lakes (There are 5 parts to this project)
07(k) $500,000

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John Lee - Wind Power Development and Pumped Storage on Minnesota's Iron Range
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Overall Project Outcome and Results

This four-part project studied aspects of existing post-mining landforms to provide baseline data for developing a long-range land-use plan. The goal of such a plan is to design landforms for the most desirable results in 30-50 years, transforming landforms through current mining activities with a predetermined post-mining outcome suitable for residential, commercial, recreation and transportation uses. Understanding the ultimate pit water level is the key in planning for future land uses and future lake bottom configurations to maximize the ultimate future benefit.

The *Geology and Ultimate Pit Morphology* study, a $101,000 research project conducted by the Minnesota Geological Survey (MGS), reviewed existing data and conducted fieldwork to produce maps and databases describing the interconnection of subsurface features in the hydrologic system of existing pit lakes directly east of Chisholm, MN. This data helped agencies like the Minnesota DNR and MGS, landscape architects, mine engineers and municipal governments understand the impact decades of open-pit mining has had on water tables and groundwater movement within and among mine pits.

The *Ultimate Mine Pit Water Levels* study was conducted by the Minnesota DNR, Division of Lands and Minerals and Division of Waters. The $218,174 project examined an predicted groundwater levels in five mine-pits: Twin City North, Twin City South, Fraser, Sherman, and Hartley-Burt/Forester. Phase I evaluated whether or not water levels in these pits were rising, using monitoring wells, slug tests and watershed delineation. Phase II examined 12 scenarios for water discharge from hypothetical "megapit" complexes resulting from continued ore mining to assess potential pit outflow impacts on the Lake Superior, Red River, and Mississippi watersheds. Results from this study provide natural resource managers, land use planners and mining companies with conceptual data that can be used as a starting point to engineer solutions to mitigate potential environmental impacts.

In the *Sport Fish Habitat* project, which was conducted as part of this project but was not funded from this appropriation, the Minnesota DNR and the Center for Water and the Environment at the Natural Resources Research Institute examined five existing mine pit lakes: Canisteo, Embarrass, Judson, Larue, and Tioga. These pits were selected because fish population assessment data was available. A compilation of the assessment data showed that the pit lakes contain 18 species of fish. Cold-water species, particularly rainbow trout, are common due to regular stocking programs. Analysis of the lakes' chemical make-up found water clarity high, but that pit lake waters do not always contain optimum amounts of chemicals that foster and support fish life cycles. In addition, pit lake structure could be a limiting factor to fish diversity. The study found a positive relationship between littoral areas and fish species diversity, yet most existing mine pit lakes have steep slopes both above and below the water line. Land use planners, mine engineers, and natural resource managers can use these results to plan current mining activity that results in mine pit lake basins with shallow, gently sloping lake beds conducive to fish habitat.

Wind Power Development and Pumped Energy Storage on Minnesota's Iron Range was a $15,000 study done by Barr Engineering that researched the feasibility of and possible sites for wind turbines and hydro-storage energy potential in mine-pit lakes. Two sites - one for each type of alternative energy source - were identified on the Central Iron Range.

Project Results Use and Dissemination

With information from the four studies outlined above, CIRI has the baseline information about key features of existing mine pit lakes needed to move toward development of a regional comprehensive landform and lakeform plan. Such a plan would be detailed enough that mining companies could use it in their permitting processes. It also would provide public and private Iron Range interests - mining companies, regulatory agencies, municipal government, and the private sector - with a roadmap for creating landforms that will maximize residential, commercial, and recreational activity. The next step in this process will be to secure funding to examine planning and zoning requirements and other locally specific land management issues not covered by this project.

Presentations on project results were made to the Central Iron Range Initiative, which has approximately 140 members. Information was also shared with area mining engineers, local legislators, and area chambers of commerce. Reports on each study are available at the Iron Range Research Center at Ironworld Discovery Center in Chisholm, MN.

Project completed: 6/30/2007

Hennepin County Beach Water Quality Monitoring Project
07(l) $100,000

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Overall Project Outcome and Results
This project was designed to develop a predictive model for on-site determination of beach water quality to prevent outbreaks of waterborne illness and to provide related water safety outreach to the public.

From July 2005 through August 30, 2007, Hennepin County temporary staff collected, recorded, and analyzed beach water quality data using a handheld five-sensor sonde for shallow depth and beach survey observations at 11 Hennepin County beaches (1129 samples in 2005, 1431 samples in 2006, 2007 pending). Temperature, pH, dissolved oxygen, conductivity, and turbidity were measured, along with the directly observed variables bather counts, animal counts, beach management techniques, location of storm water outlets and rainfall. After a trial run in 2006, rainfall, solar radiation, wind speed, and wind direction were also measured hourly at automated meteorological stations at Bryant, French, and Weaver Beaches in 2007.

In the fall of 2006, a contracted lake water quality consultant, Dr. Greg Olyphant, developed multivariate time-series regression models predictive of *E. coli* levels based on data for Bryant and French beaches. These models are specific to each beach and will facilitate decisions about when the beach should be closed or reopened based on current information. This precludes waiting the 24 hours for *E. coli* laboratory results, the present accepted practice, based on EPA beach closure guidelines. Using meteorological station data, additional samples were collected in 2007 and attempts will be made to validate the Bryant and French models in the future.

Results from this study were presented at the 2007 International Conference on Diseases Communicable to Man in Nature in Madison , WI . Additional results will be compiled and made available in electronic form to other local health and park departments at no charge. The public education component of this project involves posting summary water quality data and beach user information on a publicly accessible website.

Project completed: 6/30/2007

SW Minnesota Floodwater Retention Projects
07(m) $500,000

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Overall Project Outcome and Results
This portion of the Minnesota River watershed lies along the Coteau des Prairies, more commonly known as the Buffalo Ridge, where elevation differences range from 80 feet/mile (Lac qui Parle River) to 50 feet/mile (Redwood River). Due to these very steep slopes, flooding has become an annual occurrence. These areas typically do not qualify for land retirement programs as they do not have the necessary cropping histories to enable their enrollment. Common land conservation practices often suffer severe erosion and/or failure with water forces of this magnitude, making it imperative to hold the water where it falls on the landscape. The main objective of the funding was to design and construct at least four floodwater retention projects to temporarily store floodwaters and meter out the flows at a rate tolerable by the receiving streams.

Through this appropriation five projects were completed: two road retentions and three small dams in Yellow Medicine, Cottonwood , Murray and Lyon County in southwestern Minnesota . Local match in the amount of $220,916.62 was provided by the project partners.

Construction of these floodwater retention projects resulted in improved water quality and waterfowl habitat, 1,157.1 acre-feet of temporary

floodwater storage, reduced flows of 1,673 cfs which reduces streambank erosion, sediment transport, and nutrients into receiving streams. Perpetual flowage easements upon 151.3 acres were acquired to protect the viability and longevity of the constructed projects.

Project Results Use and Dissemination
Area II hosts an annual meeting where educational presentations are made to nine counties of county commissioners, Soil and Water Conservation District supervisors and staff, watershed district managers and staff, state agency representatives, and state and federal legislators. Presentations are occasionally made to various groups and organizations with tours of completed project sites. A

Project completed: 6/30/2007

~~**Upgrades to Blue Heron Research Vessel**~~ **- GOVERNOR VETO**
~~07(n) $295,000 / TF & GLPA ($28,000)~~
~~Thomas Johnson~~
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~~To upgrade and overhaul the Blue Heron Research Vessel.~~

~~**Project due to be completed:** 6/30/2007~~

Received 2006 appropriation of $295,000: ML 2006, Chap., Sec. 20, Subd. 6 ("Lake Superior Research"). See 2006 Abstracts for more information.

Bassett Creek Valley Channel Restoration
07(o) $175,000
I
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Overall Project Outcome and Results
The Bassett Creek Valley Restoration Study (Plan) presents a compilation of existing data used in conjunction with new research to set the context and physical design constraints for implementing public open space development in the proposed Commons and Greenway areas. The Plan provides further review of the open space concept put forward by the Bassett Creek Valley Master Plan (http://www.ci.minneapolis.mn.us/planning/basset-creek.asp). The Plan presents several Design Alternatives that were considered before arriving at the Preferred Design for the Commons and Greenway. The Plan provides phasing concepts, estimated implementation costs, and associated long-term maintenance costs. The Plan is being prepared for distribution in printed and electronic versions. The design scenarios were tested through a public participation process and a technical advisory committee of City of Minneapolis and Hennepin County staff.

The Preferred Design for the Commons includes a rehabilitated Bassett Creek with a functioning riparian habitat, an expanded floodway, and stream meanders. Upland areas are to be converted to naturalized prairie. A newly created savanna will extend northward from the existing tree canopy along the south. The project design also addresses soil contamination issues. The public open space includes a system of iconic bridges and internal trails with links to adjacent neighborhoods. The Luce Line Trail enters the Commons via a railroad underpass and links to Van White Memorial Boulevard . A 'Great Lawn' is envisioned which will serve as an informal gathering place and a gateway to a learning terrace with interpretive opportunities along the revitalized creek.

The Preferred Design for the Greenway includes a stream channel alignment running south to north from existing Bassett Creek to the old stormwater tunnel near Glenwood Avenue . This waterway will be flanked by an exciting and dense urban setting that include restaurants, offices and connections to neighborhoods and existing public open-space systems.

Project Results Use and Dissemination
The Bassett Creak Stream and Habitat Restoration Implementation Plan was completed in October 2007 in print and electronic versions. The electronic version is posted on the City of Minneapolis website: http://www.ci.minneapolis.mn.us/cped/bassett_restoration_plan_home.asp.

Project completed: 6/30/2007

Restoration of Indian Lake
07(p) $200,000
I
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Overall Project Outcome and Results
The Indian Lake Improvement District and Bemidji State University cooperated on a project to remove excess nutrients from Indian Lake in Wright County to improve water quality.

Project completed: 6/30/2008

SUBD. 08 - LAND USE AND NATURAL RESOURCE INFO

MN County Biological Survey
08(a) $1,000,000

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Overall Project Outcome and Results
This appropriation continued and accelerated the ongoing effort to identify significant natural areas and to collect and interpret data on the distribution and ecology of rare plants, rare animals, and native plant communities in each county of the state. At the end of this phase, surveys have been completed in 65 of Minnesota's 87 counties. Data from these surveys reside in the Department of Natural Resource's (DNR) Natural Heritage Information System (NHIS). Since 1987, MCBS has added 15,543 new records of rare features to the NHIS. The DNR's 'Data Deli' is a web site location where users with Geographic Information System (GIS) capabilities have access to various digital natural resource map layers. Currently over 35,511 polygons of native plant community types and complexes and 7,063 sites mapped by MCBS now reside in this location. Native plant communities are also documented by 8,756 vegetation plot samples recorded in DNR's Releve Database. Sixteen species of native plants, and two species and one hybrid of amphibians not previously documented in Minnesota have been recorded by MCBS.

Project Results Use and Dissemination
A three volume series of native plant community field guides was completed in 2005 with the publication of two final volumes: *Field guide to the native plant communities of Minnesota : The Eastern Broadleaf Forest* and *Field guide to the native plant communities of Minnesota : The Prairie Parkland and Tallgrass Aspen Parklands Provinces .* All three volumes are available through Minnesota 's Bookstore. The field sampling handbook, *A handbook for collecting releve data in Minnesota ,* and portions of the native plant community field guides are posted on the DNR website. Training sessions were conducted statewide in the use of the field guides.

Featured use of data: 1) A report, *Headwaters Site*, prepared from field data and associated resources, describing the ecological resources of a nearly 40,000 acre area at the headwaters of the St Louis River is being used by the Sand Lake Seven Beavers to inform collaborative management planning for the area; 2) Surveys resulted in private land protection on high quality prairies in western Murray County; 3) Issues related to Forest Certification, biofuel development and off-road vehicle issues reference MCBS data; and 4) A preliminary list of 'Quality Lakes of Minnesota' was prepared based largely on the results of rare aquatic plant and nongame fish data.

Project completed*: 6/30/2007

*Work continues via 2007 appropriation of $1,500,000: ML2007, Chap. 30, Sec. 2, Subd. 6(a) - "Minnesota County Biological Survey**"**. See 2007 Abstracts for more information.

Soil Survey
08(b) $500,000

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Overall Project Outcome and Results
This appropriation continued the ongoing study of the state's soils by accelerating the completion of soil mapping and digitization of soils data.

To accelerate the completion of soil mapping, and the eventual digitization of soils data, mapping projects were initiated in Pine and Crow Wing Counties . During the project period, the NRCS established survey offices and hired the lead soil scientists and most of the assistant soil scientists for these counties. To characterize the landscape, geology and soil patterns, soil surveys begin with extensive field investigations and exploratory borings. To those ends, about 15 percent of the overall project has been addressed in Crow Wing County and about 10 percent has been addressed in Pine County .

Existing soil surveys for two counties, Beltrami and Aitkin, were fully digitized to USDA SSURGO (Soil Survey Geographic Database) Standards by staff employed with Trust Fund funding. These staff also contributed to USDA Natural Resource Conservation Service efforts to digitize additional published soil surveys in Minnesota . Additional soils data from a total of 28 counties were digitized during the funding period. These 28 counties brought the total number of counties digitized to 75 at the end of calendar year 2007. (An additional 6 project areas were done by the NRCS with 2007 funding, for a total of 81 survey areas having digital coverage).

It was during the 2005 funding period that NRCS fully implemented a WEB-delivered soil survey. Digital SSURGO soil surveys are the basis for the WEB Soil Survey. Consequently, the acceleration of digitization efforts means that the WEB Soil Survey is available in 81 soil survey areas. Built to complement the WEB Soil Survey, NRDSS (Natural Resource Decision Support System) was developed. This product allows users to perform multiple queries of soils data and download it in formats not currently available with the USDA WEB Soil Survey.

Project Results Use and Dissemination
Digital data through the WEB Soil Survey http://soils.usda.gov/survey is available for 81 project areas. Soils data from counties not yet mapped and digitized is available to the public on a request basis.

Project completed*: 6/30/2008
*Work continues via 2007 appropriation of $400,000 and 2008 appropriation of $400,000: ML2007, Chap. 30, Sec. 2, Subd. 6(b) - "Soil Surveys" and ML2008, Chap. 367, Sec. 2, Subd. 5(b) - "Soil Survey". See 2007 Abstracts and 2008 Abstracts for more information.

~~**Land Cover Mapping for Natural Resource Protection**~~ **- GOVERNOR VETO**
~~08(c) $250,000~~
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~~To develop GIS tools for prioritizing natural areas for protection and restoration and to update and complete land cover classification mapping.~~

~~**Project due to be completed:** 6/30/2007~~

Received 2006 appropriation of $250,000: ML 2006, Chap., Sec. 20, Subd. 5 ("Land Cover Mapping for Natural Resource Protection"). See 2006 Abstracts for more information.

Open Space Planning and Protection
08(d) $250,000

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Overall Project Outcome and Result
The premise of the Open Space Planning and Protection Project was to bring concepts related to open space planning into the local comprehensive planning process in hopes that they would be incorporated into comprehensive plan updates. Since it is not possible to mandate local government adoption of open space protection strategies, giving those concepts a place at the table and prominence in local planning discussions is the next best alternative. Ultimately, the success of the effort lay with the local decisions makers and in the end mixed results were achieved.

Results 1 and 2, the creation of local open space protection plans and local adoption of tools to provide the means of implementation, have been achieved to the extent participating communities consented to do so. Due to an unanticipated lack of new development in the project area the goals for land protection in number of acres have not been met. Moreover, participating communities have been given a blueprint for natural resource protection going forward, including both 1) the identification and prioritization of natural resources for protection and 2) the planning and land use regulation approaches that can be used to protect land as part of the development process. In addition, the necessary long term shift in how

communities view development and planning for the future has begun to occur-while difficult to quantify, this is a very important point. These techniques were demonstrated through an actual protection project in one community (East Bethel) and through a mock platting process in another (Burns Township/City of Nowthen).

Project Results Use and Dissemination
Each of the participating communities received extensive individualized planning documents that included maps and analysis, infrastructure planning, demographics, model open space protection ordinances, easement documents, etc. Full copies of the reports are available on the Anoka Conservation District's website (www.anokanaturalresources.com/acd/tech_assist/res_plan.htm). The information and expertise amassed as a result of this project have and will continue to inform efforts throughout the county. A low impact development workshop in Andover and the donation of 200 acres of conservation easement in the City of Anoka both benefited from this project. Many articles have appeared on this and related topics in community newsletters throughout the planning process and periodic articles will be sent to local and regional newspapers.

Project complete: 6/30/2008

SUBD. 09 - AGRICULTURE AND NATURAL RESOURCE INDUSTRIES

Completing Third-Party Certification of DNR Forest Lands
09(a) $250,000

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For third party assessment and certification of 4.47 million acres of DNR administered lands under forest sustainability standards established by two internationally recognized forest certification systems, the Forest Stewardship Council system and the Sustainable Forestry Initiative system.

Project due to be completed: 6/30/2009

Third Party Certification of Private Woodlands
09(b) $376,000

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Overall Project Outcome and Results
Third party certification of forest lands verifies the land is being managed sustainably. Minnesota is a leader in the US with its certification of public and industrial forests, driven by demand from major purchasers for products made using certified fiber. However, efforts to certify private woodlands have been far less successful, even though those lands comprise nearly 40% of Minnesota 's forest land base and supply about 50% of the wood harvested in the state. To sustain the quality of the state's forests and its forest-based economy, this project was funded to develop mechanisms to certify wood coming from family forests.

This project found the vast majority of family forest owners have little interest in certifying their land and providing additional information about the benefits of certification does little to change their minds. Their primary interest in owning the land is for its wildlife or other recreational value. They have no interest in paying for certification, are distrustful of certification because they perceive it as a government program, and are concerned about losing decision-making control over their land.

To address the situation, this project helped develop the Minnesota Master Logger Certification program. Wood harvested by Minnesota Certified Master Loggers is considered to be third party certified by numerous major paper purchasers and it does not impinge on landowner income or management objectives. In one year this program increased the amount of certified wood harvested from family forests from 0% to 9.8%.

Other mechanisms for family forest certification are also available. The Aitkin County Soil and Water Conservation District (SWCD) was awarded certification for its forest services program covering 13 landowners and 1,574 acres, with owners of another 20,000 acres eligible to participate. The state Tree Farm System is working with the Minnesota Forest Stewardship program to certify additional landowners. In the future, there may be opportunities to link certification with markets for carbon credits and carbon sequestration, opening new avenues for family forest certification.

Project Results Use and Dissemination
The Minnesota Master Logger Certification program is being marketed vigorously to loggers in the state. To date, 43 loggers have been certified and another six are seeking certification. Efforts to certify more loggers will continue in the future and there has been substantial press coverage of this program. The Aitkin County SWCD is being considered by others as a model. More than 10,000 brochures summarizing the options for family

forest certification were printed and are being distributed to private woodland owners. A September 2007 workshop will explain the project results, and they will be shared at an upcoming 'Million Acre' conference for private woodland owners. A journal article describing the entire project is being prepared for publication in the future. Although excellent progress was made, there is still a significant gap in certified wood from family forests. Work will continue by many involved in this project to close that gap.

Project completed: 6/30/2007

Sustainable Management of Private Forest Lands
09(c) $874,000
ML 2006, Chap 243, Sec. 20, Subd. 11: "Forest Legacy" - $500,000 incorporated into this project.
TOTAL of ML2005 and ML2006 appropriations = $1,374,000

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Overall Project Outcome and Results
This project targeted private forestland in Minnesota. Private (non-industrial) landowners own 40% of the forestland in Minnesota. These acres have been identified as critical to the overall sustainability of our forest resources.

The purpose of this project was to: 1) provide stewardship advice to private forest landowners to improve the sustainability of forest habitat on their property; 2) cost-share stewardship practices on private forestland; and 3) protect private forestland with permanent conservation easements.

Complimentary results #1 ("Landowner Motivation Through Stewardship Plans") and #2 ("Cost Sharing to Convert Forest Stewardship Plans to Action") protect water quality, create wildlife habitat, offer recreational opportunities, provide forest-based economies wood fiber, and improve many other forest amenities. Stewardship plans outline forest management recommendations that help landowners meet their goals. Some of those recommendations may require financial assistance. The cost share dollars are incentives provided to landowners to entice them to implement those forest management activities outlined in their stewardship plan.

Result #1 used $274,000 to provide stewardship plans to 272 forestland owners, covering 44,348 acres, and professional forest management assistance via the Woodland Stewardship Program. Result #2 used $100,000 in cost-sharing for stewardship practices on private forestlands, resulting in the implementation of nearly 1,150 acres of on-the-ground forest management projects. Results #3 ("Protection of Private Forestland with Permanent Conservation Easements through matching Federal Funds" used $500,000 of ML2005 Trust Fund funding and $500,000 of ML2006 Trust Fund funding to acquire permanent working forest conservation easements from 2 landowners in Itasca County and Lake County, Minnesota.Total federal match leveraged on these two projects was $818,983. Accomplishments: The total acres protected from development is 7,665 acres: 1,659 acres on the Sugar Hills Project in Itasca County; and 6,006 acres on the Wolfwood project in Lake County. All 7,665 acres provide permanent public access for hunting and fishing according to the terms of the conservation easements.

Project completed: 6/30/2008

Evaluating Riparian Timber Harvesting Guidelines: Phase 2
09(d) $333,000

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RESEARCH

Overall Project Outcome and Results
This project continues research begun with a 2001 appropriation from the Trust Fund and is being further continued by a 2007 appropriation.

Minnesotans care about how timber harvesting practices may impact the terrestrial, aquatic, and wildlife components of forested riparian areas. Research addressing the long-term effectiveness of riparian guidelines to mitigate harvesting impacts is critical to effectively resolve riparian management conflicts and sustain Minnesota's forest resources. This project evaluated post-harvest impacts of Minnesota's riparian guidelines on eight northern Minnesota sites harvested in 2004 and 2005.

Terrestrial findings include: 1) partially-harvested riparian management zones (RMZs) have substantial aspen suckering, although at or just below the low range of full stocking; 2) partially-harvested RMZs, particularly at medium residual basal areas, have significant hardwood regeneration; 3) medium basal area retention maintains leaf litter input to streams at control levels; 4) RMZs with medium basal area retention promote development of aspen-mixed wood stands, while retaining adequate stream litter inputs; and 5) residual tree blowdown was low.

Site-level stream effects include: 1) harvesting resulted in reduced canopy cover but increased woody cover; 2) fine sediments increased downstream of the intermediate harvest treatment; 3) harvest effects were observed for macroinvertebrate abundance and species richness, and the proportion of tolerant fish and fish Index of Biotic Integrity (IBI) scores in some treatments; and 4) water quality parameters exhibited seasonal and year-to-year variation with few harvest effects. Although significant harvest effects were found, the changes were relatively small and suggest that application of the RMZ guidelines minimizes negative impacts.

Bird community effects include: 1) no change in species richness or diversity, 2) decrease in total abundance in harvested treatments, and 3) dramatic community compositional change from domination by mature forest species to domination by early successional bird species. These results suggest that if the management goal is to maintain pre-harvest bird species composition in RMZs with a concurrent upland harvest, it is best to leave RMZs at their unharvested basal areas.

Because these results only assessed dynamics three years post-harvest, there is a need to continue monitoring the sites to more fully assess effects over time.

Project Results Use and Dissemination

Project results were disseminated to scientists, natural resource managers, private landowners, legislators, and others through fifteen presentations, two posters, and two field tours. Three additional manuscripts are in preparation. Three graduate student produced theses or dissertations from their project work. Other graduate students continue to collect, analyze, and summarize data which will result in additional theses, dissertations, and manuscripts. As this research study was designed to be a long-term assessment with little dissemination during the initial project phases, researchers will continue to monitor, analyze, and report post-harvest effects in the future as funding permits. With that additional information, we will be able to assess how birds and terrestrial and aquatic ecosystems respond to timber harvesting within RMZs over the long-term. Results will then be used to inform on-the-ground decision making as well as suggest changes to the guidelines to more effectively manage forested riparian areas.

Project completed*: 6/30/2008

*Work continues via 2007 appropriation of $400,000: ML2007, Chap. 30, Sec. 2, Subd. 5(f) - "Evaluating Riparian Timber Harvesting Guidelines: Phase 3". See 2007 Abstracts for more information.

3rd Crops for Water Quality - Phase 2

09(e) $500,000

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RESEARCH

Overall Project Outcome and Results (Rural Advantage)

The purpose of the project was to accelerate the adoption of 3rd crops to enhance water quality, accomplish TMDL goals, diversify cropping systems, supply bioenergy, provide wildlife habitat and improve economic vitality through demonstrations, research, and education. The term 3rd crop is used to represent a variety of crops beyond corn and soybeans such as hays, small grains, cover crops, native species, hazelnuts, grapes, etc. These crops provide multiple benefits to society in the form of improved water quality, reduced soil erosion, enhanced wildlife and pollinator habitat, water storage/ aquifer recharge, and carbon sequestered plus they provide economic return to the landowner. These are meant to be working lands.

Numerous outreach, education, and marketing activities were conducted to accelerate the adoption of 3rd crops. These ranged from one-on-one consultations to public events to conferences to feasibility development activities.

Through this project there were 51.5 acres of 3rd crops established on seven sites in the greater Blue Earth and Lower Minnesota River watersheds and 3rd crop demonstration sites of two acres each at Belle Plaine, Fairmont, Starbuck, and Roseau. Each site contains a diverse planting of various 3rd crops. Each site has a ten year easement to maintain the 3rd crop. We expect that there will be viable markets at the end of the easement term to maintain these sites in a 3rd crop use for the long term. 3rd crops demonstrated include native grass mixes for bioenergy [4 sites], pasture mix, native grasses for seed production and grapes. All were targeted to environmentally sensitive lands within their local geography.

There has been significant progress toward the acceleration of 3rd crop adoption in Minnesota as a result of this project and the collaborations with

multiple partners. The University of Minnesota completed the research aspects of the 3rd Crop Project and is submitting a separate report for their portion of the funding._

Project Results Use and Dissemination (Rural Advantage)
Throughout the timeframe of this project there were over 200 outreach, education, and marketing activities conducted to accelerate the adoption of 3rd crops. These ranged from one-on-one consultations to public events to conferences to feasibility development activities. It is estimated that at least 12,000 individuals have been reached throught these efforts.

Overall Project Outcome and Results (U of MN CINRAM)
The intent of this project was to accelerate the adoption of 3rd crops at a demonstration scale documenting their long term impact on water quality and storage, renewable energy supply and rural economic vitality. Demonstrations were established in the Greater Blue Earth, Chippewa, Lower Minnesota, and Rouseau River Watersheds. The work has resulted in significant findings that are being disseminated through publications and the activities of our partner, Rural Advantage.

- Landscape position has a significant impact on the success and productivity of different biomass species.
- Research on the impact of conversion from row cropping to perennial crops coupled with wetland restoration suggests that we can expect diminished flow volumes, total suspended solids, and nitrate levels. Although grass competes with woody crops, this study demonstrates the importance of soil cover as a best management practice to reduce runoff, soil erosion, and phosphorous loads during establishment of woody crops.
- Soil frost is deeper under annual crops than under perennials making soils under perennials are better able to absorb water earlier in the spring and reduce runoff from rain on snow events and from rapid snowmelt.
- Through research on the production and nutrient cycling impacts of 3rd crops, we are able to suggest species that will be productive, have important characteristics for cellulosic ethanol production, and protect environmentally sensitive areas.

The overall impact has been to generate and disseminate information that will allow us to target 3rd crop plantings for bioenergy to optimize their economic, environmental and water quality and storage benefits. The project has leveraged funding through 2013 from the private sector that will continue monitoring benefits, expand the research to answer additional questions, and provide greater detail for the development of renewable energy options in Minnesota.

Project Results Use and Dissemination (U of MN CINRAM)
The outreach activities of this project are reported in a separate report prepared by Rural Advantage, the partner in this project. In addition to the work by Rural Advantage for audiences including farmers, natural resource professionals and citizens, the University portion of the project has provided information in the following venues and formats:

- Presentations by University researchers and students at Rural Advantage sponsored events. (approximately 12 presentations)
- Presentations at professional meetings in the US (7) and internationally (1).
- Papers and Theses prepared by University Graduate students (7).
- Projects prepared and presented by Undergraduate students (8).
- Publications by graduate students and researchers.

It is important to note that the project has used a variety of venues to disseminate information and results from project activities. Results have been disseminated to interested members of the public through a series of meetings sponsored by Rural Advantage and UMN extension as well as meetings sponsored by state agencies and initiatives (MPCA, NextGen, BWSR). In addition, research results have been disseminated through publications, presentations at scientific meetings and integrated into coursework at the University of Minnesota.

Project completed: 6/30/2008

Bio-conversion of Potato Waste into Marketable Biopolymers
09(f) $350,000

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RESEARCH

Overall Project Outcome and Results
Potato processing plants generate large quantities of potato waste that pollutes air, water, and soil; no solution to the problem has yet been found. Biopolymers are renewable and biodegradable materials that could replace petroleum based plastics, which are polluting and environmentally unfriendly. We studied production of two biopolymers (i.e. xanthan and polylactic acid) on potato waste. Xanthan has many applications in the chemical, food, oil, pharmaceutical, and other industries. Its global market was estimated at $300-400 million and is expected to grow at an annual

rate of 4 to 10%. Polylactic acid is also an attractive raw material. Its market is smaller than that for xanthan; however, polylactic acid has a large growth potential.

The objectives of the project were to study: 1) Lactic acid fermentation of potato waste and subsequent polymerization of the lactic acid into polylactic acid (PLA), 2) Xanthan (XA) fermentation of potato waste, and 3) To compare economic feasibility of PLA and XA production from the potato waste. The major results were: 1) Lactic acid average yield was 60% (i.e. kg lactic acid / kg potato waste starch), 2) Xanthan average yield was 24.90 % (i.e. kg xanthan/ kg dry potato waste), 3) Both lactic acid and xanthan fermentations can be more profitable on potato waste than on current production media, and 4) PLA polymerization from the lactic acid fermented on potato waste would be less profitable than conventional processes.

Fermentation of potato waste into xanthan or lactic acid could generate net social benefits regardless of whether these processes are commercially viable. The potential for positive externalities emanates from: 1) reducing environmental costs of potato waste disposal, and 2) alleviating the pressure on materials that are both conventional media for fermentation of xanthan and lactic acid and inputs in subsidized markets for food and fuel.

Project Results Use and Dissemination
The project has resulted in a patent application ("Solid or Semi-Solid State Fermentation of Xanthan on Potato or Potato Waste" - Patent Publication No. US-2008-0113414-A1). Additionally, information about project results has been disseminated through multiple conference presentations and posters, news stories in Minnesota media, and multiple manuscripts submitted for publication.

Project completed: 6/30/2008

SUBD. 10 - ENERGY

Clean Energy Resource Teams and Community Wind Energy Rebate and Financial Assistance Programs
10(a) $700,000

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The project has been divided into two parts. Part 1 – Clean Energy Resources Teams for $300,000 was completed in 2007. Part 2 – Community Wind Energy Rebate and Financial Assistance Program for $400,000 which will be completed in 2010.

Part 1: Clean Energy Resouce Teams

Appropriation Amount: $300,000

Overall Project Outcome and Results
The Clean Energy Resource Teams (CERTs) provide technical assistance to implement cost-effective conservation, energy efficiency, and renewable energy projects throughout Minnesota . This is accomplished through a network of six regional teams working with the statewide CERTs coordinators to implement community-based energy projects that addressed their respective regional priorities.

CERTs awarded grants for technical assistance for at least two projects in each region, funding fifteen in all. An estimated thirty energy efficiency and renewable energy projects received assistance from CERTs while countless individuals consulted with CERTs coordinators for project advice.

The CERTs model has proven to be an effective way for citizens to participate in energy efficiency and renewable energy development. In 2006, the Minnesota Environmental Initiative recognized the Clean Energy Resource Teams with the *Partnership of the Year* award. As further affirmation of the CERTs model, both the governor and the legislature budgeted for a second phase of CERTs through fiscal year 2009. (Minnesota State Laws 2007, 216C.385.) This legislation also appropriated funds to create a seventh CERT to serve the Twin Cities area. A survey titled, *Report on the Clean Energy Resource Teams (CERTs) Project* is part of the final report and measures volunteer satisfaction with the CERTs program statewide at 95%. (See *Attachment D*.)

Project Results Use and Dissemination
Each CERT hosts a quarterly meeting that draws between 20 and 100 people. Additionally, there are frequent workshops and trainings. This year, the CERTs statewide conference drew 400 people from the public, private, and not-for-profit sectors.

Designing a Clean Energy Future: A Resource Manual was published in 2003 to highlight opportunities for communities to work together on energy issues. It offers basic information on energy efficiency, biofuels, solar, and wind as well as other renewable technologies with tips on how to implement projects. The manual is available in hard copy and at www.cleanenergyresourceteams.org.

The CERTs website had nearly 16,000 new visitors this year. Additionally, there are 1,100 e-mail subscribers to CERTs monthly updates which cover upcoming events, funding opportunities and regional project highlights.

The CERT model is receiving recognition nationwide. This fall, CERTs is presenting to the Will Steger Foundation Summer Institute, the Rural Youth Summit in Ames, Iowa and the Western Mountains Alliance in Maine. The presentations will focus on how partnerships between land grant universities, not-for-profit organizations, and state energy offices can be an effective way for citizens to get involved in implementing successful community-based energy projects.

Project completed: 6/30/2007

Part 2: Community Wind Energy Rebate and Financial Assistance Program

Appropriation Amount: $400,000

The Community Wind Energy Rebate Program will select community-oriented wind energy projects through a competitive process to receive financial assistance and rebates of $200,000 each for the successful completion of grid-interconnected wind turbines.

Project due to be completed: 6/30/2010

~~**Planning for Economic Development via Energy Independence**~~ - **GOVERNOR VETO**
~~10(b) $240,000~~
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~~To evaluate the socioeconomic benefits of statewide and community renewable energy production and distribution by analyzing system installation, technical capabilities, cost-competitiveness, economic impacts, and policy incentives.~~

~~**Project due to be completed:** 6/30/2007~~

Manure Methane Digester Compatible Wastes and Electrical Generation
10(c) $100,000

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Overall Project Outcome and Results
The project examined the potential for a centrally located, multi-farm manure digester and the potential use of compatible waste streams with manure digesters.

The advantage of central anaerobic digesters in terms of their larger size relative to farm scale digesters comes from their ability to process other organic wastes in addition to dairy, swine, or poultry manure.

The project found that, overall, central anaerobic digesters appear to have the most potential for economic feasibility where:

- nuisance odors require action;
- offsite organic waste is available that can be co-digested to increase gas output and/or generate tipping fees;
- manure solids are separated and have a high value for dairy cow bedding or as a soil amendment;
- biogas can replace large onsite retail purchases of electricity or heat;
- electricity is sold to the grid in a region of the U.S. with higher-than-average electricity prices.

Central anaerobic digesters can by owned by farmer or consumer cooperatives, third party/non-farming investors, state or municipal government, or established as a cooperative or limited liability corporation.

Challenges unique to centralize digesters include:

- organizing groups of farms, reaching consensus and commitment to the project, and providing a mechanism for farms to leave the agreement;
- sanitary issues involved in transporting manure between farms;
- capital investment and operating costs for the manure transportation equipment and loading/unloading facilities.

Project Results Use and Dissemination
Results were disseminated at two workshops for producers and researchers and will continue to be made available to producers, producer groups, agri-businesses and researchers interested in central anaerobic digesters.

Project completed: 6/30/2007

Dairy Farm Digesters
10(d) $336,000

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Overall Project Outcome and Results

Anaerobic digestion is a process using bacteria to stimulate production of gas during manure decomposition. The gas produced during digestion can be utilized to produce electricity. Anaerobic digestion technology had been proven economically feasible on dairy farms with at least 300 cows. The vast majority of Minnesota dairy farms, 96%, are between 50-300 cows.

The goal of this project was to test cutting edge digestion technology that could be profitable for an average Minnesota dairy farm. At the beginning of this project there were no commercially-available digestion technologies that could be utilized by our pilot farm site of 160 dairy cows. Two requests for proposals were solicited from project engineers across the county. Project partners reviewed and scored bids. Select engineers were invited to visit the pilot farm site and submit a site-specific bid for further evaluation. After a year and a half of soliciting, scoring, and evaluating dozens of project bids, one engineering firm was selected to enter into a binding contract for engineering services. The selected bid was from Genex Farm Systems, www.genex.crinet.com and Andigen, www.andigen.com.

Construction of an Induced Blanket Reactor (IBR) digester began in September, 2007 at Jer-Lindy Farms, Brooten. The digester began producing gas and electricity in the spring of 2008.

- 450 kwh of electricity is produced per day, on average
- Annual electricity production is 164,000 kwh
- Annual revenue from electricity sales $13,000
- Electricity production at Jer-Lindy Farms represents nearly one million tons of avoided carbon emissions/year compared to conventional electricity production

Benefits to Minnesota's environment and economy from the Jennissen digester project include odor control, pathogen reduction (58% volatile solids destruction rate), reduction in Total Oxygen Demand, and avoided need for additional transmission lines due to renewable electricity production and distributed generation of electricity. A final summary of project results are contained in a field day folder submitted to LCCMR.

Project Results Use and Dissemination

A final project field day was held at the Jerry and Linda Jennissen farm, June 27th, 2008. Over 350 people attended the field day. Project documentation materials were developed and distributed at the field day. Materials from the field day are available at: www.mnproject.org/e-biogas.html. Materials include fact sheets about the project, biogas and electrical production, preliminary economic analysis of the project, and information about carbon credits and financing anaerobic digester projects. There was excellent media coverage from the field day, resulting in information about the project reaching a broader audience. Press releases about the field day and project were developed and distributed to agriculture and energy media across Minnesota.

Prior to the final field day, the Natural Resources Conservation Service hosted a field day at the farm with 65 state engineers and NRCS staff. Additionally, Jerry and Linda Jennissen have hosted smaller groups of interested parties to the farm to tour the digester and learn about the operation. It is estimated that since the digester began operating nearly 500 people have toured the project.

The Minnesota Milk Producers and the Stearns County Soil and Water Conservation District distributed information about the project, including project educational materials to dairy farmers and the Minnesota conservation community.

Project presentations were given early during this project to build interest in the final project results in advance of having definitive results to share. Each early presentation was followed up with in June 2008 to ensure final project results were shared with the groups who had heard about this digester project before construction began.

Project completed: 6/30/2008

Wind to Hydrogen Demonstration
10(e) $800,000

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To develop a model, community-scale wind to hydrogen facility at the University of Minnesota - Morris Campus.

Project due to be completed: 6/30/2009

Natural Gas Production from Agricultural Biomass
10(f) $100,000

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RESEARCH

Overall Project Outcome and Results
The overall objective of this project was to develop a roadmap for the production of pipeline quality natural gas from mixtures of hog manure and biomass. If this process is economic, then hog farmers will have an economic incentive to treat their wastes in a manner that eliminates odor and reduces the environmental footprint of hog operations.

This project was comprised of two primary elements: an experimental program to determine if crop residues could be combined with hog manure to increase biogas production and an engineering study to develop regional biogas production as a means to make treating hog manure economically attractive.

The study considered beet pulp, corn stalks or stover, wheat straw and switchgrass. The experimental study began with the assumption that these biomass sources could be digested in an anaerobic digester based on published literature values for gas generation. In the experiments, only the corn stover showed any gas generation but the gas generated would not be enough to be economic. The conclusion is that some form of pretreatment will be necessary before the biomass is fed to the digester. Acid hydrolysis as developed by the Department of Energy for biomass to ethanol or fungal composting are two candidate pretreatment technologies that could make biomass digestion economic. However, it is known from prior work that wood wastes such as sawdust will generate gas without pretreatment. This limits pretreatment to those technologies that are simple and inexpensive.

The second portion of the project was an engineering study of what regional biogas production would look like. This concept assumes multiple digesters located at individual hog (or dairy) operations producing biogas. With the addition of substrate, gas production is expected to increase sharply. Consolidating biogas from multiple locations into a single refinery is more capital efficient than dispersed refining units and allows for a single connection to the natural gas pipeline. The engineering feasibility study showed that very large hog operations are candidates for biogas production but smaller farms, under 5000 hogs, were not. There is a substantial economy of scale in gas refining and consolidation of multiple farm output is more likely to be successful.

The overall economics of biomass/hog manure digestion are potentially attractive if long term gas purchase agreements and long term financing can be assembled. The primary result of this effort has been to assemble a roadmap for regional biogas production. Minnesota will benefit from this project as the economic analysis and engineering details facilitate follow on project development in specific locations. The successful implementation of this strategy will dramatically reduce the environmental damage from stored manure odors and pollution. In addition to the broadly shared benefits of reducing hog odors, specific property owners down wind of hog operations could see property values go up and an enhanced quality of life.

The project ended with a net balance because the final step of engineering a final system based on biomass could not be completed. When the biomass/hog manure mixture did not produce gas, there was no data to size the digesters or the biomethane refinery.

A full report, compiling the engineering study and experimental results was submitted.

Project completed: 6/30/2007

Biomass-Derived Oils for Generating Electricity and Reducing Emissions
10(g) $150,000

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Overall Project Outcome and Results
This project is a portion of a larger program to identify and test Bio Derived Oils (BDOs) based fuels for use in a commercial power-generating turbine. This project assists an effort to demonstrate the applicability of biomass-derived oils in the operation of large scale electricity generating turbines by piloting the use of these fuels on a smaller scale in a small turbine. A micro turbine generator was purchased to allow for the evaluation of BDOs in a small turbine. The micro turbine was installed and calibrated and tests are being conducted as part of the larger program to understand the effects of using BDOs on turbine emissions and performance. Those tests are being funded by the Minnesota Soybean Research

and Promotion Council (MSR&PC) and are scheduled to be completed by December 2008.

Project Results Use and Dissemination
During the project, data and information was shared with the AURI, MSR&PC and the University of Minnesota . Updates were published in AURI's Ag Innovation News. Information was included on the University of Minnesota 's Center for Diesel Research web site and other appropriate web sites.

Project completed: 12/30/2007

~~**Phillips Biomass Community Energy System**~~ **- GOVERNOR VETO**
~~10(h) $900,000~~
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~~To assist in the distribution system equipment and construction costs for a biomass district energy system. This appropriation is contingent on all appropriate permits being obtained and a signed commitment of financing for the biomass electrical generating facility being in place.~~

~~**Project due to be completed:** 6/30/2007~~

Received 2006 appropriation of $500,000: ML 2006, Chap., Sec. 20, Subd. 3 ("Phillips Biomass Community Energy System"). However, this appropriation was then declined in December 2007 and the project cancelled. See 2006 Abstracts for more information.

~~**Laurentian Energy Authority Biomass Project**~~ **- GOVERNOR VETO**
~~10(i) $466,000~~
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~~To lease land and plant approximately 1000 acres of trees to support a proposed conversion to a biomass power plant.~~

~~**Project due to be completed:** 6/30/2007~~

Received 2006 appropriation of $400,000: ML 2006, Chap., Sec. 20, Subd. 4 ("Laurentian Energy Authority Biomass Project"). See 2006 Abstracts for more information.

SUBD. 11 - ENVIRONMENTAL EDUCATION

~~**Enhancing Civic Understanding of Groundwater**~~ **- GOVERNOR VETO**
~~11(a) $150,000~~
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~~To create ground water exhibits and a statewide traveling groundwater classroom program.~~

~~**Project due to be completed:** 6/30/2008~~

Received 2006 appropriation of $150,000: ML 2006, Chap., Sec. 20, Subd. 2 ("Laurentian Energy Authority Biomass Project"). See 2006 Abstracts for more information.

Cedar Creek Natural History Area Interpretive Center and Restoration
11(b) $400,000

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Overall Project Outcome and Results
Cedar Creek completed three efforts: 1. restoration of 400 acres of prairie and oak savanna, 2. construction of an energy efficient science interpretive center, and 3. creation of interpretive trails and signage highlighting environmental research, habitats, and wildlife.

1. Restoration of 400 acres of prairie and oak savanna ($141,638): The initial preparation of the restoration project was completed in 2005 and 2006 and burned in 2007 and 2008. Also with the Trust Fund money, Cedar Creek was able to leverage an addition $60,000 from the National Fish and Wildlife Foundation for the project. The initial preparation work of the 400 acres included: removal of brush and branches on 150 acres, removal of invasive black locust from about 10 acres, and the creation of about 4 miles of new firebreaks. Also the acquisition of 2 fire ATVs outfitted for prescribed burning and the construction of a fire storage shed for prescribed burning vehicles and equipment was completed. Cedar Creek also established 7 vegetative monitoring plots, in which researchers will be using over the next decade to monitor the recovery of the oak savanna.

2. Construction of a Science and Interpretive Center ($250,000): With the Trust Fund money, Cedar Creek was able to acquire an additional $1.55 million in funds from; Department of Commerce, National Science Foundation, Great River Energy, U of MN Initiative in Renewable Energy and the Environment, and the University, making the total project $1.8 million. In the spring of 2008, the Raymond L. Lindeman Research and Discovery Center opened, providing a 6000 square foot, highly energy efficient building for Cedar Creek's research and education/outreach programs. Some of the energy efficient features include: decreased volume of the building by lower ceiling height, high energy efficient windows, heat recovery unit, and HVAC units that are 93% efficient. The building includes a 1,500sf science interpretation and education area, two laboratory rooms, and a new computing area for environmental interpretation, research, and education/outreach programs.

3. Creation of interpretive trails and signage ($8,362): With the Trust Fund money, Cedar Creek purchased 8 interpretive signs to be placed around the 3 mile walking trail that was established. The signage highlights the environmental research, habitats, and wildlife at Cedar Creek. Cedar Creek partnered with the City of East Bethel on this project and the city provided over $150,000 dollars in material and labor for the construction of the 3 miles of walking trail and over 5 miles of winter ski trails.

Project Results Use and Dissemination
Savanna Restoration: The 400 acre oak savanna/prairie restoration project provided experience for both MCC (Minnesota Conservation Corp) and the DNR. The MCC and DNR helped burn the 400 restoration acres giving their individuals experience and training.

Cedar Creek also is monitoring the vegetation response of the oak savanna restoration unit. Through the collection and analyzing of data we could publish insights into restoration techniques. We will also share our insights through our website.

Center and Trails: Both, the new center and trail system have given Cedar Creek the ability to facilitate our newly expanded outreach and education program without interfering with our world class research. In fact, both Cedar Creek's research and outreach programs are complementing each other. In just a few months from opening our doors we have had close to 1000 Minnesotans using the facility for research and outreach through teacher workshops, K-12 school children programs, and general public tour groups.

The new facility is allowing K-12 teachers to hold workshops here, where as before there was no space. In these workshops teachers are learning about Cedar Creek's research directly from the researchers and by seeing the experiments first-hand. Each teacher will bring this information back to the classroom and hopefully through this indirect method, Cedar Creek will impact 1000s of students per year.

Cedar Creek is also bringing K-12 school children out to the site directly for informational and discovery field trips. We are using both the new center and trail to facilitate these trips.

Project completed: 6/30/2008

~~**Environmental Problem-Solving Model for Twin Cities Schools -**~~ **GOVERNOR VETO**
~~11(c) $75,000~~
~~Kathy Kinzig~~
~~Eco Education~~
~~210 E. 10th Street, #375~~
~~St. Paul, MN 55101~~
~~**Phone** 651-222-7691~~
~~**Fax** 651-222-3425~~
~~**E-mail** kkinzig@ecoeducation.org~~

~~To train high school students and teachers on environmental problem solving.~~

~~**Project due to be completed:** 6/30/2007~~

Tamarack Nature Center Exhibits
11(d) $95,000

Marcie Oltman
Ramsey County Parks & Rec. - Tamrack Nature Ctr.
5287 Otter Lake Road
White Bear Township, MN 55110

Phone: (651) 407-5350
Fax: (651) 407-5354
E-mail: marcie.oltman@co.ramsey.mn.us
Website: http://www.co.ramsey.mn.us/parks/tamarack

Overall Project Outcome and Results
Tamarack Nature Center's (TNC) Destination for Discovery is a multi-year project that redirects TNC away from the role of a traditional nature center towards vital center of community engagement that uses the arts, humanities and sciences to reconnect people to nature. A comprehensive master plan was produced that describes and illustrates a set of indoor and outdoor experiences that aims to 'help people discover the value of nature through art, play, exploration and inquiry'. The-detailed concept design of site improvements, natural play areas, exhibits, building renovation and expansion will be implemented based on funding and further design and planning efforts. When complete, the project will serve between 150,000-200,00 users per year.

Tamarack Nature Center 's Destination for Discovery, an $8-10 million dollar project is sponsored by public and private sources. The Trust Fund provided lead funding for Phase I of this multi-year project. Federal funds totaling $149,000 were successfully secured to match the Trust Fund. A complete 84-page site and interpretive master plan detailing the projects concepts (Phase I) is available for public viewing and comment on the Ramsey County website www.co.ramsey.mn.us/parks/tamarack at Tamarack Nature Center, 5287 Otter Lake Road, White Bear Township, MN 55110 and Ramsey County Parks and Recreation Administration Building, 2015 North Van Dyke St., Maplewood, MN, 55109.

Next Steps: Due to the Trust Fund's early support of this project, TNC's project has been on a parallel trajectory of the 'Leave No Child Inside' movement. The project has received national attention for its innovative and integrated approach to reconnecting children and families to nature. Minnesota has been recognized as a key state in identifying strategies to link policy makers and practitioners from every discipline to encourage the creation of a national culture that values spending time in nature. Because of this, Tamarack Nature Center has received a second federal grant totaling $118,000 from the Institute for Museum and Library Services to continue on to Phase II (develop and design) of Destination for Discovery. This, along with other private and public funding will put the entire project on track for completion within the next three to five years.

Project completed: 6/30/2007

SUBD. 12 - CHILDREN'S ENVIRONMENTAL HEALTH

Minnesota Children's Pesticide Exposure Reduction Initiative
12(a) $200,000

Collie Graddick
Dept of Agriculture
90 W. Plato Blvd.
St. Paul, MN 55155

Phone: (651) 296-1234
Fax: (651) 296-7386
E-mail: collie.graddick@state.mn.us

Overall Project Outcome and Results
The "MN Children's Pesticide Exposure Reduction Initiative" objective was to reduce children's pesticide exposures through parent education of alternative pest control methods and safe pesticide use. Project efforts focused on rural and suburban residents and minorities (including migrant workers), as well as urban counterparts, through early childhood programs and community outreach. Project tasks included production of an educational DVD, a refrigerator magnet, and an educational training manual, all in four languages: English, Hmong, Somali and Spanish. A public service announcement and informational materials were also developed, along with a train-the-trainer component and training of others having direct familial contacts.

Program activities included identifying communities at risk, training local personnel to enhance safe pesticide use education, and establishing cooperative working relationships with other agencies, community organizations, environmental organizations, dealers, and educational institutions. The goal of the program was to establish a regulatory presence in urban and residential communities; provide educational materials and training on pest prevention and control; and ensure the safe and proper use of all pesticides. The program involved community outreach through a short presentation, a demonstration, and a free pest management kit to participants. The kits include several items that can be used to help control indoor pests such as cockroaches, ants, mice, spiders, etc.

The project partnered with numerous organizations including the U. S. Environmental Protection Agency, the MN Departments of Education, the MN Department of Health, U.S. Housing and Urban Development Healthy Homes program, the American Lung Association of MN, MN Migrant Health Services, the City of Minneapolis Environmental Action for Children's Health Demonstration Project, local school districts Early Childhood Family Education programs and MN Daycare Associations to name a few. The program worked with over 60 different organizations, gave over 120 presentations, and distributed over 9,000 pieces of information to approximately 7,000 people.

Project Results Use and Dissemination
Education Materials Developed: 4,000 DVDs with 4 languages on each (12 minutes long); 4,000 promotional fans; 5,000 promotional magnets with 4 languages on each; 5,000 user manuals (manual translated into 4 languages); 1,000 pest mgmt. kits (caulking, caulking gun, steel wool, screen kit, duct tape, cloth pin and trap); 3,000 promotional posters in 5 languages (Hmong, Spanish, English, Somali and Russian); MDA website developed with education and outreach materials.

Program Outreach: Meetings, Workshops, Project Materials, etc.: 850 promotional fans; 1,100 promotional magnets; 1,255 DVDs; 900 Pest Management Kits; 4,820 Outreach and Educational Materials (manuals, brochures, fact sheets, etc.); 182 Outreach and Educational Training Sessions, Meetings, Workshops; 6 Community Forums; 83 Different agencies and/or organizations as partners, workshops, forums, etc.; 18,860

Approximate number of children and families impacted by program

Project completed: 6/30/2007

LCMR 2005 Appropriations (.pdf list), ML 2005, First Special Session, Ch. 1, Art. 2, Sec. 11 - Beginning July 1, 2005
(updated: 7/5/2005 with vetos)

LCMR Governor Veto List (.pdf list)

LCMR 2005 Proposal Process Information Page

Last Updated: 12/30/08 (mb)

send comments regarding this site to:
lccmr@lccmr.leg.mn

2006 PROJECT ABSTRACTS

MN Laws 2006, Chapter 243, Section 19 & Section 20 (beginning June 2006)

The following documents are short abstracts for projects funded during the 2006 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 projects web site. The sites linked to this page are not created, maintained, or endorsed by the LCMR/LCCMR office or the Minnesota Legislature.

Funding Sources: (**note: all projects are TF, unless otherwise noted)
Environment and Natural Resources Trust Fund (TF)
Great Lakes Protection Account (GLP)

ADMINISTRATION

Legislative-Citizen Commission on Minnesota Resources
Section 19 $550,000

John Velin, Director
LCCMR

100 Rev. Dr. Martin Luther King Blvd.
65 - State Office Building
St. Paul, MN 55155

Phone: (651)296-2406
Fax: (651)296-1321
E-mail: lcmr@commissions.leg.state.mn.us
Web: http://www.commissions.leg.state.mn.us/lcmr/lcmr.htm

For administration as provided in Minnesota Statutes, section 116P.09, subdivision 5.

FISH AND WILDLIFE HABITAT

Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties
Section 20, Subd. 8 $290,000
Mark Jacobs
Aitkin County
209 - 2nd Street NW
Aitkin, MN 56431

Phone: 218-927-7364
Fax: 218-927-7249
E-mail: mjacobs@co.aitkin.mn.us
Web: www.co.aitkin.mn.us

To establish a six-year revolving loan fund for Aitkin, Cass, and Crow Wing Counties to improve public and private land ownership patterns, increase management efficiency, and protect critical habitat.

Project due to be completed: 6/30/2011

Riparian Land Acquisition
Section 20, Subd. 9 $640,000

Mike Halverson
DNR
500 Lafayette Rd
St. Paul, MN 55155

Phone: (651) 259-5209
Fax: (651) 297-4916
E-mail: mike.halverson@dnr.state.mn.us

Overall Project Outcome and Results
Through leverage created by this funding, this project resulted in a grand total of approximately 149 acres and 2.13 miles of lake and stream shoreline being acquired in fee title. Environmental and Natural Resources Trust Fund dollars directly acquired 52.2 acres of the total, including 0.85 miles of lake and stream shoreline. Outside funds ($527,980) and other state monies ($2,025,220) leveraged with Trust Fund dollars totaled $2,553,200. These contributions helped acquire the remaining acres of the grand total including 79.4 acres and 1.05 miles using other state dollars, and 17.4 acres and 0.23 miles from outside funds.

This project complemented parcel acquisitions funded in the past with capital bonding, Trout Stamp, and Environment and Natural Resources Trust Fund dollars. The acquisition of aquatic management areas adjacent to lakes and streams ensures the protection of critical riparian habitat areas within sensitive watersheds and headwater areas, as well as angler and management access. Acquisition under this project occurred in the following Counties: Bottle Lake in Hubbard, Rum River (Chuck Davis) in Mille Lacs, Dead Lake in Otter Tail, and Maple Lake in Douglas.

Project completed: 7/16/2007

Forest Legacy
Section 20, Subd. 11 $500,000
Incorporated into M.L. 2005, First Special Session, Chp. 1, Art. 2, Sec. 11, Subd. 9c work program.

Doug Anderson
DNR - Division of Forestry
500 Lafayette Rd
St. Paul, MN 55155

Phone: 651-259-5251
Fax: 651-296-5954
E-mail: doug.anderson@dnr.state.mn.us/forestry
Web: www.dnr.state.mn.us/forestry

To acquire easements as described under Minnesota Statutes, chapter 84C (Conservation Easements), on private lands. The conservation easements must guarantee public access, including hunting and fishing.

Project completed: 6/30/2008 (See 2005 Abstracts for more information)

WATER RESOURCES

Lake Superior Research
Section 20, Subd. 6 $295,000 ($267,000 TF + $28,000 GLP)

Steven M. Colman
Large Lakes Observatory, UMD
2205 E. 5th Street
Duluth, MN 55812

Phone: 218-726-8128
Fax: 218-726-6979
E-mail: scolman@d.umn.edu
Web: www.d.umn.edu/llo

RESEARCH

For research on Lake Superior waters.

Project due to be completed: 6/30/2009

Impacts on Minnesota's Aquatic Resources from Climate Change
Section 20, Subd. 7 $250,000

Lucinda Johnson
UMD - Natural Resources Research Institute
5013 Miller Trunk Hwy.
Duluth, MN 55811

Phone: 218-720-4251
Fax: 218-720-4328
E-mail: ljohnson@nrri.umn.edu
Web: www.nrri.umn.edu/cwe/staff/ljohnsonintro.htm

RESEARCH

To quantify climate, hydrologic, and ecological variability and trends and identify indicators of future climate.

Project due to be completed: 6/30/2009

LAND USE AND NATURAL RESOURCE INFORMATION

Land Cover Mapping for Natural Resource Protection
Section 20, Subd. 5 $250,000

Roel Ronken
Hennepin County - Environmental Services
417 North 5th Street, #200
Minneapolis, MN 55401

Phone: 612-596-1172
Fax: 612-348-8532
E-mail: roel.ronken@co.hennepin.mn.us
Web: www.hennepin.us

Overall Project Outcome and Results
Much of the land cover within the five Twin Cities metropolitan county partners on this project (Carver, Dakota, Hennepin, Scott, and Washington) has been converted from historic native plant communities to human-disturbed systems. However, remnant natural plant communities persist and their protection remains critical, while significant opportunities also exist for the restoration of other cover types in these landscapes. Restoration within these areas will increase the extent and connectivity of remnant natural areas, provide ecological benefits such as improved wildlife habitat and reduced soil erosion, and present many opportunities for landowners and other citizens to engage in improving the natural resource base in their own communities. Large-scale restoration will be more possible with landscape-scale planning that provides methods for identifying and prioritizing opportunities based on the best available information.

Over a period of years, significant public funding has been invested in land cover mapping as part of a natural resource inventory to help determine regional priorities for wildlife habitat protection and restoration using the Minnesota Land Cover Classification System (MLCSS). The purpose of this project was to create a GIS-based model following MLCSS that the five participating counties could use as a tool for identifying opportunities for ecological restoration at a landscape-scale in their urbanized landscapes.

This project completed identified land cover mapping for the five partner counties and used it along with other data – e.g. soils, slope, and aspect – to develop prioritization criteria to identify and rank potential restoration sites. The Restoration Prioritization and Prediction Model (RePP) was the resulting computer model developed to identify these sites. After the initial categorization of approximately 1.5 million acres, the model was run on approximately 837,000 acres defined as having restoration potential.

Land cover data and an electronic version of the RePP including appendices are available by reviewing the "Restoration Prioritization and Prediction Model" located at the following Minnesota Department of Natural Resources .ftp site: ftp://ftp.dnr.state.mn.us/pub/gisftp/barichar/restoration_model/Workshop%20Materials/

Additional background data is available at the Minnesota Department of Natural Resources Data Deli: http://deli.dnr.state.mn.us/

Project Results Use and Dissemination
Increasingly, land cover data is referenced and used as a tool for planners and government officials. Cities and other local forms of government can benefit from the model and understanding how it can be used in planning efforts. A training session with the staff of county partners was conducted. A presentation of the model was made to a partnership of local nonprofit organizations and other entities that promotes protection of open space in the Twin Cities region. Further dissemination will occur through the Data Deli, through project partners familiar with the model, and through planners that find the publicly available model.

Project completed: 6/30/2008

Statewide Conservation and Preservation Plan
Section 20, Subd. 10 $300,000

LCCMR
100 Rev. Dr. Martin Luther King Blvd.
65 - State Office Building
St. Paul, MN 55155

Phone: (651)296-2406
Fax: (651)296-1321
E-mail: lccmr@lccmr.leg.mn
Web: www.lccmr.leg.mn

Overall Project Outcome and Results
The Environmental and Natural Resources Trust Fund funded a unique partnership among the University of Minnesota and the consulting firms of Bonestroo and CR Planning to evaluate the state's natural resources, identify key issues affecting those resources, and make recommendations for improving and protecting them. More than 125 experts, including University scientists and public and private natural resource planners and professionals, participated in the 18-month effort.

The team addressed Minnesota's Constitutionally identified natural resources of air, water, land, wildlife, fish, and outdoor recreation in two distinct phases. In the first phase of the project, the project team assessed the past and present condition of each of these six natural resources. They identified and described (where possible) the drivers of change immediately impacting them, and identified key issues that could be addressed to protect and conserve them in an integrated fashion. This information was published as the Preliminary Plan. In the second phase of the project, the team addressed the key issues in depth, developing recommendations that would positively impact as many natural resources as possible while taking into account demographic change, public health, economic sustainability, and climate change. These recommendations then were synthesized into a framework with five strategic areas. Recommendations were identified as being either policy and action recommendations (those that could be put into effect directly by the legislature) or recommendations that add to our knowledge infrastructure (research needs, data gathering and monitoring needs, or educational activities). This framework and its recommendations were published as the Final Plan.

The Minnesota Statewide Conservation and Preservation Plan (SCPP) lays out a deliberate strategy for fostering the conditions in Minnesota we as citizens most cherish. The strategy aims to balance long-term plans for conserving and protecting our priceless natural resources with those for ensuring a healthy public and healthy economy, and it does so in a unified, integrated fashion that employs an interdisciplinary approach with multiple perspectives and expertise.

To learn more and access an electronic version of both the Preliminary Plan and the Final Plan, please visit http://www.lccmr.leg.mn/statewideconservationplan/StatewidePlan.htm.

Project Results Use and Dissemination
During the development of the Final Plan, project team members made nearly 50 presentations reaching more than 2,000 people. Three public outreach forums were held around the state during May and June to present and gather comments on a set of draft recommendations. The discussion following the presentations and at the outreach forums influenced the final recommendations in this report. A fourth public outreach forum was held after the release of the Final Plan to gather additional feedback. A summary of these efforts is included in the appendices of the Final Plan.

Now that the Final Plan has been completed, team members continue to give presentations on the plan to organizations around the state and provide guidance to both public and private decision-makers on how to make use of the plan recommendations within their own efforts.

In addition to being available on the web (http://www.lccmr.leg.mn/statewideconservationplan/StatewidePlan.htm), hard copies of the plan have also been distributed to several libraries around the state.

Project completed: 6/30/2008

ENERGY

Phillips Biomass Community Energy System
DECLINED & FUNDS TRANSFERRED TO 2008 PROJECTS
~~Section 20, Subd. 3 $500,000~~

~~Jeff Cook-Coyle~~
~~Phillips Community Energy Cooperative (PCEC)~~
~~2801 - 21st Ave. South, #110~~
~~Minneapolis, MN 55407~~

~~Phone:~~ ~~612-278-7120~~

~~**Fax:** 612-278-7101~~
~~**E-mail:** cnelson@greeninstitute.org~~
~~**Web:** www.kandiyo.com/energy.php~~

~~To assist in the distribution system equipment and construction costs for a biomass district energy system. This appropriation is contingent on all appropriate permits being obtained and a signed commitment of financing for the biomass electrical generating facility being in place.~~

~~**Project due to be completed:** 6/30/2008~~

Laurentian Energy Authority Biomass Project

Section 20, Subd. 4 $400,000

Terry Leoni
Virginia Public Utility
PO Box 1048, 618 Second Street South
Virginia, MN 55792

Phone: 218-748-7564
Fax: 218-748-7544

E-mail: leonit@VPUC.com
Web: www.virginiamn.com

Overall Project Outcomes and Results:
The project resulted in 1,368 acres of hybrid poplar plantations being planted as a closed loop renewable biomass fuel source for the Laurentian Energy Authority's (LEA) Biomass Project. 35 MWh of electricity will be produced and sold to Xcel Energy to meet a state mandate for renewable energy. The Trust Fund appropriation was used to purchase trees (slips/whips developed by the University of MN, Duluth NRRI – hybrid poplar NM-6), tree planting, and for plantation land leasing on this 1,368 acres. LEA funded all technical assistance, crop care maintenance, and farming. Two separate plantations in Aitkin and Koochiching Counties totaling 1,368 acres were partially funded by the Trust Fund grant and partially funded and LEA.

The Trust Fund grant was also being used as a 50% non-federal match to the latest federal earmark/appropriation request. All of the Trust Fund funding was used directly to establish the initial and important plantings of the closed loop biomass crop. The success of the project depends upon growing a large portion of the fuel supply over the long term and successfully applying the work of the U of M's Natural Resource Research Institute (NRRI) and others on short rotation woody crops to real world production of fuel to large scale commercial projects.

The project assists the State of Minnesota's goal of 25% renewable fuels by 2025. Further it builds on the Federal Government's push to create one billion tons annually of renewable biomass fuels. The research and implementation is being accomplished under the U of M NRRI's direction with assistance from the USDA, Forest Service and is being done under the U.S. Department of Energy guidance and review.

Project Results Use and Dissemination:
LEA will assemble all data, costs, slips, care, and maintenance records for the 1,368 acres of plantation and this data will be available on paper from the Laurentian Energy Authority. All data, which has been under the auspices of the U of M NRRI with assistance from the USDA Forest Service, will be shared and turned over to them for determining ongoing and the long-term results. The U.S. Department of Energy is providing guidance and review.

Project completed: 6/30/2008

ENVIRONMENTAL EDUCATION

Enhancing Civic Understanding of Groundwater

Section 20, Subd. 2 $150,000
Patrick Hamilton
Science Museum of Minnesota
120 W. Kellogg Blvd.
St. Paul, MN 55102

Phone: 651-221-4761
Fax: 651-221-4514
E-mail: hamilton@smm.org
Web: www.smm.org

To create groundwater exhibits and a statewide traveling groundwater classroom program.

Project due to be completed: 6/30/2009

LCMR 2006 Appropriations (.pdf list), ML 2006, Chp. 243, Sec. 19 & Sec. 20 - Beginning July 1, 2006

Last Updated:Wednesday, 07-Jan-2009 10:45:07 CST

send comments regarding this site to:
lccmr@lccmr.leg.mn

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 $25,622,000 available for expenditure in each year of the FY10-11 biennium from the Environment and Natural Resources Trust Fund (Trust Fund). The LCCMR is to make annual funding recommendations to the Legislature from the Trust Fund.

In addition to recommendations from the Trust Fund, $400,000 is recommended from Federal Land and Water Conservation Funds (LAWCON) M.S. 116P.14 and $66,000 is recommended from the Great Lakes Protection Account (GLPA) M.S. 116Q.02 in FY2010.

For FY2010 recommendations were made using a two step process. The first step was completed on December 10, 2008 when a list of projects and recommended funding levels were adopted by the LCCMR with a 13-2 vote. The second step is the approval of the legislative bill for funding recommendations. The LCCMR approved the legislative bill with an 11-2 vote, representing a super majority of seated commission members. However, it was not adopted with the statutorily required 12 votes (MS 116P.05 Subd. 2 states "Approval of the recommended legislative bill requires an affirmative vote of at least 12 members of the commission"). At the time of the January 16, 2009 meeting, the Commission had only 14 members. There were three vacancies: two House of Representative members from the minority party and one non-legislative Governor appointee.

The LCCMR will be making funding recommendations to the Legislature for the FY2011 expenditure in January 2010.

2009 LCCMR List of Projects and Recommended Funding Levels

**In response to the 2009 proposal process, 146 proposals requesting a total of approximately $105.3 million were received. Approximately $26.1 million is available for 2009 funding ($25.6 million - Environment and Natural Resources Trust Fund; $66,000 - Great Lakes Protection Account; $400,000 - Land and Water Conservation Fund). After full consideration of all proposals received, on 12/10/08 the LCCMR made funding recommendations for 32 projects, some of which combine and/or incorporate multiple proposals from those received. These recommendations ranged from full funding for the full project and dollar amount requested to partial funding for specific project elements and partial dollar amount requested. Project managers of proposals recommended for funding were contacted individually regarding the parameters of their project's allocation recommendation.*

Subd.	Project Title	$ Recommended [$26,088,000]		Affiliation
Subd. 3 - Natural Resource Data and Information				
3a	Minnesota County Biological Survey	$2,100,000		DNR
3b	County Geologic Atlas and South-Central Minnesota Groundwater	$2,695,000		U of M Minnesota Geological Survey - $820,000 DNR - $1,875,000
3c	Soil Survey	$400,000		Board of Water and Soil Resources (BWSR)
3d	Springshed Mapping for Trout Stream Management	$500,000		U of M - $250,000 DNR - $250,000
3e	Restorable Wetlands Inventory	$300,000		Ducks Unlimited, Inc.
	Subd. 3 Subtotal	**$5,995,000**		
Subd. 4 - Land, Habitat, and Recreation				
4a	State Parks Acquisition	$590,000		DNR
4b	State Trail Acquisition	$1,000,000		DNR
4c	Metropolitan Regional Park System	$1,290,000		Metropolitan Council
4d	Statewide Scientific and Natural Area Acquisition and Restoration	$590,000		DNR
4e	Minnesota's Habitat Conservation Partnership (HCP) - Phase VI	$3,375,000		DNR - $770,000 Ducks Unlimited - $895,000 Friends of the Detroit Lakes Water Management District - $50,000 MN Deer Hunters Association - $50,000 MN Valley National Wildlife Refuge Trust - $100,000 Minnesota Land Trust - $210,000 National Wild Turkey Federation - $85,000 The Nature Conservancy - $365,000 Pheasants Forever - $450,000 The Trust for Public Land - $350,000 US Fish & Wildlife Service - $50,000
4f	Metro Conservation Corridors (MeCC) - Phase V	$3,375,000		DNR, - $2,185,000 Friends of the Minnesota Valley - $90,000 Friends of the Mississippi River - $90,000 Great River Greening - $155,000 Minnesota Land Trust - $250,000 Minnesota Valley National Wildlife Refuge Trust - $225,000 The Trust for Public Land - $380,000
4g	Statewide Ecological Ranking of Conservation Reserve Program (CRP) and other Critical Lands	$107,000		Board of Water and Soil Resources (BWSR)
4h	Protection of Granite Rock Outcrop	$1,500,000		Renville Soil and Water Conservation District
4i	Minnesota Farm Bill Assistance Project	$1,000,000		Board of Water and Soil Resources (BWSR)
4j	Land and Water Conservation Account (LAWCON) Federal Reimbursement	$400,000	**	DNR
	Subd. 4 Subtotal	**$13,227,000**		

2009 LCCMR List of Projects and Recommended Funding Levels

**In response to the 2009 proposal process, 146 proposals requesting a total of approximately $105.3 million were received. Approximately $26.1 million is available for 2009 funding ($25.6 million - Environment and Natural Resources Trust Fund; $66,000 - Great Lakes Protection Account; $400,000 - Land and Water Conservation Fund). After full consideration of all proposals received, on 12/10/08 the LCCMR made funding recommendations for 32 projects, some of which combine and/or incorporate multiple proposals from those received. These recommendations ranged from full funding for the full project and dollar amount requested to partial funding for specific project elements and partial dollar amount requested. Project managers of proposals recommended for funding were contacted individually regarding the parameters of their project's allocation recommendation.*

Subd.	Project Title	$ Recommended [$26,088,000]		Affiliation
Subd. 5 - Water Resources				
5a	Removal of Endocrine Disruptors: Treatment and Education	$275,000		U of M
5b	Vulnerability of Fish Populations in Lakes to Endocrine Disrupting Contaminants	$297,000		USGS / St. Cloud State University
5c	Cooperative Habitat Research in Deep Lakes	$825,000		DNR
5d	Intensified Tile Drainage Evaluation	$300,000		Science Museum of Minnesota / St. Croix Watershed Research Station
5e	Citizen-Based Stormwater Management	$279,000		Metro Blooms
5f	Minnesota Drainage Law Analysis and Evaluation	$87,000		Smith Partners PLLP
	Subd. 5 Subtotal	**$2,063,000**		
Subd. 6 - Aquatic and Terrestrial Invasive Species				
6a	Ballast Water Sampling Method Development and Treatment Technology	$366,000	*	MPCA
6b	Emergency Delivery System Development for Disinfecting Ballast Water	$125,000		USGS
6c	Improving Emerging Fish Disease Surveillance in Minnesota	$80,000		U of M
6d	Controlling the Movement of Invasive Fish Species	$300,000		U of M
6e	Prevention and Early Detection of Invasive Earthworms	$150,000		U of M, NRRI
6f	Native Plant Biodiversity, Invasive Plant Species, and Invertebrates	$47,000		Concordia College
	Subd. 6 Subtotal	**$1,068,000**		
Subd. 7 - Energy				
7a	Options to De-carbonize Minnesota's Electrical Power System	$143,000		U of M
7b	Projecting Environmental Trajectories for Energy-Water-Habitat Planning	$180,000		U of M
7c	Energy Efficient Cities	$2,000,000		Center for Energy and Environment
	Subd. 7 Subtotal	**$2,323,000**		
Subd. 8 - Administration and Other				
8a	Contract Management	$158,000		DNR
8b	Legislative-Citizen Commission on Minnesota Resources (LCCMR)	$1,254,000		LCCMR
	Subd. 8 Subtotal	**$1,412,000**		
	OVERALL TOTAL	**$26,088,000**		

*$66,000 from Great Lakes Protection Account
**$400,000 from Land and Water Conservation Fund

VI. Revenues and Distributions

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

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 174 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)	30,100,000	~~17,870,000~~ (3)	519,000	2,000,000 (4)	56,000	**~~50,545,000~~**
Ch. 128, Art. 1, Sec. 9			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**
		258,251,000	**97,184,000**	**8,416,000**	**4,100,000**	**707,000**	**368,658,000**

NOTE: Does not reflect vetoes below.

(1) 1999 Veto

350,000	TF
200,000	TF
1,200,000	FRF
1,750,000	

(2) 2001 Veto

275,000	FRF
455,000	TF
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	

Trust Fund and LAWCON for FY08-09 is expected to be $47.5 million.

Appropriations for LCMR and LCCMR Administrative Expenses

Statutory reference MS 116P

The amounts shown here are part of the total appropriation above

	Appropriation Year	Environment & Natural Resources Trust Fund	Carryforward	Future Resources Fund	Biennium Total
LCMR	1991	0		850,000	850,000
LCMR	1993	270,000		425,000	695,000
LCMR	1995	394,000		308,000	702,000
LCMR	1997	472,000		304,000	776,000
LCMR	1999	567,000		333,000	900,000
LCMR	2001	738,000		389,000	1,127,000
LCMR	2003	672,000	172,000 **	0 *	844,000
LCMR	2005 (annual)	449,000		0	449,000 ***
LCCMR	2006 (annual)	550,000	63,000 ****	0	613,000
LCCMR	2007 (biennial)	1,278,000		0	1,278,000
	Total	**5,390,000**	**235,000**	**2,609,000**	**8,234,000**

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

* Future Resources Fund was redirected to the General Budget, not to be recommended by the LCMR per per ML 2003, Ch. 128, Art. 1, Sec. 146 & Sec. 155.

** Carryforward from administrative budget appropriation 02-03 (Trust Fund)

*** 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 following document is from the State Board of Investment 2007 Annual Report.

2007 Annual Report

Minnesota State Board of Investment

Environmental Trust Fund

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, 2007, the market value of the Fund was $494 million.

By statute, the State Board of Investment (SBI) 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.

Investment Constraints

In November 1998, Minnesota voters passed a constitutional amendment to continue the mandate that 40 percent of the net proceeds from the state lottery be credited to the Fund through 2025.

The amendment also provides for spending 5.5 percent of the Fund's market value annually, since fiscal year 2000. The amendment eliminates the 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 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 SBI approved a 70% stock and 30% fixed income asset allocation which was implemented July 1, 1999. 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.

Figure 38 presents the actual asset mix of the Fund at the end of fiscal year 2007. The current long term asset allocation targets for the Fund are:

Domestic Stocks	70%
Domestic Bonds	28
Cash	2

Investment Management

SBI staff manage all assets of the Environmental Trust Fund. Given the unique constraints of the Fund, management by SBI staff is considered to be the most cost effective at this time.

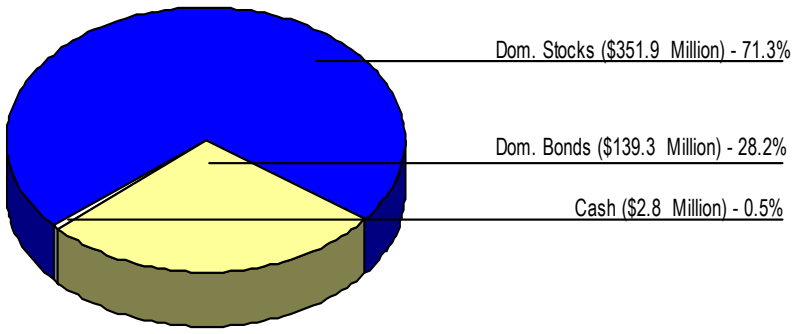
Stock Segment

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 Lehman Brothers Aggregate Bond Index.

Figure 38. Environmental Trust Fund Asset Mix as of June 30, 2007



Note: Percentages may differ slightly due to rounding of values.

Environmental Trust Fund

Investment Performance

During the fiscal year, the ***stock*** segment matched its S&P 500 benchmark. By investing in all of the stocks in the benchmark at their index weighting, the segment attempts to track the benchmark return on a monthly and annual basis. The portfolio is periodically rebalanced to maintain an acceptable tracking error relative to the benchmark subject to keeping trading costs at a minimum.

The ***bond*** segment outperformed its benchmark by 0.1 percentage point during the fiscal year.

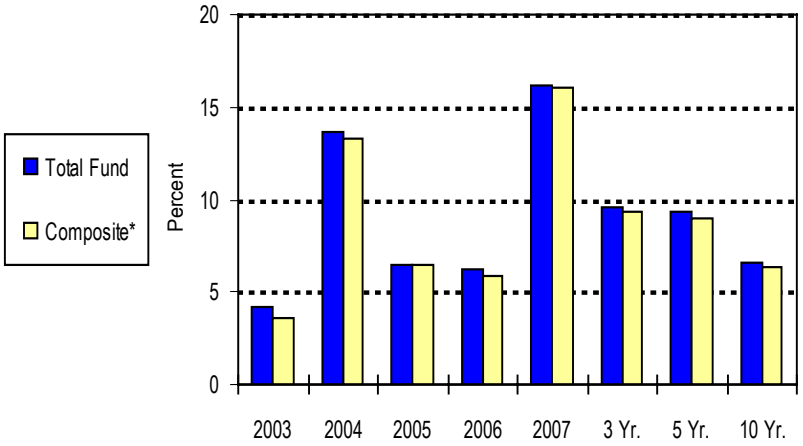
Overall, the Environmental Trust Fund provided a return of 16.2% for fiscal year 2007, outperforming its composite index by 0.1 percentage point. For the most recent three-year period, the Fund exceeded its composite benchmark by 0.2 percentage point. The Fund experienced modest outperformance over the last five and ten years due to the incremental value added by both the stock and bond segments.

Performance results are presented in Figure 39.

Spendable income generated by the Fund follows:

Fiscal Year	Millions
2003	$17
2004	$15
2005	$15
2006	$19
2007	$19

Figure 39. Environmental Trust Fund Performance FY 2003-2007



						Annualized		
	2003	**2004**	**2005**	**2006**	**2007**	**3 Yr.**	**5 Yr.**	**10 Yr.**
Total Fund	**4.2%**	**13.7%**	**6.5%**	**6.2%**	**16.2%**	**9.6%**	**9.3%**	**6.6%**
Composite*	3.6	13.3	6.5	5.9	16.1	9.4	9.0	6.3
Stock Segment	**0.7**	**19.2**	**6.3**	**8.7**	**20.6**	**11.7**	**10.8**	**7.2**
S&P 500	0.3	19.1	6.3	8.6	20.6	11.7	10.7	7.1
Bond Segment	**11.9**	**1.5**	**7.0**	**0.5**	**6.2**	**4.6**	**5.4**	**6.5**
Lehman Aggregate	10.4	0.3	6.8	-0.8	6.1	4.0	4.5	6.0

* Weighted 50% S&P 500/ 48% Lehman Aggregate, and 2% 3 Month T-Bills through June 1999. Weighted 70% S&P 500/ 28% Lehman Aggregate/ and 2% 3 month T-Bill beginning July 1, 1999.

VIII. Findings

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

No findings or 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 is from A Fiscal Review of the 2007 Legislative Session

A

Fiscal Review

of the

2007 Legislative Session

Prepared by
Minnesota State Senate
Office of Senate Counsel, Research, and Fiscal Analysis
G-17 State Capitol
75 Rev. Dr. Martin Luther King, Jr. Blvd.
St. Paul, MN 55155-1606

Edited by
Matt Massman

Table of Contents

ENVIRONMENT, ENERGY, AND NATURAL RESOURCES

Total appropriations for the Environment, Energy, and Natural Resources budget area are $1.5 billion for FY 2008-2009, a $108.3 million or 7.6 percent increase compared to the previous biennium for this budget area. Relative to the February forecast base, appropriations from all funds for FY 2008-2009 are $181.5 million higher. Of the $1.5 billion budget, $444.5 million is from the General Fund. Spending and budget amounts for all agencies and funds are summarized in Table 5, at the end of this chapter.

Table 1 - Environment and Energy
General Fund Changes Relative to Forecast
(dollars in thousands)

Change Item	FY 2008	FY 2009	FY 2008-2009 Biennium	FY 2010-2011 Biennium
Pollution Control Agency				
Clean Water Legacy	31,009	-	31,009	375
Health Tracking and Biomonitoring	1,000	1,000	2,000	1,000
Other Onetime Grants	788	-	788	-
Compensation Increase	132	268	400	536
Minnesota Zoo				
Increased Utilities and Operations	561	754	1,315	1,258
Department of Natural Resources				
Compensation Increase	1,850	3,758	5,608	7,516
Clean Water Legacy	4,500	-	4,500	-
Invasive Species Control/Prevention	970	2,190	3,160	4,380
Shift Forestry Cost to Nat Resources Fund	(3,167)	(3,167)	(6,334)	(6,334)
Forest Initiatives	2,530	1,980	4,510	2,960
Increased Nonmotorized Trails Funding	1,150	1,150	2,300	1,500
Prairie Wetlands	575	575	1,150	1,150
Shoreland Rulemaking	500	500	1,000	-
Land Asset Management and Systems	1,000	500	1,500	-
Other Onetime Expenditures	2,558	175	2,733	-
Other Ongoing Expenditures	1,033	979	2,012	1,666
Board of Water and Soil Resources				
Clean Water Legacy	14,166	-	14,166	-
Wetland Conservation	1,120	1,060	2,180	1,120
Bioenergy Monitoring and RIM Standards	700	-	700	-
Other Ongoing Expenditures	736	1,191	1,927	1,382
Met Council Regional Parks				
Increase Base Funding	750	750	1,500	1,500
MN Conservation Corps				

Increase Base Funding	125	125	250	250
Stipends for Deaf Students, Interpreters	50	-	50	-
Science Museum of Minnesota				
Increase Base Funding	500	500	1,000	1,000
Public Utilities Commission				
Staffing and Compensation Increases	1,184	1,270	2,454	2,540
Department of Commerce				
Renewable/Bioenergy Initiatives	11,250	1,500	12,750	-
Other Ongoing Expenditures	1,644	1,942	3,586	3,884
TOTAL ENVIRONMENT AND ENERGY	**79,214**	**19,000**	**98,214**	**27,683**
General Fund Revenue Changes	*2,131*	*2,636*	*4,767*	*5,272*
Net Changes	**77,083**	**16,364**	**93,447**	**22,411**

The General Fund portion of the expenditures increased by 24 percent, from about $359 million in FY 2006-2007 to $445 million in the 2008-2009 biennium. As illustrated by Table 1, there was a net increase to the General Fund appropriations of about $98.2 million when compared to the February forecast base budget for FY 2006-2007. The major focus for new spending in this budget area is funding the Clean Water Legacy Act ($49.7 million) and renewable energy initiatives ($36.5 million). While funding for these purposes was appropriated to various state agencies, tables later in this section provide more details on money appropriated for the Clean Water Legacy Act and renewable energy initiatives.

Pollution Control Agency

The total FY 2008-2009 budget for the Pollution Control Agency (PCA) is $335.7 million, a $23.5 million or 7.5 percent increase over the previous biennium and $48.1 million over the February forecast base. The three largest sources of funding for the PCA are the Environmental Fund (39.1 percent), the Remediation Fund (23.1 percent), and the General Fund (17 percent). The three largest areas of spending by the PCA are water protection (30.1 percent), land protection (29.9 percent), and environmental assistance (14.9 percent). Most of the $48.1 million increase over forecast base is attributable to appropriations for the Clean Water Legacy Act (over $31 million) and biomonitoring and health tracking ($2.0 million).

Minnesota Zoological Board

The total FY 2008-2009 budget for the Minnesota Zoological Board is $39 million, a 13.4 percent increase over the previous biennium. Of this amount, about $14.5 million is from direct appropriations from the General Fund and the Natural Resources Fund in Laws 2007, Chapter 57. The remaining budget of the Minnesota Zoo is from the revenue raised by the zoo and gifts.

Department of Natural Resources

The total FY 2008-2009 budget for the Department of Natural Resources (DNR) is $689.4 million, a $45.5 million or 7.1 percent increase over the previous biennium and

$63.1 million more than the February forecast base. The three largest purposes of the General Fund increase to the DNR were for salary increases ($5.6 million), implementation of the Clean Water Legacy Act ($4.5 million), and invasive species control (about $3.2 million).

Of the amounts appropriated to the DNR, over $507.5 million is from direct appropriations in Laws 2007, Chapter 57. Much of the increase to the DNR is the result of an 11.3 percent increase in General Fund appropriations. The three largest sources of funding for the DNR are the General Fund (35.7 percent), the Game and Fish Fund (27.6 percent), and the Natural Resources Fund (23.2 percent). The three largest areas of direct appropriations to the DNR are Fish and Wildlife Management (24.8 percent), Forest Management (19.9 percent), and Parks and Recreation Management (11.8 percent). The following table shows the DNR budget broken down by program.

Table 2
DEPARTMENT OF NATURAL RESOURCES
Biennial Appropriations by Purpose
(dollars in thousands)

Purpose	**FY 2008-2009**	**Percent of Total**
Land and Mineral Resource Management *	66,372	9.6%
Water Resources Management	35,101	5.1%
Forest Management	136,877	19.9%
Parks and Recreation Management	81,629	11.8%
Trails and Waterways Management	71,368	10.4%
Fish and Wildlife	170,867	24.8%
Ecological Services	44,415	6.4%
Enforcement	65,834	9.5%
Operations Support	16,900	2.5%
TOTAL	689,363	100.0%

* Includes payments in lieu of taxes (PILT) and consolidated conservation (Con-Con) payments to local units of government of about $41.2 million.

The budget for the DNR does not include $160,000 in General Fund appropriations that were vetoed by the Governor. The vetoed funds were for shade tree protection ($150,000) and the Cuyuna Country State Recreation Area Citizens Advisory Council ($10,000).

Board of Water and Soil Resources

The total FY 2008-2009 budget for the Board of Water and Soil Resources is $52.3 million, a $9.8 million or 23 percent increase over the previous biennium and $19.0 million over the February forecast base. The major sources of the increase in General Fund appropriations to the board were for implementation of the Clean Water Legacy Act (about $14.2 million), implementation of the Wetland Conservation Act (about $2.2 million), and local assistance for implementation of the Drainage Law (over $1.2 million). Of this amount, $49.4 million is the result of direct appropriations from the General Fund in Laws 2007, Chapter 57.

The budget for the board does not include $200,000 in General Fund appropriations for the Gaylord storm water and sewer reconstruction project that was vetoed by the Governor

Metropolitan Council Parks
The total FY 2008-2009 budget from the state for the Metropolitan Council Parks is $17.2 million, a $1.5 million or 9.5 percent increase over both the previous biennium and the February forecast base.

Minnesota Conservation Corps
The total FY 2008-2009 budget from the state for the Minnesota Conservation Corps is $2 million, a $300,000 or 17.9 percent increase over both the previous biennium and the February forecast base.

Science Museum of Minnesota
The total FY 2008-2009 budget from the state for the Science Museum of Minnesota is $2.5 million, a $1.0 million or 66.7 percent increase over both the previous biennium and the February forecast base.

Minnesota Resources
In Laws 2007, Chapter 30, the Legislature appropriated $22.9 million in FY 2008 only from the Environment and Natural Resources Trust Fund for various projects to protect and enhance Minnesota resources. The Environment and Natural Resources Trust is funded through revenues from the Minnesota Lottery. Based on the new process established for recommending appropriations from the Environment and Natural resources Trust Fund, the Legislative-Citizens Commissioner on Minnesota Resources will recommend FY 2009 appropriations to the 2008 Legislature. For FY 2008, the two largest areas of spending under Minnesota Resources are for land protection (63.5 percent) and water resources (22.6 percent). In addition, $500,000 of federal funds in the Land and Water Conservation (LAWCON) Fund was appropriated in Chapter 30.

Public Utilities Commission
Total FY 2008-2009 appropriations for the Public Utilities Commission (PUC) increased by $894,000 or 6.3 percent over the previous biennium and by $2.5 million or 19.5 percent over the FY 2008-2009 February forecast base. The General Fund portion of the appropriations to the PUC was increased by $2.5 million over the forecast base, with most of the increase to cover increased staffing for additional duties due to various energy saving and clean energy programs. The PUC is authorized to recover their operation costs through increased assessments on utility companies.

Department of Commerce
The total budget for the Department of Commerce for the 2008-2009 biennium is $349.3 million, including $74.8 million directly appropriated in Chapter 57. A majority of the department's budget, about $192.5 million, is from federal sources. The department's FY 2008-2009 General Fund appropriation increased by 38 percent from the previous biennium, from about $40.2 million to over $55.5 million.

A major focus of both the Governor and the 2007 Legislature was in the area of renewable energy. The Legislature approved about $36.5 million for renewable energy projects, of which about $12.9 million is from the General Fund, $15.25 million is transferred from Xcel Energy's Renewable Development Fund, and about $8.3 million is from the Special Revenue Fund. The following table shows major renewable energy initiatives in this budget area.

Notable policy changes also occurred in the areas of residential mortgage lending, securities, and vehicle protection product warranty requirements.

Table 3
Renewable Energy Initiatives
(dollars in thousands)

Fund/Project	**Amount**
General	
E-85 Ethanol Pump Grants	3,000
Rural Wind Energy Program*	1,000
Renewable Hydrogen Initiative	3,250
St. Paul Steam/Electricity Facility	4,500
Special Revenue	
Demand Efficiency Program	7,700
Methane Digester Grants	1,000
Solar Rebate Program	1,000
Clean Energy Resource Teams	1,250
Hybrid Electric Vehicle Grants	2,000
Renewable Hydrogen Initiative	750
Next Gen Research Grants	4,250
Rural Wind Revolving Loan	2,000
Initiative for Renewable Energy and the Environment	3,000

*The Governor issued a line item veto for the second year, $1 million appropriation of the Rural Wind Energy Program. The budget for the Department of Commerce does not include just over $1 million in General Fund appropriations that were vetoed by the Governor. The money vetoed was for rural wind energy assistance ($1 million) and the Linden Hills district heating and cooling project ($45,000).

Residential mortgage originator licensing requirements changed in that a licensee must have approval as a mortgagee by either the federal Department of Housing and Urban Development or the Federal National Mortgage Association, and by requiring a licensee to have a minimum net worth, net of intangibles, of at least $250,000 or a surety bond or irrevocable letter of credit in the amount of $50,000. Residential mortgage originator licensing fees were also raised from $850 to $2,125 for an initial license and from $450 to $1,125 for a renewal license.

The Vehicle Protection Product Act prohibits the sale of vehicle protection products unless the warrantor has either a warranty reimbursement insurance policy or a net worth

or stockholder's equity of $50 million. The department may charge warrantor registrants $250 annually to offset the cost of processing the registration and maintaining records.

The Legislature approved an industry-supported technology surcharge on Commerce Department licenses for insurance agents, real estate brokers and salespersons, and real estate appraisers. The surcharge would pay costs of technology to keep track of continuing education requirements for those professions, in order to reduce license renewal costs and delays. This program will collect and spend about $2.3 million annually.

Clean Water Legacy Act

The 2007 Legislature appropriated a total of $53.7 million from the General Fund for Clean Water Legacy Act purposes. Of this amount, $49.7 million was for agencies in the Environment, Energy, and Natural Resources budget area and $4 million for the Department of Agriculture. Much like the 2006 Legislative Session, the 2007 appropriations for Clean Water programs are onetime, with a proposed constitutional amendment dedicating ongoing resources for the Clean Water Legacy and other programs still under consideration by the Legislature.

Table 4
Clean Water Legacy Appropriations
(dollars in thousands)

Agency/Program	**Amount**
Pollution Control Agency	
Water Quality Assessments	12,634
Total Maximum Daily Load Development (TMDL)	18,000
Endocrine Study	375
Department of Natural Resources	
Water Quality Assessments	1,800
TMDL Development	1,700
Nonpoint Restoration and Protection	1,000
Board of Water and Soil Resources	
Targeted Nonpoint Restoration Cost-Share	3,316
Nonpoint Technical Assistance	3,000
Applied Soil and Water Conservation	400
Individual Sewage Treatment System (ISTS) County Grants	2,450
Feedlot Water Quality Grants	3,000
Local Nonpoint Source Protection (Lakes and Rivers)	1,000
Imminent Threat/Failing ISTS Identification	1,000
Subtotal Environment & Energy Budget Area	**49,675**
Department of Agriculture	
Agricultural Practices Research	1,100
Technical Assistance	400
Agriculture Best Management Practices Loans	2,500
TOTAL ALL AGENCIES	**53,675**

Sales Tax Dedication – Constitutional Amendment

The 2007 Legislature worked on placing a constitutional amendment on the 2008 general election ballot that would impose an additional sales tax of 3/8 of one percent and dedicate the proceeds for clean water, wildlife, cultural heritage, and natural areas. The constitutional amendment was adopted by a conference committee late in the legislative session, but was not considered for final passage by the House of Representatives or the Senate. According to joint legislative rules, the bill (H.F. No. 2285) was returned to the House of Representatives at the end of the 2007 Legislative Session. The additional sales tax revenue that would be raised under the amendment is estimated to be around $290 million per year starting in fiscal year 2010. As recommenced by conference committee, the receipts from the additional sales tax revenue would be allocated by dedicating 33 percent for outdoor heritage purposes, 33 percent for clean water purposes, 14.25 percent for park and trail purposes, and 19.75 percent for arts and cultural heritage purposes.

Table 5 - Environment and Energy
All Funds Biennial Spending by Agency and Fund
(dollars in thousands)

Agency/Fund	FY 2006-07 Spending*	FY 2008-09 Fcst. Base	FY 2008-09 Budget	Change: Budget - FY 2006-07	Change: Budget - Fcst. Base
Pollution Control Agency					
General Fund	28,119	22,728	56,925	28,806	34,197
General Fund Transfers Out	(546)	-	-	546	-
Environmental Fund	115,058	117,010	131,119	16,061	14,109
Remediation Fund	91,568	77,789	77,579	(13,989)	(210)
Special Revenue Fund	29,966	26,957	26,957	(3,009)	-
State Gov Special Revenue Fund	98	98	98	-	-
Gift Fund	24	22	22	(2)	-
Federal Fund	47,960	43,004	43,004	(4,956)	-
Total Pollution Control Agency	**312,247**	**287,608**	**335,704**	**23,457**	**48,096**
Minnesota Zoo					
General Fund	12,878	12,878	14,193	1,315	1,315
Special Revenue Fund	18,777	21,955	21,955	3,178	-
Natural Resources Fund	270	-	275	5	275
Gift Fund	2,501	2,621	2,621	120	-
Total Minnesota Zoo	**34,426**	**37,454**	**39,044**	**4,618**	**1,590**
Department of Natural Resources					
General Fund**	221,062	223,944	246,083	25,021	22,139
General Fund Transfers Out	(11)	-	-	11	-
Natural Resources Fund	141,205	128,341	160,218	19,013	31,877
Game & Fish Fund	181,675	181,146	189,961	8,286	8,815
Special Revenue Fund	46,860	43,355	43,650	(3,210)	295
Remediation Fund	4,403	1,370	1,370	(3,033)	-

Endowment and Permanent School Fund	938	436	436	(502)	-
Gift Fund	4,814	3,215	3,215	(1,599)	-
Federal Fund	42,895	44,430	44,430	1,535	-
Total Department of Natural Resources**	**643,841**	**626,237**	**689,363**	**45,522**	**63,126**
Board of Water & Soil Resources					
General Fund	38,905	30,462	49,435	10,530	18,973
General Fund Transfers Out	(700)	-	-	700	-
Special Revenue Fund	3,785	2,876	2,908	(877)	32
Federal Fund	577	-	-	(577)	-
Total Board of Water & Soil Resources	**42,567**	**33,338**	**52,343**	**9,776**	**19,005**
Met Council Regional Parks					
General Fund	6,600	6,600	8,100	1,500	1,500
Natural Resources Fund	9,140	9,140	9,140	-	-
Total Met Council Regional Parks	**15,740**	**15,740**	**17,240**	**1,500**	**1,500**
MN Conservation Corps					
General Fund	700	700	1,000	300	300
Natural Resources Fund	980	980	980	-	-
Total MN Conservation Corps	**1,680**	**1,680**	**1,980**	**300**	**300**
Science Museum of Minnesota					
General Fund	1,500	1,500	2,500	1,000	1,000
Total Science Museum of Minnesota	**1,500**	**1,500**	**2,500**	**1,000**	**1,000**
Minnesota Resources (LCCMR)					
Environ. and Nat. Resources Trust Fund*	37,657	22,866	22,866	(14,791)	-
Minnesota Future Resources Fund	1,356	-	-	(1,356)	-
Total Minnesota Resources (LCCMR)	**39,013**	**22,866**	**22,866**	**(16,147)**	**-**
Public Utilities Commission					
General Fund	8,511	8,326	10,780	2,269	2,454
Special Revenue Fund	5,625	4,250	4,250	(1,375)	-
Total Public Utilities Commission	**14,136**	**12,576**	**15,030**	**894**	**2,454**
Department of Commerce					
General Fund	40,230	39,168	55,504	15,274	16,336
General Fund Transfers Out	(22)	-	-	22	-
Special Revenue Fund	35,199	39,041	67,141	31,942	28,100
Petroleum Tank Release Cleanup Fund	29,265	32,458	32,458	3,193	-
Workers Compensation Special Fund	1,670	1,670	1,670	-	-
State Gov Special Revenue Fd.	412	-	-	(412)	-
Gift Fund	78	-	-	(78)	-
Federal Fund	205,108	192,541	192,541	(12,567)	-

Dept. of Commerce Total	**311,940**	**304,878**	**349,314**	**37,374**	**44,436**
TOTALS BY FUND					
General Fund**	358,505	346,306	444,520	86,015	98,214
General Funds Transfers Out	(1,279)	-	-	1,279	-
Environmental Fund	115,058	117,010	131,119	16,061	14,109
Remediation Fund	95,971	79,159	78,949	(17,022)	(210)
Special Revenue Fund	140,212	138,434	166,861	26,649	28,427
Natural Resources Fund	151,595	138,461	170,613	19,018	32,152
Game & Fish Fund	181,675	181,146	189,961	8,286	8,815
Environ. and Nat. Resources Trust Fund*	37,657	22,866	22,866	(14,791)	-
Minnesota Future Resources Fund	1,356	-	-	(1,356)	-
Endowment and Permanent School Fund	938	436	436	(502)	-
State Gov Special Revenue Fund	510	98	98	(412)	-
Gift Fund	7,417	5,858	5,858	(1,559)	-
Petroleum Tank Release Cleanup Fund	29,265	32,458	32,458	3,193	-
Workers Compensation Special Fund	1,670	1,670	1,670	-	-
Federal Fund	296,540	279,975	279,975	(16,565)	-
TOTAL ENVIRONMENT, ENERGY, AND NATURAL RESOURCES	**1,417,090**	**1,343,877**	**1,525,384**	**108,294**	**181,507**

* Amounts for the LCCMR reflect actual appropriations form the Environment and Natural Resources Trust Fund rather than spending amounts reported by the Department of Finance.
** FY 2006-07 General Fund amounts for DNR include $33.036 million for PILT payments that Dept. of Finance includes with tax Aids and Credits.

For questions or more information related to
this chapter, please contact Daniel.Mueller@senate.mn
or Gregory.Knopff@senate.mn

XI. Compliance Audit

"a copy of the most recent compliance audit."

The most recent compliance audit dated October 13, 2000 was included in the January 15, 2001 biennial report. The LCCMR has requested the legislative auditor to schedule a financial audit in the near future.

Appendix A

Funding Source Reference:

Environment and Natural Resources Trust Fund

MN Constitution – Amendment Article 11, Sec. 14 and M.S. 116P

Federal Land and Water Conservation Funds (LAWCON) M.S. 116P.14

Oil Overcharge Money M.S. 4.071

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]

Environmental Protection Funds

CHAPTER 116P
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

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 finance 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*

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. 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. 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 shall be initially appointed according to the following schedule of terms:

(1) two members appointed by the governor for a term ending the first Monday in January 2010;

(2) one member appointed by the senate Subcommittee on Committees of the Committee on Rules and Administration for a term ending the first Monday in January 2010 and one member appointed by the speaker of the house for a term ending the first Monday in January 2010;

(3) two members appointed by the governor for a term ending the first Monday in January 2009; and

(4) one member appointed by the governor for a term ending the first Monday in January 2008.

(f) 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.

(g) 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 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) The commission shall recommend expenditures to the legislature from the state land and water conservation account in the natural resources fund.

(c) 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 program 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 program.

(d) The peer review panel created under section 116P.08 must also 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.

(e) The commission may adopt operating procedures to fulfill its duties under this chapter.

(f) 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. **Sunset.** This section expires June 30, 2016, unless extended by law.

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*

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 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 annual emerging issues account in its annual 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 review panels must be open to the public. 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 a peer review panel.

(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 reviewed by a peer review panel before receiving an appropriation.

(b) In conducting research proposal reviews, the peer review panel shall:

(1) comment on the methodology proposed and whether it can be expected to yield appropriate and useful information and data;

(2) comment on the need for the research and about similar existing information available, if any; and

(3) report to the commission on clauses (1) and (2).

(c) The peer review panel also must review completed research proposals that have received an appropriation and comment and report upon whether the project reached the intended goals.

Subd. 7. **Peer review panel membership.** (a) The peer review panel must consist of at least five members who are knowledgeable in general research methods in the areas of environment and natural resources. Not more than two members of the panel may be employees of state agencies in Minnesota.

(b) The commission shall select a chair every two years who shall be responsible for convening meetings of the panel as often as is necessary to fulfill its duties as prescribed in this section. Compensation of panel members 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*

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 shall 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 review panelist, or an employee of the commission may not participate in or vote on a decision of the commission, advisory committee, or peer review panel relating to an organization in which the member, panelist, or employee has either a direct or indirect personal financial interest. While serving on the commission, technical advisory committee, or peer review panel, or being 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 by appointing 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*

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 annual 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 annual 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*

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*

116P.14 FEDERAL LAND AND WATER CONSERVATION FUNDS.

Subdivision 1. **Designated agency.** The Department of Natural Resources is designated as the state agency to apply for, accept, receive, and disburse federal reimbursement funds and private funds, which are granted to the state of Minnesota from section 6 of the federal Land and Water Conservation Fund Act.

Subd. 2. **State land and water conservation account; creation.** A state land and water conservation account is created in the natural resources fund. All of the money made available to the state from funds granted under subdivision 1 shall be deposited in the state land and water conservation account.

Subd. 3. **Local share.** Fifty percent of all money made available to the state from funds granted under subdivision 1 shall be distributed for projects to be acquired, developed, and maintained by local units of government, providing that any project approved is consistent with a statewide or a county or regional recreational plan and compatible with the statewide recreational plan. All money received by the commissioner for local units of government is appropriated annually to carry out the purposes for which the funds are received.

Subd. 4. **State share.** Fifty percent of the money made available to the state from funds granted under subdivision 1 shall be used for state land acquisition and development for the state outdoor recreation system under chapter 86A and the administrative expenses necessary to maintain eligibility for the federal Land and Water Conservation Fund.

History: *1Sp2001 c 2 s 140; 2003 c 128 art 1 s 152,153*

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. If the recipient fails to comply with the terms of this section, ownership of the interest in real property transfers to the state. 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.

(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. 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 is at least equal in fair market value, as certified by the commissioner of natural resources, to the interest being replaced; and

(2) the interest is in a reasonably equivalent location, and has a reasonably equivalent usefulness compared to the interest being replaced.

(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 or work program 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. If the holder of the interest in real property fails to comply with the terms and conditions of the grant agreement or work program, ownership of the interest in real property shall transfer to this state."

History: *1Sp2001 c 2 s 141; 2002 c 225 s 4; 2006 c 243 s 21*

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, must submit annual reports on the status of the real property to the Legislative-Citizen Commission on Minnesota Resources 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*

116P.14 FEDERAL LAND AND WATER CONSERVATION FUNDS.

Subdivision 1. **Designated agency.** The Department of Natural Resources is designated as the state agency to apply for, accept, receive, and disburse federal reimbursement funds and private funds, which are granted to the state of Minnesota from section 6 of the federal Land and Water Conservation Fund Act.

Subd. 2. **State land and water conservation account; creation.** A state land and water conservation account is created in the natural resources fund. All of the money made available to the state from funds granted under subdivision 1 shall be deposited in the state land and water conservation account.

Subd. 3. **Local share.** Fifty percent of all money made available to the state from funds granted under subdivision 1 shall be distributed for projects to be acquired, developed, and maintained by local units of government, providing that any project approved is consistent with a statewide or a county or regional recreational plan and compatible with the statewide recreational plan. All money received by the commissioner for local units of government is appropriated annually to carry out the purposes for which the funds are received.

Subd. 4. **State share.** Fifty percent of the money made available to the state from funds granted under subdivision 1 shall be used for state land acquisition and development for the state outdoor recreation system under chapter 86A and the administrative expenses necessary to maintain eligibility for the federal Land and Water Conservation Fund.

History: *1Sp2001 c 2 s 140; 2003 c 128 art 1 s 152,153*

116Q.02 STATE RECEIPTS FROM THE 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*

4.071 OIL OVERCHARGE MONEY.

Subdivision 1. **Appropriation required.** "Oil overcharge money" means money received by the state as a result of litigation or settlements of alleged violations of federal petroleum pricing regulations. Oil overcharge money may not be spent until it is specifically appropriated by law.

Subd. 2. **Minnesota resources projects.** The legislature intends to appropriate one-half of the oil overcharge money for projects that have been reviewed and recommended by the Legislative-Citizen Commission on Minnesota Resources. A work plan must be prepared for each proposed project for review by the commission. The commission must recommend specific projects to the legislature.

Subd. 3. [Repealed, 1998 c 273 s 15]

History: *1988 c 686 art 1 s 36; 1988 c 690 s 1; 1989 c 335 art 1 s 269; 1990 c 568 art 2 s 1; 1994 c 483 s 1; 2006 c 243 s 21*