

**Environment and Natural Resources Trust Fund
2014 Proposals**

First Name	Last Name	Title	Organization	\$ Requested	Summary
Mark	Abrahamson	Brown Marmorated Stink Bug Monitoring and Biocontrol Evaluation	MN Department of Agriculture	\$266,024	We will monitor for brown marmorated stink bug to identify problem areas and target biocontrol efforts. We will evaluate the suitability of potential biological control agents for use in Minnesota.
Scott	Alexander	Rain Water Reuse and Valuation Investigation	U of MN	\$310,000	Reusing rainwater can significantly reduce demands on Minnesotas groundwater resources while reducing stormwater runoff. Evaporative chillers can efficiently utilize naturally distilled rainwater creating value from a current waste product.
David	Andersen	Sandhill Crane Populations and Management in Minnesota	U of MN	\$306,904	Obtain information essential to managing Minnesotas 2 populations of sandhill cranes, using GPS-cellular transmitters to delineate population boundaries, habitat use relative to crop depredation, and migration patterns and survival.
Mark	Anderson	District Heating With Renewable Biomass at Camp Ripley	Minnesota Department of Military Affairs/Minnesota	\$1,970,000	Decrease dependence on natural gas by replacing 14,100 mcf and a reduction in CO2 emissions by 740 metric tonnes annually through district heating with renewable biomass at Camp Ripley.
William	Arnold	Water: Solar Driven Destruction of Pesticides, Pharmaceuticals, Contaminants	U of MN	\$291,000	Solar-driven destruction of contaminants via reaction with dissolved organic matter will be quantified to optimize water treatment and reuse to achieve improved water quality for the benefit of aquatic health.
William	Arnold	Antibiotics and Antibiotic Resistance Genes in Minnesota Lakes	U of MN	\$338,000	The historical relationship between antibiotics and antibiotic resistant bacteria in Minnesota lakes will be explored to determine if improved wastewater treatment is necessary to protect human and aquatic health.
Brian	Aukema	Mountain Pine Beetle: Invasive Threat to Minnesotas Pines	U of MN	\$382,100	Mountain pine beetle kills pines. Given a recent find and two potential arrival pathways, we survey and characterize risk to Minnesota's pine forests to inform early detection and rapid response.
Robert	Backman	Red River "Living with a River" Interpretive Trail	River Keepers	\$190,185	Interpretive trail along Red River will provide environmental education to City of Moorhead and Red River Valley through interpretive trail signs, audio tour, and riparian education outreach materials.
Lawrence	Baker	Enhanced Street Sweeping to Restore Nutrient-Impaired Lakes	U of MN	\$474,536	We propose developing tools for Metro cities that could be used to evaluate the potential effectiveness and cost of using enhanced street sweeping to restore their nutrient-impaired lakes.

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Keith	Barker	Online Access to Minnesota's Biodiversity for Environmental Management	U of MN	\$342,428	Online access to specimen records of plants and animals will help control invasive species by tracking their spread and enable conservation of native species by predicting responses to environmental change.
Stephen	Bartell	Triclosan Occurrence and Bacterial Resistance in Minnesota Wastewater	Normandale Community College	\$51,992	Triclosan and triclosan-containing products are being phased out by State agencies. This project aims to produce a snapshot of triclosan in wastewater; and bacterial resistance at this point in time.
John	Beckwith	Creating Foundations for Farmer Led Conservation Planning	Minnesota Association of Resource Conservation and	\$61,736	Develop the educational and technical materials, training for farmer and facilitator expertise, support specific local resource assessments, and demonstrate success of farmer led conservation planning councils in Minnesota.
Rob	Bergh	Minnesota EV Trail: Solar Chargers for Electric Vehicles	MN DNR	\$250,000	Install a chain of solar powered electric vehicle charging stations across Minnesota. This Minnesota EV Trail will ultimately reach from Iowa to Canada, greatly accelerating adoption of EVs in Minnesota.
Darcy	Berus	The Wolf At Our Door	International Wolf Center	\$123,672	This new initiative will bring an outreach specialist to metro area K-12 classrooms and nature centers to help children understand issues around wolf management in this new era of delisting.
Richard	Biske	Protecting the Best of the Best in Southeast	The Nature Conservancy	\$258,500	This project will provide a framework for the protection and stewardship of unimpaired waters in Southeast Minnesota. The result will be a template for watershed protection in Minnesota.
Peggy	Booth	SNA Acquisition, Restoration, Improvement & Citizen Engagement	MN DNR	\$3,951,870	Diverse native plant communities and rare species habitat would be acquired as state Scientific and Natural Areas (SNAs) and their quality increased through restoration, site improvements, monitoring, and public involvement.
Suzy	Boysen	Land Stewardship in Secondary Education	River Bend Nature Center	\$130,000	Environmental Education for 7-12 graders using an outdoor classroom setting to establish land stewardship in young adult populations and increase interest in Environmental Studies and Conservation beyond the educational setting.
Kyle	Bozentko	Citizen Input on Silica Sand Mining	The Jefferson Center	\$99,672	The Jefferson Center aims to motivate conservation efforts in southeastern Minnesota by developing citizen-led information and education events related to silica sand mining development.

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Wiley	Buck	Restoring our Lands and Waters	Great River Greening	\$414,000	Great River Greening will restore/enhance 0.27 miles (0.18 Trust Fund, 0.09 match) of shoreline and 340 acres (218 Trust Fund, 122 match) of forests, wetlands, woodlands, savanna and prairie.
Monika	Chandler	Biosurveillance and Biocontrol of EAB - Phase 2	MN Department of Agriculture	\$628,100	We will continue to monitor select ash and EAB populations to inform and expand biological control implementation and test the compatibility of biological control with insecticide treatments for EAB management.
Katy	Chayka	Expand the Minnesota Wildflowers Online Botanical Reference	MN Wildflowers Information	\$222,450	It's hard to protect what you can't identify. Field work to expand technical image library and accelerate publication of species accounts to increase website utility/usage by public and land managers.
Laura	Cina	Creating a Statewide Solar Resource Inventory and Map	Minnesota Renewable Energy Society	\$287,000	Create a statewide solar resource inventory map and website, enabling Minnesotans and local government planners to understand and manage the opportunities and risks associated with developing solar energy resources.
Carl	Colwell	Connecting the Minnesota River Water Trail and Morton	City of Morton	\$198,200	Connects State Trail paddlers to significant area sites by providing the only potable water between New Ulm and Granite Falls, and provides connecting trails, amenities, interpretation, and a campground.
Jeffrey	Corney	Making a Splash in Water Resources Education	U of MN	\$160,000	Improve our students' appreciation for and understanding of Minnesota's water resources, and inspire their interest in pursuing science toward a potential career in natural resources.
James	Cotner	Using CO2 and Drawdown to Manage Shallow Lakes	U of MN	\$452,000	We will develop a new method for controlling rough fish and invasive species using dry ice in winter and evaluate best practices for nitrogen and phosphorus removal from shallow lakes.
Joe	Courneya	Regional Aquatic Invasive Species Project	Red River Basin Commission	\$219,890	This project will expand AIS activities from a county based processed to a Watershed scale through a partnership with LGUs and others within a defined region in NW Minnesota
Tim	Cowdery	Measuring hydrologic benefits from Glacial Ridge habitat restoration	Red Lake Watershed District	\$168,500	This project will enhance work to measure and extend flooding and water-quality benefits of wetland and prairie restorations at Glacial Ridge NWR by leveraging an existing comprehensive hydrologic characterization.

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Anthony	DAmato	Assess and Improve Ecological Health of Trust Lands	U of MN	\$514,395	Project evaluates strategies for improving ecological health of forests on State Trust Lands. Results will quantify long-term ecological impacts of increased forest management on State Trust Lands and other areas.
Anthony	D'Amato	Mitigating Drought and Windstorm Impacts on Minnesota's Forests	U of MN	\$270,000	Project assesses strategies for mitigating impacts of drought and windstorms on Minnesota's forests. Results will quantify effectiveness of forest management at sustaining forest health and growth during extreme weather events.
Susan	Damon	Long-Term Conservation Easement Stewardship Account	MN DNR	\$1,186,667	This project provides principal funding for a conservation easement stewardship account. Investment income from this money will provide long-term funding for stewardship of conservation easements acquired with ENRTF/MFRF appropriations.
Gino	D'Angelo	Movements and Seasonal Habitat Use of Minnesota Elk	MN DNR	\$257,473	The proposed project would provide some of the first biological data collected about Minnesota elk, including movements and habitat use. This information is essential to their long-term, sustainable management.
Mae	Davenport	Climate Readiness in Tourism-Dependent North Shore Communities	U of MN	\$279,185	Recreation and tourism systems are sensitive to climate change. We propose research and outreach to assess and build climate readiness in Lake Superior north shore communities dependent on nature-based tourism.
Michael	DeLong	River Management Strategy Before Asian Carp Invasion	Winona State University	\$279,868	Project will develop a management framework to address invasion of Asian carp in the Upper Mississippi River. Predictive models will identify vulnerable aquatic habitats, reducing costs for river management and mitigation.
Karl	DeWahl	Wastewater Facility Energy Conservation and Air Pollution Reduction	U of MN - MnTAP	\$208,616	Provide technical assistance to fifteen wastewater treatment facilities across Minnesota to identify and implement energy conservation projects that improve operational efficiency and reduce air pollution from associated energy production.
Alan	Ek	Restoring Long-Lost Forest Data and Extending Ecological Monitoring	U of MN	\$196,000	Long-term forest data; focus on restoration of long-lost statewide forest inventories of 1935, 1953 and 1966 to link with more recent data; to extend long-term ecological monitoring.
Daniel	Engstrom	Sedimental Journey: Watershed-scale monitoring of BMP effectiveness	Science Museum of Minnesota - St. Croix Watershed Research Station	\$972,000	This project uses lake-sediment records to evaluate the effectiveness of best management practices in reducing sediment and nutrient loads at watershed scales over longer time periods than conventional monitoring.

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Sherry	Enzler	Achieving Clarity: Impacts of Agricultural Tiling and BMPs	U of MN	\$849,877	Supporting agriculture while minimizing environmental impacts is a 21st century grand challenge. By linking stakeholder needs to a hydrologic model, we can target agricultural tiling and BMPs for water quality.
Sherry	Enzler	The Human Dimensions of Wolf Management	U of MN	\$144,099	Healthy wolf populations contribute to healthy ecosystems. Controversy decreases human tolerance threatening wolf viability. Understanding human attitudes and encouraging structured discourse around management strategies can increase tolerance and wolf viability.
Leslie	Everett	Restoring Aquatic Habitat by Reducing Sediment from Streambanks	U of MN - Water Resources Center	\$276,000	Restore aquatic habitat by reducing the 65-70% of river sediment now delivered from streambanks, bluffs, and ravines by developing tools and training for siting and implementing stream flow reduction practices.
Jan	Falteseik	State Spring Inventory for Resource Management and Protection	MN DNR	\$875,746	Springs are natural points of groundwater discharge. This project will systematically inventory springs statewide to provide the fundamental data needed to maintain spring flows and protect groundwater-dependent resources.
Jacques	Finlay	Remote Sensing Characterization to Improve Water Quality Monitoring	U of MN	\$207,000	Provide new remote sensing tools for comprehensive measurement of surface water quality in Minnesota, improving efficiency and effectiveness of monitoring and management under changing climate and land use conditions.
Hank	Fisher	Reducing Dioxin Emissions Grant Program	MN Pollution Control Agency	\$620,000	Reduce dioxin emissions and their negative health consequences from household garbage burning by improving access to rural garbage collection and recycling sites through grants to townships and counties in Minnesota.
James	Forester	Impacts of Forest Quality on Declining Minnesota Moose	U of MN	\$394,496	Link regional patterns of moose abundance through time to the distribution of food and cover. Determine if this distribution affects the diet and survival of individual moose.
Lana	Fralich	Victus Farms: Expanding in New Directions	Silver Bay, MN	\$356,000	Victus Farms demonstrates an innovative approach to sustainable food and fuel production. We propose to improve our existing system and expand into waste water purification and salt-water system design
Tracy	Fredin	Waters to the Sea: Rivers of Minnesota	Hamline University - Center for Global Environmental Education	\$451,494	Waters to the Sea: Rivers of Minnesota is an environmental education and community outreach project that will help Minnesotans understand water issues and act to improve and maintain water quality.

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Charles	Fritz	WQExPertApp	International Water Institute	\$882,500	The WQExPertApp is an online tool that bridges the gap between Clean Water Funded TMDL/WRPP strategies by delivering prioritized, targeted and measurable on-the-ground BMP and CP projects.
Charles	Gantzer	Quantifying Acrylamide Detoxification in Frac Sand Washwater	Barr Engineering Company	\$174,560	The ability of a laboratory protocol to quantify the site-specific rates of acrylamide detoxification will be demonstrated. Use of the protocol will improve the environmental review of frac sand facilities.
Jason	Garms	Native Prairie Stewardship & Prairie Bank Easement Acquisition	MN DNR	\$5,153,680	This project will protect 1200-acres of native prairie with Prairie Bank easements, apply management to 910-acres of prairie, and landowner stewardship will be encouraged through workshops, technical assistance and planning.
Ralph	Garono	Will Superior Sediment Plumes Produce Harmful Algal Blooms?	U of MN Duluth - Large Lakes Observatory	\$413,443	Floods and changing lake conditions may trigger harmful algal blooms along Superior's shorelines. We will produce a tool to better protect Minnesotans by understanding conditions leading to nearshore algal blooms.
Alex	Gehrig	Reducing Lake Quality Impairments through Citizen Action	Freshwater Society	\$59,375	Train lake associations and other key stakeholder groups to develop lake management plans and to implement science-based, citizen-led water quality improvement projects on eight impaired lakes in west central Minnesota.
James	Gibson	MN Agricultural Interpretive Center Energy Education Project	MN Ag Interpretive Center - Farmamerica	\$160,000	To develop an agricultural based energy education curriculum. Farmamerica is Minnesotas only agricultural environment learning center. The materials will be used at Farmamerica and be available online.
Jenny	Gieseke	Minnesota Conservation Apprenticeship Academy	BWSR	\$392,000	This program builds upon previous success, placing 30 students as interns in SWCD offices state-wide each year for two years, facilitating knowledge sharing between experienced professionals and students.
Amanda	Graeber	Contract Management	MN DNR	\$135,000	Provide continued contract management and customer service to ENRTF pass-through appropriation recipients. Ensure funds are expended in compliance with appropriation law, state statutes, grants policies, and approved work plans.
Elise	Griffin	Eco Educations Environmental Service-Learning Program	Eco Education	\$90,000	Eco Education will train, support and mentor teachers to implement an environmental service-learning curriculum that will allow students to complete action projects and address environmental issues to improve their communities.

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Timothy	Griffis	Wind Energy from Gravity Waves and Nocturnal Jetstreams	U of MN	\$191,779	This project examines gravity waves and nocturnal jetstreams for wind turbine energy generation. Results will help Minnesota meet the 25% renewable energy requirement by 2025 and will improve air quality.
Shalini	Gupta	Human Health, High Risk Populations and Climate Change	Center for Earth, Energy and Democracy	\$225,000	Improve health of low-income and communities of color as Minnesota's climate changes. Conduct GIS mapping outlining high-risk human populations, develop recommendations for adaptation planning and conduct culturally appropriate community outreach.
Patrick	Hamilton	River Lab: Engaging Minnesotans in Water Quality Issues	Science Museum of Minnesota	\$730,747	An exhibit with educational scientific laboratory experiences that measurably increases the awareness of Minnesotans to common river water pollutants and the implications of these contaminants to their daily lives.
Kipp	Hanson	Community Green Space Mapping Project	Project Get Outdoors, Inc.	\$15,000	Youth participants will explore local nature areas and create inter-active, on-line maps of their community green spaces. Maps will be linked to local school, city and community organization websites.
Mark	Hanson	Shallow Lakes: Assessing Quality and Predicting Future Change	MN DNR	\$433,223	We propose a 3 part approach to improve management of Minnesota's shallow lakes: data gathering, identification of lake quality drivers, and a comprehensive modeling strategy for predicting future lake conditions.
Michele	Hanson	Building Bridges to a Diverse Natural Resources Community	MN DNR	\$1,100,000	Increase participation of under-represented communities in outdoor recreation and in the natural resource professions by means of targeted urban outreach and stronger linkages between DNR programs and academic offerings.
Jane	Harper	3,500-Foot Shoreland Acquisition on St. Croix River	Washington County	\$2,500,000	Purchase 15 acres and 3,500 feet of St. Croix shoreland paralleling Brown's Creek State Trail providing passive recreation to trail and river users and tourists from a wide area.
Lynn	Hayes	Minnesota Farmers' and Landowners' Guide to Frac Sand Mining	Farmers' Legal Action Group	\$142,230	Farmers' Legal Action Group (FLAG) requests \$142,230 from LCCMR to protect Minnesota's land, water, and habitat through production of "Minnesota Farmers' and Landowners' Guide to Frac Sand Mining".
Richard	Hemmingssen	Developing Minnesotas Clean Energy Carbon Neutral BioEconomy	U of MN, Dept. of Bioproducts and Biosystems Engineering	\$195,950	The project will identify opportunities for advanced energy technologies and biochemicals from agricultural and forest based resources and deliver a consensus framework for establishing a green energy, carbon neutral BioEconomy

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Carrol	Henderson	Contaminants in Minnesotas Loons and Pelicans: Phase 2	MN DNR	\$259,936	This project is designed to assess the potential impact of petroleum, dispersant, and heavy metal contaminants on Minnesotas common loons and white pelicans through radiotelemetry, geolocators, and contaminant analysis.
Brendan	Henehan	TV Documentary: The Great Mille Lacs Walleye Mystery	Twin Cities Public Television	\$102,372	Overfishing? Invasive species? Rising Temperatures? Our hour-long statewide PBS documentary explains to average Minnesotans the science and history behind why the Mille Lacs walleye fishery is struggling.
Kevin	Hennessy	Eliminating Sulfur from On-Farm Anaerobic Digester Emissions	MN Department of Agriculture	\$300,000	On-farm anaerobic digestion diverts feedlot water from groundwater and mitigates greenhouse gas emissions. Reducing sulfur emissions will further improve environmental and cash-flow benefits allowing for more acceptance of the technology.
Calder	Hibbard	Minnesotas Forest Invasives: Threats, Assessment and Recommendations	Minnesota Forest Resources Council	\$308,000	Assessment of threats from terrestrial invasive species to Minnesotas forests and urban trees and development of recommendations regarding optimal policy instruments, needed investments, and key information needs, better positioning Minnesota.
Randall	Hicks	Bacterial Biodiversity for Sustainable St. Louis River Estuary	U of MN - Duluth	\$359,849	We will identify the common and rare bacteria that currently inhabit the St. Louis River Estuary to evaluate the potential ecological and economic damage caused by new invasive bacterial species.
Cheryl	Hills	Region Five Development Commissions Sustainable Communities Initiative	Region Five Development Commission	\$971,080	Five counties (Wadena, Todd, Cass, Beltrami, and Hubbard) request aggregate mapping and natural resource data compilation to conserve and protect critical habitat. Project is led by Region Five Development Commission.
Howard	Hoganson	Strategies For Restoring Pine in Minnesota's Forests	U of MN	\$356,289	Identifies statewide strategies for effective and efficient management investments to restore mixed pine forest cover types. Using inter-organizational collaborations, tests multi-aged, multi-species silvicultural systems, including safe biopesticides for deer control.
Andy	Holdsworth	Precision Conservation Models - Applications to Working Forest Lands	MN DNR	\$377,000	This project applies state-of-the-art tools to inform precision conservation acquisitions of threatened forest lands in the vulnerable and rapidly changing Pineland Sands Aquifer region.
Matt	Holland	Minnesota Pollinator Partnership	Pheasants Forever	\$104,600	Forty community pollinator projects will be completed on at least 40-acres involving and educating 800 youth and 200 adults on the value of pollinating species and their habitat.

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George	Host	Quality of Life under Climate Change in Minnesota	U of MN - NRRI	\$493,784	Develop Quality of Life indices sensitive to climate change in communities founded on timber, tourism, mining, and agriculture; work with city and natural resource managers to validate this tool statewide.
Bo	Hu	Next Generation Septic Tank Systems	U of MN	\$258,810	This project aims to developing next generation septic tank systems focusing on nutrient recuperation, bioenergy generation and environmental protection by the implementation of a bio-electrochemical system.
George	Hudak	Silica/Frac Sand Mining Air/Water Quality Environmental Impacts	U of MN - NRRI	\$607,924	This study will determine the environmental concentrations and compositions of airborne particulate matter generated by silica sand mining activities in Southeast Minnesota and evaluate related air and water quality impacts.
Rich	Huelskamp	CREED - Energy Education Project	CREED (Center for Renewable Energy Education and Demonstration)	\$148,500	To update CREED's curriculum to serve more teachers in a shorter period of time thru development of an online, interactive, teacher lead, with online meetings based curriculum package.
Jay	Huseby	Wolf Research Red Lake Reservation (5,500 square miles)	Red Lake Department of Natural Resources	\$404,535	Red Lake is a unique Reservation, having complete jurisdiction over lands within 5,500 square miles of Minnesotas wolf range. This project will facilitate effective management of wolves in northern Minnesota.
Kurt	Illig	Estrogen exposure analyses in Minnesotas Shallow Lake Wildlife	St. Thomas Univesity	\$136,000	Using biological samples already gathered from shallow lakes across Minnesota, we will determine whether environmental estrogen exposure impacts aquatic wildlife, and make recommendations about land and lake management.
Kent	Jacobson	Increasing Habitat and Ecosystem Benefits through Forest management	MN DNR - Div of Forestry	\$268,600	Conduct and coordinate state forest resource assessments, prepare summary reports and communicate through outreach efforts promoting the business investment opportunities resulting in increased and sustainable environmental, social and economic benefits.
Bart	Johnson	Itasca Boiler/Woody Biomass Utilization Project	Itasca Community College	\$1,035,100	Itasca Community College is developing a national demonstration site for the effective use of woody biomass for heating, and creating training opportunities for the woody biomass energy conversion industry.
Lucinda	Johnson	Protecting North Shore Trout Steams for the Future	U of MN - NRRI	\$361,758	Identify viable North Shore trout streams threatened by climate change using site-specific temperature and fish data; develop strategies to manage and protect trout streams.

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Margaret	Johnson	Middle Fork Crow River Sediment and Nutrient Reduction	Middle Fork Crow River Watershed District	\$320,800	The Middle Fork Crow River has been established as a leading sediment and nutrient exporter. Restoring its streambanks will lower concentrations of pollutants and improve the health of state waters.
Thomas	Kalahar	Protection of Granite Rock Outcrop Ecosystem	Renville County Soil & Water Conservation District	\$4,216,275	Over 700 acres of rare and unique Granite Rock Outcrop Ecosystem, located in the Upper Minnesota River Valley, will be preserved and enhanced through perpetual conservation easements.
Allan	Kean	Drainage Records Modernization and Statewide GIS Database	BWSR	\$730,000	This project will develop a web-based GIS database for Chapter 103E public drainage records modernization, update Drainage Records Modernization Guidelines, and provide grants to drainage authorities requiring minimum 1:1 match.
Cathy	Kindem	Trailblazers: District 196 Students Ensure Sustainable School Environments	District 196 - Rosemount-Apple Valley-Eagan	\$1,876,026	Over 4,000 students and staff each year will be empowered to work together on creative solutions for environmental problems and become practitioners of sustainable development on their local school campuses.
Joseph	Knight	Mapping Landscapes for Better Land and Water Management	U of MN	\$378,718	Critically important land cover information for Minnesota is outdated. We propose to update the states land cover data at moderate spatial resolution statewide and high resolution for selected areas.
Ken	Kornack	Minnesota Zoo Site Restoration and Native Wildlife Study	Minnesota Zoological Garden	\$477,200	The Zoo will integrate habitat conservation, environmental education and recreation by restoring and studying 40 acres of land, creating educational opportunities for those exploring the site along a public trail.
Jessica	Kozarek	Conserving Minnesotas Freshwater Mussel Legacy: Quantifying Habitat Interactions	U of MN	\$356,843	Healthy native mussel populations improve water clarity and provide habitat for other aquatic organisms. We will define environmental conditions necessary to conserve Minnesota's mussels, engaging local organizations and the public.
Vera	Krischik	Protecting Bees by Understanding Systemic Insecticides	U of MN	\$326,869	Understand how native bee and honey bee colonies are impacted by systemic, neonicotinyl insecticides in pollen and nectar of plants growing in fields and landscapes.
Dale	Krystosek	Northeast Minnesota White Cedar Restoration, Phase 2	BWSR	\$335,800	White cedar swamps provide valuable ecological and economic functions in Minnesota. This project continues an effort to reverse the decline of white cedar by demonstrating restoration techniques in the state.

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Gregory	Lais	Urban Environmental Education Engaging Students in Local Resources	Wilderness Inquiry	\$1,093,000	A collaborative metro-wide system for environmental educational using existing, but underutilized, environmental resources serving 15,600 underserved middle and high school students in high quality, place-based environmental education programs.
Harold	Langowski	City of Ely Joint Biomass District Heating Project	City of Ely	\$150,000	City of Ely, Ely-Bloomenson hospital, ISD696 with assistance of AETF, USFS, WERC have a viable biomass district heating project. The \$3,780,000 project needs final legal, governance, partnership structure to proceed.
Timothy	LaPara	Does Triclosan Create Super Bugs During Wastewater Treatment	U of MN	\$382,000	This research project will assess the ability of triclosan, the widely used antibacterial agent, to create bacteria resistant to multiple antibiotics (a.k.a 'super bugs') during the municipal wastewater treatment process.
Diane	Larson	Impact of Grazing on Native Plants and Pollinators	U.S. Geological Survey	\$465,457	We will evaluate effects of grazing versus other management actions on native prairie plant communities, exotic grasses, and pollinator richness to help managers select appropriate tools to achieve their goals.
Mike	Larson	Moose Decline and Air Temperatures in Northeastern Minnesota	MN DNR	\$743,648	Studying physiology and behavior of adult moose and effects of female condition on calf production and survival to determine the impact of air temperature on moose population performance and decline.
Jack	Lauer	Southwest Minnesota Asian Carp Watershed Deterrents	MN DNR	\$3,268,800	Prohibit Asian carp migration into sub-watersheds and core recreational lakes near Mankato and Willmar, Minnesota by installing physical deterrents and electric barriers at strategic sites along streams and ditches.
Zea	Leguizamon Grant	Urban Youth-Led Ecological Regeneration Partnership	Ce Tempoxcalli	\$208,200	This initiative organizes and engages 8000 participants from diverse communities in improving the community environmental health while preparing their youth for future career possibilities in environmental services and sciences.
Clarence	Lehman	New Data Directions for Understanding Our Natural Systems	U of MN	\$253,000	We will develop new levels for natural resource data through very-low-altitude self-guided model aircraft equipped for sensing and imaging. We have acquired these aircraft and are ready to apply them.
Megan	Lennon	Increasing Cover Crop Adoption on Working Lands	BWSR	\$162,500	This project increases cover crop adoption in Minnesota by partnering with farmers' knowledgeable crop advisors, removing barriers to implementation, and demonstrating on-farm feasibility.

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Tom	Levar	Dredged Sediment for Forest Restoration on Unproductive Minelands	U of MN - NRRI	\$495,585	Restore up to 136 acres of unproductive mine stockpile while improving the treatment of municipal sewage and biosolids near Virginia using clean Erie Pier dredged sediment and managed forestry techniques.
Ann	Lewandowski	Protecting Water Quality in Northeast Minnesota Mining Areas	U of MN	\$406,000	Prevent resource degradation by defining the threshold at which mining-related watershed changes will alter fisheries and recreational economies. Results will inform effective approaches to mining and resource protection.
Tom	Lewanski	Protect, Restore and Enhance Significant Watershed Habitat.	Friends of the Mississippi River	\$204,000	Within the Metro Conservation Corridors, FMR will install 2 acres of prairie, enhance 31 acres of prairie and enhance 107 acres of forest and 15 acres of oak savanna.
Jeff	Lewis	Nutrient Capture Through Water Management and Biomass Harvesting	Red River Basin Commission	\$478,500	Evaluate potential capture of nutrients by utilizing cattails grown and harvested within shallow flood reservoirs. Treatment cells will be constructed within existing flood reservoirs. Harvested vegetation utilized for bioenergy.
Donald	Liu	Integrating Environmental Education in Grade 3-12 Economics Curriculum	Minnesota Council on Economic Education	\$96,816	The project will enhance the abilities of up to 10,000 students in grades 3-12 to analyze trade-offs between environmental protection and economic development and make choices to achieve sustainable balances.
David	Lorenz	Watershed Water Budgets for Managing Minnesota's Water	U.S. Geological Survey	\$129,300	This pilot study will calculate complete water budgets for two counties in Minnesota. Those water budgets can be used for proactive groundwater management in areas considered for mining development.
Gerry	Maciej	Restoring Groundwater and Trout Habitat Through Irrigation Efficiencies	Benton County Soil and Water Conservation District	\$490,649	Restoring Little Rock Creek trout stream flow by reducing irrigation groundwater demand. Multiple benefits achieved using proven and innovative technologies and involving producers in designing solutions. Outcomes are transferable statewide.
Rylee	Main	Lake Pepin Preservation: Enhancing Local Water Management Capacity	Lake Pepin Legacy Alliance	\$109,275	Enhancing local capacity to address erosion problem areas by educating county boards about the benefits and feasibility of enforcing the state shoreland rule and of redetermining outdated drainage systems.
Jim	Manolis	Building Habitat and Watershed Resilience to Climate Change	MN DNR	\$510,000	This project applies state-of-the-art "resilience clinics" and "climate-smart" management frameworks to guide resource professionals in their work to steward risk-prone habitats and watersheds through a range of future climate scenarios.

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Robert	Manzoline	Mesabi Trail Development - Soudan to Ely Segment	St. Louis & Lake Counties Regional Railroad Authority	\$1,000,000	This project consists of the right-of-way acquisition, design and construction of an 18 mile segment of the Mesabi Trail from Soudan to Ely.
Mark	Martell	Analyzing and sharing the Minnesota Breeding Bird Atlas	Audubon Minnesota	\$386,831	Analysis, preparation and distribution of information collected in the past 5 years on every breeding bird across Minnesota through the publication of 7,000 books and an upgraded website.
Dalma	Martinovic	Pharmaceuticals and Nitrogen Interact to Harm MN Fish/Ecosystems?	St. Thomas University	\$269,000	Determine whether pharmaceuticals (alone/combined with environmental stressor nitrogen-nitrate) widespread in Minnesota's waters impact fish health and microbial processes that regulate nutrient cycling and water quality in rivers and lakes.
Katsumi	Matsumoto	Characterizing Urban Metabolism to Help Manage Carbon Emissions	U of MN	\$189,523	This proposal will help the MPCA formulate CO2 emissions reduction and climate change adaptation by quantifying the fluxes of CO2, energy, and water from urban surfaces using innovative measurements
Jake	McAlpine	Reduction of Carbon Emissions in Residential Buildings	Sustainable Resources Center, Inc.	\$500,000	The goal of this proposed project is to quantify the reduction in green house gas emissions from 40 homes by implementing comprehensive energy saving retrofits in each home.
Jennifer	McGuire	Does Water Contaminated with Oil Affect Your Hormones?	St. Thomas University	\$233,089	We will test Minnesota waters contaminated with oil for potential estrogenic and androgenic activity to evaluate the risk of these chemicals in drinking water to aid in water remediation strategies
Allen	Mensingher	Bioacoustics to Detect, Deter and Eliminate Flying Carp	U of MN Duluth	\$262,907	Develop bioacoustic (sound) technology for silver carp 1) detection and early warning systems; 2) capture and elimination methods; 3) deterrent systems
Linda	Meschke	Demonstrating Farmer Led Conservation in Elm Creek Watershed	Rural Advantage	\$460,360	Reduction of water quality and quantity impacts from agricultural systems using an innovative treatment train approach that treats water traveling through the drainage system starting at field to shore.
John	Mesko	Improving St. Croix River Basin Water Quality	Sustainable Farming Association of MN	\$304,000	This project will improve water quality in the St. Croix River Basin by educating and empowering farmers to change farming practices to focus on soil health, grazing and cover crops.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Dylan	Millet	Minnesotas Methane Emissions: Potential Energy and Climate Benefits	U of MN	\$362,680	This project quantifies Minnesota's methane emissions. Results will indicate where reductions can be effective, evaluate the importance of natural and human-driven sources, and identify energy savings and climate mitigation opportunities.
Peter	Moe	Bee Discovery Center at the Minnesota Landscape Arboretum	U of MN, Landscape Arboretum	\$615,279	The Minnesota Landscape Arboretum's new Bee Discovery Center will offer hands-on learning experiences for everyday people and communities to learn how they can protect bees and bee habitat.
Megan	Moeller	Testing Triggers for Adopting Sustainable Water Practices	City of Rochester	\$317,000	Individuals adopting stormwater retention, groundwater conservation, and wastewater chloride reduction practices provide a public benefit by sustaining water resources. This project identifies the most influential factors for overcoming personal inaction.
Ron	Moen	Improving Stream Trout Habitat by Beaver Management	U of MN - NRRI	\$219,755	We will analyze aerial photographs and measure habitat in designated trout streams to improve stream management practices and meet objectives for trout while retaining broader ecological benefits provided by beaver
Ron	Moen	Improving Wildlife Habitat Analysis with Value-Added LiDAR	U of MN - NRRI	\$230,428	We will process LiDAR with high resolution aerial photography in northeast Minnesota to provide current landscape-scale habitat measurements. The product will fundamentally improve habitat management for all forest wildlife species
Bruce	Monson	Identifying Causes of Exceptionally High Mercury in Fish	MN Pollution Control Agency	\$2,700,869	Quantify the probable causes of high mercury levels in fish from five impaired Minnesota rivers, providing the scientific basis to guide further mercury reductions.
Rebecca	Montgomery	Assessing Species Vulnerability to Climate Change Using Phenology	U of MN	\$189,845	Historical and new observations of timing of biological events such as flowering will assess change in the ecology of species, identify vulnerable species and inform management strategies for climate change.
Paul	Moss	Building Environmental and Community Resilience to Extreme Weather	MN Pollution Control Agency	\$846,000	Reducing environmental damage from extreme weather through practical investments, community engagement, outreach and grants to implement green infrastructure, conservation, urban forestry, building, and other adaptive practices while building community resilience.
Kimberly	Musser	Minnesota River Basin Water Quality Success Stories	Minnesota State University, Mankato - Water Resources Center	\$135,871	Lessons learned from eight successful subwatershed-scale conservation efforts will be summarized and disseminated to help inform and influence future watershed protection efforts. Products include videos, website, booklet and outreach.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Edward	Nater	Determining Climate Change Effects on Mercury in Peatlands	U of MN	\$442,779	Elevated concentrations of mercury have been observed in children living along the North Shore. Potential increases in mercury in surface waters resulting from climate change may exacerbate that situation.
Jon	Nelson	Redesigned Updating of State and County Forest Inventories	MN DNR	\$1,794,640	Pilot forest inventory redesign updating 350,000 acres of DNR and County lands with a multi-pronged approach including: targeted data collection; modeling for imputation and projections; and new tools and technologies.
Kirsten	Nielsen	Emerging Threats to Minnesotas Wildlife	U of MN	\$874,447	Many emerging threats to wildlife are acquired from the environment, yet little is known about environmental source or spread. Identifying hot spots and risk factors for exposure will improve protection.
Gerda	Nordquist	Wild Bee Surveys in Prairie-Grassland Habitats	MN DNR	\$370,736	Wild bees are important for pollination of many prairie plant species. Proposed surveys will assess the current status and distribution of bees in prairie-grassland habitats of Minnesota.
Paige	Novak	Protecting Bacteria from Contaminants to Preserve Water Quality	U of MN	\$279,000	Treatment plants use bacteria to degrade pollutants. Man-made chemicals including perfluorinated chemicals that enter treatment plants harm bacteria. If we can protect bacteria, we can better protect water quality.
Paige	Novak	Wastewater Estrogen: Removal Options, Fish Abundance, and Cost	U of MN	\$516,000	Estrogen in wastewater impacts fish but is unregulated. Nitrogen is increasingly regulated and treatment can also remove estrogen. Our research will improve nitrogen removal while reducing estrogen and safeguarding fish.
Dave	Pederson	Youth-led Sustainability Initiatives in 40 Greater MN Communities	Prairie Woods Environmental Learning Center	\$397,000	40 Youth Energy Summit (YES!) teams will complete over 100 youth-led sustainability action projects in 40 communities in SW SE, Central and NE Minnesota, providing valuable service and gaining valuable experience.
Lee	Penn	Solar Cell Materials from Sulfur and Common Metals	U of MN	\$494,092	We will develop solar cell materials using nontoxic and common metals combined with sulfur, a mining waste product. Success will help progress towards the 2002 MN solar energy policy standard.
Donald	Pereira	Structured Decision Making for Mille Lacs Fisheries Management	MN DNR	\$299,000	This project will use Structured Decision Making to incorporate both biological and social dimensions into a revised Mille Lacs management process to address issues related primarily to fisheries conversation.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Rich	Perrine	VanderWert Scientific and Natural Area and County Park	Fox Lake Conservation League, Inc.	\$455,000	Purchase Martin Countys only Prairie Bush Clover prairie, protect it by designating it as a scientific and natural area, buffer it and add it to the county park system.
Ann	Pierce	Accelerated Effort to Understand and Control Zebra Mussels	MN DNR	\$5,180,800	This project will expand partnerships between state, tribal, and local units of government to address the spread of AIS and increase our understanding of how zebra mussels impact our lakes.
Steve	Polasky	Clean Water Benefits Tool for Smarter Resource Investments	U of MN	\$347,253	Outcomes of the proposed work are new spatial data on the economic benefits of clean water (surface and groundwater) and a decision tool to inform more strategic investments in conservation.
Julia	Ponder	Raptor Lab: Online and Outdoors!	U of MN	\$186,676	The Raptor Lab will create an environmental education curriculum for middle schools that integrates authentic outdoor experiences with technology and scientific investigation to empower students to explore their local environment.
Kristen	Poppleton	Minnesota Stories in a Changing Climate	Will Steger Foundation	\$413,860	Minnesota Stories in a Changing Climate utilizes media tools and local experts to share stories, provide personal contact, and highlight resources to increase climate literacy and encourage positive behavior change.
Michael	Reese	Transitioning Minnesota Farms to Local Energy	U of MN	\$1,049,992	Agricultures dependence on fossil energy carries economic and ecological risks. Clean energy strategies will be developed for Minnesota farms to significantly reduce fossil energy use while increasing local energy production.
Peter	Reich	Forecasting Minnesotas Future Forests	U of MN	\$642,764	The project will increase understanding of climate change impacts on Minnesota forests, use that information to forecast future forests, and provide managers with strategies to increase forest growth and health.
Jennifer	Ringold	Ecological Management Plans - Mississippi River Watershed and Minneapolis	Minneapolis Park and Recreation Board	\$228,800	To improve on-the-ground operations and management of natural resources in Minneapolis and the Mississippi River watershed through the creation of ecologically based management plans for vegetation and water.
Patrick	Rivers	Accelerated Reinvest in Minnesota Critical Habitat Matching Program	MN DNR	\$2,017,920	Accelerate the Reinvest in Minnesota programs ability to utilize donations and protect 1,000 acres of fish and wildlife habitat by leveraging donations to secure fee title interest in the lands.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Stacie	Robinson	Minnesota Deers Risk of Invading Epizootic Hemorrhagic Disease	U of MN - College of Veterinary Medicine	\$135,847	Minnesota is on the edge of invasion by epizootic hemorrhagic disease; a significant threat to white-tailed deer. Research is critical to assess risk, enabling agency partners to mitigate disease impacts.
Roger	Ruan	Demonstrating Innovative Technologies to Fully Utilize Wastewater Resources	U of MN	\$2,041,626	To demonstrate innovative technologies to utilize and treat wastewater streams; convert scum, sludge, and centrate to bio-fuels; improving water quality, reducing GHG emission, producing renewable energy, lowering wastewater treatment costs.
Erik	Runquist	Prairie Butterfly Conservation, Research and Breeding Program	Minnesota Zoological Garden	\$638,439	The Zoo and DNR will work to prevent the extirpation and possible extinction of imperiled native Minnesota butterfly species through breeding, genetics and mortality research, inventory, monitoring and public education.
Deb	Ryun	St. Croix Priorities and Conservation Action Plans	St. Croix River Associaion	\$230,000	Identify and target critical areas within the St. Croix River Basin to achieve maximum results for water quality, habitat and recreational benefits through thoughtful planning and action.
Martin	Saar	Innovative Groundwater-Enhanced Geothermal Heat Pump Study	U of MN	\$196,000	We propose to analyze and validate a novel geothermal heat pump method and technology that is expected to substantially reduce heat pump cost while improving performance and predictability.
Michael	Sadowsky	Sources of Microbial Pollution in the Upper Mississippi River	U of MN	\$690,972	In this project we will develop a DNA-sequence-based method to determine sources of fecal bacteria in the Mississippi River to assess water quality, mitigate health risks, and develop effective control strategies.
Eli	Sagor	Forest Wildlife and Climate Change Research and Outreach	U of MN	\$308,000	Innovative research addressing habitat quality and distribution for two aspen-dependent bird species considering climate-driven tree species range shifts, plus coordinated outreach through a network of committed partners.
Patrick	Schoff	Predicting Smallmouth Bass Exposure to Endocrine Active Compounds	U of MN - NRRI	\$241,073	We will develop a model that will predict the exposure of native fish to endocrine active compounds and identify lakes and rivers where these compounds are likely to be found.
Dan	Shaw	Increasing the Resiliency of Conservation Projects in Minnesota	BWSR	\$166,710	This project will assess factors related to project resiliency on conservation lands, resulting in guidance and standards to develop resilient landscapes, protecting the publics investment in conservation projects.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Ruth	Shaw	Healthy Prairies: Seed Storage, Beneficial Microbes, and Adaptation	U of MN	\$695,000	We will collect and preserve germplasm of plants throughout Minnesotas prairie region, study microbial effects on them, and discover the scale of local adaptation and rate of ongoing adaptation.
Lian	Shen	Simulating Surface Flows to Inform Water Resources Management	U of MN - St. Anthony Falls Laboratory	\$336,000	We will use computer simulations to obtain high-fidelity data of surface water flows. The simulation will be a cost-effective tool for gathering information for water resources management and ecosystem preservation.
William	Sierks	GreenStep Schools Program: School-based Environmental Education and Stewardship	MN Pollution Control Agency	\$900,000	Develop and pilot a best-practices program for students and community to learn how to save energy and water, reduce waste, and provide natural habitat at their school building and grounds.
Robert	Slesak	Disseminating Sustainable Forest Management Guidelines for Resource Protection	Minneosta Forest Resources Council	\$112,000	Publication of revised Forest Management Guidelines in a user-friendly field guide and web application format to increase forest resource protection through enhanced understanding and implementation of sustainable forest management practices.
Peter	Sorensen	Blocking Asian Carp by Optimizing Lock and Dams	U of MN	\$463,449	Working with the Army Corps of Engineers to develop simple ways to modify two lock and dams to stop Asian carp from invading the Minnesota, St. Croix, and Mississippi Rivers
Scott	Sparlin	Minnesota River Community Clean-Ups for Water Quality	Friends of the Minnesota Valley	\$85,100	The Minnesota River Community Clean-Ups for Water Quality is a stormwater pollution abatement project designed to address excess nutrient pollution in the form of phosphorus and nitrogen in the Minnesota River Watershed.
Marla	Spivak	Achieving Pollinator Landscapes with the Greatest Multiple Benefits	U of MN	\$1,714,040	We will identify new and reliable floral resources for bee pollinators on natural and agricultural lands for greatest multiple benefits, including bee and bird habitat, soil conservation, and water quality.
James	Stark	Protecting the State's Confined Drinking-Water Aquifers	U. S. Geological Survey	\$394,000	Confined aquifers are critical because they provide reliable drinking water to many State residents. Some critical information is needed to manage these aquifers to ensure clean and sustainable water.
Arne	Stefferdud	Metropolitan Regional Park System Acquisition--Phase 3	Metropolitan Council	\$2,250,000	Third phase of multi-phase program to acquire 210 to 250 acres of high quality natural resource lands for regional parks and trails in the Metropolitan Regional Park System.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Anne	Stevenson	Engaging Youth With Nature Through Mobile Technology	U of MN	\$362,000	Recruit and train 1,200 adults statewide to engage 30,000 youth in 4-H/ other non-formal learning programs, using mobile technology to explore nature, enhance youth's skills, and build a conservation ethic.
Otto	Strack	Small-scale Groundwater sustainability assessment	U of MN	\$118,214	We propose the development of a simple tool for assessment of groundwater sustainability. The proposal includes an educational component. The tool is intended for local use in rural Minnesota.
Tom	Sullivan	Wolf-Livestock Conflict Reduction Using Cost-Effective Non-Lethal Prevention	Howling For Wolves	\$417,250	Educate, empower, and assist livestock producers that have experienced chronic livestock losses from wolves with non-lethal prevention techniques to minimize conflicts and foster coexistence between humans and wolves.
Daniel	Svedarsky	Cattail Management for Wetland Wildlife and Bioenergy Potential	U of MN	\$74,600	This project will evaluate different management techniques for the control of cattails in northwest Minnesota and their wildlife effects and potentials to use cattails as a biofuel.
Lawrence	Svien	Demonstration Water Quality Protection Practices on Zumbro River	Zumbro Watershed Partnership	\$413,934	To achieve increased water quality through the application of agricultural and urban BMPs in the Zumbro Watershed by increasing public understanding, connection, and engagement, to the watershed water quality issues.
Joel	Tallaksen	Life Cycle Energy of Renewably Produced Nitrogen Fertilizers	U of MN	\$512,732	Fossil energy savings and greenhouse gas reductions of using local renewable energy technologies for fertilizer production are calculated using Life cycle assessment. Technological and economic feasibility are also examined.
Brooke	Tapp	Duluth Post-Flood Trout Stream Riparian Habitat Restoration	Community Action Duluth	\$250,000	Restore 10 miles of native riparian habitat on public land along 16 coldwater trout streams within the City of Duluth that were damaged by the unprecedented June 2012 flood.
Michael	Tenney	Achieve Conservation Objectives through Grazing - Monitor Response	MN DNR	\$1,416,480	The Minnesota Prairie Plan calls for ecological disturbance to maintain diversity. This proposal will provide for conservation grazing materials on 10,000-acres of WMAs and monitoring to develop best management practices.
Steve	Thomas	Developing Building Deconstruction into a Sustainable Enterprise	Better Futures Minnesota	\$150,000	The project will show deconstruction is a viable alternative to demolition; reducing construction waste going to landfills, conserving natural resources by promoting reuse/recycling, and increasing employment for chronically unemployed adults.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Anne	Timm	Chemical Removal from Minnesota Lakes by Aquatic Plants	USDA Forest Service, Northern Research Station	\$346,334	This study investigates aquatic plants ability to remove personal care chemicals and contaminants from Minnesota lakes to improve water quality and habitat for fish and other aquatic species.
Robert	Tomlinson	Strategic Land Acquisition, Accelerating Sales and Exchanges	MN DNR	\$500,000	Strategic Land Asset Management oportunities for exchange, sale and acquisition of public lands will be planned for and implemented through comprehensive county based planning and completion of priority transactional activities.
Ulrike	Tschirner	Greenhouse Gas Reduction through Forest Based Bio-Chemicals	U of MN	\$199,280	We will reduce greenhouse gas emissions and enhance carbon sequestration by replacing petroleum based fuels and chemicals with forest based materials, providing additional revenue streams for paper and forest industry.
Kenneth	Valentas	Removing Phosphorous and Endocrine Disruptors from our Waterways	U of MN	\$493,000	Phosphorous and Endocrine Disruptive Chemicals enter and threaten our waterways in the effluent from 500 Minnesota waste treatment plants. Pressurized heating of these effluents to 200C removes the harmful chemicals.
Aaron	Vande Linde	Preserving Old Growth Forests on School Trust Lands	MN DNR	\$2,082,104	DNR administers ~20,000 acres of designated old-growth forests on school trust lands. Legislation requires DNR to compensate the school trust in order to preserve these natural resources on trust land.
Dana	Vanderbosch	State Parks and Trails Land Acquisition	MN DNR	\$2,200,000	Acquire land for habitat and recreation within the statutory boundaries of state parks, state recreation areas, and state trail corridors.
Paul	Venturelli	Better Trout Fishing Through Better Stream Restoration Planning	U of MN	\$615,464	Groundwater inputs to SE Minnesota streams support healthy trout populations and fisheries. We will explore this link (landscape features, food production, trout diet/growth) in support of restoration activities and management.
Paul	Venturelli	A Smartphone Application to Benefit Anglers and Fish	U of MN	\$138,229	Develop a free smartphone application that benefits anglers (information access, instant diary, peer interaction) and fish (informed and objective management via long-term, state-wide data on angler movement, effort, and harvest).
Lawrence	Wackett	Environmentally-Friendly Frac Sand Water Cleanup	U of MN	\$812,428	We will develop environmentally-friendly procedures for the frac-sand mining industry in Minnesota. Our technology detects and destroys the potentially hazardous chemicals used. Water is cleaned and less land used.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Neil	Wilmot	Economic Impact of Frac Sand Mining on Minnesota	Labovitz School of Business and Economics	\$39,967	Investigation of socio-economic impacts from frac sand mining in Minnesota, with particular interest in examining the effects of mining on property values, as well as short-term and long-term employment levels.
Bruce	Wilson	Evaluating Clean Water Legacy: Has the Water Improved?	U of MN	\$388,500	Mining existing and building new foundational data to determine whether Legacy funding is improving water resources and developing restoration BMP effectiveness protocols for WRAPS
Jenny	Winkelman	Reducing Salt Pollution Through Winter Maintenance Training	Mississippi Watershed Management Organization	\$415,900	Training thousands of winter maintenance personnel will reduce road salt (chloride) use by 30%, protecting Minnesota's infrastructure and surface and groundwater. Research and collaborative, longterm planning will recommend future reductions.
Brian	Winter	Invasive Species Control in Grassland Habitats	The Nature Conservancy	\$892,000	Invasive species in critical habitats identified in the Minnesota Prairie Plan will be managed on 80,000 acres through inventory, direct control (herbicide and fire treatments) and habitat reconstruction.
Gary	Wyatt	Innovative Technology to Seed Plants on Streambanks	U of MN	\$189,000	Develop and evaluate an innovative, safe method of establishing perennial vegetation on steep bare streambanks to reduce sediment and erosion to waterways while providing sustainable, economic and environmental benefits.
Donald	Wyse	Developing Forever Green Crops for Minnesotas Agricultural Landscapes	U of MN	\$847,900	This project will accelerate development of economically viable winter annual and perennial crop options for Minnesota farmers to reduce nonpoint pollution and habitat loss currently associated with annual cropping systems.
Dale	Yerger	Solar PV at Minnesotas Residential Environmental Learning Centers	Eagle Bluff, Wolf Ridge, Deep Portage , Long Lake , Audubon Center of the	\$150,000	5 kw institutional solar arrays will be installed at each of six residential environmental learning centers. Online monitoring, site demonstration and recently developed solar curriculum will reach thousands annually.
Diomy	Zamora	Maintaining Expiring CRP Land Benefits Using Integrative Cropping	U of MN	\$467,000	Develop and evaluate alley cropping agroforestry systems as continuous living covers to maintain the environmental benefits gained of expiring CRP lands while providing economic opportunities for farmers and rural communities.
Darrick	Zarling	Biomass Gasification to Produce Electricity for CO2 Reduction	U of MN	\$175,000	This project will provide a platform for distributed renewable electrical generation, allow us to rethink energy distribution, use renewable resources to manage carbon, create local bioenergy ecosystems and sustainable communities.

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First Name	Last Name	Title	Organization	\$ Requested	Summary
Russ	Zastrow	Anoka Rum River Dam Asian Carp Barrier Improvements	City of Anoka	\$150,000	This project will study potential improvements to the Rum River Dam in Anoka to improve its effectiveness as a barrier to Asian carp to protect the Rum River watershed.
Jun	Zhu	Clean Water/Renewable Energy from Beet Waste/Manure	U of MN	\$403,685	Sugar beet processing wastewater and pig manure, the two major pollutants to Minnesota water, can be used together to produce bioenergy (\$9.72 million) and a crop fertilizer (\$5 million) annually.
				\$111,435,013	