



I. PROJECT TITLE: Increasing the Resiliency of Conservation Projects in Minnesota

Resiliency refers to the ability of a system to absorb change and still persist in an intact state. This project will help ensure the public investment in restoration projects and conservation easements by assessing the long-term resiliency of established wetland restoration projects and using this information to develop updated project objectives, performance standards, state seed mixes and guidance on site selection, design and maintenance to conservation professionals with the ultimate goal of maximizing project resiliency.

Minnesota is a leader in the number of restoration and conservation projects protected with perpetual conservation easements each year, but due to a wide range of environmental stressors, including extreme weather events, invasive species, water fluctuations, sedimentation, etc. it is difficult to predict how resilient projects will be after initial establishment and management activities are completed. Current project assessment and monitoring are typically only conducted during the establishment phase (first 3-5years) of projects, so the resilience of both public and private investments has not been assessed.

This project focuses on measuring the resiliency of wetland restoration projects that have conservation easements to learn how to effectively select projects, plan/design and manage for high resiliency. Site conditions before and after restoration, as well as hydrology and plant community integrity measures will be used to assess restored projects, as well as intact reference wetlands, and to develop outreach materials to ensure the resiliency of future projects. With plans to restore over 10,000 acres per year through State and Federal conservation programs, this project will help ensure project success into the future.

This project has two primary goals:

- 1) To improve our understanding of the factors that make projects more capable of persisting over time with lower management inputs, and to make this information available to conservation professionals. This will be accomplished through developing a resiliency assessment method, assessing projects, conducting data analysis, and developing new guidance materials for conservation professionals on how to maximize project resiliency.
- 2) To adopt improved restoration objectives, performance standards and seed mixes to improve the resiliency of future restoration and conservation projects. This goal will be accomplished through an interagency effort (BWSR, DNR, Mn/DOT, MPCA, USFWS, Nature Conservancy, etc.) to review current objectives, performance standards and seed mixes and to develop updated materials based on the findings of this project.

II. DESCRIPTION OF PROJECT ACTIVITIES:

Activity 1: Develop Method for Assessing Project Resiliency **Budget: \$37,000**

The assessment method will use site conditions information before and after restoration that have an influence on the resiliency of projects (years in agricultural production, sedimentation, native seedbank, natural colonization, water fluctuations, invasive species, soil conditions, restoration methods, etc.) to gain an understanding of what stressors have the greatest impact on the initial success and long-term resiliency of individual projects. The assessment also will use hydrology and plant community integrity measures to provide a resiliency score. Restoration/conservation partners from other agencies, universities, non-profits, and the private sector will be involved in reviewing the assessment method.

Outcome	Completion Date
1. Assessment method to measure the resiliency of restoration projects	4/2015



Environment and Natural Resources Trust Fund (ENRTF)

2014 Main Proposal

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Activity 2: Conduct Assessments of Restoration Projects and Reference Wetlands

Budget: \$87,710

Collect background site condition data from before and after restoration and information for reference wetlands. Assess ten wetland restoration projects and ten reference wetlands using the assessment method.

Outcome	
1. Data collection and assessment of ten restored wetlands and ten reference wetlands	11/2015

Activity 3: Data Analysis and Refinement of Assessment Method

Budget: \$40,000

Data from the site assessments will be used to determine which factors make projects more capable of persisting over time with lower management inputs, and which factors lead to higher inputs; the assessment method will be refined based on these findings for use on future projects.

Outcome	Completion Date
1. Summary report including data analysis and refined assessment method	4/2016

Activity 4: Develop Outreach on Planning for Restoration and Conservation Project Resiliency, and

Improved Wetland Restoration Objectives, Performance Standards and Seed Mixes

Budget: \$2,000

(primarily match funded)

Information from this project and other assessment and evaluation efforts focused on improving the resiliency of restoration and conservation projects will be used to develop a comprehensive guide on planning for restoration and conservation project resiliency. Through an interagency effort, information from the project will also be used to develop improved wetland restoration objectives, performance standards and state seed mixes, and this information will be incorporated into BWSR and other agencies regulatory and outreach materials.

Outcome	Completion Date
1. Guide on "Planning for Restoration and Conservation Project Resiliency". Information from the project will be used to update the "Minnesota Wetland Restoration Guide", "BWSR Easement Stewardship Guide", and "BWSR's Native Vegetation Establishment and Enhancement Guidelines". A "Restoring Minnesota" webinar will also be conducted on the topic of "Planning for Project Resiliency"	5/2016
2. Updated wetland restoration objectives and performance standards and updated seed mixes incorporated into agency regulatory and outreach materials.	6/2016

III. PROJECT STRATEGY

A. Project Team/Partners: Dr. Susan Galatowitsch, University of Minnesota Department of Fisheries, Wildlife and Conservation Biology (co-develop assessment method and conduct data analysis), Michael Bourdaghs, Minnesota Pollution Control Agency (review of assessment method), Minnesota Board of Water and Soil Resources (co-develop assessment method, conduct data collection and develop outreach materials). Contracts will be developed with the University of Minnesota, and SWCDs for hydrology monitoring.

B. Timeline Requirements: This project is anticipated to be completed within 36 months.

C. Long-Term Strategy and Future Funding Needs: The primary goal of this project is to improve site selection and the long-term resiliency and effectiveness of future restoration and conservation projects. This project will be complementary to the work that Dr. Susan Galatowitsch is conducting on the assessment of LCCMR restorations as this project will provide a more in-depth consideration of wetland function and will collect valuable information on reference wetlands; and this project will use all of the information collected about past restoration efforts to develop new outreach materials, standards and updated seed mixes. Projects assessed through this effort may be re-assessed every five to ten years into the future.

2014 Detailed Project Budget

Increasing the Resiliency of Restoration and Conservation Projects in Minnesota

Attach budget, in MS-EXCEL format, to your "2014 LCCMR Proposal Submission Form".

IV. TOTAL ENRTF REQUEST BUDGET 3 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
Personnel: <ul style="list-style-type: none"> •Two student summer workers for two seasons (\$40,000). •One student Research Assistant for three seasons (\$24,000). Summer workers and a research assistant will allow BWSR to back-fill monitoring staff and free up their experience and expertise to be involved in this project.	\$ 64,000
Contracts: University of Minnesota Department of Fisheries, Wildlife and Conservaton Biology will be contracted to co-develop the resiliency assessment method with BWSR and to conduct the analyses of data that is field collected. <ul style="list-style-type: none"> •Research Fellow 50% time for one year with salary and fringe for developing the predictive tool (\$35,000) •University travel as part of assessment method development (\$2,000) •Research Fellow 50% time for one year with salary and fringe for data analysis (\$38,000) •University travel as part of data analysis (\$2,000) •Development of a webinar on use of the predictive tool (\$2,000). 	\$ 79,000
Equipment/Tools/Supplies: Field supplies and equipment for conducting site assessments on ten restored wetlands and ten reference wetlands. <ul style="list-style-type: none"> •20 hydrologic data loggers (\$7200) •18 barometric presser loggers (\$5760) •2 mobile mapping tablets (\$3,000) 	\$ 15,960
Travel: This budget item is to cover BWSR staff travel costs to ten restored wetlands and ten reference wetlands around the State. Multiple visits will be needed for each site. <ul style="list-style-type: none"> • Meals/lunches (\$450) • Truck rental and gas for two field seasons (\$7,300) 	\$ 7,750
Additional Budget Items:	\$ -
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 166,710

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ Being Applied to Project During Project Period:	\$ -	
Other State \$ Being Applied to Project During Project Period:	\$ -	
In-kind Services During Project Period: BWSR Vegetation Specialist/landscape Ecologist 10% staff time in kind for 3 years, BWSR Monitoring Coordinator 5% staff time in kind for 3 years, BWSR Monitoring Technician 5% staff time in kind for 3 years, 5% BWSR Hydrologist staff in-kind time for 3	\$74,988	<i>Secured</i>

Increasing the Resiliency of Conservation Projects in Minnesota

This project will improve our understanding of which factors make projects more capable of persisting over time with lower management inputs; and involves the development of new outreach materials, and updated standards and seed mixes



Project in Chisago County that has high resiliency and plant community integrity years after establishment



Project in Renville County with lower resiliency and plant community integrity years after establishment

Project Manager Qualifications:

Dan Shaw is the Minnesota Board of Water and Soil Resource's Vegetation Specialist/Landscape Ecologist. Dan has managed many Federal, state, foundation and local grants as a non-profit Conservation Director as well as at the State of Minnesota. Dan was the project manager for the development of the BWSR Cooperative Weed Management Area Grant Program and the BWSR Native Buffer Cost-share Grant Program. Dan has been involved in agricultural production, invasive species control and native community establishment as part of nursery production, restoration companies, consulting companies and a non-profit organizations for 20 years. Dan has also authored several publications on native vegetation establishment and management and is an Adjunct Assistant Professor at the University of Minnesota.

Key Outreach Publications:

2013 – *Minnesota Wetland Restoration Guide* (co-author)

2013 – *BWSR Easement Stewardship Guide*

2009 – *BWSR Native Vegetation Establishment and Enhancement Guidelines*

2007 – *The Blue Thumb Guide to Raingardens* (co-author)

2003 – *Plants for Stormwater Design* (co-author)

2000 – *Native Vegetation in Restored and Created Wetlands*

Organization Description:

The Minnesota Board of Water and Soil Resources consists of 20 members, including local government representatives that deliver BWSR programs, state agencies, and citizens. The board sets a policy agenda designed to enhance service delivery through the use of local government. Board members, including the board chair, are appointed by the governor to four-year terms.

The Board is the state's administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers.

The BWSR mission is to improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners. Core functions include implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act as it relates to the 41.7 million acres of private land in Minnesota.