



2019 LEGACY FUND RESTORATION EVALUATION REPORT

Technical Panel Findings and Recommendations



REPORT TO THE MINNESOTA LEGISLATURE

Senate Environment and Natural Resources Finance Committee

Senate Environment and Natural Resources Policy and Legacy Finance Committee

House Environment and Natural Resources Finance Division

House Environment and Natural Resources Policy Committee

House Legacy Finance Division

Lessard-Sams Outdoor Heritage Council

Clean Water Council

Parks and Trails Legacy Advisory Committee

Submitted by the Department of Natural Resources and the Board of Water and Soil Resources

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LEGISLATIVE CHARGE

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EXECUTIVE SUMMARY

When Minnesotans passed the Clean Water, Land and Legacy Amendment in 2008, they did so with high expectations. As projects have moved forward throughout the state, so too have efforts to ensure that the projects are meeting those expectations.



This report summarizes work to evaluate Legacy Fund stream restorations. This effort is intended to support project partners in maximizing the impact of Minnesotan’s investment. The Department of Natural Resources (DNR), Board of Water and Soil Resources (BWSR) (agencies), and the restoration evaluation panel (panel), have worked together to improve restorations throughout the state.

Based on an interest from the restoration evaluation panel, funding organizations, state agencies and practitioners, the Legacy Fund Restoration Evaluation Program focused entirely on stream restorations in 2019. These projects are of particular interest because of the evolving nature of stream restoration science, the range of goals addressed in the work, and the high stakes surrounding problems with implementation. To get a more focused picture of Legacy Funded stream restorations, this report focuses only on 63 stream projects evaluated between 2012 and 2019. Future program reports will again include all habitat types.

Stream projects are largely on track to meet stated goals, utilizing current science and complying with applicable laws. Project benefits will be maintained assuming ongoing maintenance. However, the panel did identify areas for improvement and have made recommendations for

future work. DNR, BWSR and project managers have discussed these areas for improvement and continue to work to promote high quality restorations.

Recommendations

STREAM SPECIFIC RECOMMENDATIONS

Improved Planning for Stream Projects—thorough project planning will enable project managers to make informed decisions and improve capacity to achieve desired outcomes

Improved Vegetation for Stream Projects—well established native vegetation is important for project success and will increase the likelihood project benefits will continue over time

ONGOING RECOMMENDATIONS RELATED TO STREAM RESTORATIONS

Improved Project Teams

Improved Documentation

Improved Restoration Training

Evaluation Process Improvement

EVALUATIONS SUMMARY

Restoration Evaluation Program

As statute directs, projects are evaluated relative to: *the law, current science and stated goals*. Statute also directs the panel to determine: *any problems with the implementation and recommendations on improving future restorations*. A high-level summary of these criteria for 2019 is provided on page 6. The evaluation process and detailed project evaluations are provided in Appendix B.

The panel's recommendations are promoted by program staff through reports, presentations, and targeted training. Surveys of project managers are used to track trends in restoration activities and identify opportunities for the Legacy Fund Restoration Evaluation Program to support high quality work.

PROJECT FUNDS

Restorations are completed utilizing three Legacy Funds:

- Clean Water Fund (CWF)
- Outdoor Heritage Fund (OHF)
- Parks and Trails Fund (PTF)



EVALUATIONS SUMMARY CONTINUED

Legacy Fund Stream Restorations

Since 2012 program staff have coordinated evaluations of 63 stream projects (27 CWF, 33 OHF, 3 PTF) and revisited 7 for a total of 70 evaluations.

Thirty-nine of these evaluations were completed in 2019.

EVALUATED PROJECTS

	Clean Water	Outdoor Heritage	Parks and Trails
Complied With Applicable Laws	All projects	All projects	All projects
Utilized Current Science	Predominantly	Predominantly	All projects
On Track to Meet Stated Goals	Predominantly	Predominantly	Predominantly
Problems with Implementation	Some instances	Some instances	Some instances

CURRENT SCIENCE

Most projects evaluated (71%) fully utilized state of the art site specific treatments and best practices within the range of current science. The panel considered instances where there were opportunities to improve the use of current science. These opportunities for improvement could be addressed by:

- Ensuring project goals align with project design to maximize habitat and clean water benefits
- Planting diverse native vegetation targeted to site conditions (see new recommendation)
- Ensuring restoration techniques are executed using best practices

STATED GOALS

Stream projects were implemented to achieve a variety of goals including improving water quality, increasing channel and bank stability, protecting infrastructure, re-meandering channels, improving floodplain connectivity, reestablishing fish passage, improving habitat, increasing biodiversity and improving angling opportunities. The panel determined that most projects evaluated (78%) were on track to meet or exceed their stated goals. This was similar to the rate for other types of restoration projects in the state (81%). Ongoing monitoring and possible maintenance may be required for these projects to continue to provide habitat and other benefits.



PROBLEMS WITH IMPLEMENTATION

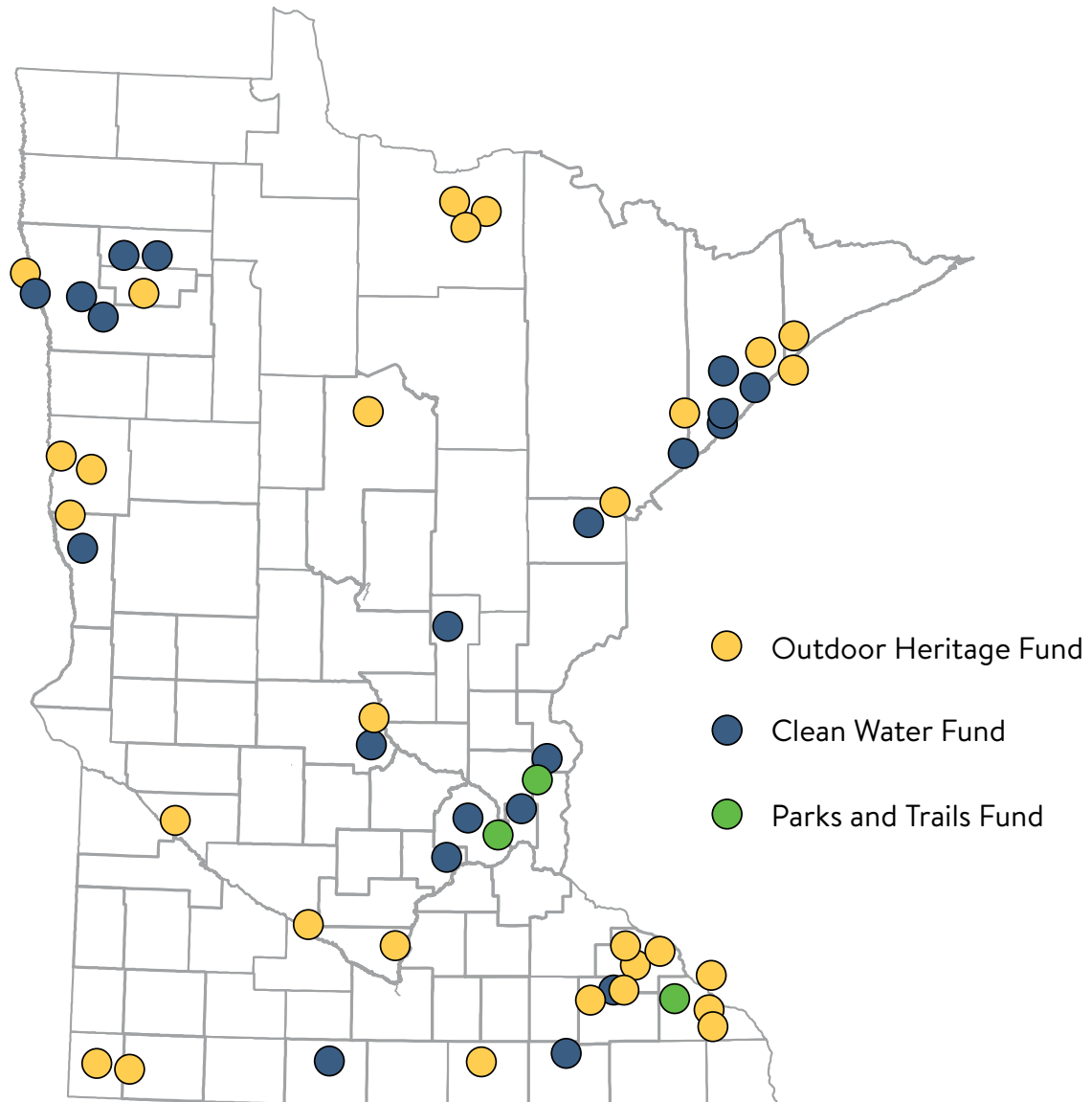
Restoration projects take place in dynamic and complex landscapes. Many projects (60%) were implemented without problems. While not all problems can be predicted or prevented, the panel identified situations where problems arose that could be avoided in the future. These problems may be avoided in future projects by applying the following best practices:

- Providing detailed information in restoration plans
- Having experienced experts provide construction oversight
- Sufficient treatment of invasive species during site preparation



STREAM PROJECTS EVALUATED 2012-2019

Dots may represent more than one stream project site. A list of projects evaluated is available in Appendix B.



Factors of Success

There are common characteristics that successful stream restoration projects share. Incorporating these characteristics into future projects will improve restorations.

1 Making a Plan

Knowing the root causes of problems

Having clear, common goals among stakeholders

Having community support

2 Designing the Project

hydrologists

ecologists

geomorphologists

engineers

Collaborating and getting feedback

Getting the details down on paper

Bringing diverse, professional perspectives to the table



3 Doing the Work

Hiring trained, experienced professionals



Having construction oversight guiding installation



Collaborating with a team if the plan changes



4 Maintaining the Benefits

Having someone in charge of monitoring

Having resources to respond if needed

Having time to do the monitoring



5 Moving Forward

Evaluate what's working

Share stories of success and challenges

Adjust as we learn

RESTORATION EVALUATION PANEL RECOMMENDATIONS

Improved Planning for Stream Projects

CONTINUED PANEL RECOMMENDATION—FIRST DETAILED IN 2018 REPORT:

Project managers should complete consistent project planning for all stream projects. This information is particularly valuable for stream and river restorations due to the complexity, cost, and risks associated. This consistent project planning process should include:

- Identifying problems (e.g. stressors or impairments)
- Articulating specific project goals
- Designing strategies to address identified problems and specific goals based on a stream assessment
- Budgeting funds adequate to achieve goals
- Documenting project partner capacity to execute and maintain the project as well as specific roles of project partners

The level of assessment and planning detail should be proportional to the scope, scale, and complexity of the restoration and be completed before work begins on the ground. Preparation and thoughtful application of this information will enable project managers to make informed decisions throughout the project and

improve the capacity to achieve desired outcomes. This level of project planning prior to construction will result in better stream restorations in the state.

ROLES OF PROJECT PARTNERS

- Engage state agencies, local government units, and other technical experts early in, and throughout, the project planning phase
- Secure financial, staff and/or contract resources to complete appropriate project planning

ROLE OF STATE AGENCIES

- Identify and promote best practices in consistent project planning detail





Improved Vegetation for Stream Projects

NEW PANEL RECOMMENDATION.

Well established vegetation is critical for the long-term success of stream projects. While cover crops can provide temporary stabilization, establishing native vegetation takes planning and diligent maintenance especially in dynamic stream systems that are subject to frequent flooding. Identifying project partners responsible for planning, installing, monitoring, and maintaining vegetation will increase the likelihood project benefits will continue over time.

ROLES OF PROJECT PARTNERS

- Establish and apply performance standards for vegetation
- Consistently apply BWSR's Native Vegetation Establishment and Enhancement Guidelines focusing on diverse native vegetation
- Incorporate climate resiliency into vegetation planning

ROLE OF STATE AGENCIES

- Provide science-based, up-to-date guidance on the use and maintenance of native vegetation

RESTORATION EVALUATION PANEL RECOMMENDATIONS CONTINUED



Improved Project Teams

CONTINUED PANEL
RECOMMENDATION—FIRST
DETAILED IN 2015 REPORT

More comprehensive project teams should be used to improve ecological outcomes and better meet Fund goals. Stream restorations benefit from the expertise of diverse professional experience in fields like: geomorphology, hydrology, plant and animal ecology, construction site management, and engineering. Bringing more sets of expertise to the table, will ideally: minimize instances of non-native plant use, identify plan components with high risk of limited success, help plan contingencies for potential challenges, and broaden project goals. Project components sometimes require modification during instillation. It is important that project partners identify contingencies and engage appropriate expertise from a project team during planning and when modifications are needed.

ROLES OF PROJECT PARTNERS

- Use multidisciplinary project teams appropriate to project scale/complexity
- Engage state agency, local government units, and technical experts early in the planning phase

ROLES OF FUNDING ORGANIZATIONS

- Include project team requirements in requests for proposals
- Continue to make staff available for consultations

ROLE OF STATE AGENCIES

- Consult with project partners regarding technical specifications



Improved Documentation

CONTINUED PANEL
RECOMMENDATION—FIRST
DETAILED IN 2012 REPORT

Documentation is critical for understanding, tracking, and achieving successful restorations. Documenting clear outcome based goals is crucial for establishing a common understanding and tracking progress. Project managers should clearly state both ecologically based goals and other goals that may exist for the project (e.g. citizen engagement) and note how they may adjust methods or outcomes. The panel recommends that the agencies work to improve documentation through targeted trainings and grant guidance for project managers.

ROLES OF PROJECT MANAGERS

- Consistently document restoration project data in a simple and accessible format
- Ensure that details of implemented actions are recorded and coupled with the initial plan
- Designate one project partner to permanently store project data

ROLE OF FUNDING ORGANIZATIONS

- Develop checklist of key project data to be archived by project partners



RESTORATION EVALUATION PANEL RECOMMENDATIONS CONTINUED



Improved Restoration Training

CONTINUED PANEL RECOMMENDATION— FIRST DETAILED IN 2012 REPORT

Continued development and implementation of training is essential to promote best practices and improve restorations. The agencies and panel will identify specific opportunities to develop and disseminate trainings. It is recommended that the agencies track and report progress in integrating evaluation recommendations and lessons learned into new and existing trainings.

ROLES OF THE LEGACY FUND RESTORATION EVALUATION PROGRAM

- Compare needs identified from evaluations with existing trainings
- Identify gaps and opportunities for targeted trainings
- Integrate program findings and recommendations into existing trainings



Evaluation Process Improvement

CONTINUED PANEL RECOMMENDATION— FIRST DETAILED IN 2012 REPORT

The Restoration Evaluation Program should implement strategic processes to achieve the stated goal of improving future restorations. The panel has made recommendations including revisiting evaluated sites, producing case studies, tracking factors of success, and tracking panel evaluation recommendations.

ROLES OF THE LEGACY FUND RESTORATION EVALUATION PROGRAM

- Revisit evaluated sites to inform the accuracy of initial assessments and refine assessment methods
- Produce stories highlighting decision making, challenges, and successes in project implementation
- Track environmental, social and operational factors that influence success of projects to guide future policy and practice
- Track panel recommendations through project data and project partner surveys to gauge application of recommended actions



IMPROVING FUTURE RESTORATIONS

Maximizing the benefits of Legacy Funded restorations requires evaluating projects to learn what's working, engaging experts to promote current science, and communicating recommendations so they can be implemented.

Evaluating Projects

The restoration evaluation panel asked to focus on stream projects in 2019. State agencies and funding organizations were also interested in learning more about these projects.

In response, we visited 39 stream restorations in 2019 and combined the information with previous stream evaluations. Based on the information collected in these evaluations, the panel made several specific recommendations to improve stream restorations.

Engaging Experts

To understand how the Legacy Fund Restoration Evaluation Program can help support practitioners, we conducted a project partner survey asking people what they need to do their best work.

Practitioners wanted more in-person trainings to learn from experts. One way our program meets this need is by helping coordinate training opportunities such as the Pollinators in Prairie Restorations field day where practitioners learned cutting-edge science.





Communicating with Stakeholders

For panel recommendations to make a difference, they need to be communicated to the stakeholders engaged in planning, funding, and implementing restorations in the state.

We work to increase the reach of the panel's recommendations by engaging targeted stakeholders. For example at the 2019 BWSR Academy we held roundtable discussions about the benefits of adopting panel recommendations in restorations on easements.



Program Activities 2012-2019



146 projects evaluated
(all habitat types)



166 experts engaged



>2,500
stakeholders reached



CWF PROJECT STORY



Mille Lacs Soil and Water Conservation District— Restoring the West Branch of the Rum River

CLEAN WATER FUND

When the Clean Water, Land and Legacy Amendment became available, Mille Lacs SWCD was ready to jump in to help landowners in the county learn about and utilize resources to improve water quality. Part of the plan was to work with a landowner to restore and stabilize a quickly eroding bend in the West Branch of the Rum River. Every year about five feet of the steep bank would wash away polluting the river with sediment and threatening to cut the owner off from the only access to his home.

Working with the owner and engineers, Mille Lacs SWCD staff came up with a plan to bioengineer the bank to provide long-term stability, reduce erosion, and save the driveway. After bringing out excavators and terracing the slope, crews installed tree revetments, laid down erosion fabric, seeded, and planted nearly 7,000 plant plugs and shrub stakes. Almost immediately, floods threatened to wash everything away, but the project held and today the bend in the river is still stable and abuzz with pollinators. Now the SWCD has set their sights on Mille Lacs Lake. They plan to continue with the model to build connections and empower landowners to take action where they can.

RESTORATION HIGHLIGHTS

- Stream restoration techniques guided by a thorough site assessment and current science
- Multidisciplinary project team including landowner used to maximize multiple benefits
- Documented prioritized, targeted and measurable restoration goals
- Diverse native vegetation used for long term stability and habitat benefits



After





Koochiching Soil and Water Conservation District— Collaborations along the Rat Root River

OUTDOOR HERITAGE FUND

In the 1930s the Rat Root River was swarmed by thousands of spawning walleye each spring. Eggs would hatch and walleye fry would filter into Rainy Lake supporting a thriving fishery. By the 1970s there was a tenfold decrease in fish spawning in the Rat Root River.

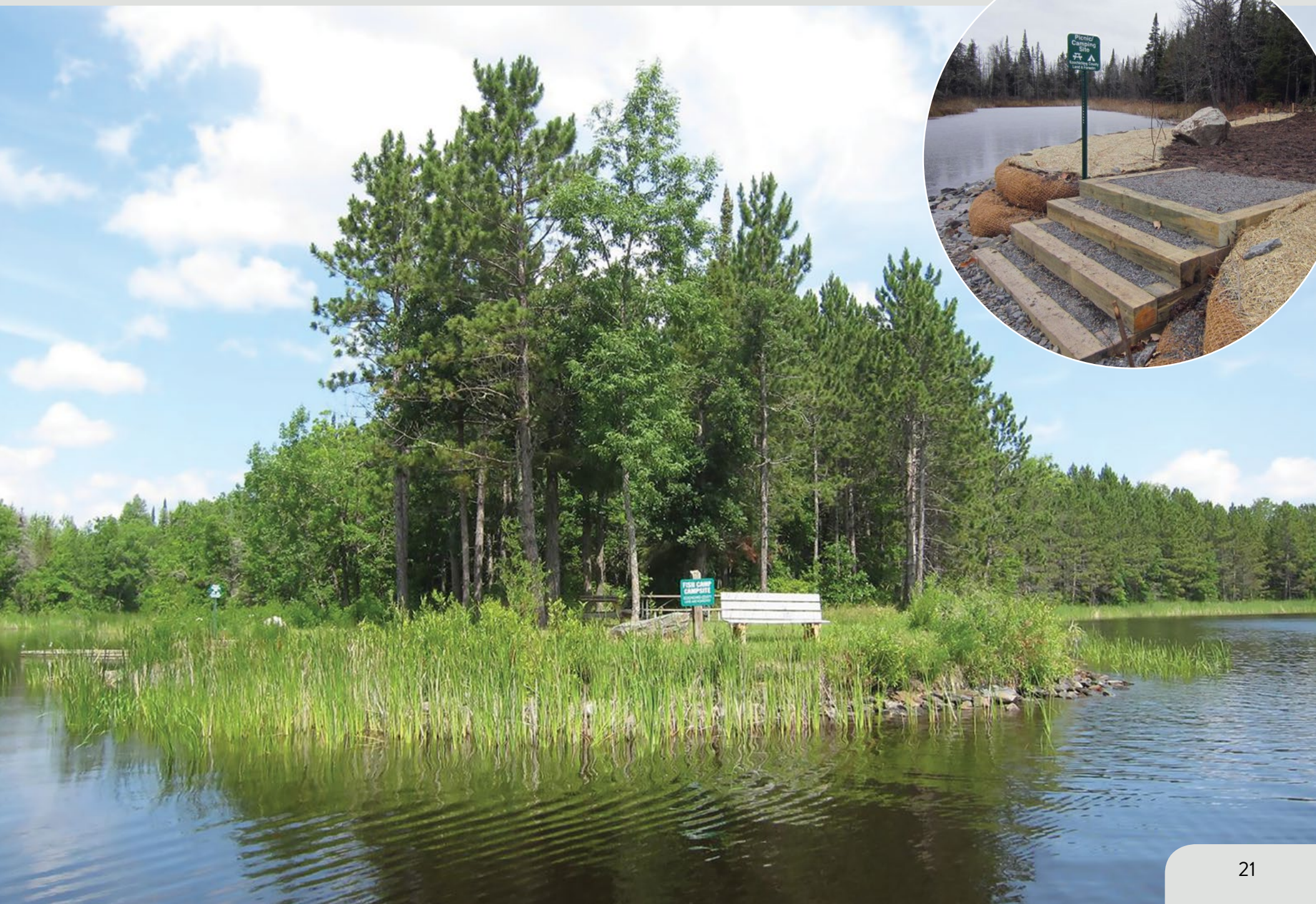
Working together the Rainy Lake Sportfishing Club, local DNR staff, and the Koochiching SWCD set out to use Conservation Partner Legacy Grants to restore spawning in the Rat Root River. Phase one of the project removed channel spanning log jams that were blocking fish from getting to suitable spawning habitat.

Phase two continued to open the channel, stabilized shorelines to reduce erosion, and installed spawning riffles for fish. Phase three of the project expanded these efforts three miles further into the Rat Root River.

Today the Minnesota Department of Natural Resources is watching the riffles for walleye eggs, and more importantly to see if those eggs are hatching into fry. Knowing if the work done along the Rat Root is resulting in bringing walleye back is critical in strategically and efficiently using Legacy Funds in the future.

RESTORATION HIGHLIGHTS

- Multidisciplinary project teams used to strategically work to address root causes of problems
- Comprehensive and ongoing documentation of project goals, methodology and outcomes
- Monitoring data being collected to guide future projects
- Long-term management is practical for meeting proposed outcomes



PTF PROJECT STORY



Ramsey County—Addressing recreational use and water quality along the Sucker Channel

PARKS AND TRAILS FUND

The shoreline of the Sucker Channel within Vadnais–Sucker Regional Park in northern Ramsey County is a heavily used fishing and recreational area. After decades of wear, the paved paths that lined the banks of the Channel were falling into the water. The Park’s mowed grass and paved paths also allowed rainfall to carry pollutants directly to the Channel that importantly serves as the City of St. Paul’s drinking water supply for more than 400,000 people.

In an effort to protect the channel from continued degradation and improve habitat, Ramsey County Parks, Soil and Water Conservation Division in collaboration with the Vadnais Lakes Area

Watershed Management Organization developed plans to replace the degraded pathways and turf grass with a 550-foot strip of native vegetation to slow down and soak up rainfall from the park. As part of the design, park planners also provided handicap-accessible paths and fishing access points to prevent trampling damage to the new plantings.

Completed in 2018, the project effectively stabilizes the shoreline, provides a vegetated buffer for rainwater, and creates new pollinator habitat with flowering native plants. Project partners have developed a maintenance plan to ensure the continued success of this project’s multiple benefits.

RESTORATION HIGHLIGHTS

- Multidisciplinary project team used to protect water, create habitat and provide recreation
- Long-term management is practical for meeting proposed outcomes
- Diverse native vegetation used for long term stability and habitat benefits





APPENDIX A: LEGISLATIVE CHARGE AND STATUTORY REQUIREMENTS FOR THIS REPORT



Parks and Trails Fund: M.S. 85.53, Subd. 5.

RESTORATION EVALUATIONS.

The commissioner of natural resources may convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two other representatives with expertise related to the project being evaluated. The commissioner may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the commissioner may assign a coordinator to identify a sample of up to ten habitat restoration projects completed with parks and trails funding. The coordinator shall secure the restoration plans for the projects specified and direct the technical evaluation panel to evaluate the restorations relative to the law, current science, and the stated goals and standards in the restoration plan and, when applicable, to the Board of Water and Soil Resources' native vegetation establishment

and enhancement guidelines. The coordinator shall summarize the findings of the panel and provide a report to the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the parks and trails fund. The report shall determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and, if necessary, recommendations on improving restorations. The report shall be focused on improving future restorations. Up to one-tenth of one percent of forecasted receipts from the parks and trails fund may be used for restoration evaluations under this section.

Outdoor Heritage Fund: M.S. 97A.056, Subd. 10.

RESTORATION AND ENHANCEMENTS EVALUATIONS.

The commissioner of natural resources and the Board of Water and Soil Resources must convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two representatives with expertise in the project being evaluated. The board and the commissioner may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration or enhancement, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the board and the commissioner may assign a coordinator to identify habitat restoration or enhancement projects completed with outdoor heritage funding. The coordinator shall secure the plans for the projects specified and direct the technical evaluation panel to evaluate the restorations and enhancements relative to the law, current science, and the stated goals and standards in the project plan and, when applicable, to

the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. The coordinator shall summarize the findings of the panel and provide a report to the chair of the Lessard-Sams Outdoor Heritage Council and the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the outdoor heritage fund. The report shall determine if the restorations and

enhancements are meeting planned goals, any problems with the implementation of restorations and enhancements, and, if necessary, recommendations on improving restorations and enhancements. The report shall be focused on improving future restorations and enhancements. At least one-tenth of one percent of forecasted receipts from the outdoor heritage fund must be used for restoration and enhancements evaluations under this section.



Clean Water Fund: M.S. 114D.50, Subd. 6.

RESTORATION EVALUATIONS.

The Board of Water and Soil Resources may convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two representatives with expertise related to the project being evaluated. The board may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the board may assign a coordinator to identify a sample of habitat restoration projects completed with clean water funding. The coordinator shall secure the restoration plans for the projects specified and direct the technical evaluation panel to evaluate the restorations relative to the law, current science, and the stated goals and standards in the restoration plan and, when applicable, to the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. The coordinator

shall summarize the findings of the panel and provide a report to the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the clean water fund. The report shall determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and, if necessary, recommendations on improving restorations. The report shall be focused on improving future restorations. Up to one-tenth of one percent of forecasted receipts from the clean water fund may be used for restoration evaluations under this section.



APPENDIX B: PROGRAM PROCESS AND PROJECT EVALUATIONS

Appendix B is available online at:
www.dnr.state.mn.us/legacy/restoration-evaluation.html





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