

**Environment and Natural Resources Trust Fund
2014 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 070-C

Reducing Salt Pollution Through Winter Maintenance Training

Category: C. Environmental Education

Total Project Budget: \$ 415,900

Proposed Project Time Period for the Funding Requested: 3 Years, July 2014 - June 2017

Summary:

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.

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Sponsoring Organization: Mississippi Watershed Management Organization

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Location

Region: Statewide

County Name: Statewide

City / Township:

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%



PROJECT TITLE: Reducing Salt Pollution through Winter Maintenance Training

I. PROJECT STATEMENT

The Problem: Road salt (chlorides), at levels as low as one teaspoon in five gallons of water, kills aquatic life. At higher levels, salt is toxic to wildlife and humans. Salt, which accumulates year-after-year, pollutes Minnesota’s groundwater, lakes and streams (Fig. 1). Each winter 350,000 tons of road salt is used for de-icing in the Twin Cities Metro Area alone, and contaminates billions of gallons of water. Every ton of salt causes \$1,500 in damages to infrastructure, such as the iron and concrete on bridges and roadways (Sohanghpurwala 2008). The MN Pollution Control Agency (MPCA) is acting proactively to address salt pollution on a regional scale, because all lakes and streams in the Metro Area are threatened or already contaminated by road salt.

Road salt used for winter maintenance accounts for more than 75% of salt pollution in Metro Area waters; the second leading source of salt pollution, about 20%, is from water softeners (Fig. 2; Heinz, Novotny et al. 2008). After salt dissolves in water, it is expensive and impractical to remove. The only practical management strategy for salt pollution is prevention. Reducing the amount salt used (granular and liquid, or brine) is best accomplished by teaching salt applicators to use best practices. Funding for winter maintenance training, to this point, has been unstable, fragmented, and mostly eliminated. Federal grants, combined with in-kind matches from over fifty organizations, have sustained training thus far; a new approach is needed to continue and expand programs with proven track records.

Training Works! Since 2005, a Level 1 Minnesota Winter Maintenance and Certification Training has provided information about best practices to over 3,500 public and private road salt applicators from across Minnesota. Using science and new technology, this four-hour training results in verifiable behavior change and significant road salt reductions, without compromising safety (numerous examples of over 50%; Fig. 3). Minnesota is regarded as an international leader in reducing winter sources of salt pollution. More than five states and Canada currently use content from Minnesota’s Level 1 training.

Advanced Trainings and Research Needed: By working with a wide network of partners and leveraging in-kind resources, in three years this project will:

- Certify up to 2,500 new trainees, meeting a growing demand for Level 1 classes;
- Train up to 400 supervisors and managers in a new Level 2 training class;
- Research ways to reduce salt discharges from water softeners; and
- Recommend long-term strategies for continuing winter maintenance education, addressing salt loading from water softeners, and emerging chloride issues.

Preventing pollution is considerably cheaper and more effective at protecting and improving water quality than trying to treat pollution after-the-fact. This project will 1) protect and improve groundwater, rivers and lakes from the negative impacts of road salt, and 2) identify ways to reduce salt from softeners.

I. DESCRIPTION OF PROJECT ACTIVITIES:

Activity 1: Train winter maintenance personnel to reduce the use of road salt **Budget: \$326,150**

This project will teach 40–60 Level 1 classes to public and commercial salt applicators (up to 2,500 trainees) statewide; develop a new, Level 2 class; and teach 200 to 400 maintenance supervisors and managers to use a computer-based tool to choose and prioritize best practices, and document salt reductions and cost savings.

Outcomes	Completion Date
Reduce road salt use by 30% through training up to 2,900 winter maintenance personnel in Level 1 and Level 2 classes	May 2017



Environment and Natural Resources Trust Fund (ENRTF)

2014 Main Proposal

Project Title: "Reducing Salt Pollution through Winter Maintenance Training"

Reduce salt wasted (such as improved storage, loading and hauling practices)	May 2017
Revise and create new training content	May 2017
Increase public access to MPCA certified contractor lists to inform consumer choice	May 2017

Activity 2: Research ways to reduce salt discharging from water softeners

Budget: \$46,000

Collect data (literature review, assess current practices, conversations with industry) to understand which cities in the Metro Area soften water, characterize households that soften water, examine technologies and costs.

Outcomes	Completion Date
Understand the scope of local government and household water softening practices, and barriers to reducing salt in discharge water	May 2017
Recommend ways to reduce salt from softeners with potential savings to consumers	May 2017

Activity 3: Coordinate stakeholder input and recommendations: evaluate project results, reporting.

Budget: \$43,750

Form a technical advisory committee of experts representing public and private sectors to: provide 1) scientific, maintenance and industry expertise, 2) develop a long-term strategy and fiscal plan for continuing winter maintenance education; and 3) initiate actions that reduce salt from softeners. University of Minnesota staff will evaluate the trainings, using the computer-based tool, and calculate salt reductions.

Outcomes	Completion Date
Input from stakeholders is thoughtfully integrated into project at every step	May 2017
Evaluations provide formative feedback, report results and make recommendations	June 2017
Develop a long-term strategy for advancing and funding efforts to prevent salt pollution	June 2017

Funding Total: \$419,500

III. PROJECT STRATEGY

A. Partners Funded by this request: The *Mississippi Watershed Management Organization (MWMO)* will manage the project, oversee contractors, provide technical expertise and training facilities. The MWMO has proactively developed nonstructural best management practices with statewide success, e.g., Level 1 Summer Maintenance Training Program, and two winter maintenance training videos. *University of MN* will provide technical expertise and design and implement evaluations. **In-kind Support:** *MPCA* will fund computer-based tools, manage the website and certification program, and print manuals. *BWSR and MPCA* will provide technical expertise, and training and videoconferencing facilities. *MN Cities Stormwater Coalition (an organization of the League of MN Cities)* will partner to disseminate information, promote classes and provide technical expertise. These past partners have worked together for years to implement winter maintenance trainings: watershed management organizations and districts, cities, counties, non-profits, state agencies (MNDOT, MDA, MNDOT), University of MN (Extension, Center for Transportation Studies), private businesses, and maintenance organizations. In-kind commitments will be confirmed when funded is granted and will be managed in ways similar to the past.

B. Timeline Requirements

Year one: Develop new, Level 2 training. *Years one–three:* Hold trainings, meet with technical advisory committee, and research water softeners. *Year three:* Evaluate, make recommendations.

C. Long-Term Strategy and Future Funding Needs

This project will give rise to a long-term collaborative and self-sustaining strategy for advancing efforts to protect Minnesota’s waters from salt pollution. Future funding needs and sources will be clearly identified in a fiscal plan.

2014 Detailed Project Budget

IV. TOTAL ENRTF REQUEST BUDGET 3 years

BUDGET ITEM	AMOUNT	
Personnel: Project manager, .20 FTE for 3 years (80%=\$43,200 salary+ 25%=\$10,800 benefits)		\$54,000
Contracts: 1. Technical consultants and instructors (@\$65–100 per hour) to teach 40–60 Level 1 classes; develop, then teach 22, Level 2 classes using computer-based tools, rent computer labs, advise technical content, manage committees . Competitive process.	\$288,250	
2. Facilitator for high level strategic planning (5 meetings*1000=\$4,000). Competitive process.	\$4,000	
3. Consultant to evaluate new trainings (3*\$5000 each=\$15,000); University of MN.	\$15,000	
4. Consultant (@ \$100 per hour) to research reducing salt discharge from water softeners. Competitive process.	\$36,000	
5. Youth employment program to collate 3,000 manuals (@7.25 per hour+FICA)	\$7,500	
Subtotal Contracts:		\$350,750
Equipment/Tools/Supplies: \$4,800 for 3,000 binders and tabs@\$1.60 each \$5,600 office supplies, handouts & copies for 60+ trainings and 12+ meetings \$750 for supplies for technical advisory meetings, 5@\$150 each		\$11,150
Travel:		\$0
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =		\$415,900

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ Being Applied to Project During Project Period:	\$ -	
Other State \$ Being Applied to Project During Project Period: 2013 Clean Water Funds through the MPCA to develop computer-based tool for calculating salt reductions and money savings.	\$ 94,000	secured
In-kind Services During Project Period: \$185,720 from State Partners (MPCA, BWSR): Staff and Information Technology support for managing certification program, website, videoconferencing; participating on committees, printing 3000 manuals \$18,510 from MWMO: promote and hold trainings, provide training room and supplies, participate on technical committee \$64,340 match from Partners: for training locations, recruitment/registration of trainees, training supplies, participating on advisory committee, providing trainers (will use a similar match formula as that used for 319 grants (see below))	\$ 268,570	\$204,230 committed \$64,340 pending, partner match to be solicited
Funding History: 2005 (\$12,000) Local Technical Assistance Program (UMN Center for Transportation Studies, DOT, MN Road Research Board) 2005 (\$50,000) MPCA Pollution Prevention grant 2006 (\$232,100 plus \$105,000 Federal 319 grant 2009 (\$343,230 plus \$155,000in-kind) Federal 319 grant 2010 (\$15,000 plus \$5,000 inkind) MWMO, UMN-Landcare Department, PCA 2011 (\$27,000) MWMO Education Funds	\$679,000 (>\$520,000 in-kind)	

* DOT (MN Department of Transportation; UMN (University of Minnesota)

Figure 1. Increasing salt concentrations in lakes in the Twin Cities Metro Area (MPCA 2012).

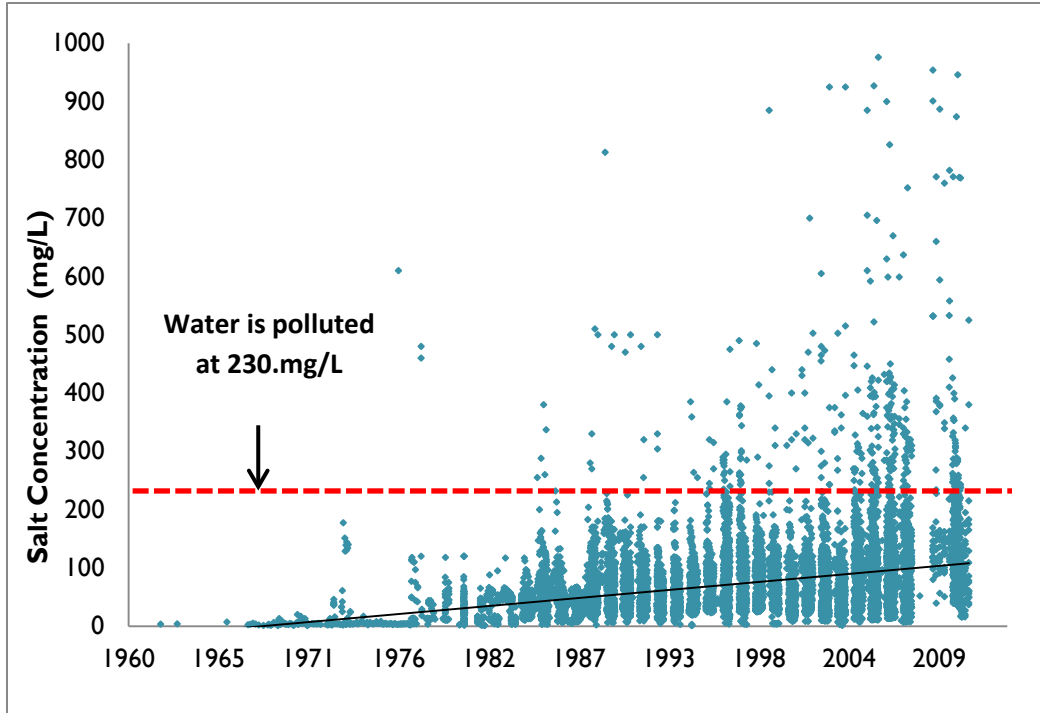
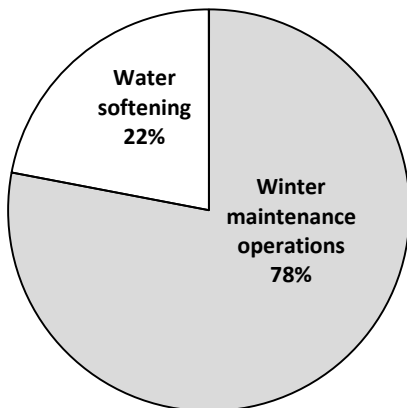


Figure 2. Sources of salt pollution in the Twin Cities Metro Area (Heinz, Novotny et al. 2008).



Training Results Example

Ridgedale Mall
Parking Lot/ Sidewalks/ Service Roads
80 acres BIG!

Before training they would typically apply **10-12 tons** of rock salt following a one day storm event

After training they have been concentrating on mechanical removal and are applying **3-5 tons** of rock salt following a one-day storm event.

Source: MPCA 2010

Figure 3. Voluntary salt reductions by private contractors following Level 1 Training at Ridgedale Mall in Minnetonka, MN (MPCA 2010).

PROJECT MANAGER QUALIFICATIONS

Jenny Winkelman, Education & Outreach Manager. Ms. Winkelman has more than 20 years of natural resource experience related to freshwater research, monitoring and habitat restoration in Minnesota and Wisconsin and holds a Master of Science degree from the Institute for Nature Conservation Research, Tel Aviv University.

Ms. Winkelman has both technical knowledge and experience developing new programs, managing complex projects and building strategic partnerships. She developed and currently manages the MWMO's Education and Outreach Program (2005 to the present, \$250,000 annual budget) and supervises the Stewardship Fund Grant Program (\$250,000 annual budget).

She is voluntarily certified in *Level I Snow and Ice Best Management Practices*. Examples of her collaborative work at the MWMO include:

- Production and project management of *Winter Maintenance for Small Sites*, a training video for seasonal employees developed in partnership with the University of MN and the PCA.
- Production and project management of *Improved Winter Maintenance: Good Choices for Clean Waters* a video for residents aired on local cable television networks and the internet.
- Current member on the PCA Twin Cities Metro Area Chloride project's Education and Outreach and Implementation committees.
- Initiating and managing the development of the MPCA training, manual and certification program *Turfgrass Maintenance with Reduced Environmental Impacts*.
- Member of the Education Technical Work Team for the *Minnesota Water Sustainability Framework* commissioned by the 2009 Legislature.

Other:

- From 1998–2001, Ms. Winkelman developed the DNR's then-new, statewide shoreline habitat restoration program, based on research, projects, grants and developing needed infrastructure and technical guidance.

ORGANIZATION DESCRIPTION

The Mississippi Watershed Management Organization (MWMO) is a special unit of government organized around the land area and stormwater infrastructure draining into 15 miles of the Mississippi River, which includes the cities of Columbia Heights, Hilltop, Fridley, Lauderdale, Minneapolis, Saint Anthony Village, Saint Paul, and lands owned by the Minneapolis Park and Recreation Board.

The MWMO provides for the long-term management of water and natural resources through science-based approaches to planning, stormwater monitoring, structural improvements and project implementation. The MWMO's Education and Outreach Program develops and implements activities targeting key audiences to prevent nonpoint source pollution and foster environmental stewardship. The developed and populated nature of this urban area intensifies the use of road salt to maintain transportation infrastructure and the resulting impact of salt on its water resources and infrastructure. Since 2005, the MWMO has dedicated significant time and resources to developing and holding trainings for the operations and maintenance and landscape industries.