



Smart Salting for Minnesota's Waters

Brooke Asleson | Chloride Program Coordinator

Minnesota Pollution Control Agency

Meet Brooke

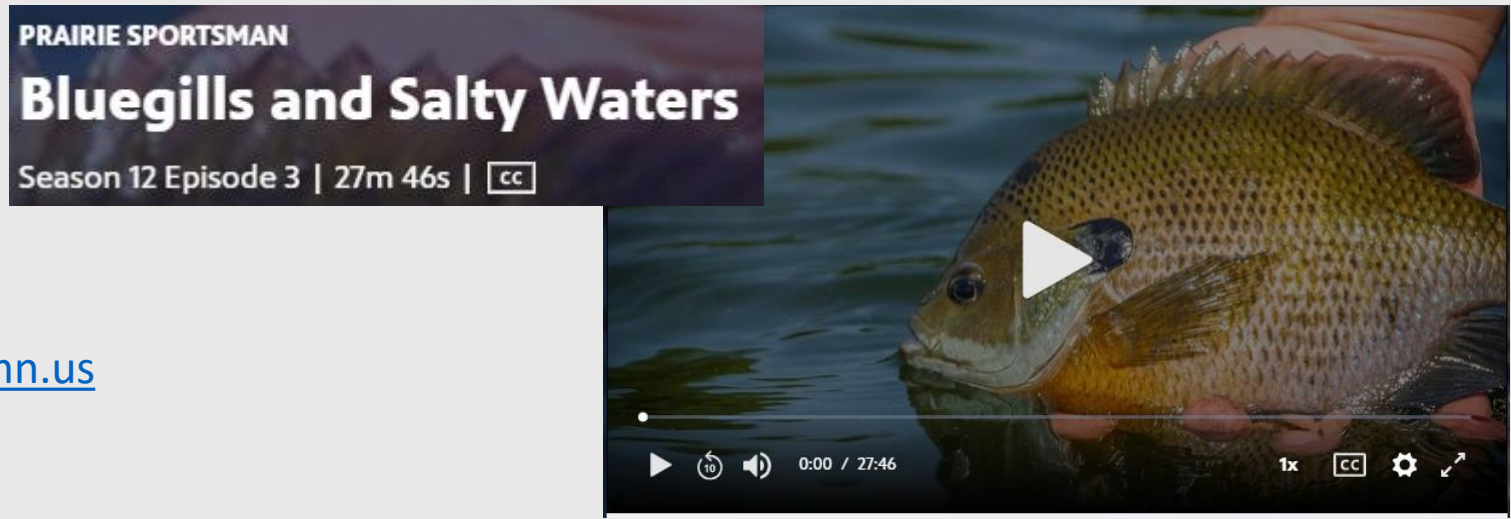


Brooke Asleson

Chloride Program
Coordinator

brooke.asleson@state.mn.us

 [@brookeMPCA](https://twitter.com/brookeMPCA)



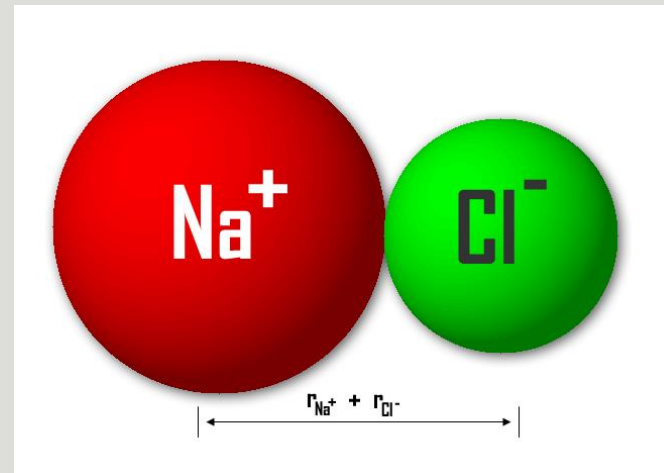
<https://video.pioneer.org/video/bluegills-and-salty-waters-ai334t/>

I began my career at the MPCA in 2007 in the Watershed program working on water quality projects, managing grants to local partners and serving as MPCA contact for local partners on water issues. This is where I first began working on addressing chloride pollution. In 2017 I moved into the new role of Chloride Coordinator to create a Chloride Reduction Program and integrate chloride reduction across the MPCA. The chloride reduction program includes the statewide Smart Salting training program and assistance programs. Prior to working at the MPCA I completed my Master's degree at the University of Minnesota in Water Resources Science.

<https://www.pca.state.mn.us/water/chloride-salts>

What is Salt?

- Salts are compounds that contain chloride
 - Sodium Chloride (rock salt)
 - Magnesium Chloride
 - Calcium Chloride
 - Potassium Chloride



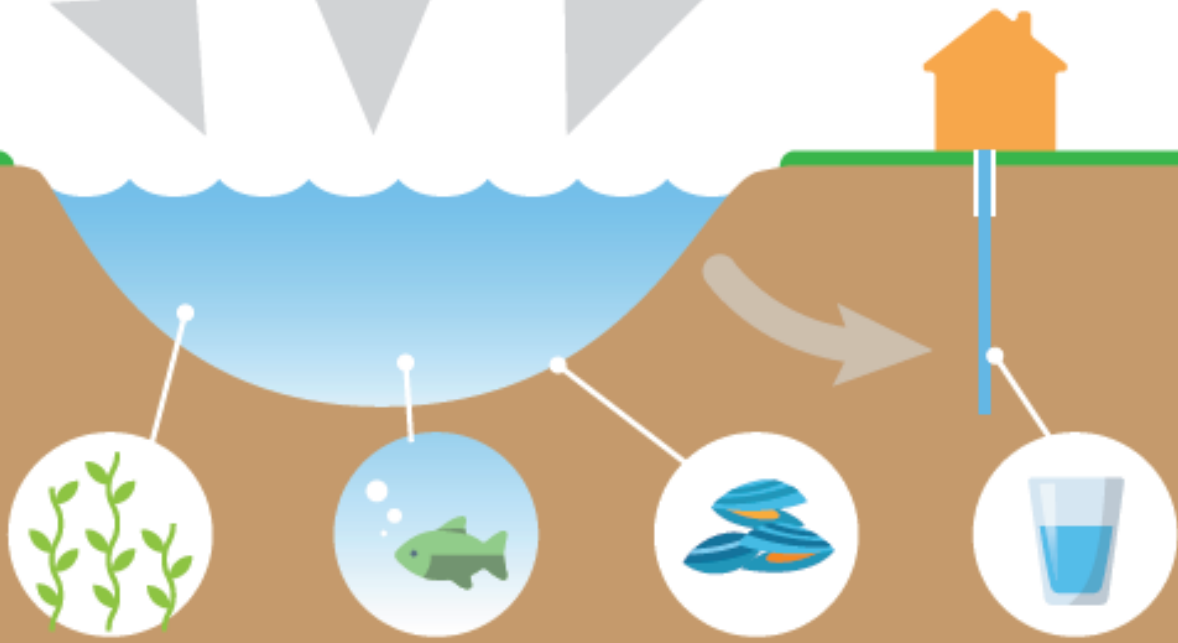
- Once chloride bonds with H_2O the only way to separate is reverse osmosis, it will not breakdown naturally

Where is all this salt coming from?

Salt pollution comes from several sources



Too much salt is bad for aquatic life and drinking water



Sources of Chloride in MN

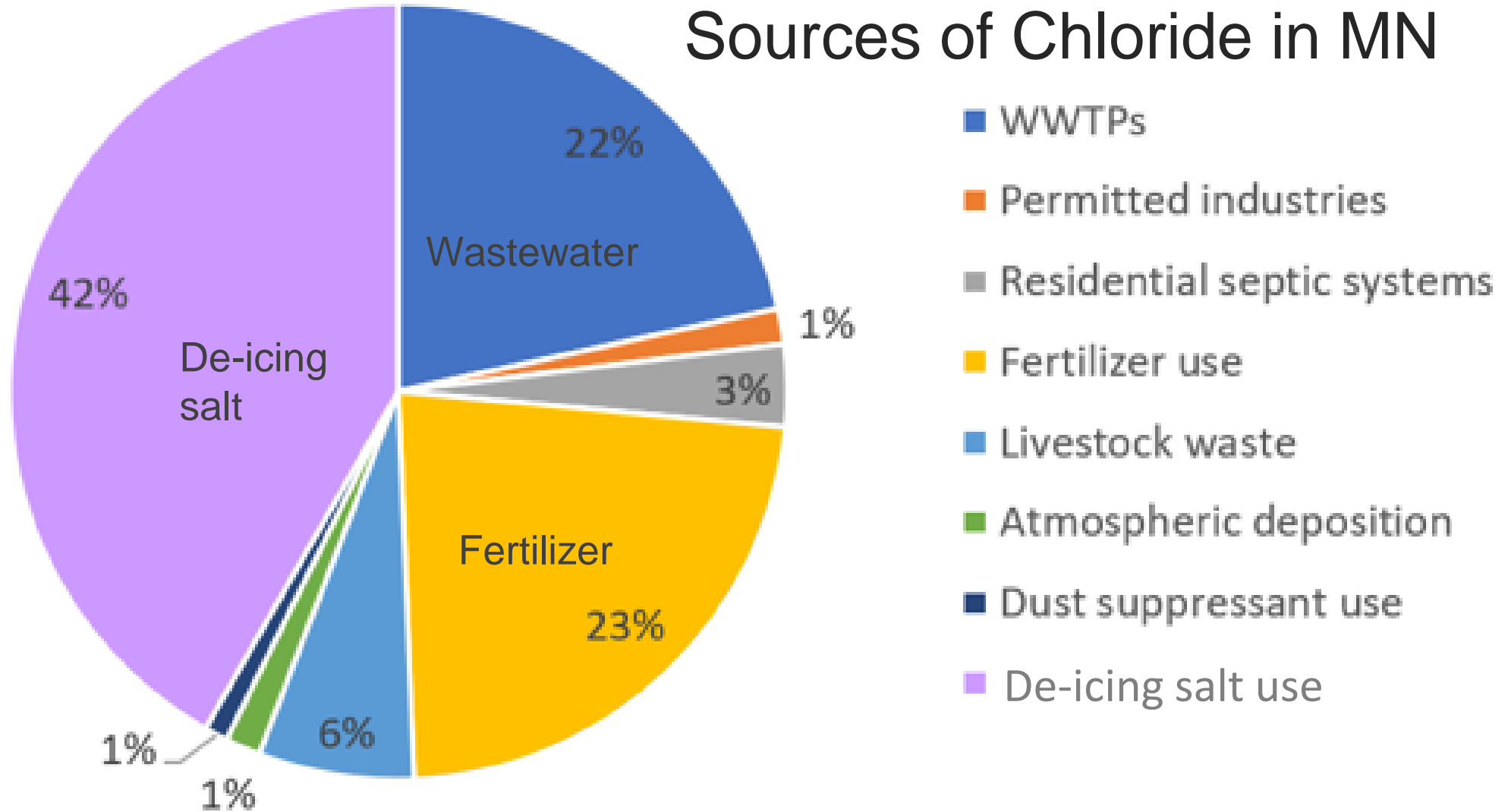


Figure 13: Fraction of annual chloride contributions from major point and nonpoint sources for State of Minnesota (Overbo et al. 2019)

What happens to all the salt?





Negative Impacts of Chloride

Why is chloride a problem?

EPA criteria

230 mg/L

860 mg/L

Canada criteria

120 mg/L

Toxic to aquatic life

Permanent Pollutant

Disrupts Lake Mixing

Freshwater Salinization Syndrome

Contaminates Groundwater

1 tsp. of salt pollutes
5 gallons of water



Chloride Sensitive species in MN

Macroinvertebrates

- Dragonfly larvae
- Mayflies
- Amphipods (side-swimmers)

Fish

- Least darter
- Pugnose shiner
- Walleye
- Northern pike

Plants

- Canada Bluejoint
- Lake Sedge
- Spike Rush
- Bulrush

Amphibians

- Wood frogs
- Tiger salamander
- Eastern newt

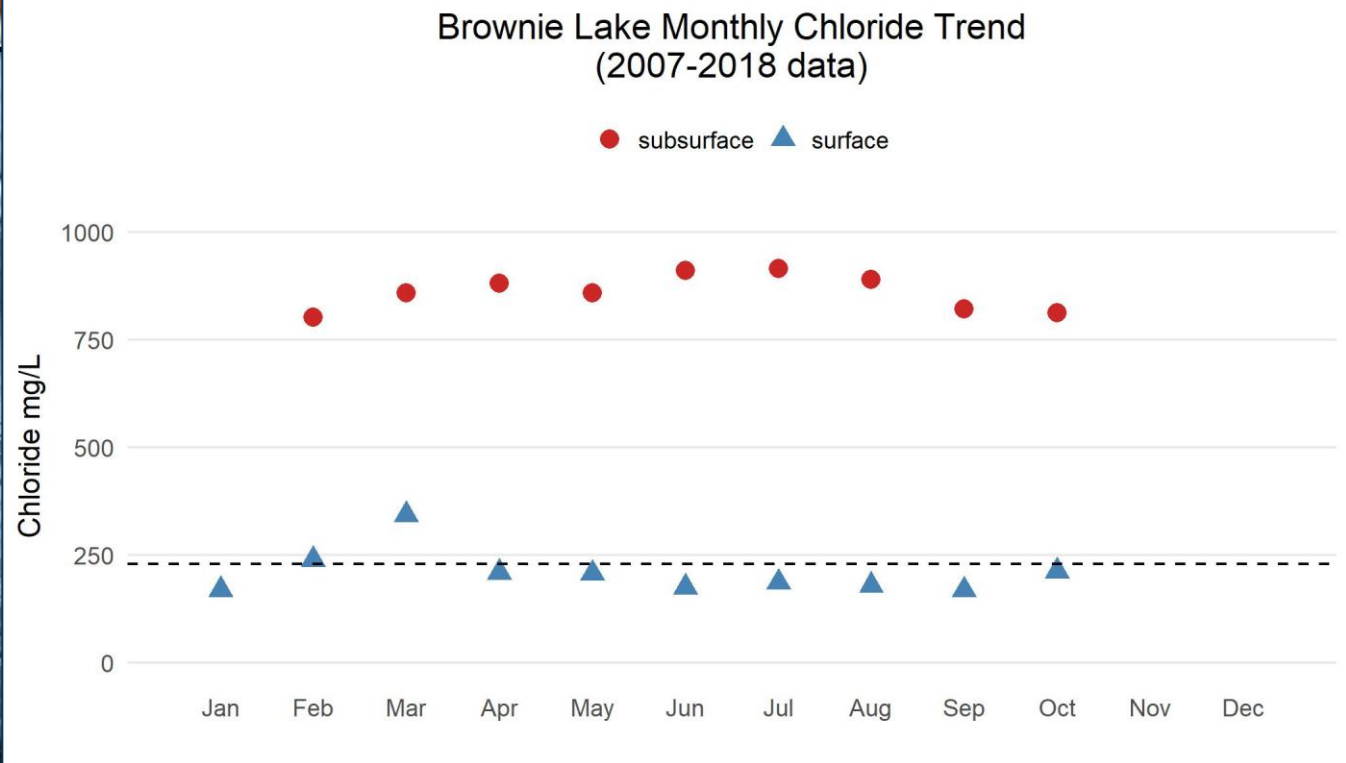




Disrupts natural mixing process

Heavier "salt" water sinks to bottom

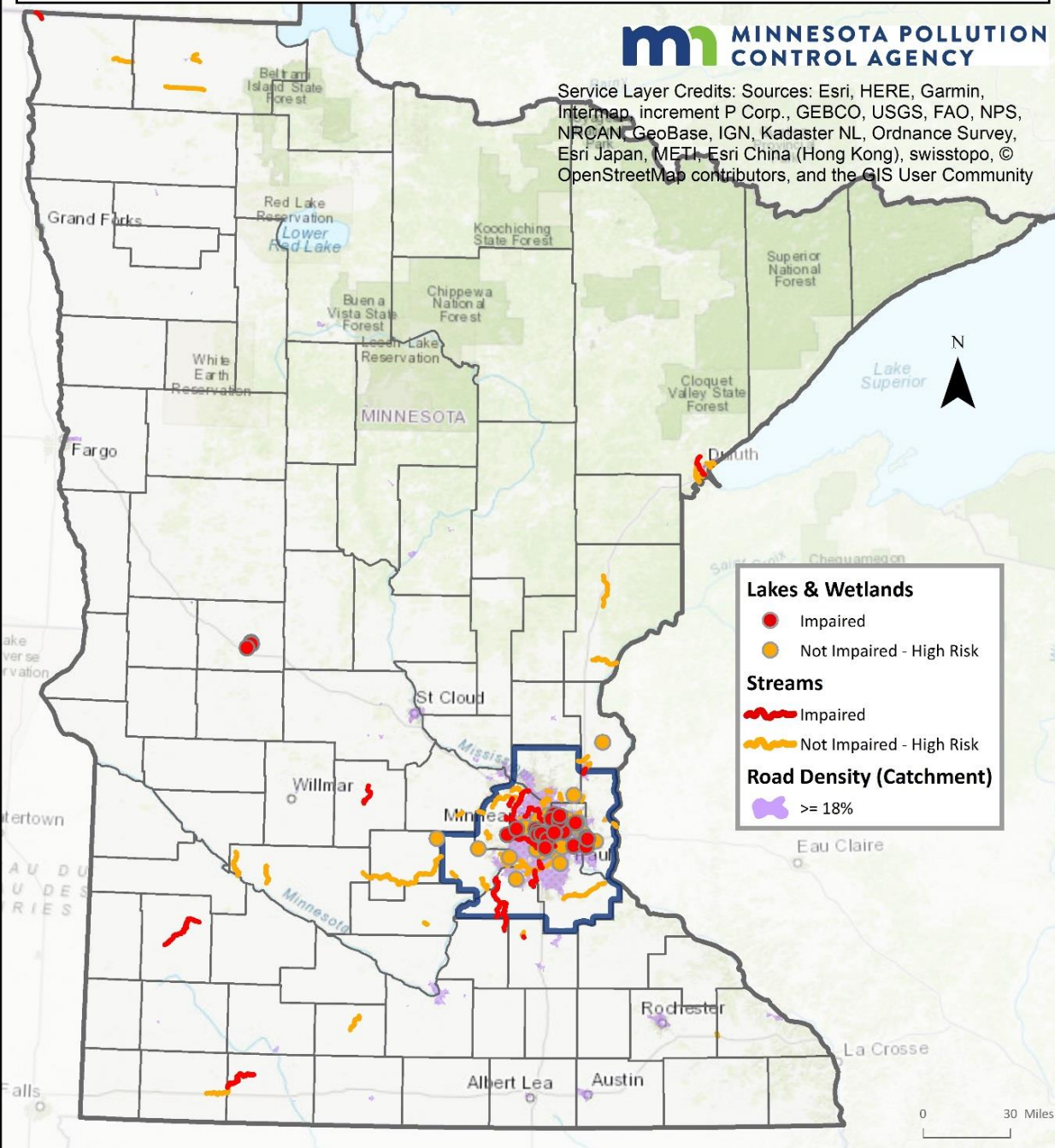
Healthy lakes "turnover" 3-4 times a year



Chloride Impairments and High Risk Waterbodies: Minnesota



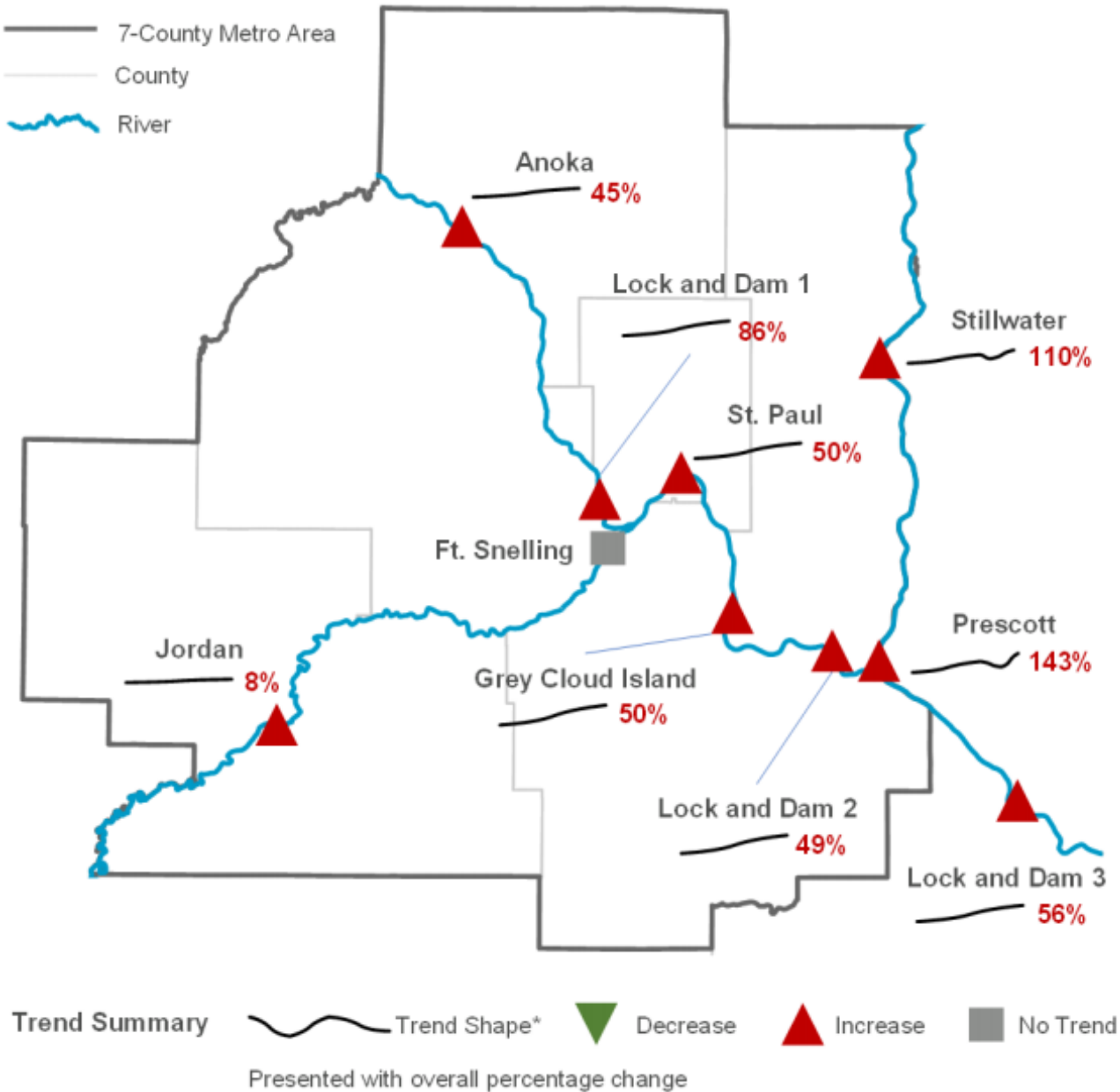
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community



Surface Water Chloride conditions

- 54 chloride impairments
 - 13 new impairments on the 2024 draft list
- 75 High Risk waters
 - Values ≥ 207 mg/L or at least one exceedance
- 80% of surface water chloride data is in the TCMA
- Increase in chloride in Mississippi, Minnesota and St. Croix Rivers (Metropolitan Council 2014)

Figure 104: Flow-Adjusted Chloride Concentration Trends in the Mississippi, Minnesota, and St. Croix Rivers, 1985-2015



*Different scaling is applied to the lines of each site to visually emphasize the trend shapes. For accurate magnitudes of the trends, refer to the Results section of the report.

Large River Chloride Trends

Metropolitan Council Environmental Services

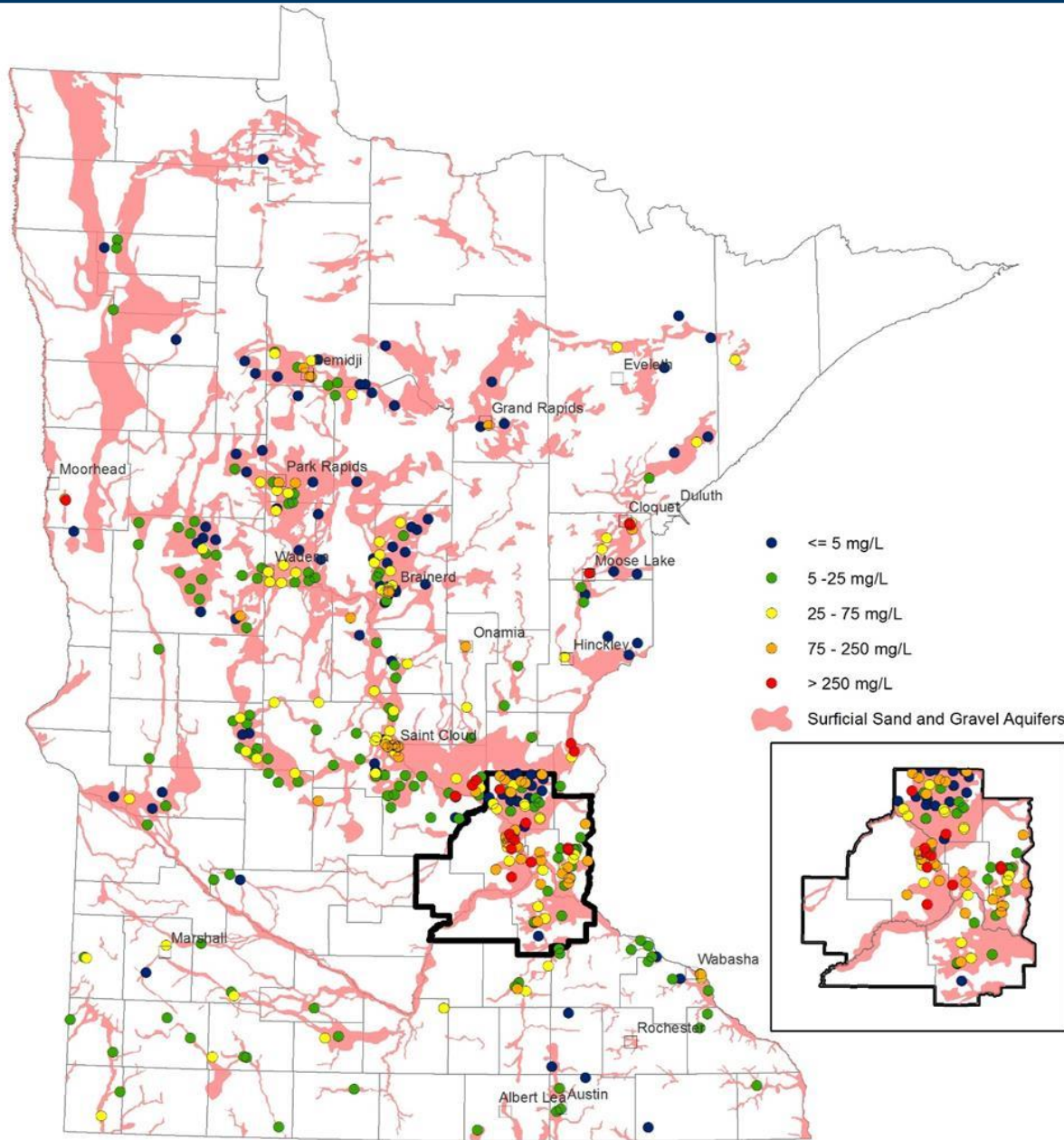
Regional Assessment of River Water Quality in the Twin Cities Metropolitan Area 1976-2015

Minnesota, Mississippi, St. Croix Rivers

- Figure 104 displays overall trends in flow-adjusted Cl concentrations in the metro area Mississippi, Minnesota, and St. Croix rivers.
- Trend results show Cl concentrations have significantly increased during the past 31 years.

<https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-QUALITY-MONITOR-ASSESS/Regional-Assessment-of-River-Quality.aspx>

Chloride in Groundwater



2/3 wells with chloride concentrations exceeding the SMCL were located in the TCMA, rest were in urban areas

40% of wells tested across the state are increasing in chloride

Land Use	Chloride (mg/L)
Sewered Residential	45 mg/L
Unsewered Residential	16 mg/L
Commercial/Industrial	82 mg/L
Agricultural	14 mg/L
Undeveloped	1 mg/L

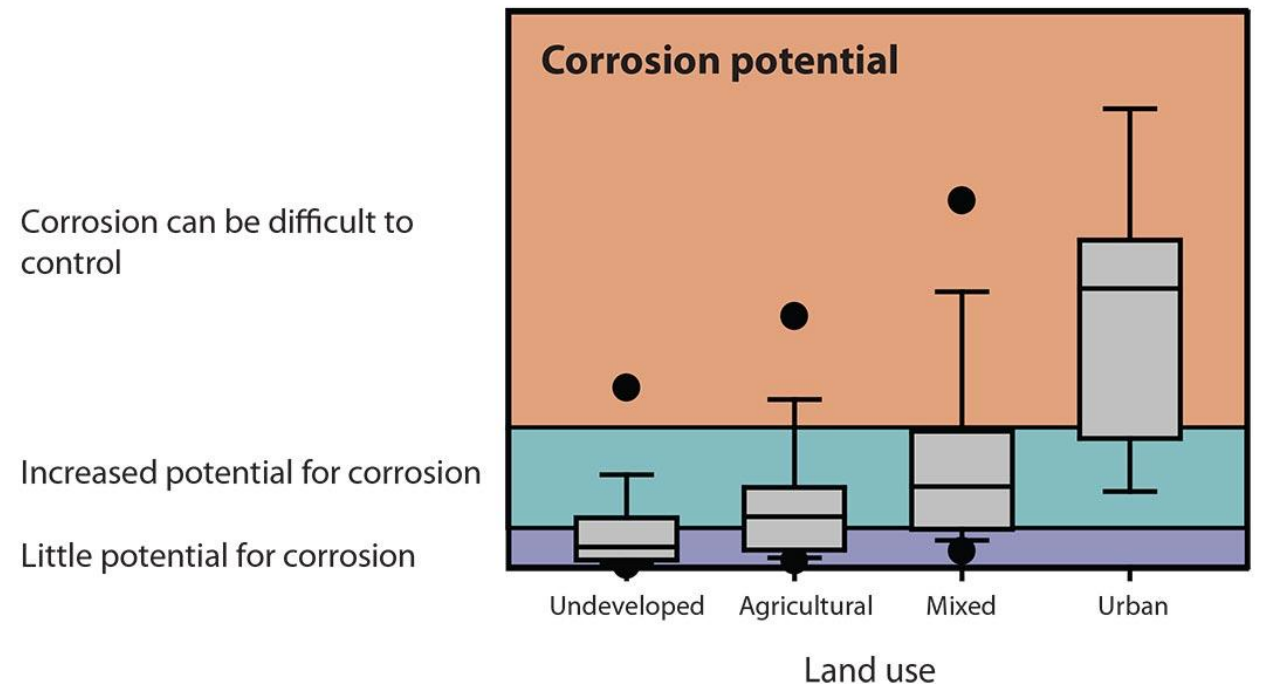
Median chloride concentrations in groundwater based on land use, 2013-2017

Increased Corrosivity in Drinking Waters



- USGS National Water-Quality Assessment project studying where and why drinking water sources are corrosive
- High chloride can increase tendency of water to cause corrosion in distribution systems
- Elevated chloride concentration can increase the rate of release of lead into the water.

Urban streams have an elevated potential to cause corrosion



<https://www.usgs.gov/media/images/urban-streams-have-elevated-potential-cause-corrosion>

Freshwater Salinization Syndrome

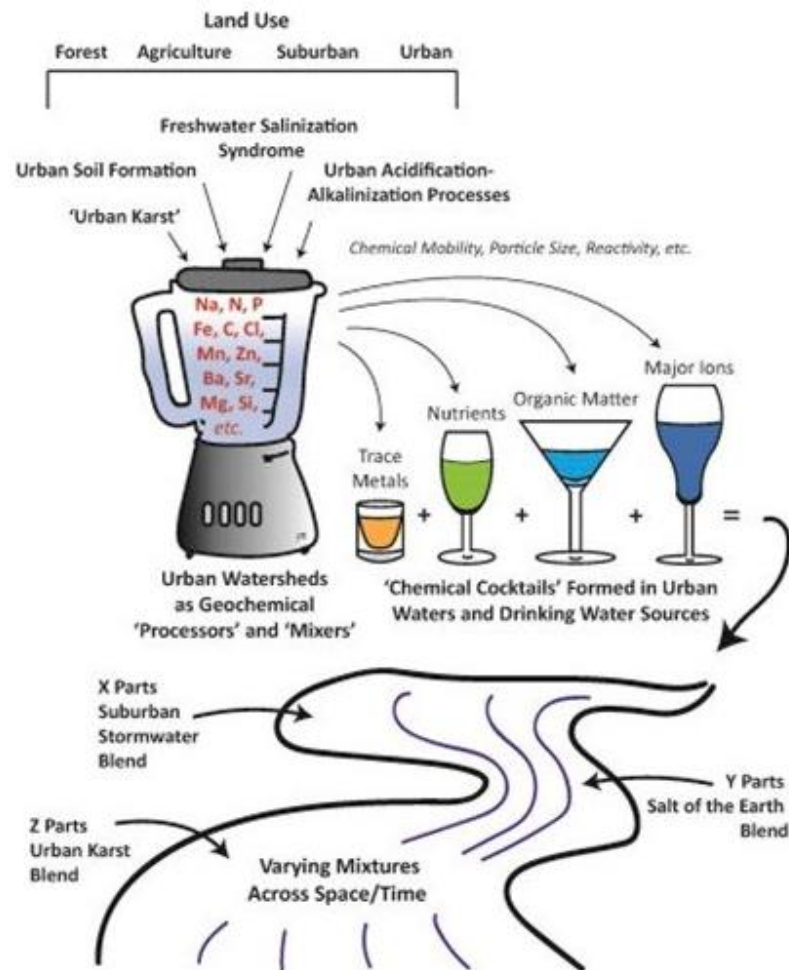
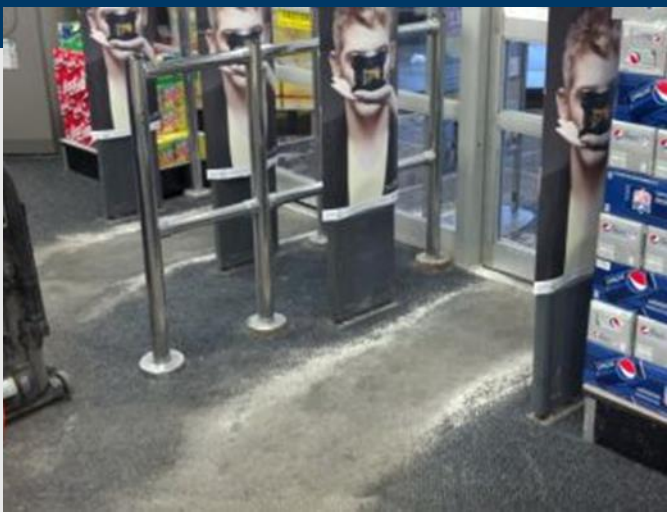


Figure 2. How salts form chemical cocktails (from Kaushal et al. 2020)

- Salts can corrode metals and cause the release of heavy metals in drinking water systems.
- Salts increases heavy metal and nutrient contamination in streams, lakes & wetlands.
- The release of these materials are creating chemical cocktails with unknown toxic effects.
- Salts and the associated chemical cocktails build up in soils, surface water, and groundwater and are not easily remediated.

Infrastructure & Vegetation Damage



Salt is Expensive

Item	Cost
Material (salt) \$73/ton ¹	\$73/ton
Labor and Equipment to apply salt ²	\$150/ton
Damage from use of salt ³	\$800 - \$3300/ton
Total cost:	\$1000 - \$3500/ton

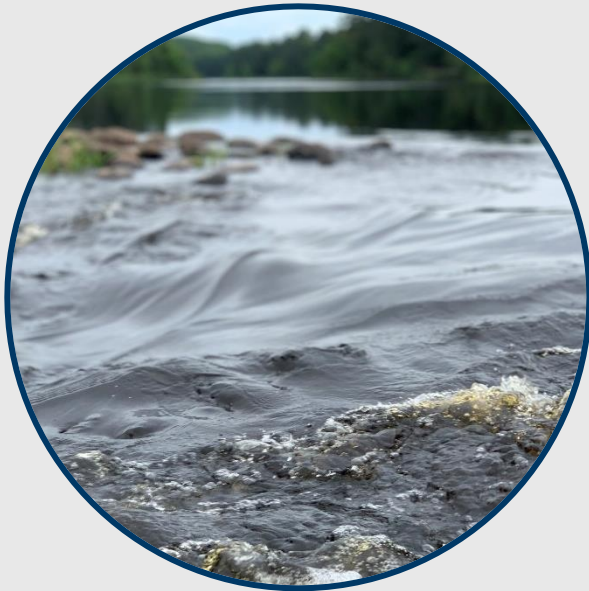


Sources: ¹MnDOT (2012), ²Stefan (2009) ³Vitaliano (1977) and Murray et. al (1992)

The Real Cost of Salt Use -

<https://www.pca.state.mn.us/sites/default/files/wq-iw11-06bb.pdf>

MPCA Chloride Reduction Program



Agency program
collaboration



Training

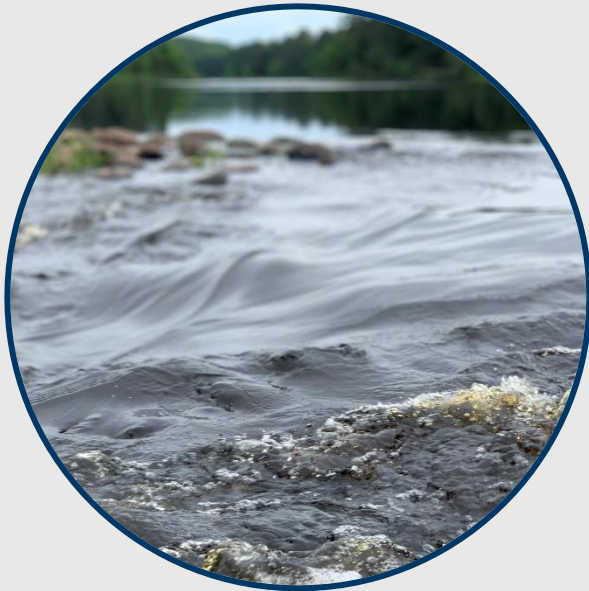


Assistance



Resources

MPCA Chloride Reduction Program



**Agency Water
programs**



Training



Assistance



Resources



Minnesota Statewide Chloride Management Plan

m MINNESOTA POLLUTION CONTROL AGENCY



Purpose

- Highlight chloride impacts on water quality
- Inform and guide best practices
- Demonstrate success and cost savings of improved practices

Scope

- Surface and groundwater trends
- Chloride sources identified
- Goals for protecting MN waters

Audience

- State and local government entities
- Winter maintenance workers
- Elected officials and general public

MPCA Regulatory programs

NPDES Wastewater treatment and disposal permits

- About 100 Wastewater Facilities in MN have been identified as having high chloride impacts
- These facilities will receive chloride limits in their permits as they are renewed

NPDES Stormwater permits

- New chloride management requirements were included in the 2020 general MS4 permit
- Industrial stormwater program includes salt storage, use and management requirements



www.pca.state.mn.us/business-with-us/water-permit-holders-and-chloride

MPCA Chloride Reduction Program



Agency Water programs



Training



Assistance



Resources

What is Smart Salting?

A suite of techniques that does not compromise public safety and public needs while minimizing environmental and economic impacts of chloride.



MPCA Smart Salting Training Certification program



Hands on professionals



**Parking Lots
& Sidewalks**

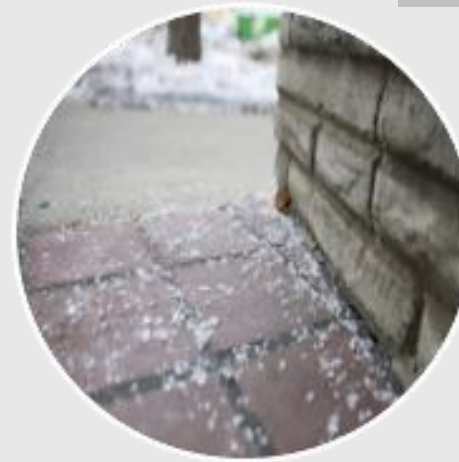


Roads

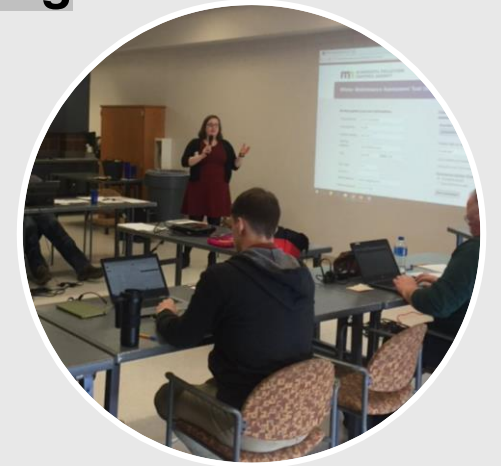


**Water Treatment
Professionals***

Managing



**Property
Management**



**Level 2 –
Organization
Certification**

****Coming Soon!***

www.pca.state.mn.us/business-with-us/smart-salting-training

NEW MPCA Smart Salting Refreshers

New Refreshers designed for current MPCA Smart Salting certificate holders



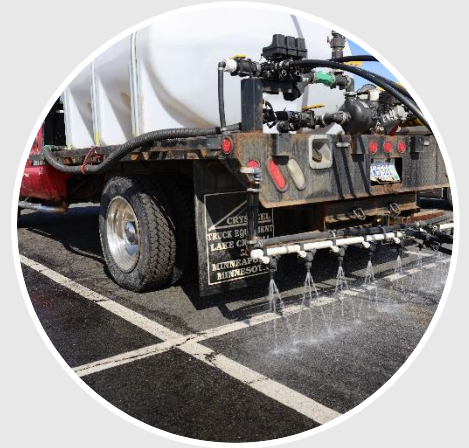
**Smart Salting
101**



**Weather for
Winter
Maintenance**



**Salt & Snow
Storage**



Liquid Deicer

www.pca.state.mn.us/water/smart-salting-training

Why Training is Important

- Improves operator effectiveness
- Saves money
- Reduces damage to infrastructure and properties
- Maintains & improves safety conditions
- Protects MN's water resources

Smart Salting Training promo video!!

<https://www.youtube.com/watch?v=Kjt5Oiqx6ps&feature=youtu.be>

Mayo puts campus on low salt diet

John Molseed jmolseed@postbulletin.com Nov 8, 2019 Updated Nov 9, 2019

Subscribe: Only 33 cents a day



Sidewalk seasoning

Buy Now

Steve Lee, owner of The Half Barrel and Bar Buffalo, salts the sidewalk along Third Street Southwest after freezing rain over night Tuesday in downtown Rochester.

Joe Ahlquist / jahlquist@postbulletin.com



Talking about winter precipitation this early in the season can make people a little salty.

Last winter was the snowiest on record in Rochester. Despite that, Mayo Clinic used 60 percent less salt to de-ice its campus paved surfaces than was used the previous winter.

Safety & Protecting Water Resources is possible!

Winter of 2018/2019

Reduced salt use by 60%

- 2018 training for all 3 crews
- Calibrated equipment
- Started using liquids properly
- Started using a non-chloride at some building entrances
- Didn't salt all the time, looked at weather forecast



Winter 2018/2019:
"Safe to say my
salt reduction savings
in product and labor
is into the
hundreds of thousands of dollars!"



Smart Salting Training promo video!!

<https://www.youtube.com/watch?v=Kjt5Oiqx6ps&feature=youtu.be>

NEW - MPCA Smart Salting Workshop



**Community
Leaders
Workshop**

Who should attend?

- City council members and other elected officials
- Members of sustainability and environmental commissions
- Board members of watershed districts, lake associations, housing associations
- Administrators of cities, schools and campuses
- Other community decision makers



www.pca.state.mn.us/water/smart-salting-training

Events and meetings

FILTER RESULTS

Search

Event type

Training and exams



Trainings and exams category

Smart salting training



Committee meeting category

- Any -



Apply

Reset

JAN
18

January 18, 2023, 8am-1pm | Training and exams
Smart Salting: Roads

JAN
19

January 19, 2023, 8-11am | Training and exams
Smart salting: Weather for winter maintenance r

JAN
25

January 25, 2023, 8am-1pm | Training and exams
Smart Salting: Parking lots and sidewalks

FEB
2

February 2, 2023, 8am-1pm | Training and exams
Smart Salting: Roads



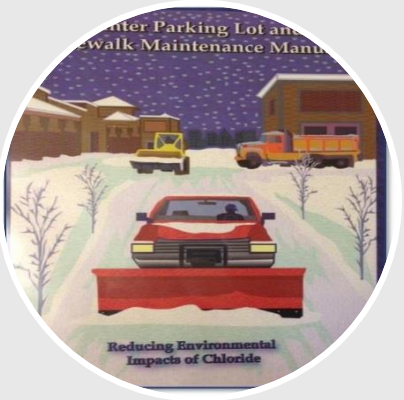
MPCA Smart Salting training calendar

<https://www.pca.state.mn.us/smart-salting-trainings>

Winter Maintenance Basics



Physical removal



Regular training for staff

Melting Agents	
Sodium Chloride (NaCl)	Cheapest, but doesn't work for colder temperatures.
Magnesium Chloride (MgCl ₂)	Works better than sodium chloride in colder temperatures.
Calcium chloride (CaCl ₂)	
Blends	Many blends and varieties on the market—all work better in warmer weather.
Sand	Never melts, provides traction only. Use sparingly when it's coldest and sweep it up after you no longer need it.

Apply Right
The best after the salt and sh...
drop...
prop...

Not the package says, remember that all...
... as use it sparingly...

Be Smart about Salting



Sweep up Extra

Physical Removal

- Removing snow physically is best option to prevent compaction
- Safest option for the environment and infrastructure
- Variety of tools for removing snow physically



Pavement Temperature

- Base application rates on pavement temperatures
- Use “low temperature” salt during cold weather events

- Warm pavements – fast melting
- Cold pavements – slow melting
- Super cold pavements – no melting



Hand-held temperature sensor

Melting agent	Lowest pavement temperature at which product works
Magnesium chloride (MgCl_2)	-10° F
Potassium acetate (KAc)	-15° F
Calcium chloride (CaCl_2)	-20° F
Sodium chloride (NaCl)	15° F
Calcium magnesium acetate (CMA)	20° F
Blends	Check with manufacturer.
Sand	Never melts, provides traction only.

Speed of Melting

- Quantity of salt does not influence the speed of melting
- Each product is able to melt a fixed amount of snow/ice
- Adding more of the same deicer is unlikely to speed up melting
- Using liquid deicers will speed up melting



Buyer Beware – No Labeling Requirements on De-icing salt



- There are no requirements to list all ingredients or percentages of ingredients
- Try to find out ingredients and % of each – call manufacturer
- Currently there are not any confirmed products safe for Environment
- Too much chloride is not good for plants, Na is more damaging than Mg

Examples of Over Salting



**If you see salt after the ice melts,
it was over applied.**

Right Amount of Salt



- Use less than 4 pounds of salt per 1,000 square feet (an average parking space is about 150 square feet).
- One pound of salt is approximately a heaping 12-ounce coffee mug.
- Consider purchasing a hand-held spreader to help you apply a consistent amount.

Training Video for Homeowners

Training video: Improved winter maintenance - Good choices for clean water

No salt, or very little salt, is needed if you've done a good job of snow removal. This 15-minute video offers easy tips about tools, techniques, and products that you can use to keep your driveways and sidewalks safe while protecting our waters.



The MPCA gives special thanks to the Mississippi Watershed Management Organization for producing this video.

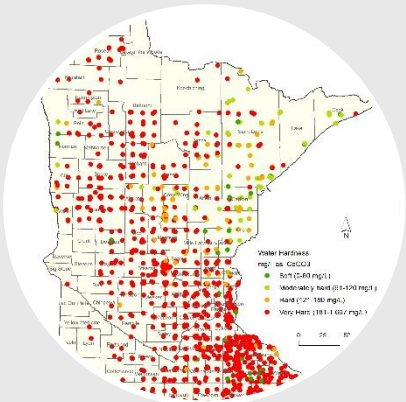
Water Softening Basics



Know Source of your Water



Know Your Equipment

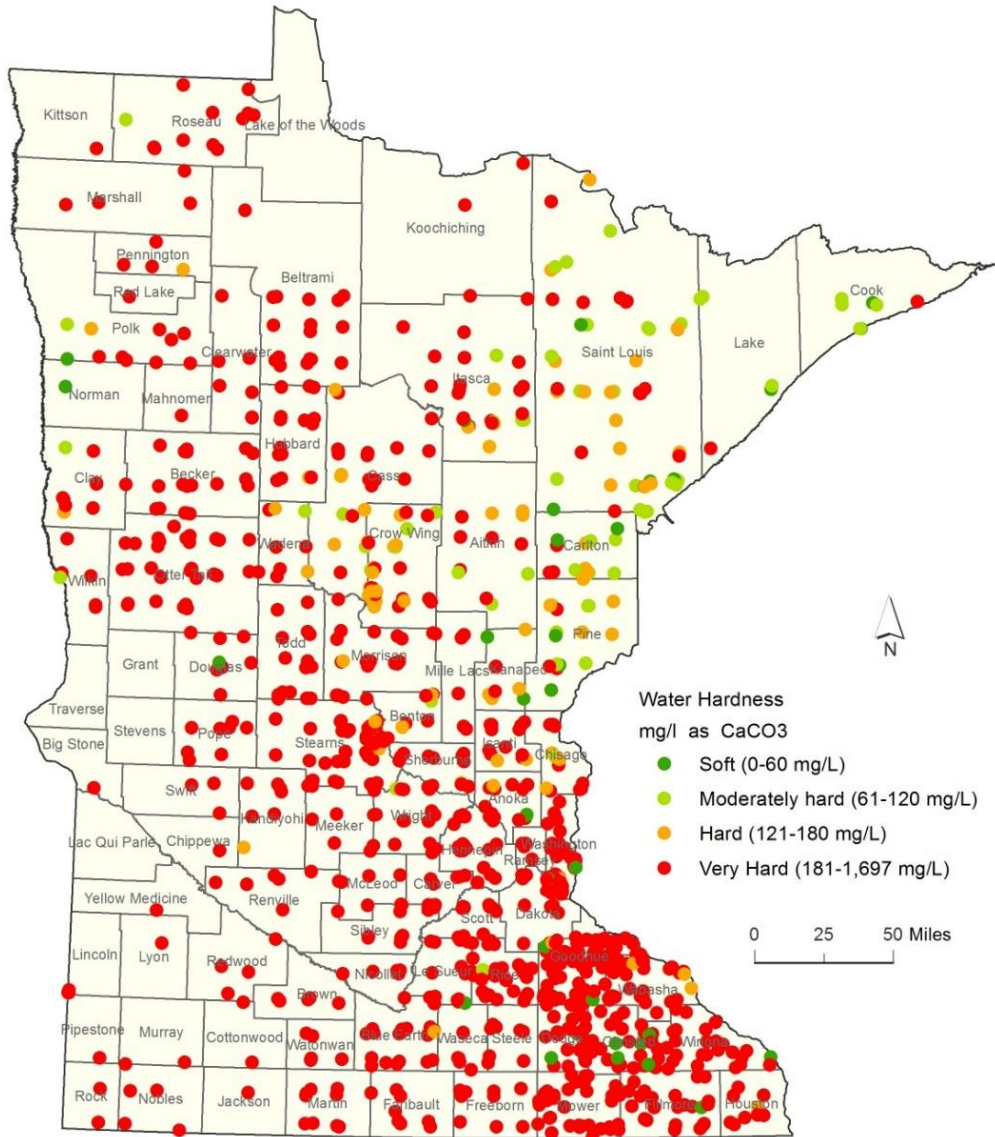


Know Your Hardness



Maintain Your Equipment

Water Supply Wells: Calcium Magnesium Hardness Values in Minnesota

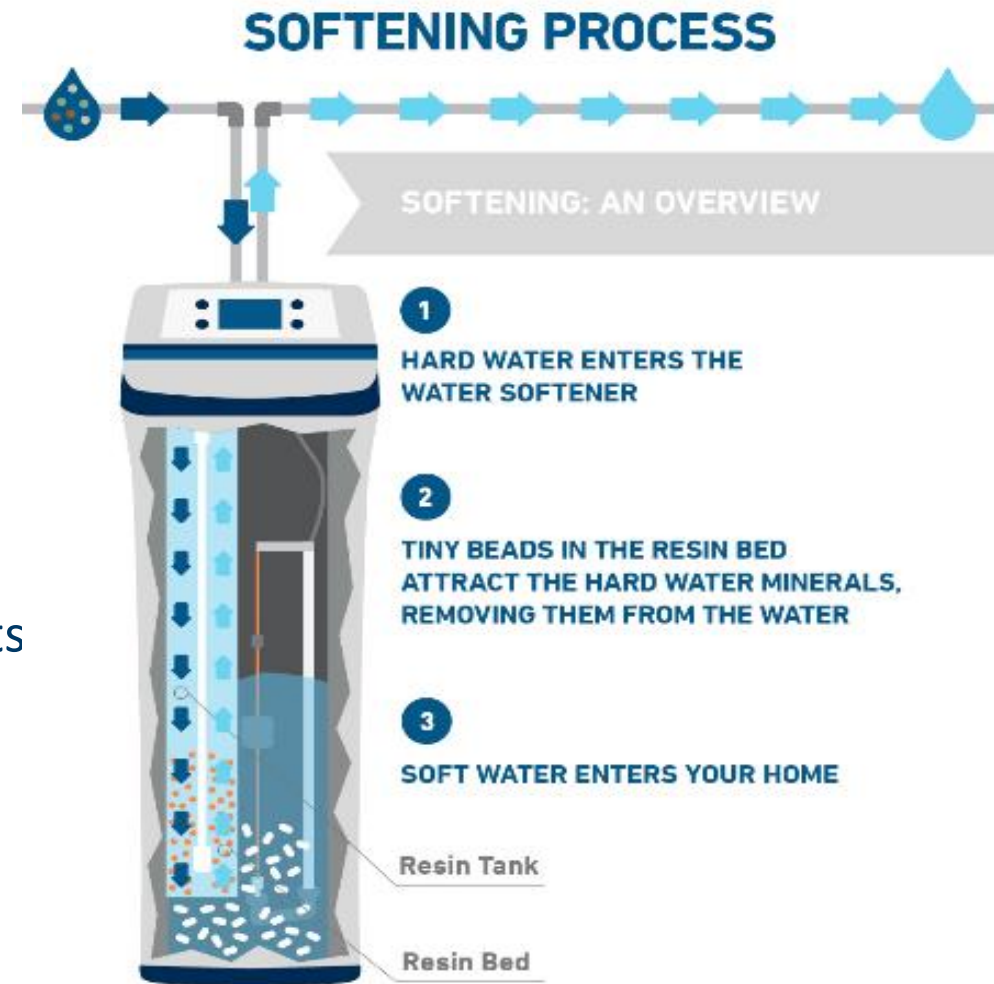


November 2015

Know Your Water Hardness

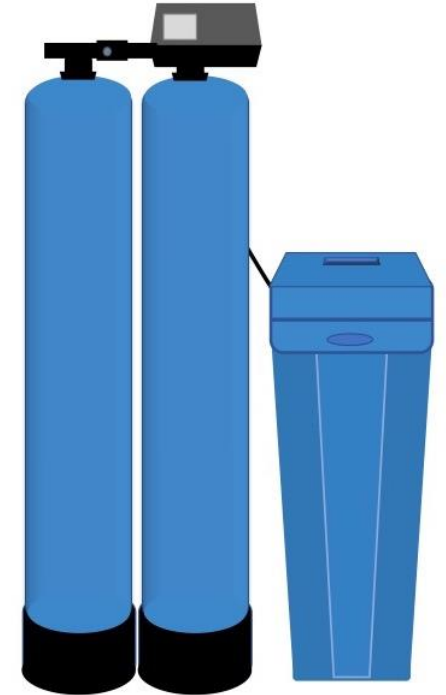
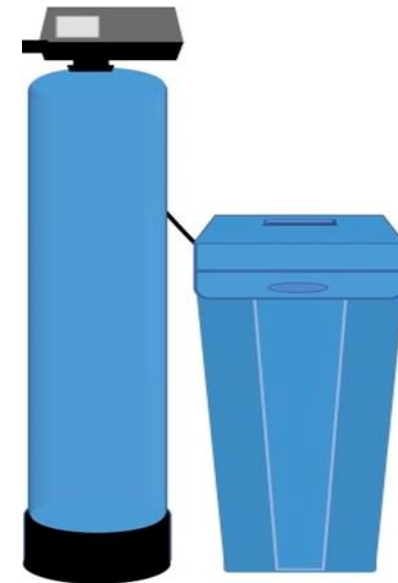
- 75% of Minnesotans rely on groundwater for drinking
- Groundwater is in constant contact with minerals, so is naturally hard
- Surface waters are generally soft (0-60 mg/L)
 - St. Paul, Minneapolis, Duluth are a few cities that utilize surface water as their primary drinking water source
- Most of MN has Very Hard to Hard drinking water

- Make sure City isn't already softening
- Have softener optimized by professional
 - Hardness, Salt dose, Water use
- Soften only indoor water
- Promote water conservation practices
 - U.S. EPA WaterSense labeled appliances & other products
 - Fix leaks
 - Provide education to users on water conservation



Types of Point-of-Entry Hardness Reduction

- Demand regenerated (based on water used)
- Twin or multiple tank (15- 30% less salt)
- Counter-current regeneration (35 – 40% less salt)
- Conductivity sensors
- Brine reclamation (up to 25% less salt)
- Reverse Osmosis
- Non-salt water conditioning technologies



MPCA Chloride Reduction Program



Agency Water programs



Training



Assistance



Resources

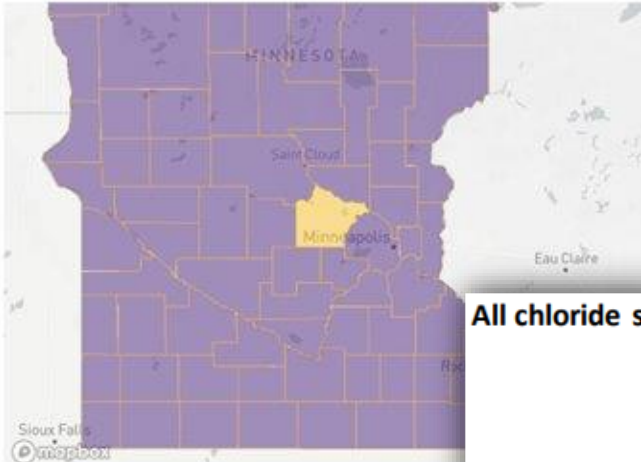
- MPCA Smart Salting Tool
- Grant & loan opportunities
- MN GreenCorps program
- Model ordinances for chloride reduction
- Water softening rebate guide



MCPA Smart Salting Tool

- Learn background information and environmental impacts of chloride sources
- Organizations can see and modify estimations of the amount of chloride from sources in their community:
 - winter maintenance
 - water softening
 - fertilizer
 - dust suppressants
- Survey templates
- Create a Chloride reduction action plan for each source

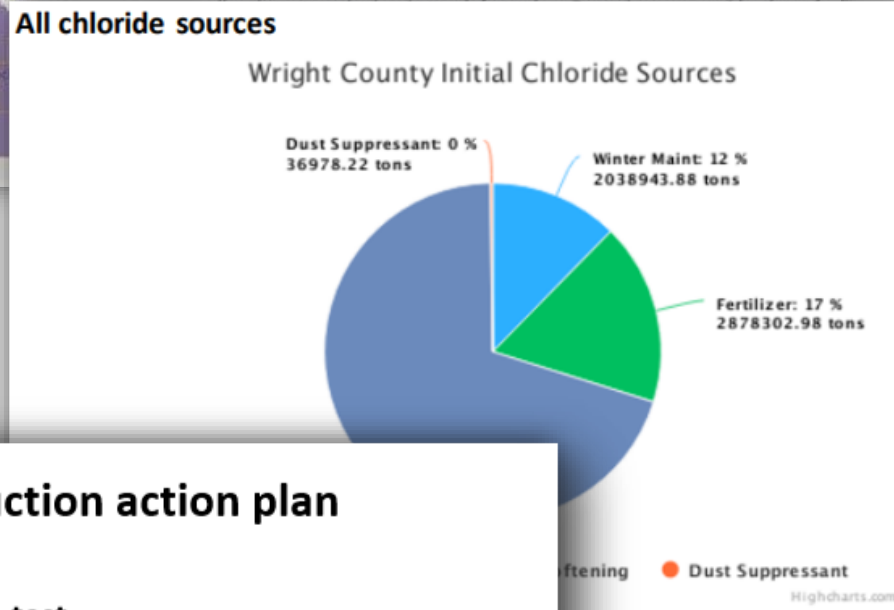
Pick a boundary:



Use the boundary selector to define where you are evaluating chloride sources. Sources are quantified within the area identified - no upstream sources are included in the estimates.

Our chloride source estimates use land cover, roadway information, and water use data. The loading rates have been matched to findings from various local and statewide research projects. These initial values are a starting point for understanding chloride in the selected area.

Modify these estimates with your own knowledge using the tables found after "Evaluate Chloride Sources". Use the background information tabs for



Chloride reduction action plan

Wright County

2023-2024 Chloride Assessment - test

Location: Wright County
Start Date: 5/12/2023 End Date: 6/2/2023
Username: xxx.xxxx@cty.mn.us

Chloride Sources Evaluated: Monitoring Chloride, Fertilizer, Water Softening, Winter Maintenance, Gravel Road Maintenance

Introduction

Chloride is a permanent pollutant that does not break down or degrade over time and will persist in our waters. It is a pollutant of concern because it is toxic to freshwater fish, amphibians, insects, and plants.

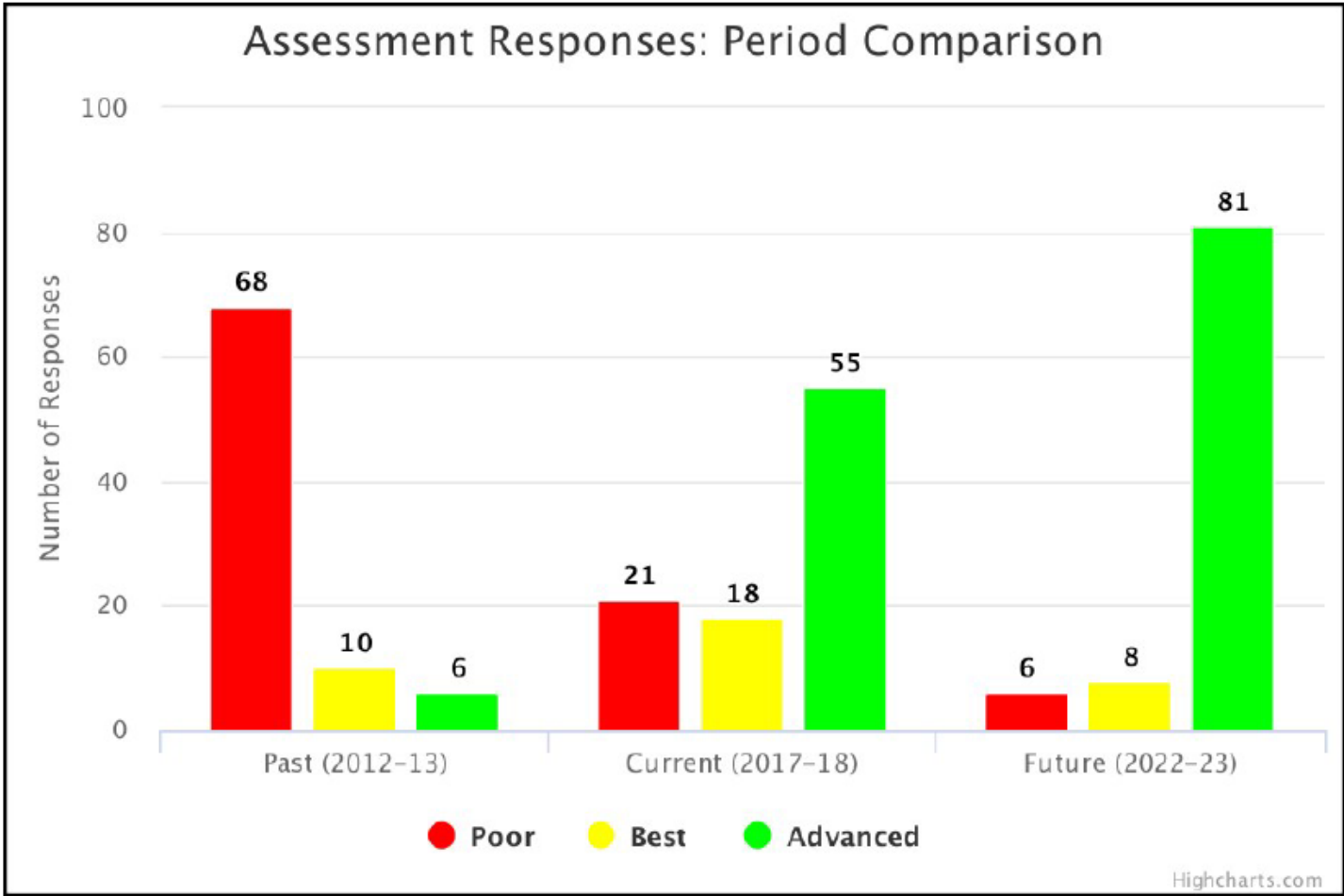
Edina Public Schools

Report generated On 06/19/2018 10:55 by brent.kaley@edinaschools.org

BMP Summary Charts

Assessment Name: Edina Schools (2017-18)
Location : Edina Schools
Winter Period: 2017-18
Surface Type(s): Sidewalks

- 2012-13: High School alone was using 500 – 1000+ pounds per event
- 2017-18 district-wide uses 10's – 100's pounds per event
- After S2 Training & use of SSAt:
 - Effectively manage salt before, during and after storm events
 - Equipment calibration
 - Proper timing
 - Use pre-treatment
 - Mechanical removal (sweeping) only during storm events
 - New snow removal equipment



MPCA Chloride Reduction Grant program

<https://www.pca.state.mn.us/water/chloride-reduction-grants>

Closed. Grant applications were due May 7 (4 p.m.).

Chloride reduction grants

The MPCA sought grant proposals from eligible organizations to work within targeted communities that are experiencing elevated chloride levels in their surface waters or wastewater discharge to provide direct assistance for the upgrade and optimization of water softening systems that will result in a chloride reduction.

Closed: Application deadline was May 7, 2021 (4 p.m.)

- **Eligible applicants:** For-profit businesses with under 500 employees; local/regional governmental entity, educational institution, tribal government, or non-profit organization.
- **Grant amount:** \$200,000 (the grant will be awarded to a single applicant). Applicant must provide 25% match as in-kind or cash match.

The request for proposals (RFP) has full details on who may apply, eligible project costs, and other information that will help applicants submit a proposal.



Sign up for Smart Salting updates



This newsletter addresses sources of chloride pollution in Minnesota, with the latest smart salting practices and resources — from winter maintenance to water softening.

Email:

jane.doe@example.com

Next

- MPCA has created the Chloride Reduction Grant program to assist communities in reducing chloride pollution
- Grant program relies on receiving funding support every 2 years
- First grant was focused on water softening – awarded July 2021
- Second grant was awarded in 2022
- Subscribe to the Smart Salting program newsletter for updates



KICK START YOUR SALT REDUCTION PROGRAM



Borrow up to \$3M

Use as a match for other grants

USE YOUR LOAN FOR:

Deicing and Smart Salting equipment

- Brine equipment
- New plow blade technology
- Salt storage
- Vacuums and sweepers
- Ice breakers, brooms, and other mechanical removal equipment
- Gas-powered AVL devices

Water softening

- Upgrade residential water softeners
- Upgrade equipment in public schools and city halls
- Develop ordinances, education, and outreach



Clean Water Partnership

www.pca.state.mn.us/water/cwp-loans

Small Business Assistance

www.pca.state.mn.us/smallbizloan

Small Business Environmental Improvement Loans

0% Interest

Borrow up to \$75,000

Flexibility in collateral

Awarded throughout the year!

Eligibility and conditions:

- Less than 100 full-time employees
- An after-tax profit of less than \$500,000
- A demonstrated ability to repay the loan

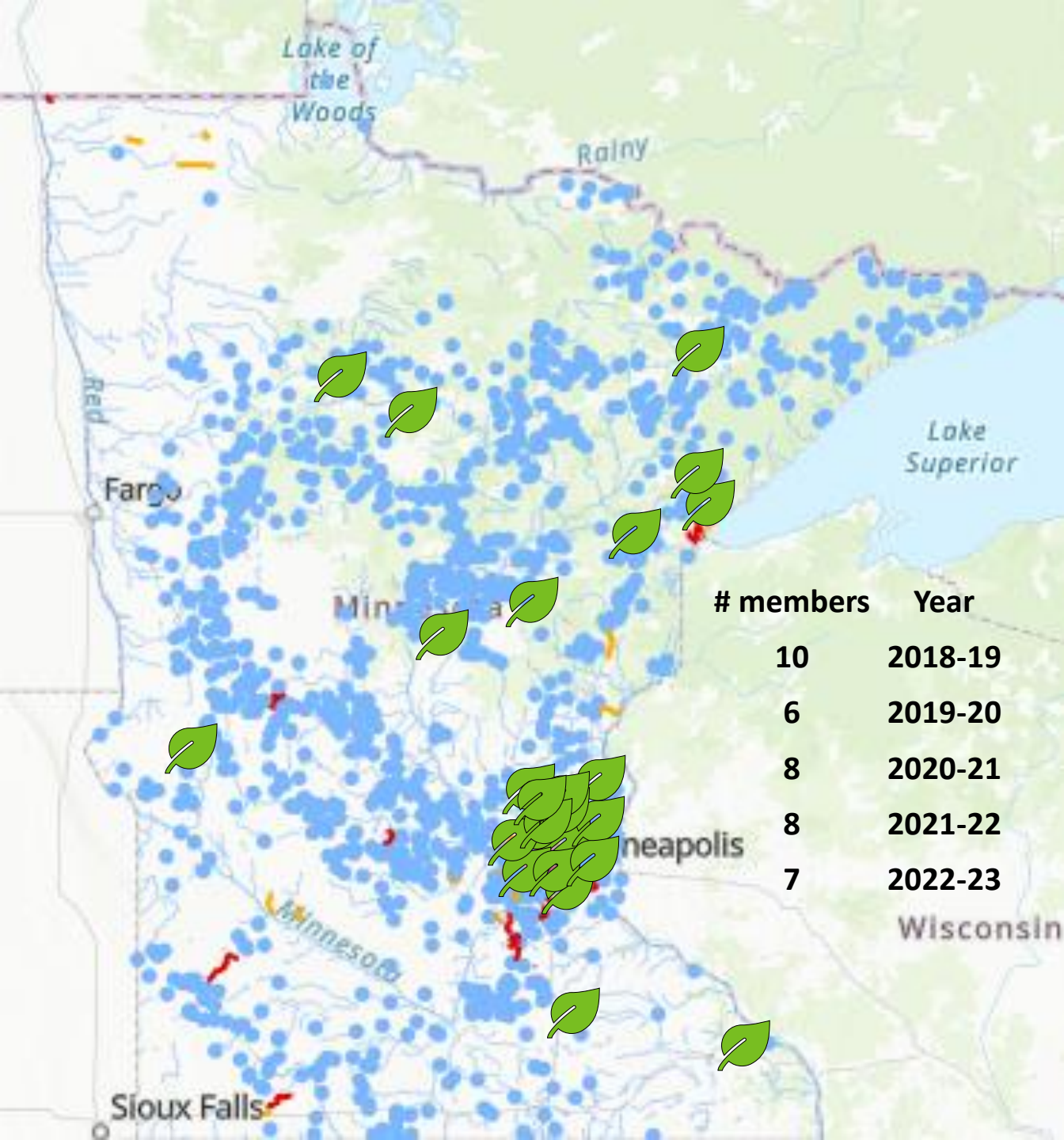
Loan terms and conditions:

- Loan amount between \$1,000 and \$75,000
- Repayment term up to 7 years
- Flexibility in the types of collateral accepted
- 0% interest



- Water softening
- Brine equipment
- Plow blade and broom technology
- Pavement temp sensors
- Ground speed spreaders

More info at: www.pca.state.mn.us/smallbizloans



- Minnesota GreenCorps is an environmentally focused AmeriCorps program coordinated by the MPCA.
- **Chloride reduction** components in the program
- Members serve approximately 40 hours a week for 11 months from September through August.
- Eligible organizations include public entities, school districts, not for profit institutions of higher education, and 501 (c)(3)

City of Minneapolis: 2020-2022 GreenCorps Member project

“Was developed to increase understanding of the impacts of salt on the environment, limit over salting, and encourage residents and businesses to commit to practicing salt stewardship.

The mini course is self-guided and provides an overview of road salt and its impacts on water quality; it consists of reading a few lessons as well as watching online videos.”



The screenshot shows the Minneapolis City of Lakes website header with navigation links for City Services and Residents. Below the header is a breadcrumb trail: Home / Government / Programs & Initiatives / Environmental Programs / Salt Mini-Course. The main heading is "Salt mini-course program". The text below reads: "Learn about the environmental impacts of de-icing salt (ice melt). Learn best practices of snow and ice removal and limiting the use of salt for driveways and sidewalks. Please take our Salt Stewardship Pledge after completion!"



Chloride Reduction Model Ordinances



CHLORIDE REDUCTION MODEL ORDINANCE LANGUAGE

July 18, 2019

Focuses on four areas:

1. Occupational Licensure for Winter Maintenance Professionals
2. Deicer Bulk Storage Facility Regulations
3. Land Disturbance Activities
4. Parking Lot, Sidewalk and Private Road Sweeping Requirements

GUIDE TO DEVELOPING A LOCAL WATER SOFTENER REBATE PROGRAM



3. Steps for Developing a Water Softener Rebate Program

A water softener rebate program should ideally be tailored to the specific goals and characteristics of a municipality. The following steps are general recommendations for consideration and are not intended to serve as a definitive how-to guide. Ultimately, each municipality or watershed should craft a process that aligns with the goals, vision, and approach best suited for that specific jurisdiction. The process, and the resulting program, should be flexible and allow for continuous improvement over time.

The general steps presented in this section are as follows:

- Step 1. Identify Program Drivers
- Step 2. Gather Baseline Information on Water Softener Use
- Step 3. Identify Program Goals and Scope
- Step 4. Identify and Engage Potential Program Partners
- Step 5. Estimate and Obtain Funding
- Step 6. Determine Type of Rebate and Program Procedures
- Step 7. Conduct Outreach
- Step 8. Implement, Evaluate, and Adapt Program

Lake Geneva, WI: Water Softener Rebate Program

The Lake Geneva Utility Commission offers a \$100.00 rebate check paid directly to residents for either upgrading current unit to an on demand system, or installing a new unit that is metered on demand. In addition to the rebate check, Culligan offers a \$100.00 discount off their complete line of metered on demand water softeners to utility customers exclusively.

Program Contact: Josh Gajewski, Utility Director, (262) 248-2311 Xt. 6115 or jgajewski@lguutilities.org

Website: <https://www.lguutilitycommission.com/wastewaterutility>

Application Form: <https://drive.google.com/file/d/0B-877Fe5oHxIX3dyZUtHS2FSY2c/view>

MPCA Chloride Reduction Program



Agency Water
programs



Training



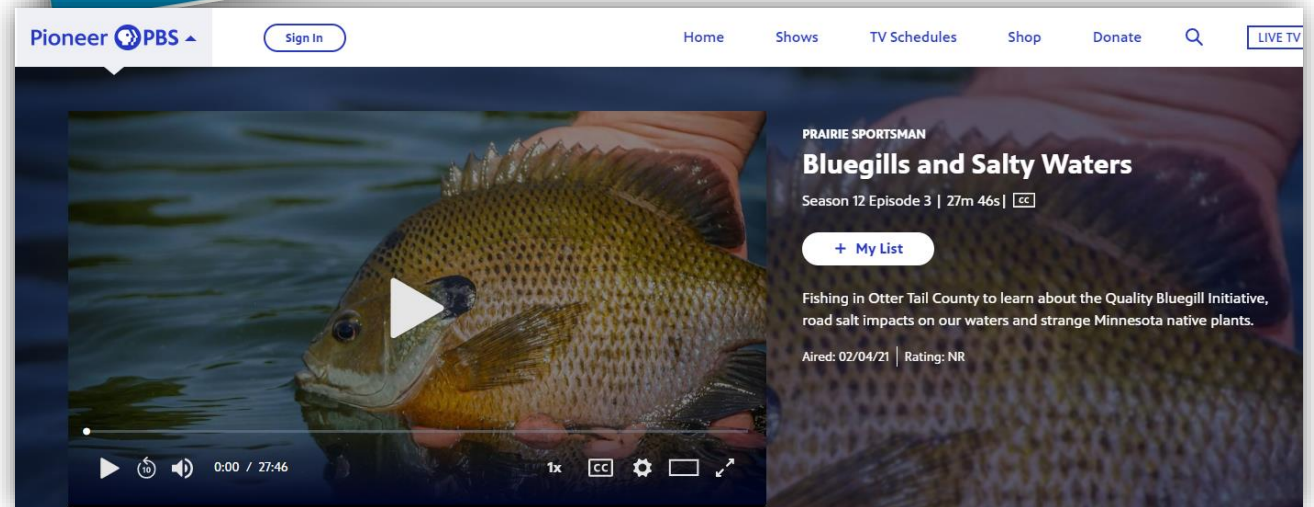
Assistance



Resources

Chloride Resources

- Educational videos, postcards & posters
- Model winter maintenance policies & contracts
- Chloride papers & research
- Water Softening resources
- Guidance for monitoring



Hold the salt!



4:17 / 4:35

Hold the Salt to Protect Minnesota Water

Reduce your salt use to help protect our lakes, streams, and drinking water.

1. Shovel



Clear walkways and other areas before the snow turns to ice. The more snow you remove manually, the less salt you will have to use and the more effective it will be.

2. Scatter



If you use salt, scatter it so that there is space between the grains. Believe it or not, a coffee mug of salt is enough to treat an entire 20-foot driveway or 10 sidewalk squares.

3. Switch



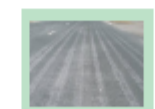
When pavement temperatures drop below 15 degrees, salt won't work. Switch to sand for traction or a different ice melter that works at lower temperatures.

4. Select a Certified Applicator



Encourage your maintenance professional to get certified through the City of Madison's Winter Salt Certification Program and ask businesses in your community to do the same.

5. Love the Lines



Stripes on roads before a storm are anti-icing. They show that your professional maintenance crew is concerned about safety and is saving money, time and protecting our environment!

6. Be Salt Wise All Year



Water softener salt ends up in local freshwater bodies. If your household softener uses more than 1 bag of salt per month, have a professional tune it up or replace it with a high-efficiency model.

Every year, we use about...



... of salt on our roads

This doesn't include what we use on sidewalks, driveways, and parking lots.


Annual Press Release @ winter salt



News release

January 9, 2024

Contact

Lauren Lewandowski, 651-757-2756, lauren.lewandowski@state.mn.us 

Winter is finally here. Apply de-icing salt correctly to protect our lakes and streams

<https://www.pca.state.mn.us/news-and-stories/winter-is-finally-here-apply-de-icing-salt-correctly-to-protect-our-lakes-and-streams>

Low Salt, No Salt Minnesota

A new program from the
Hennepin County Chloride Initiative



Provides a toolbox for LGUs such as cities and watershed management organizations to increase local awareness and provide support and guidance to property owners

- Presentations
- Videos
- Handouts
- Templates



Model Snow and Ice Management Policy & Contract

- A tool for cities and counties to prepare clear and complete snow and ice management policies
- Developed specifically to allow for cities and counties to incorporate environmental considerations into their policies and operations and thereby better manage liability risk
- City of Edina convened a diverse Advisory Committee of service providers, property managers, environmental specialists
- Model contract embraces Smart Salting practices while maintaining safety and reducing liability risk

Reduced Salt Diet

Smith Partners presented a [model snow and ice management policy, guidance document](#), and [model contract exhibit](#) to the [Freshwater Society's 16th Annual Road Salt Symposium](#).



Surface water pollution from chlorides is permanent. The Freshwater Society and Fortin Consulting asked Smith Partners to develop the model policy to manage the liability risk of cities and counties that want to take environmental, cost, and social considerations into their road salt application decision making.

The framework has the following components:

- Owner and contractor express mutual intent to utilize best practices.
- Best practices are defined.
- Owner and contractor state their intent that the use of best practices not reduce effectiveness or safety.
- The contract recites the basis for owner and operator to conclude that best practices will not reduce effectiveness or safety.
- Contractor is required to be trained and certified in use of best practices, to document that to owner, and to use that training so that best practices are properly applied under site-specific circumstances.
- Owner is responsible for certain matters within its control that are relevant to achieving a safe site.
- Contractor documents its use of best practices.
- Contractor is responsible for site outcomes, except where owner has not fulfilled its duties.

Salt Dilemma Display





Kids Chloride Science Kit & Lesson Plan

Minnesota's Salty Water Problem

Overview

Salt concentrations are increasing in lakes, streams and groundwater. Measure salt concentrations using a conductivity meter, graph your results, and discuss the impacts of salt on Minnesota's water resources and its plants and animals.

Objectives

1. Understand the impacts of chloride pollution
2. Know where salt pollution comes from
3. Share one idea for preventing salt pollution

Audience

4-8 grade students

Time

30-60 minutes, depending on which activities are selected



MPCA Smart Salting News - Spring 2022

Minnesota Pollution Control Agency sent this bulletin at 05/31/2022 10:58 AM CDT

Minnesota Smart Salting Update



MnTAP Industrial Chloride Project

The MPCA partnered with the University of Minnesota's Technical Assistance Program (MnTAP) to develop Best Management Practices (BMPs) to reduce chloride discharge in industrial wastewater effluent from water softeners. This work compiled a list of BMPs and created a flowchart for operations that should be considered during a water softener audit. These BMPs and audit strategies were tested during site visits at five facilities with a goal of making recommendations to companies to implement the BMPs.

To learn more about this project and read the full report visit the MnTAP – Chloride Reduction (umn.edu) website.



Loans for Small Businesses to upgrade equipment for chloride reduction

MPCA Smart Salting Program Newsletter



Stay connected

Sign up for Smart Salting updates and information about reducing chloride pollution in Minnesota.

Subscribe

[https://www.pca.state.mn.us/
smart-salting-newsletter](https://www.pca.state.mn.us/smart-salting-newsletter)

More than 10,000 reasons to reduce salt use

A serene landscape photograph of a lake at sunset. The sun is low on the horizon, creating a bright orange and yellow glow that reflects on the water. Silhouettes of trees are visible against the sky. In the foreground, several canoes are docked on the shore, including a dark grey one, a green one, and a red one.

Minnesota has 11,842 lakes and 92,000 miles of rivers and streams.

Thank you!



BROOKE ASLESON

CHLORIDE REDUCTION PROGRAM

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[@brookeMPCA](https://twitter.com/brookeMPCA)