



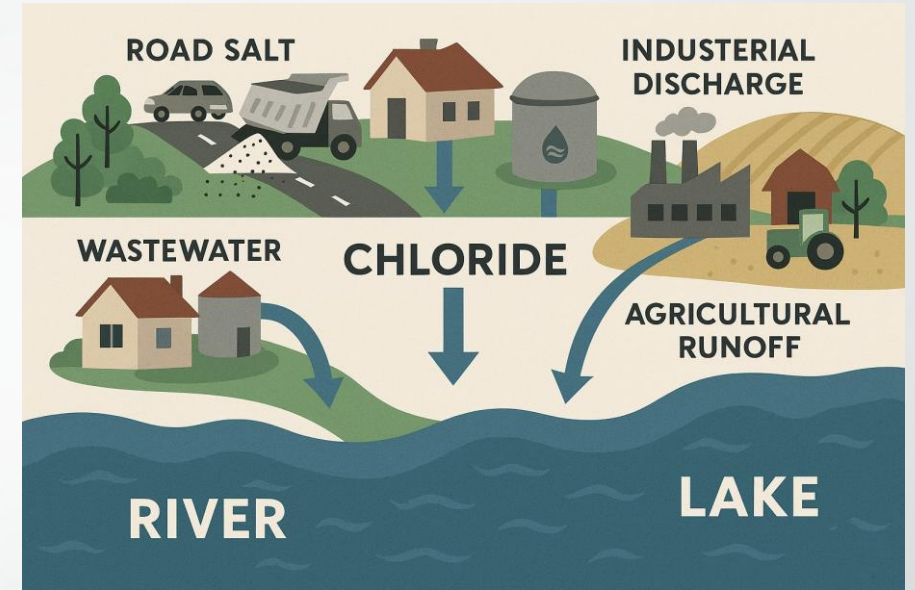
WELCOME

CHLORIDE POLLUTION IN MN WATERWAYS

The MPCA's Chloride Reduction Program supports communities like Detroit Lakes by:

- Identifying chloride sources (e.g., road salt, water softeners)
 - Offering training, resources, and technical assistance
 - Promoting source reduction strategies
 - Monitoring chloride levels in lakes, rivers, and groundwater
- Currently, **68 waterbodies in Minnesota exceed the chloride standard** of 230 mg/L

[Statewide chloride resources | Minnesota Pollution Control Agency](#)



The problem with salt

Chloride persists in the environment
It is harmful animals and aquatic life

The MPCA has adopted the United States Environmental Protection Agency's recommended water quality criteria for chloride: • acute (short-term) exposure is 860 mg/L • chronic (long-term) exposure is 230 mg/L

Chloride variability



EPA Discharge Limit
230 mg/L chloride
(2033)

Facility at 400 mg/L

Seawater
19,400 mg/L chloride

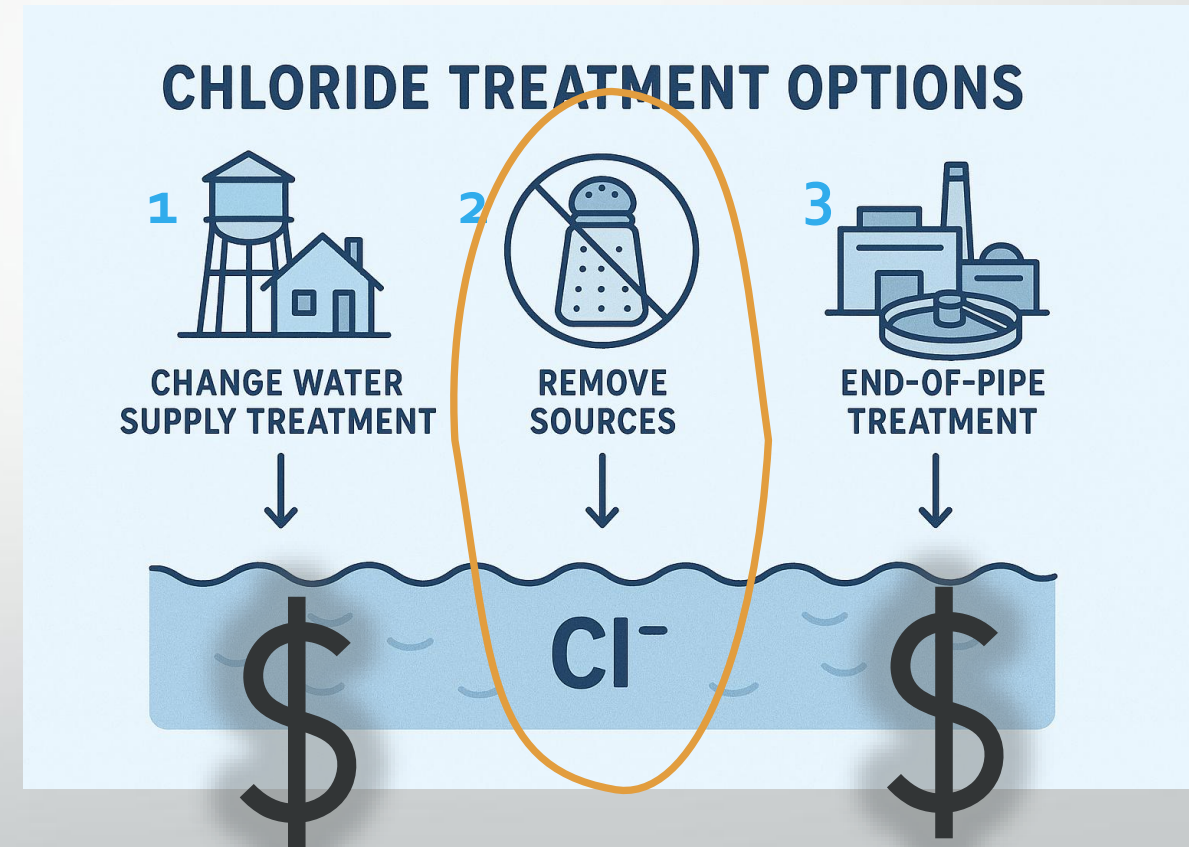
Saturation
210,000 mg/L
chloride in water at
20°C

"It takes only one teaspoon of salt
to permanently pollute five gallons
of water."

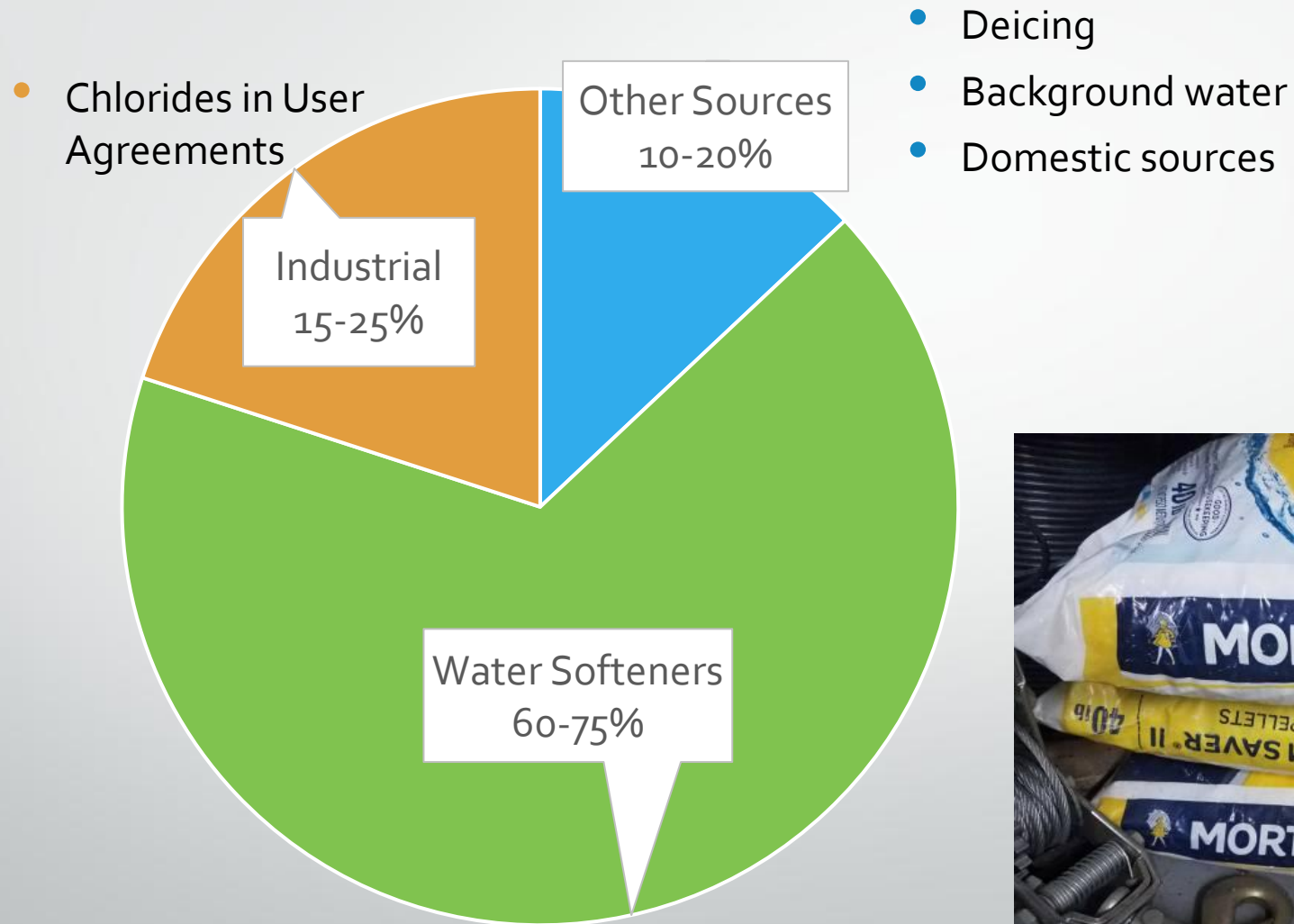
Minnesota Pollution Control
Agency-MPCA

Detroit Lakes Water Reclamation Facility

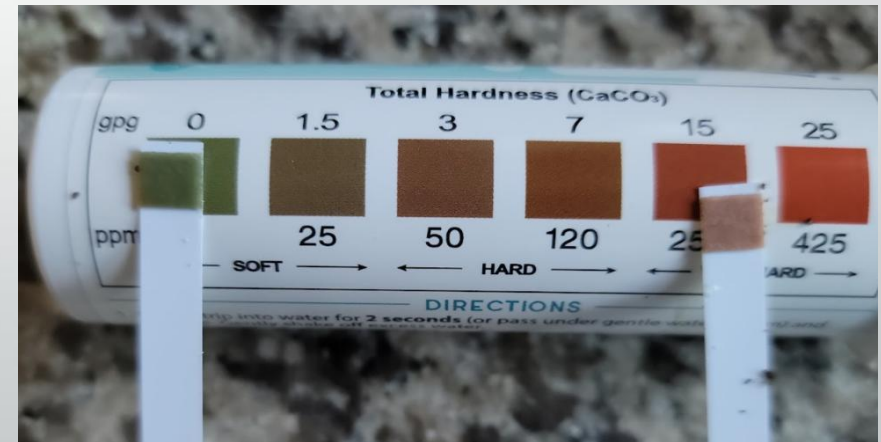
- Chloride compliance schedule is the driver
- Meet a 230 mg/l effluent chloride level by 2033
- Three general ways to address chlorides



Chloride Sources–Typical Contributors to WRRFs



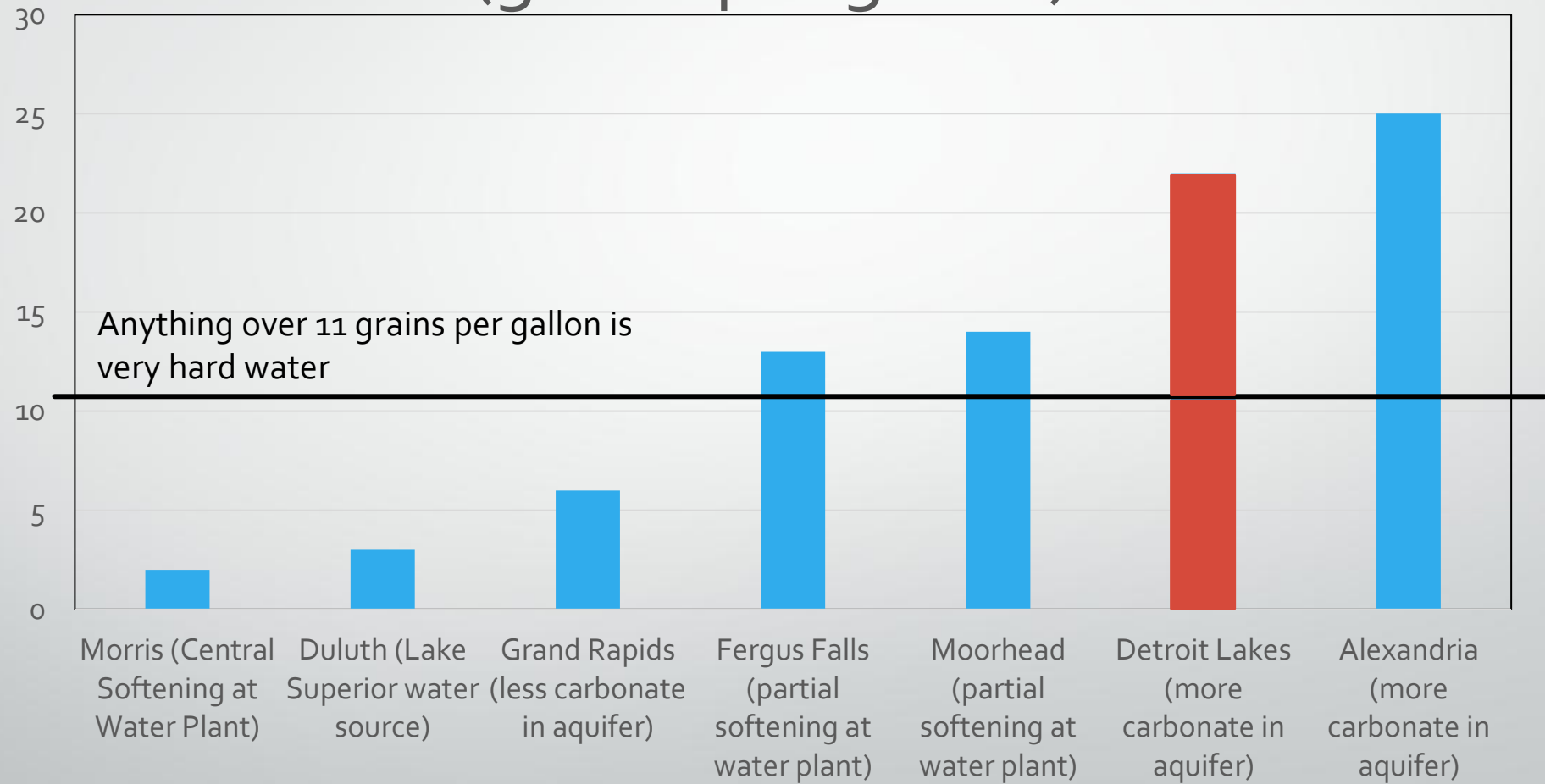
WHY DO WE USE SOFTENERS?



Hardness = dissolved calcium and magnesium



Minnesota City Water Hardness (grains per gallon)





GRANT



Detroit Lakes Chloride Reduction Project

- Project Lead:** Susan Danzl (City of Detroit Lakes, in partnership with SEH Inc.)

- Funding Request:** \$500,000 from the Environment and Natural Resources Trust Fund (ENRTF)

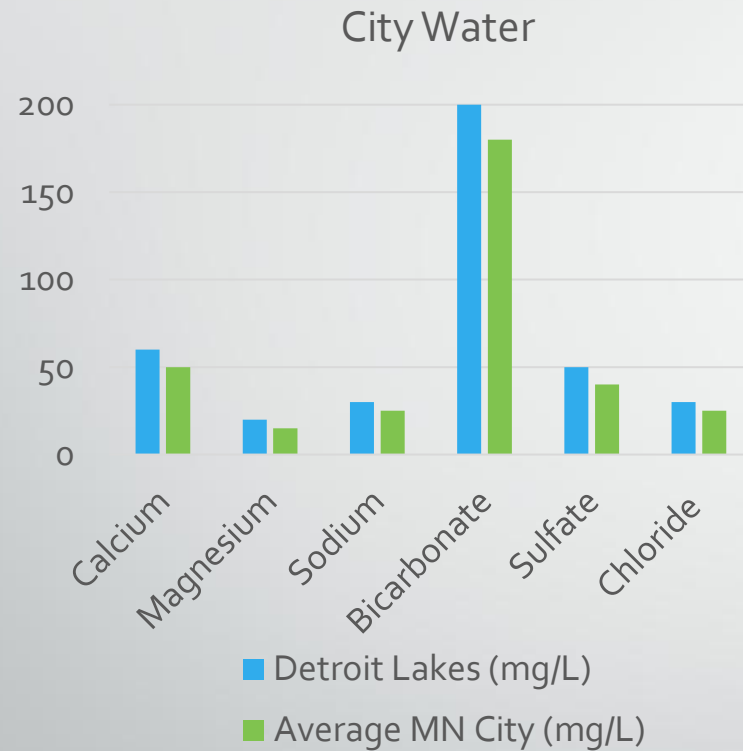
- Timeline:**

- Phase 1: Completion by April 2026
- Phase 2: Completion by June 2028

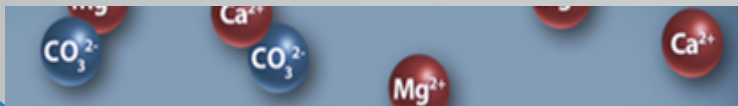
- Goal:** To test a water treatment system that uses pretreatment/conditioning to reduce **chlorides** from wastewater effluent.

- DISCLAIMER:** The state of Minnesota does not endorse the products and services provided.

TECHNOLOGY



CITY WATER WITH MINERALS



WATER WITH MINERALS
AND NANOBUBBLES



Nanobubbles - How they work



Magnesium, calcium, and carbonate ions are normal and common in tap water. However, in high concentrations, they can combine to form insoluble mineral deposits (primarily **calcium carbonate**) which accumulate as crusty **scale** on faucets, shower heads, and toilet bowls.



Nanobubbles are safe, tiny air bubbles that can be added to your water, they help stop carbonate scale from forming. This makes it less likely for deposits to form, so things like faucets, shower heads, and toilet bowls **stay clean**.

Bauer Processor

<https://www.nanobubbles.com/bauer-nanobubbles-processor-how-it-works/>

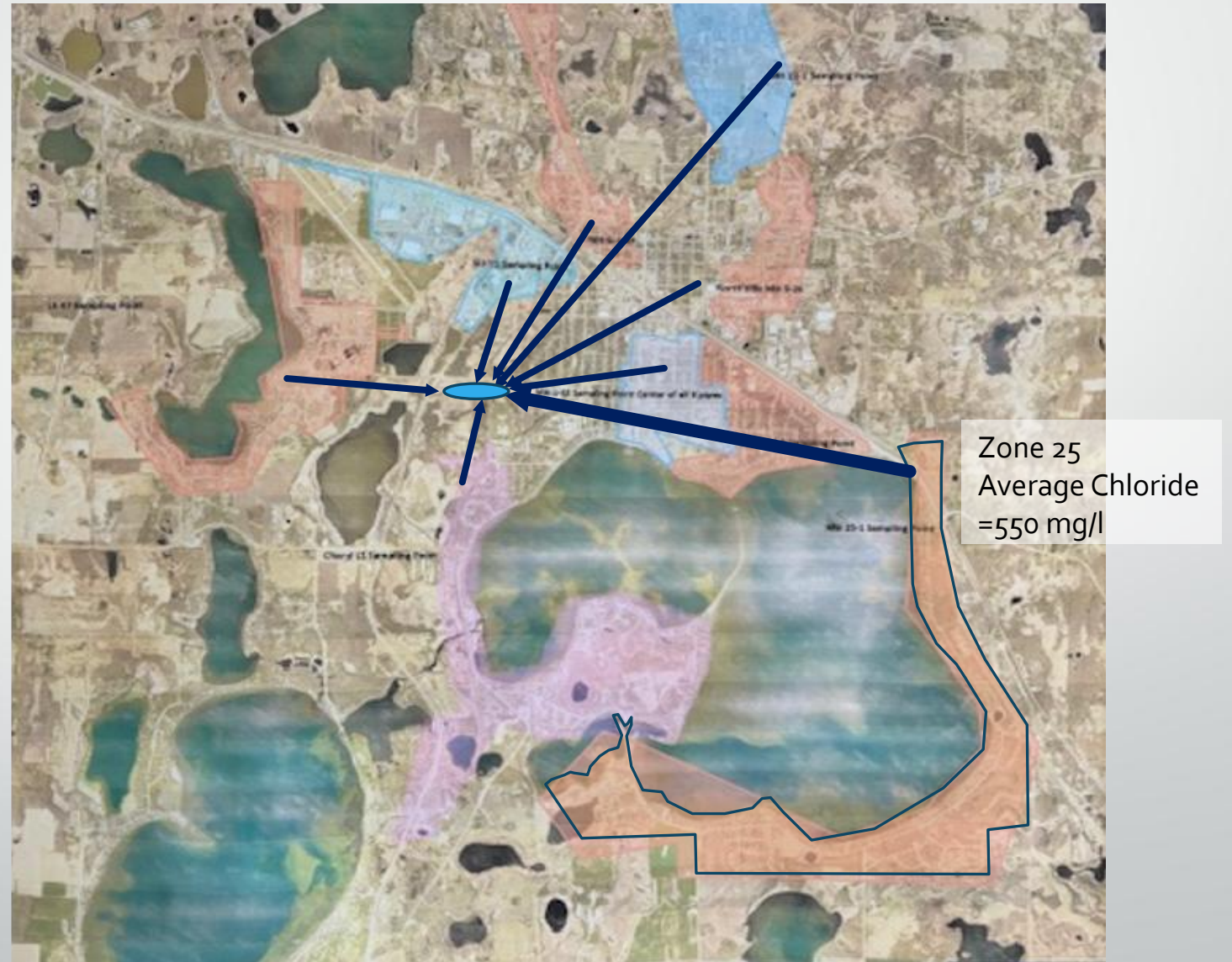


An abstract graphic in the bottom-left corner consisting of several overlapping, parallel lines in bright blue and dark grey, creating a sense of depth and movement.

CHLORIDE MONITORING

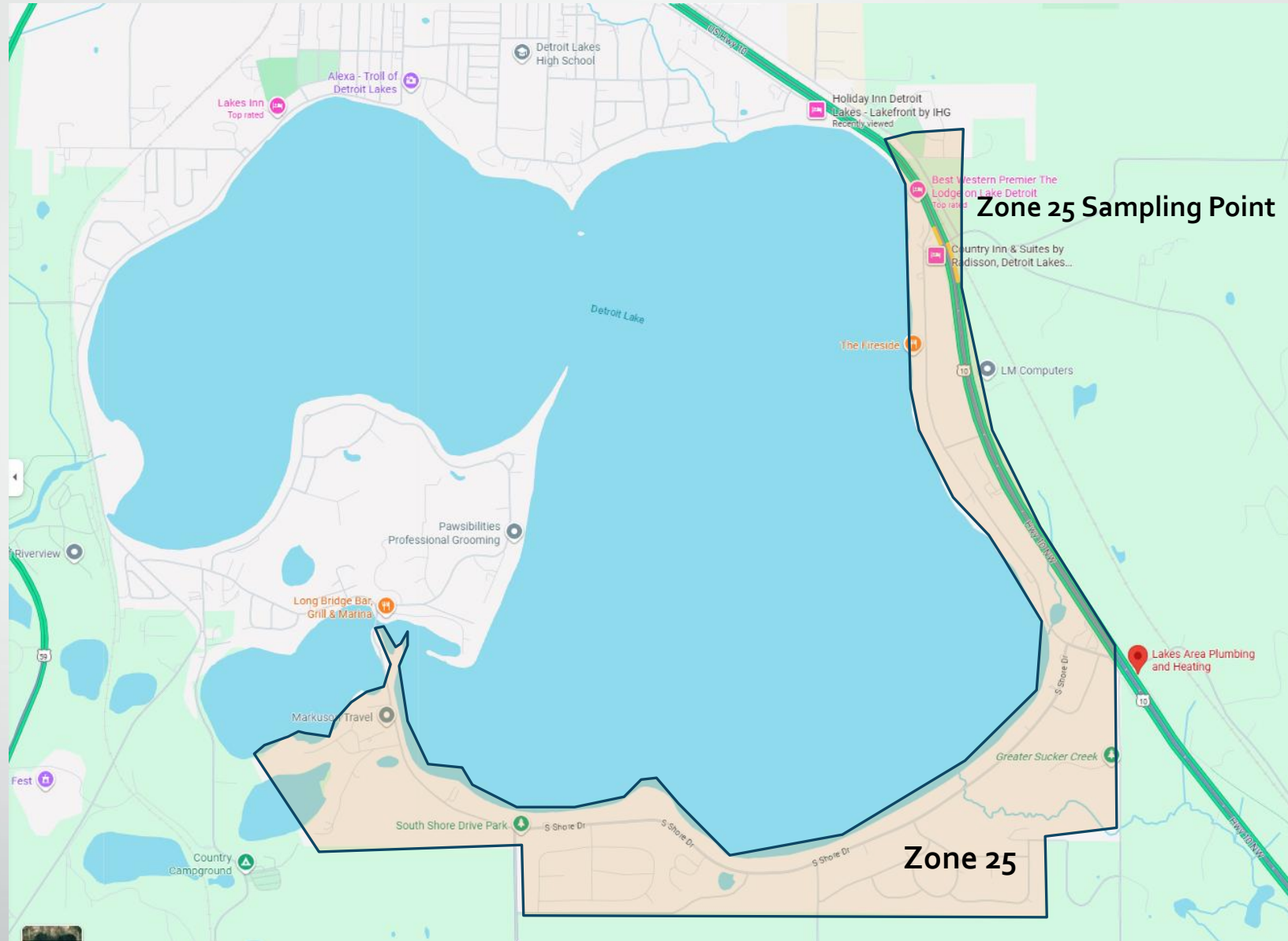
Chloride Sampling – various sampling sites

Typical Plant
Flow = 1.0 MGD
Average
Chloride = 350
mg/l
2900 lb/day
chlorides



Zone 25

- 12-14 properties within Zone 25 will receive Bauer processors to reduce or eliminate salt use
- Flow and chloride concentration will be monitored at Zone 25 monitoring point and at the plant





SUCCESS STORIES IN DETROIT LAKES

Before



After



Processor for Truck Wash

- Eliminated 6 bags a week of salt (12,480lbs annually)
- Over 1200 trailers and 400 trucks are washed over a 7 day period
- Oils and greases wash right off
- Stains on walls in the wash bay are cleaning off
- No longer need to wash the spots from the windows with vinegar
- Trailer beds rinse out quicker

House system, processor & filters.



Part of the whole house system: Filter, remineralization, and storage tanks.



Torrent reverse osmosis filter and pump system.



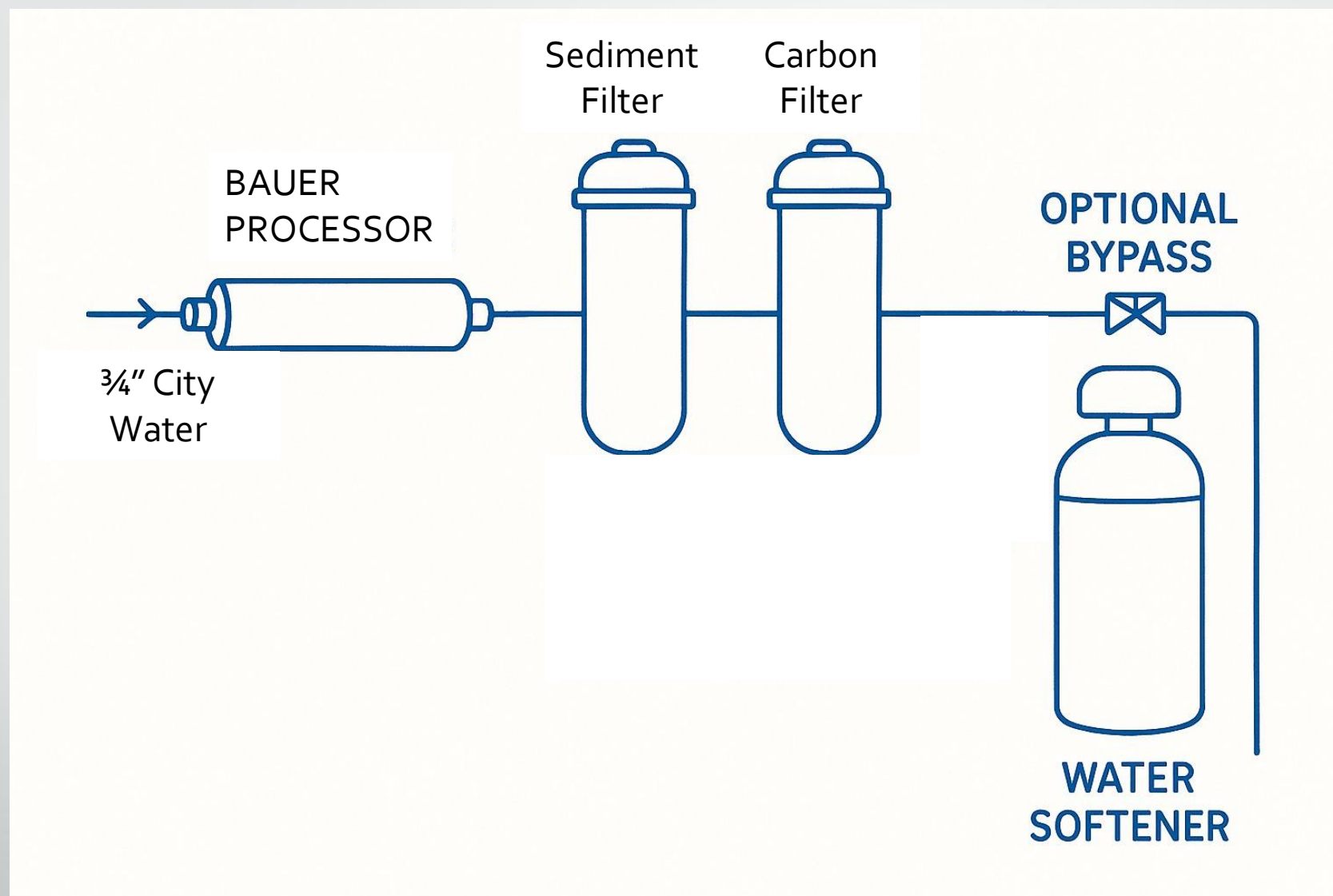
HOME INSTALLATION

INSTALLATION DETAILS

Mid November - Mid December







Next Steps

1. Applications due October 30, 2025
 - <https://www.sehinc.com/detroit-lakes>
 - Drop off/mail to City hall
 - Complete the application today
2. Utility will be selecting up to 12 locations for the installation early November based on factors like utility room size, water use, salt use, and location.
3. Utility will individually meet selected applicants to take pictures and measurements of utility room
4. Selected users will sign participation agreement
5. Time will be arranged for plumber to install mid-November to mid-December
6. SEH will conduct follow up calls over the next year



Thank you!

www.cityofdetroitlakes.com

Additional Resources

- <https://www.health.state.mn.us/communities/environment/water/factsheet/softening.html>