

Chloride in the Lake Simcoe Watershed

Presented to: Township of Brock

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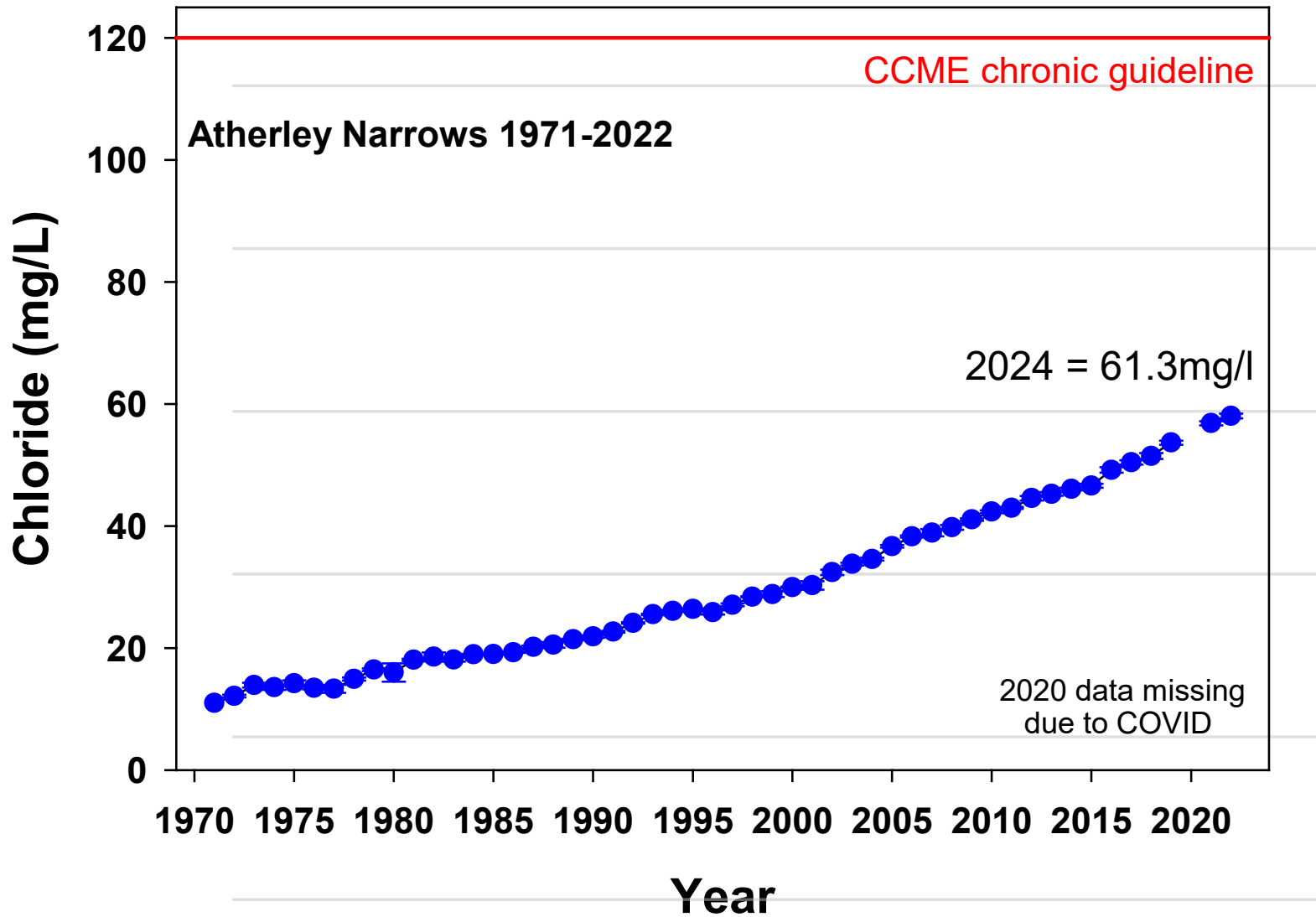
Manager, Watershed Plans and Strategies



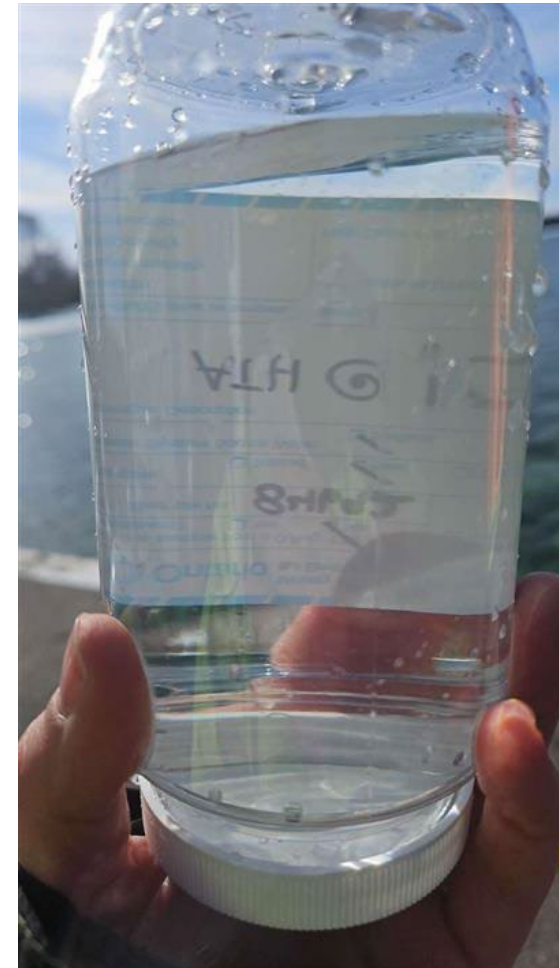
Lake Simcoe Region
conservation authority



Winter Salt Concentration in Lake Simcoe



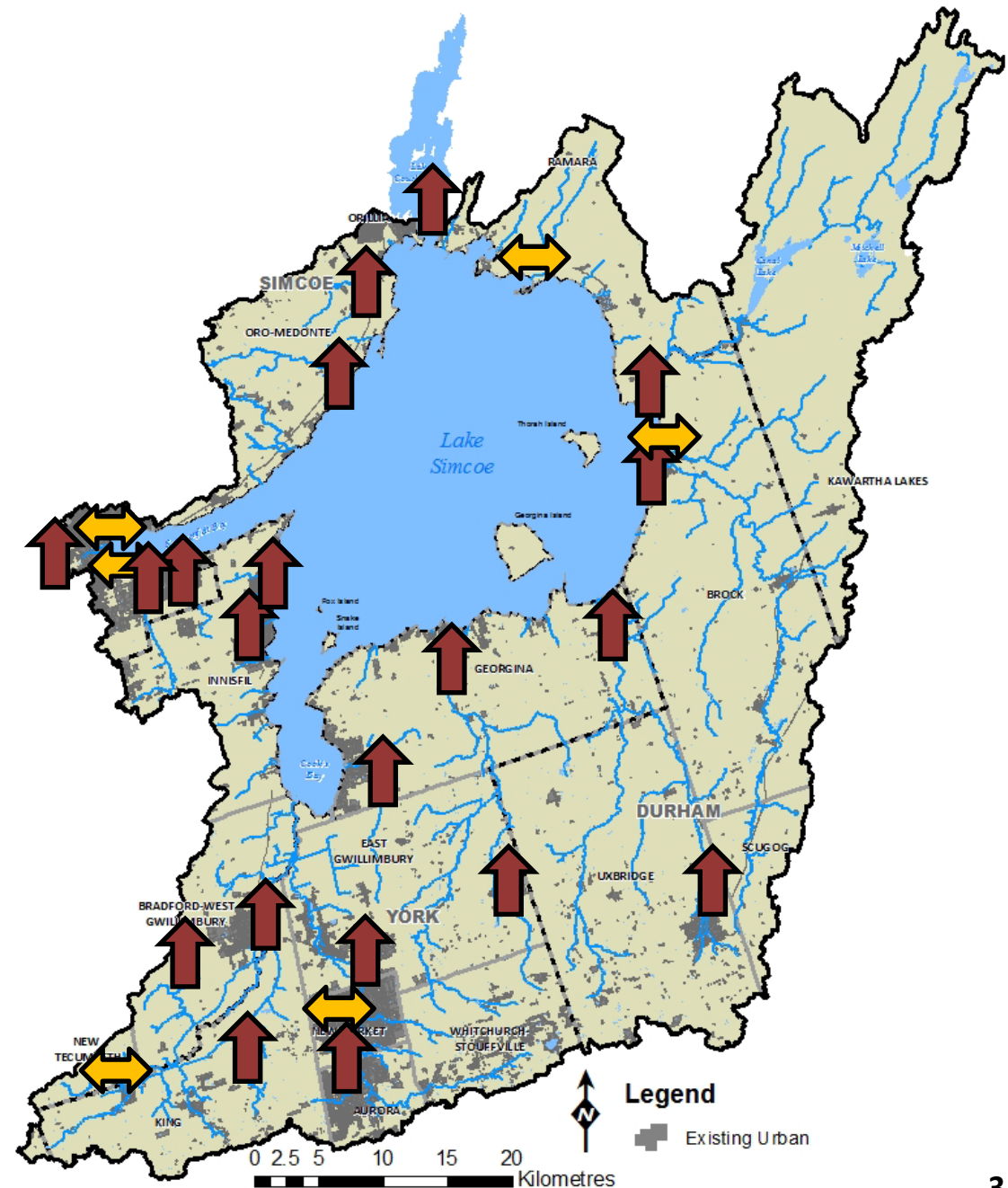
Most recent sample result:
64.2mg/l March 20th 2025



Tributaries – Chloride trends

26 water quality stations

- Short term (2014-2023)
 - 0 declining trend
 - 6 no trend
 - 20 increasing trend
- Long term trends (Full record for each station)
 - 0 declining trend
 - 3 no trend
 - 23 increasing trend

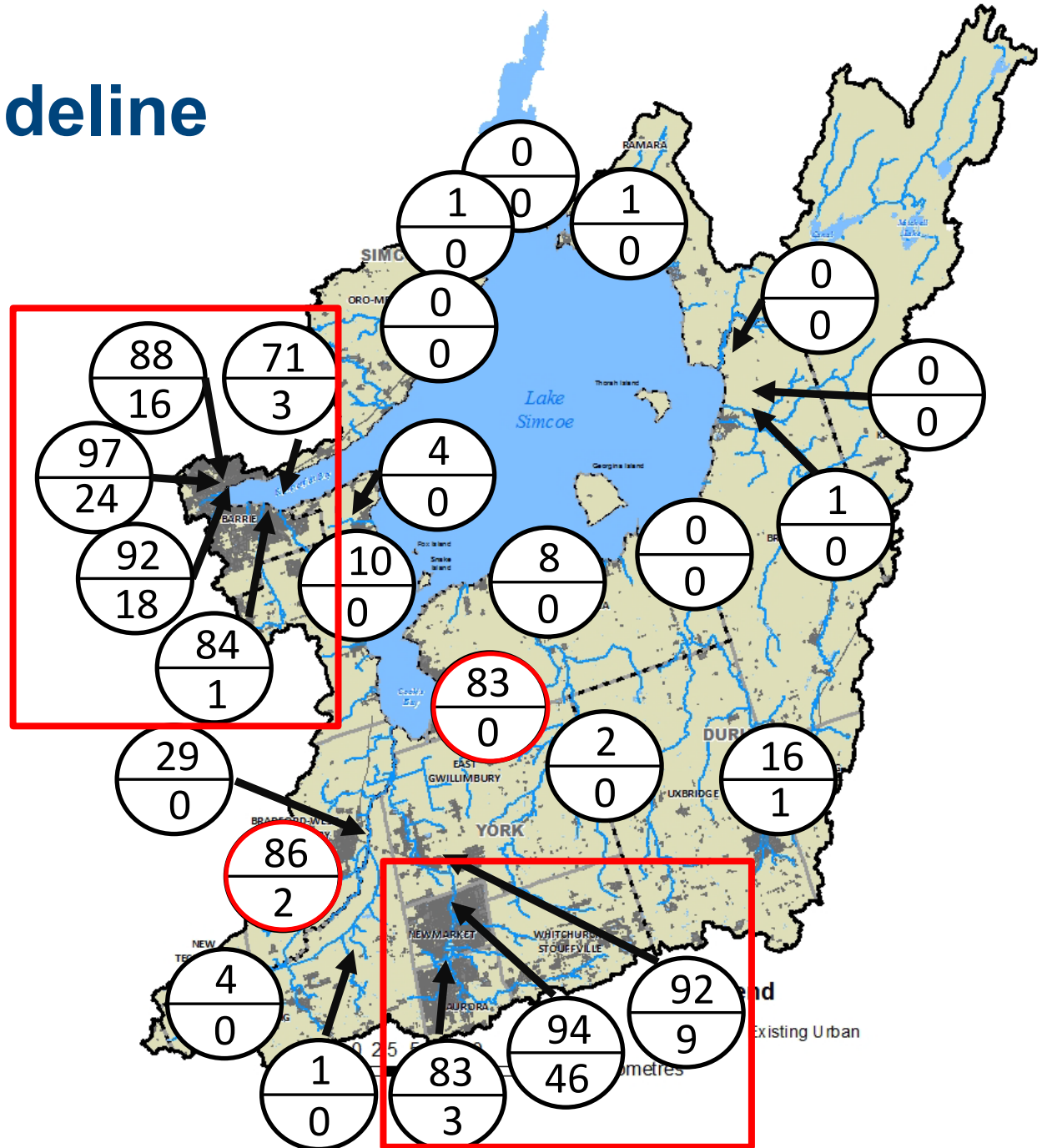
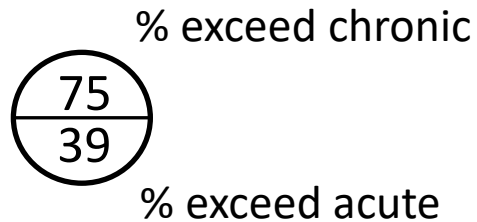


Tributaries – Chloride Guideline Exceedances (Jan 2014- Dec 2023)

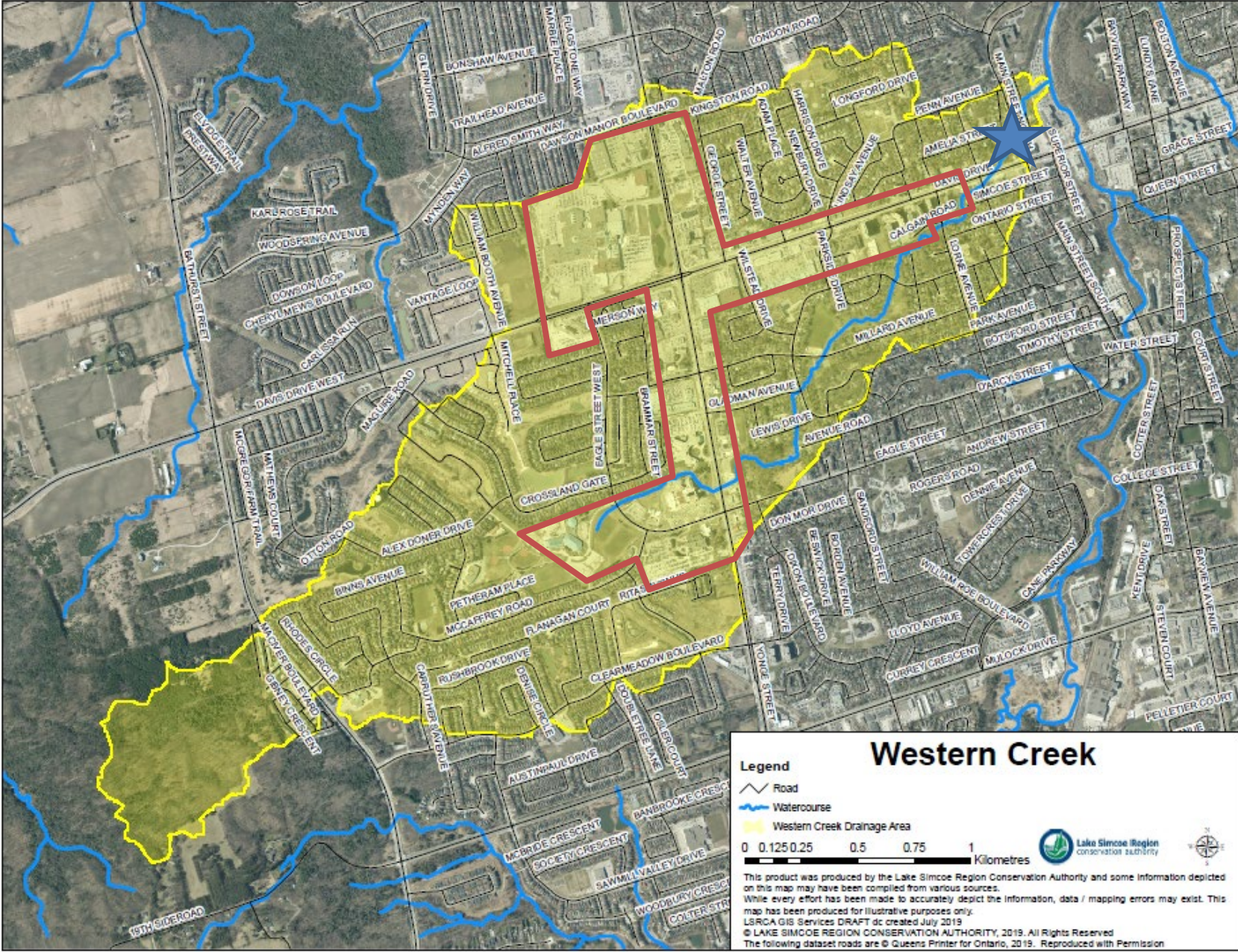
Guidelines:

Chronic = 120 mg/L

Acute = 640 mg/L

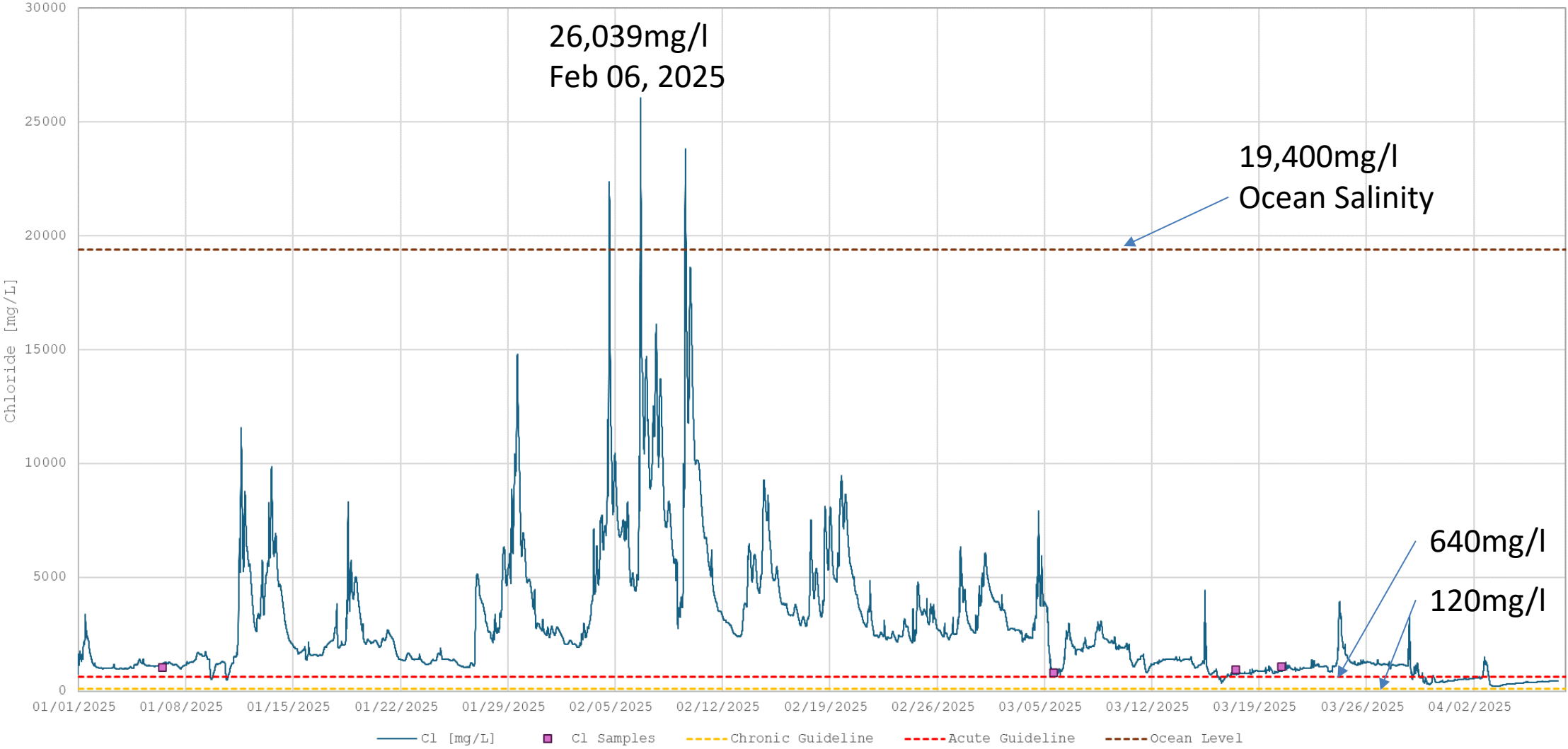


Continuous Chloride Monitoring in Western Creek



Continuous Chloride Concentrations in Western Creek

January 2025 to April 2025



Testing Salt Application Rates in Parking Lots

The Myth: More Salt = More Safety



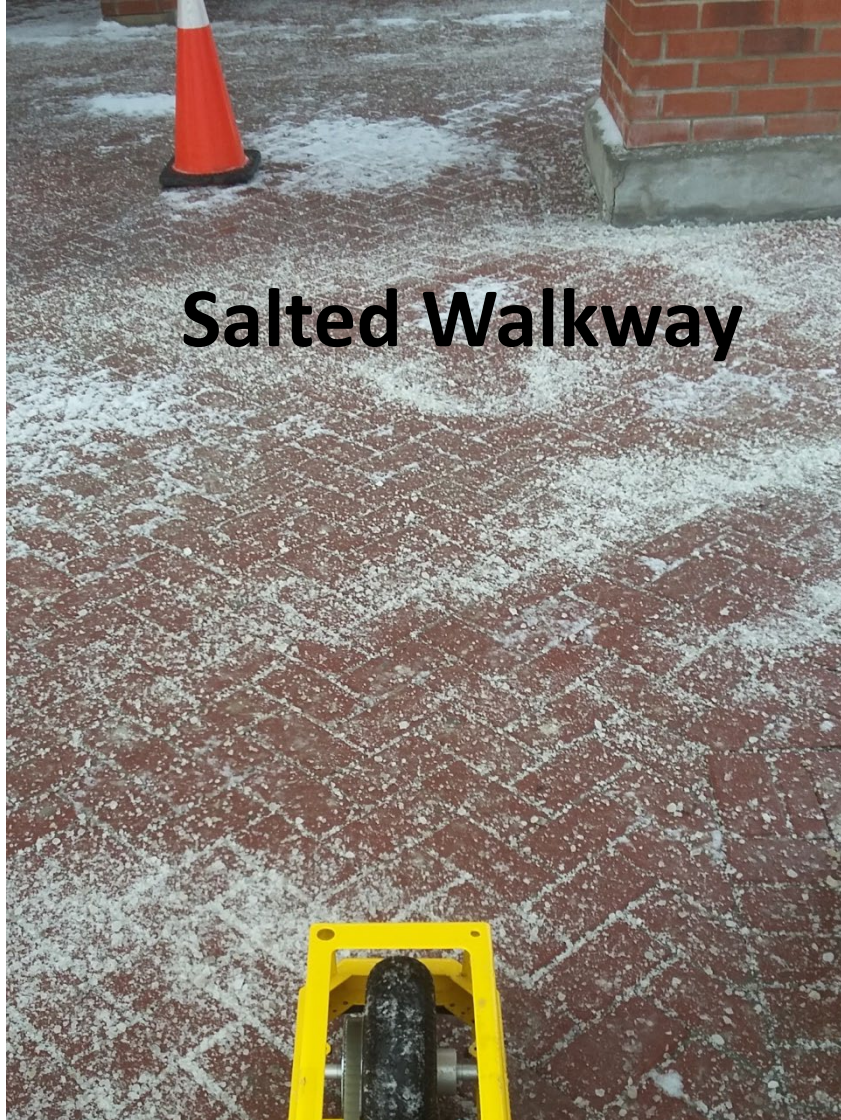
Surface Friction Testing



$\text{Mu} = 0.63$



$\text{Mu} = 0.26$



Salted Walkway

$\mu = 0.22$

Application Rate = 969g/m²



Snowy Walkway

$\mu = 0.21$

Are our winter maintenance expectations reasonable?



$\mu = 0.34$



$\mu = 0.32$

But winter maintenance is a necessity



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Better winter maintenance practices exist

Barriers to adoption do exist as well:

- Concerns about liability
- Concerns about cost
- Concerns about public expectations

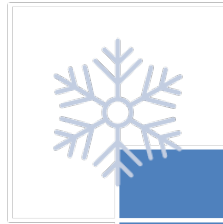


Case study: commercial parking lot

- Large commercial parking lot in the Lake Simcoe watershed
- Two contractors during the study period: Contractor A (2014-2018), and Contractor B (2018-2024)
- Similar equipment
- Primary concerns: safety and liability

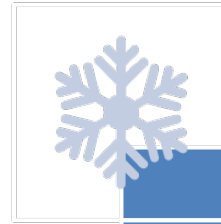


Case study: commercial parking lot



Contractor A

- “Typical” application
- High application rate
- Consistent regardless of conditions

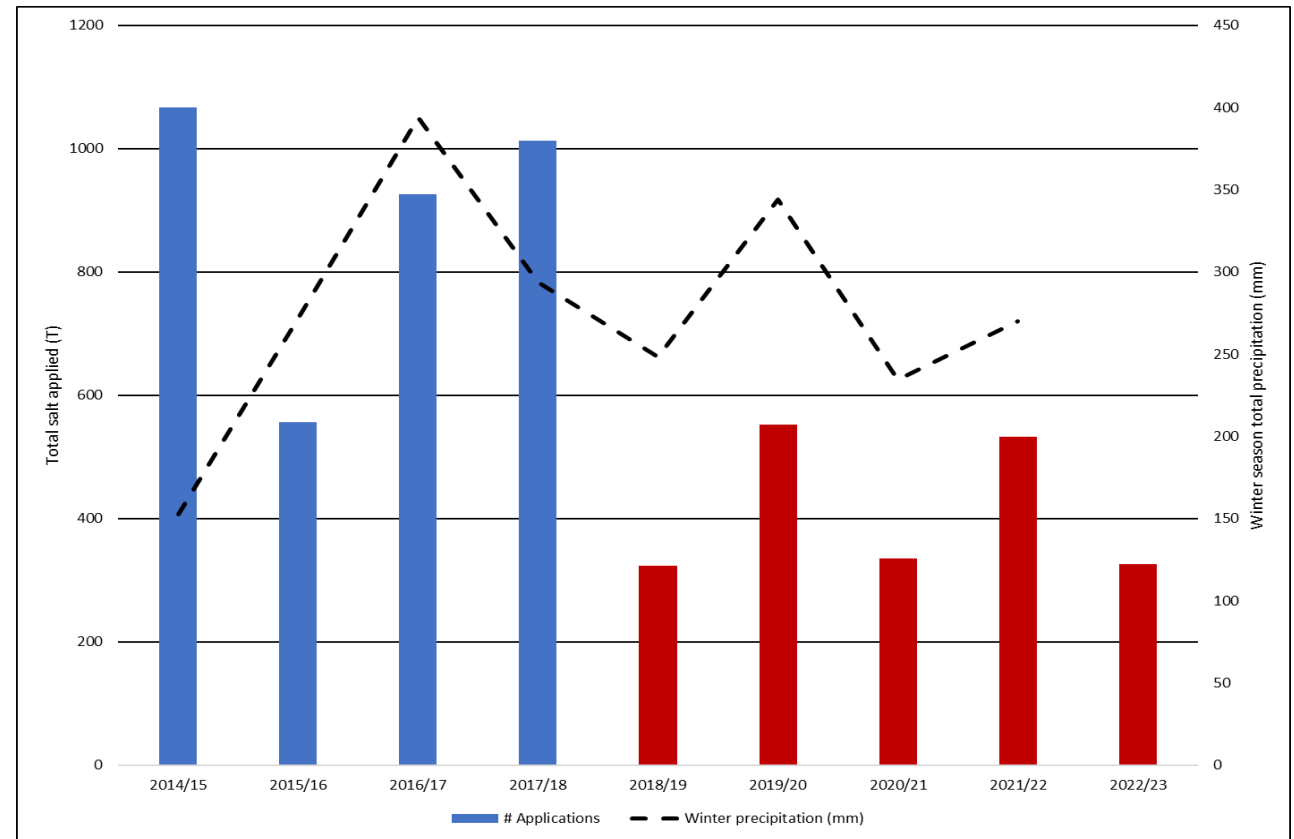


Contractor B

- Best practices
- Regular monitoring of site and conditions
- Tailored application

Case study: commercial parking lot

- Average applications/season:
 - Contractor A: 66
 - Contractor B: 43
- Average application per event:
 - Contractor A: 12 tonnes
 - Contractor B: 10 tonnes
- Both contractors were claim-free for the duration of the study
- Contractor B realized approx. \$40k in material cost savings/year



Bottom line

- It's possible to reduce application rates while maintaining safety
- Significant cost savings can be had by refining practices
- Contractor training is vital
- Good information on current conditions is vital
- Contractors and property managers need to be empowered to make good decisions



Easing adoption of best practices

- The New Hampshire approach
 - Regulation limiting liability
 - Recognition of Best Management Practice guidelines
 - Certification of snow and ice management contractors
 - Public education
- Broad support in Ontario
 - Winter maintenance industry
 - Commercial property owners
 - Water quality groups



How municipalities can help

- Council resolution in support of liability limitation
- Hire trained and certified contractors
- Share weather data, where possible
- Continual improvement in roads management
- Empower staff to make good decisions



Thank you

