



*The GSWA mission
is to protect, promote and advocate for sustainable
improvements in water quality and healthy watersheds.*
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February 10, 2023

Mayor Lefebvre and City Council:

Greater Sudbury Watershed Alliance Resolution

Applying the Precautionary Principle to protect the Greater City of Sudbury lakes from new or expanded salted roadways.

Whereas, current evidence implicates road salting activities (in the form of sodium chloride) for winter safety as a primary contributor to elevated chloride concentrations in Ontario surface (lakes and streams) and groundwater and the trends may be exacerbated with urbanizationⁱ; and

Whereas, the City of Greater Sudbury is mandated by the Ontario Regulation 239/02: Minimum Maintenance Standard for Municipal Highways to treat with road salt and plow to bare pavement conditions for safety reasons on Main Arterial and Secondary Collector Roads (Class 1-3 Roads) within 3 to 8 hours after a winter storm or freezing rain eventⁱⁱ, with the latter projected to increase in frequency with climate change; and

Whereas, the city salt application rate to achieve this standard as needed and as temperature dictates, is 60 kg - 150kg per two lane collector per kilometer of roadwayⁱⁱⁱ, with higher amounts for arterial roadways having more lanes; and

Whereas, it is recognized that road salt (sodium and chloride) migrates in a watershed to the receiving body of water and that no practical method of removal is possible and there are no practical alternatives such as calcium magnesium acetate, calcium chloride or beet juice, as they have their own cost or environmental implications^{iv}; and

Whereas, the Ontario Drinking Water Systems Regulation 170/03 under the Safe Drinking Water Act requires reporting to the local Medical Officer of Health when sodium levels in public drinking water supplies exceed 20 mg/L or more. The local Medical Officer of Health then informs local physicians, as such information is intended to help persons on sodium-restricted diets control their sodium intake. In 2020, the Ramsey Lake Sudbury Drinking Water System-David Street, 2020 had a sodium level of 54.1 mg/L^v; and

Whereas, it is estimated that approximately 40 percent of the population of the City of Greater Sudbury or up to 50,000 individuals consume drinking water from Ramsey Lake and the City Official Plan states that Ramsey Lake "is to be maintained as one of the main drinking water sources for the city" and this water body is also used for recreational purposes; and

Whereas, the Canadian Water Quality Guideline for chloride levels to protect aquatic life is 120 mg/L^{vi} and chloride levels in Ramsey Lake in 2020 reached 90.2 mg/L^{vii} although recent scientific studies are demonstrating that in lakes within the Precambrian Shield, aquatic life is harmed at much lower levels than 120 mg/L^{viii}; and

Whereas, the provincially funded Junction Creek (JCSWS) and Ramsey Lake Subwatershed (RLSWS) Studies have addressed and made recommendations with regard to winter road salt management, some of which have yet to be implemented; and

Whereas, similar concerns have been expressed by Greater Sudbury Watershed Alliance in a response to the RLSWS as “it is unfortunate that as the Public Works strives to reduce the amount of salt used on city roads, new development and roadways within the watershed will counteract that initiative and increase the amount of salt”; now, therefore be it

Resolved that the Greater Sudbury Watershed Alliance recommends the City of Greater Sudbury (CGS):

1. Apply a stringent ‘Precautionary Principle’ to any new or widened roadways that are being planned or developed in the City, and specifically in the Ramsey Lake Subwatershed to avoid exacerbating the decline in water quality of an important drinking water source.
2. Recommended initial steps to support this approach would include:
 - Fostering multi-stakeholder and co-adaptive management strategies to mitigate the social, economic and environmental costs^{ix} of increasing salinization of our urban lakes.

Developing a ‘net-zero salt-effluent to the receiving waterbody’ framework for Ramsey Lake and other CGS salt-stressed lakes. This could be done by researching and trialling technological advancements (e.g., artificial intelligence software that provides smart decision-making tools to prepare, intervene and adapt road salt spreading more efficiently while reducing costs and environmental impacts^x, phasing out steel blades on plows, by replacing with rubber blades, resulting clearing closer to the roads^{xi}) which could decrease the salt application rate per kilometer.

- Pausing the creation of new, and the widening or extension of current class 1 - 3 roads within the watershed until it can be demonstrated that salt-budget offsets as described above would achieve a net-zero salt effluent to the receiving waterbody.
- Designing any other roads/streets within the watersheds with minimal grades and speed limits lowered to increase safety.

Respectfully,

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ⁱ Sorchetti RJ et al. Chloride trends in Ontario’s surface and groundwaters Journal of Great Lake Research. 2022. 48(2) pp512-525 <https://doi.org/10.1016/j.jglr.2022.01.015>

ⁱⁱ City of Greater Sudbury Salting and Sanding: <https://www.greatersudbury.ca/live/transportation-parking-and-roads/road-maintenance/salting-and-sanding/>

ⁱⁱⁱ Use of Road Deicers City of Greater Sudbury Operations Committee May 14th, 2018 <https://pub-greatersudbury.escribemeetings.com/filestream.ashx?documentid=5886>

^{iv} Sustainable Technologies Evaluation Program Technical Brief . Alternatives to Salt: What else melts snow and ice? 2020 www.sustainabletechnologies.ca

^v Public Health Sudbury and Districts. Accessed November 12, 2022: <https://www.phsd.ca/health-topics-programs/water/drinking-water/sodium-drinking-water/>

^{vi} Canadian Council of Ministers of the Environment. 2011. Canadian water quality guidelines for the protection of aquatic life. Chloride. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg

^{vii} Data supplied by the Greater Sudbury Strategic and Environmental Planning Initiatives / Planning Services

^{viii} Arnott SE et al. Road Salt Impacts Freshwater Zooplankton at Concentrations below Current Water Quality Guidelines Environmental Science and Technology 2020, 54, 9398–9407 <https://pubs.acs.org/doi/10.1021/acs.est.0c02396?ref=pdf>

^{ix} Schuler MS. Regulations are needed to protect freshwater ecosystems from salinization.

Philosophical Transactions of The Royal Society B Biological Sciences · December 2018

<http://dx.doi.org/10.1098/rstb.2018.0019>

^x Clean Nature: <https://www.clean-nature.ca/#product3>

^{xi} City of Ottawa: Winter Maintenance Quality Standards Review/ Update on Improvements for 2021/2022 Winter Season <https://engage.ottawa.ca/wmqqs>