DRINKING WATER SOURCE PROTECTION
Our Actions Matter

LAKE ERIE SOURCE PROTECTION REGION

January 14, 2020

Clerk, City of Guelph
1 Carden Street, Guelph ON N1H 3A1

To Whom It May Concern:

**RE: <u>Support for actions to address over-application of winter maintenance chemicals to protect sources of municipal drinking water</u>**

On December 12, 2019, the Lake Erie Region Source Protection Committee received report SPC-19-12-02 Winter Maintenance Chemicals: Challenges and Opportunities, and passed the following resolution:

> *AND THAT the Lake Erie Region Source Protection Committee direct staff to forward report SPC-19-12-02 to the Councils of the single, upper and lower-tier municipalities within the Lake Erie Source Protection Region, all Source Protection Committees, Ontario Good Roads Association, Association of Municipalities of Ontario, and Rural Ontario Municipal Association, to request resolutions in support of the report's recommended actions and forward the resolutions to the Ontario Minister of the Environment, Conservation and Parks, Ontario Minister of Transportation, Ontario Minister of Municipal Affairs and Housing and Attorney General of Ontario.*

The report (attached) provides an overview of the ongoing issue and implications of over-application of winter maintenance chemicals, highlighting trends in the Lake Erie Source Protection Region, and includes recommended actions, including changes to the liability framework, increased requirements for winter maintenance of parking lots and changes to the Clean Water Act, 2006 framework to proactively protect municipal drinking water sources.

As per the Source Protection Committee's resolution, I am asking for municipal support of the report's recommended actions. Please forward a copy of any resolution to: Ilona Feldmann, Source Protection Program Assistant, Lake Erie Source Protection Region (ifeldmann@grandriver.ca)

Please contact me if you have any questions or concerns about the report or the request for municipal support.

Regards,

Martin Keller
Source Protection Program Manager, Lake Erie Source Protection Region

**LAKE ERIE REGION SOURCE PROTECTION COMMITTEE**

**REPORT NO. SPC-19-12-02** **DATE:** December 12, 2019

**TO:** Members of the Lake Erie Region Source Protection Committee

**SUBJECT: Winter Maintenance Chemicals: Challenges and Opportunities for Change**

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**RECOMMENDATION:**

THAT the Lake Erie Region Source Protection Committee receives report SPC-19-12-02 – Winter Maintenance Chemicals: Challenges and Opportunities for Change – for information.

AND THAT the Lake Erie Region Source Protection Committee receives the Recommended Actions to Address the Over-Application of Winter Maintenance Chemicals for consideration and action.

**REPORT:**

**Summary of Report Contents**

- Introduction
- Recommended Actions to Address the Over-Application of Winter Maintenance Chemicals
- Increasing Sodium and Chloride Concentrations within Groundwater Drinking Sources in Lake Erie Source Protection Region
- Liability and Other Factors Influence the Amount of Salt Applied
- Changes Needed to the Source Water Protection Director's Technical Rules

**Introduction**

At the October 3, 2019 Lake Erie Region Source Protection Committee (SPC) meeting, members discussed the ongoing issue of salt over-application and the increasing number of sodium and chloride Issue Contributing Areas (ICAs) across the Lake Erie Source Protection Region. Following the discussion, the committee directed Lake Erie Region staff to draft a report and recommendation(s) regarding the issue for presentation at the next SPC meeting.

This report has been written in collaboration with staff from the Grand River Conservation Authority (GRCA), City of Guelph, Region of Waterloo and Wellington Source Water Protection.

**Recommended Actions to Address the Over-Application of Winter Maintenance Chemicals**

To address the above concerns, the following recommendations are provided to the Lake Erie Region Source Protection Committee for consideration:

THAT the Province of Ontario explore ways to reduce the factors that contribute to excess application of winter maintenance chemicals on road ways and parking lots through a review of the liability framework in Ontario.

THAT the Province of Ontario work with municipalities to strengthen training programs for road agencies that apply winter maintenance chemicals on roads and sidewalks to reduce application rates without compromising road safety that would assist with mitigating risks to municipal drinking water systems.

THAT the Province of Ontario require property owners and contractors responsible for maintaining safe parking lots and sidewalks be trained and certified in the application of winter maintenance chemicals.

THAT the Province of Ontario change Prescribed Drinking Water Threats, “the application of road salt” and “the handling and storage of road salt” to “the application of winter maintenance chemicals” and “the handling and storage of winter maintenance chemicals”, and define the term in the regulation.

THAT the Province of Ontario change the Table of Circumstances related to the application of winter maintenance chemicals to differentiate between application on roads, sidewalks and parking lots to reflect the different liability issues and the nature of winter maintenance conducted for each surface type.

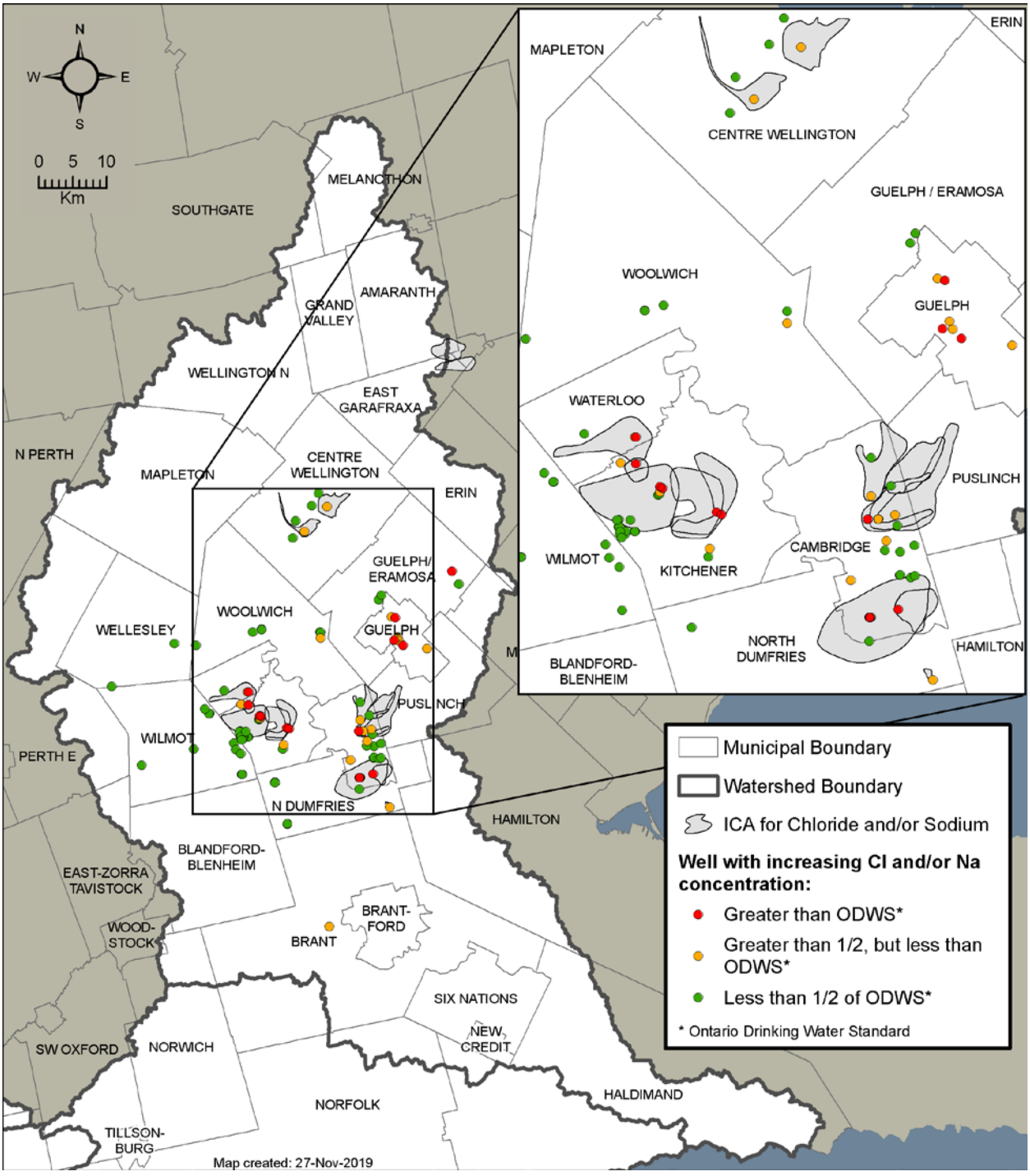
AND THAT the Province of Ontario amend the Clean Water Act’s Director’s Technical Rules to enable municipalities to proactively protect their municipal drinking water supplies from the application and storage of winter maintenance chemicals.

**Increasing Sodium and Chloride Concentrations within Groundwater Drinking Sources in Lake Erie Source Protection Region**

Municipal water supplies within the Lake Erie Source Protection Region (LESPR) have exhibited increases in chloride and sodium concentrations. **Map 1** identifies all municipal supplies within the LESPR that are impacted by increasing chloride and sodium concentrations. Within LERSPR, approximately 150 wells are impacted by increasing concentrations of chloride and/or sodium, where 34 wells have identified chloride and/or sodium as an Issue under the *Clean Water Act, 2006* and Technical Rules. **Map 1** shows the ICAs for chloride and sodium, along with municipal supply wells with increasing concentrations. Issue Contributing Areas are delineated for wells with an Issue and policies apply to address the elevated contaminant concentrations.

The impacted municipal supply wells range from small rural centres (Elora, Fergus – Centre Wellington, Guelph-Eramosa, Paris – County of Brant) to medium cities (City of Guelph, Orangeville) to large urban areas (Region of Waterloo). Examples of increasing chloride and sodium concentrations at municipal supply wells within the LESPR are described below and include Wells E3 in Elora and F1 in Fergus, the City of Guelph Water Supply Wells, William Street Wellfield in Waterloo and Well G5 in Cambridge. The Town of Orangeville Water Supply System is impacted by increasing chloride and sodium concentrations and has defined ICAs that extend into the LESPR.

**Map 1: Lake Erie Region Municipal Supply Wells with Elevated Chloride and Sodium Concentrations**



Increasing Sodium and Chloride Concentrations at Bedrock Groundwater Wells in Wellington County

The Township of Centre Wellington monitors sodium and chloride concentrations at the nine municipal wells that service Elora and Fergus. Well Fergus F1 is screened within a bedrock aquifer with surrounding land primarily urban. Well Elora E3 is screened within a bedrock aquifer with surrounding land primarily agricultural, with a large manufacturing facility located immediately north of the well.

**Figure 1** and **Figure 2** illustrate the increasing and variable trends of chloride and sodium concentrations at Elora Well E3 and Fergus Well F1. Chloride concentrations at Elora Well E3 and Fergus Well F1 are both above and below half of the Ontario Drinking Water Standards (125 mg/L). Maximum chloride concentrations are noted at Elora Well E3 of 165 mg/L. At Elora Well E3 and Fergus Well F1 sodium concentrations are increasing, but remain below half of the Ontario Drinking Water Standards (100 mg/L). Maximum sodium concentrations are noted at Fergus Well F1 of 93 mg/L. A study completed by Golder Associates (2015) concluded that groundwater at well F1 appears to be derived mainly from the overburden and shallow bedrock aquifers, while groundwater at well E3 appears to be derived mainly from the bedrock aquifer. In both cases, the chloride source is likely from the surface (anthropogenic sources). As a result of the increasing chloride concentrations to above half of the Ontario Drinking Water Standards and the anthropogenic origin of the chloride, chloride was identified as an Issue and an ICA was delineated for both Elora Well E3 and Fergus Well F1.

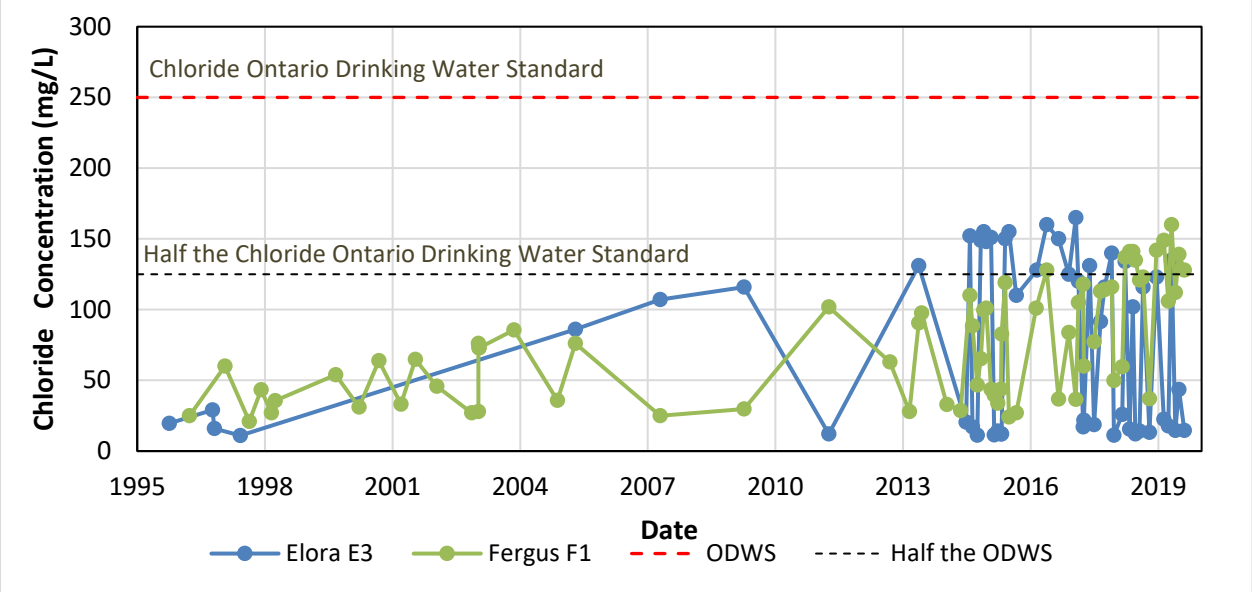



**Figure 1: Chloride concentrations at Elora Well E3 and Fergus Well F1**

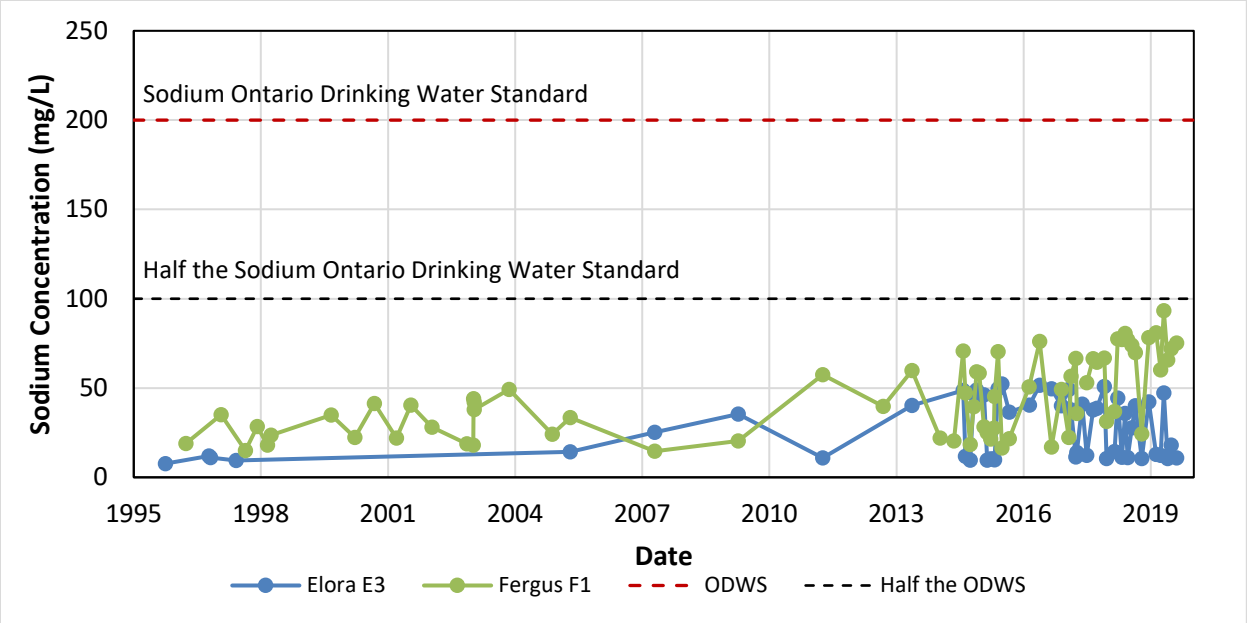



**Figure 2: Sodium concentrations at Elora Well E3 and Fergus Well F1**

Increasing Sodium and Chloride Concentrations at Bedrock Groundwater Wells in the City of Guelph

Sodium and chloride concentrations are increasing at several bedrock wells within the City of Guelph. **Figure 3** and **Figure 4** below illustrate increasing chloride and sodium trends in select municipal wells within the City of Guelph. **Figure 3** shows chloride concentrations above half the Ontario Drinking Water Standard for chloride (125 mg/L) at almost all wells, with chloride concentrations approaching or at the Ontario Drinking Water Standard for chloride of 250 mg/L. **Figure 4** shows sodium concentrations above half the Ontario Drinking Water Standard for sodium (100 mg/L) at all wells, with sodium concentrations ranging from 120 to 170 mg/L in 2019.

Sodium and chloride are not identified as Drinking Water Issues at City of Guelph wells. The City of Guelph will continue to monitor sodium and chloride concentrations.

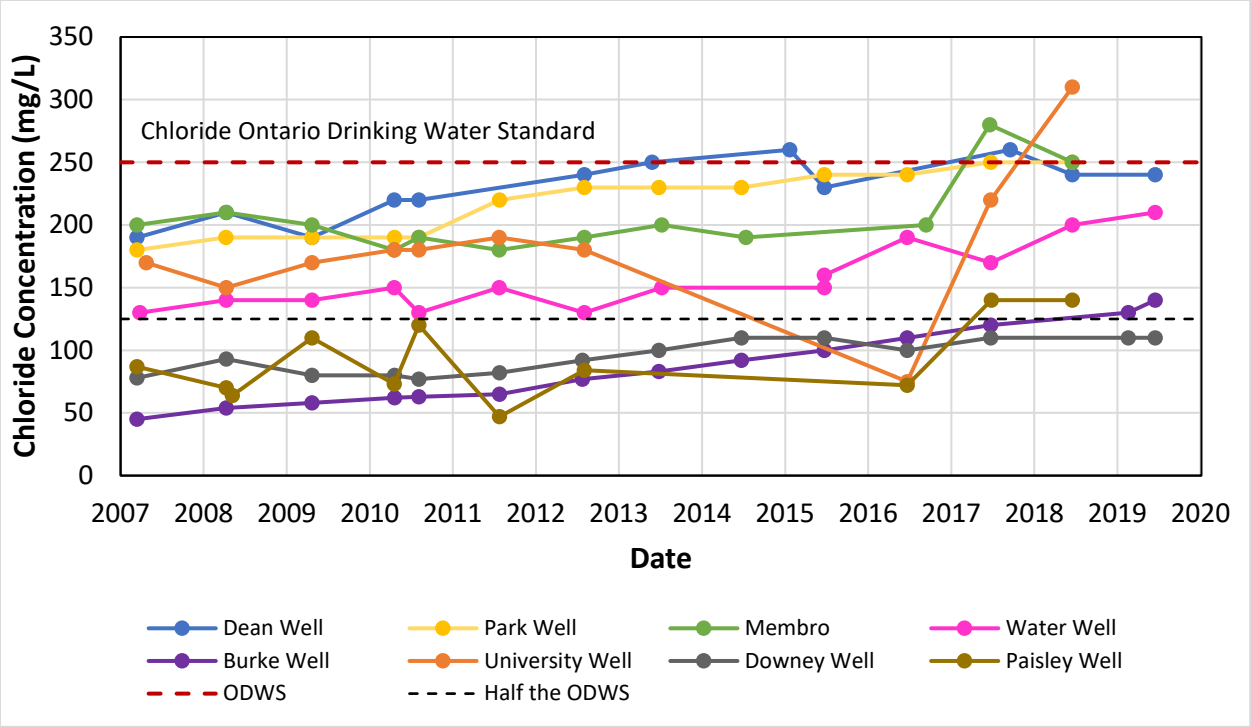



**Figure 3: Chloride concentrations at select municipal wells within the City of Guelph**

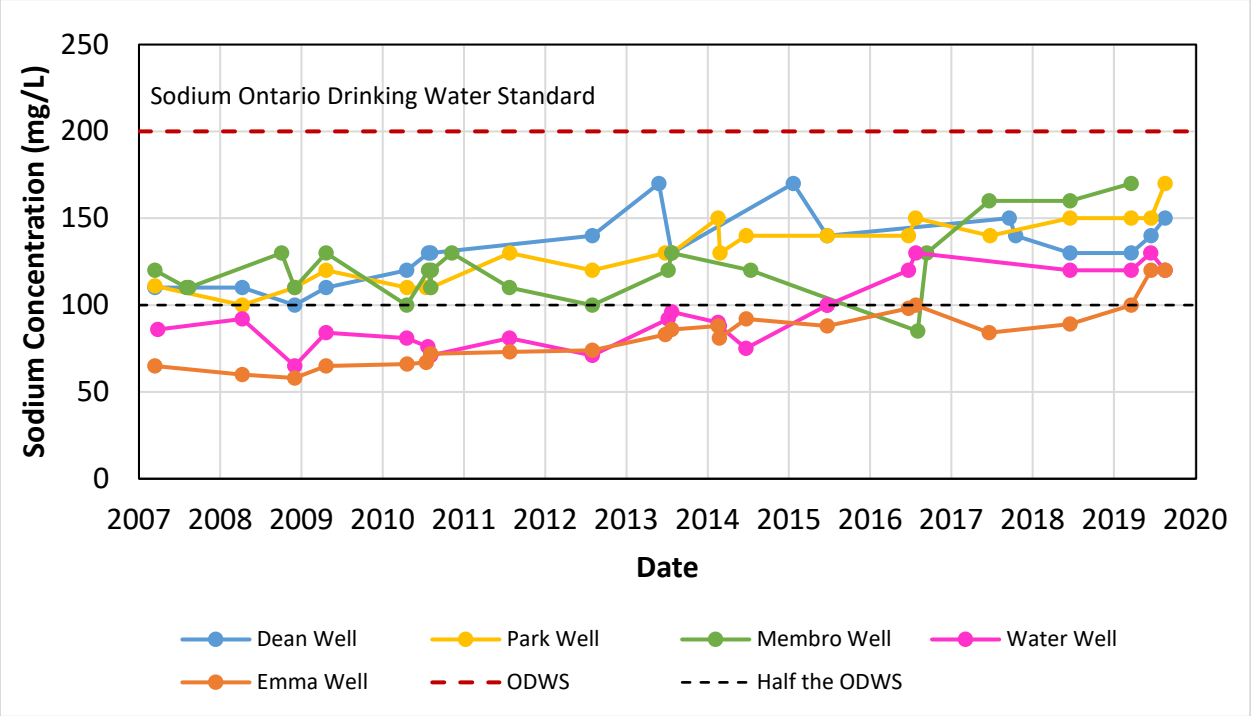



**Figure 4: Sodium concentrations at select municipal wells within the City of Guelph**

Increasing Sodium and Chloride Concentrations at Groundwater Wells in the Region of Waterloo

The Region of Waterloo has nine wellfields with elevated concentrations of chloride and sodium that resulted in the identification of Issues under the *Clean Water Act, 2006* and Technical Rules and delineation of ICAs. Impacted wellfields are generally within the urban areas of Cambridge, Kitchener and Waterloo. Chloride and sodium concentrations have been measured as high as 750 mg/L and 365 mg/L, respectively, at one municipal wellfield in the Region of Waterloo.

The William Street Wellfield is an example of one of the Waterloo's wellfields that is impacted by increasing chloride and sodium concentrations. **Figures 5** and **6** below illustrate the increasing chloride and sodium concentrations at the three water supply wells in the William Street wellfield. An increasing trend of chloride (**Figure 5**) is observed dating back to 1975. Current chloride concentrations are above the Ontario Drinking Water Standard of 250 mg/L with 2019 chloride concentrations reaching approximately 450 mg/L. An increasing trend of sodium (**Figure 6**) is observed dating back to 1980. Current sodium concentrations at two of the three wells are above the Ontario Drinking Water Standard of 200 mg/L with 2019 sodium concentrations reaching approximately 240 mg/L.

**Figures 5** and **6** also present the results from well G5 of the Pinebush system in Cambridge and demonstrates the impacts from application of salt on parking lots. This well also shows increasing chloride and sodium trends from the 1980s. However, the concentrations dramatically increase in the middle to late 1990s, which is coincident with the construction of a large retail centre and associated large parking lots immediately adjacent to the well. Currently, chloride and sodium concentrations are higher than those in the William Street wellfield, being approximately 600 mg/L and 300 mg/L, respectively.

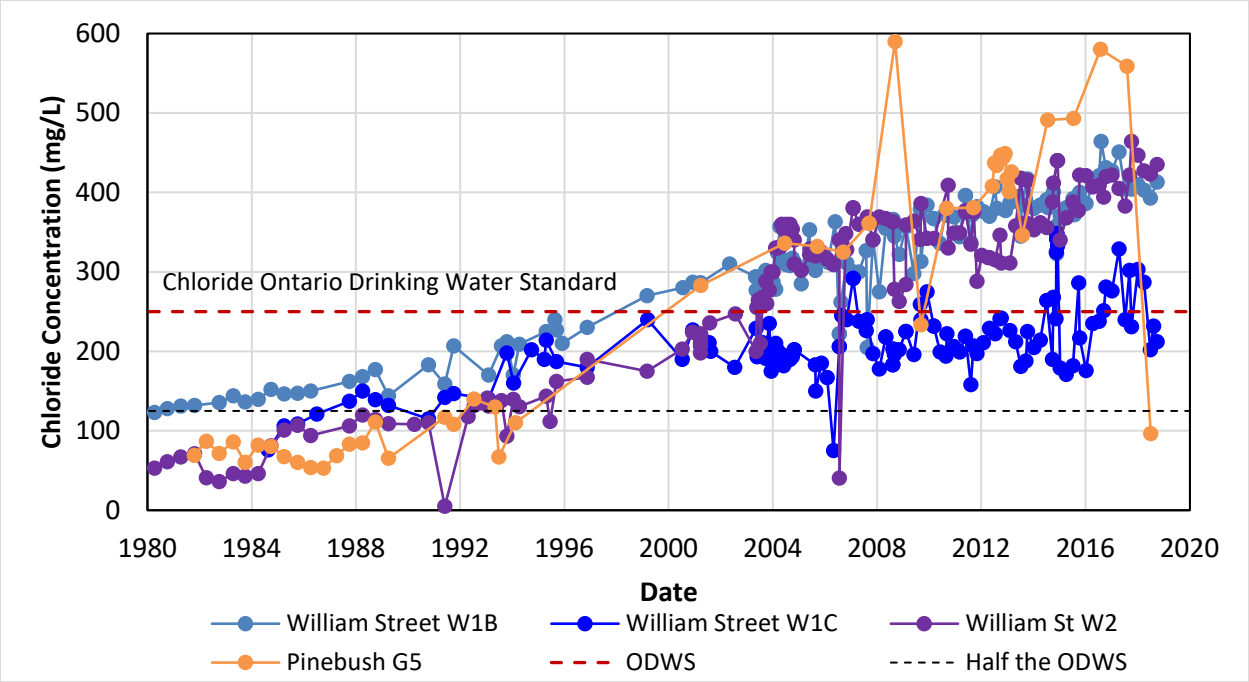



**Figure 5: Chloride concentrations at the William Street and Pinebush Wellfields in the Region of Waterloo**

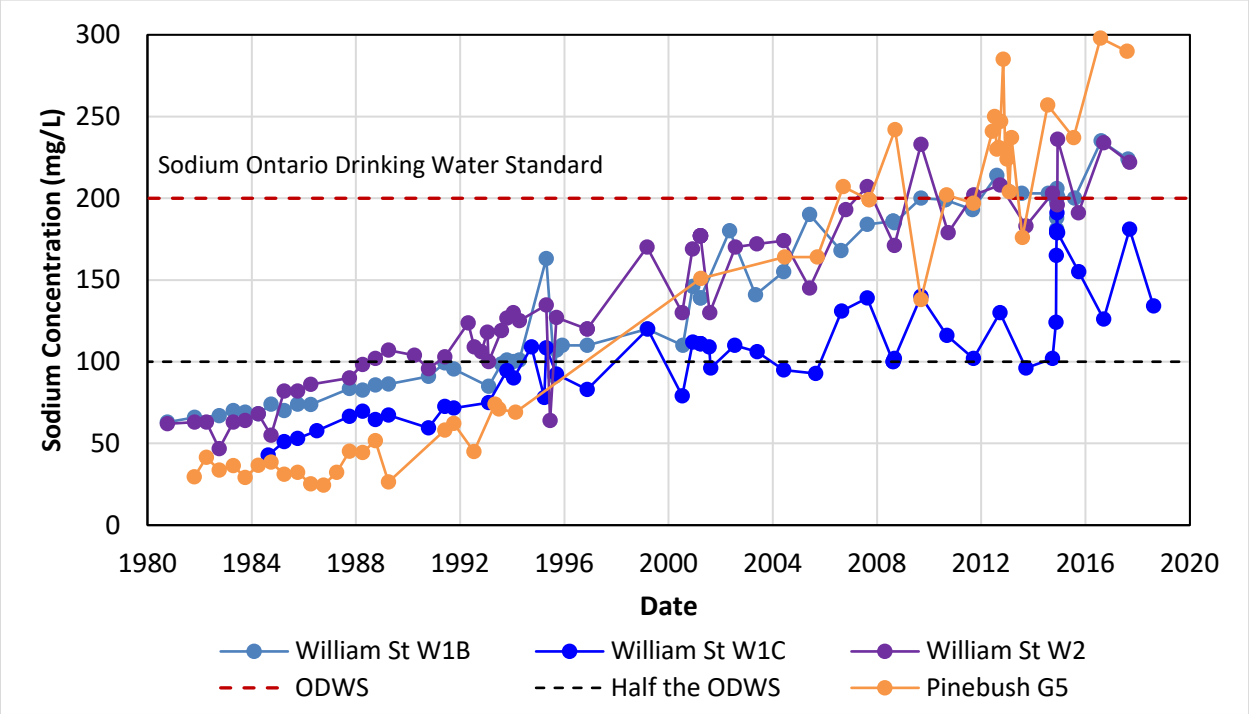



**Figure 6: Sodium concentrations at the William Street Wellfield in the Region of Waterloo**

Implications of Elevated Sodium and Chloride in the Environment

Elevated and increasing concentrations of chloride and sodium are becoming prevalent in small rural centre, medium sized cities, and large urban areas. The application of road salt (sodium chloride) is a common activity across LESPR given winter road conditions.

The application of salt on roads (and parking lots) enters into the environment in several ways. In many cases, the snow gets plowed onto the road shoulder which either enables it to infiltrate into the groundwater or the meltwater runs off into surface water features and/or into storm water management structures. While the primary purpose of these storm water facilities is to manage wet weather flows, they also receive meltwater during the winter months. If the stormwater structures include infiltration galleries and/or Low Impact Development (LID) infrastructure, some of the salty water conveyed to them during the winter months could infiltrate into the subsurface further exacerbating impacts to groundwater based municipal drinking water systems. Ultimately, all the winter maintenance chemicals eventually enter the natural water system.

Climate change is resulting in more extreme weather patterns with generally milder winters and increased frequencies of precipitation freeze/thaw cycles predicted, resulting in increased use of chemicals for winter road and parking lot maintenance. If left unmanaged, chloride and sodium from road salt will continue to contaminate drinking water sources.

A summary of negative impacts of road salt use for winter maintenance can be described as follows:

- increased concentrations of chloride and sodium in surface water and groundwater drinking water sources impairs the water taste and poses a risk to persons with high blood pressure and sodium restricted diets;
- premature wear to concrete sidewalks and structures (bridge decks, overpasses) which reduces overall life of such infrastructure and results in increased capital costs to maintain them on the order of $250-$480 per tonne of salt applied (Environmental Commissioner of Ontario, 218). and,
- damage of animal and plant cells' ability to carry out key ecological processes, changes to the weight of lake water to block the normal mixing process, which is essential for oxygen mixing, and harm to soil, gardens, vegetation and trees, which are necessary for shade as summers get hotter.

The only treatment process available to remove sodium and chloride from water is by reverse osmosis (desalinization) which is very expensive, energy intensive and creates a large volume of concentrate waste brine that must be discharged back into the environment. Accordingly, the only way to minimize the impacts from road salt on water resources and the environment is to reduce the amount being used.

**Liability and Other Factors Influence the Amount of Salt Applied**

In 2001, Environment and Climate Change Canada (ECCC) completed an assessment of the impacts of road salt and concluded that high releases of road salts were having an adverse effect on freshwater ecosystems, soil vegetation and wildlife. This assessment initiated the risk management process to address the risks posed to the environment by road salt. Subsequently, a Code of Practice was developed by ECCC and a parallel Synthesis of Best Practices document was created by the Transportation Association of Canada. The synthesis is a detailed resource on winter maintenance practices and supplements the recommendations made within the Code.

The two main recommendations of the Code are the development of salt management plans and implementation of best management practices. The Code is voluntary, only applies to road

organizations that use more than 500 tonnes of salt per year, and does not apply to application on parking lots or sidewalks. The ECCC assessment report concluded that application of salt on parking lots represents less than 10% of the total amount of salt being applied across the country. However, the contribution of parking lots in urban areas is much greater due to the increased density of paved surfaces and the higher potential application rates needed to address private property liability concerns. Specifically, in parts of Cambridge, Kitchener and Waterloo, salt loading to groundwater from parking lots is equal to or greater than the loading from roads.

Several pieces of legislation provide the legal context for application of winter maintenance chemicals. For roads, municipal transportation agencies are required under Section 44 of the Municipal Act to maintain roads in a "reasonable state of repair" and to maintain them in accordance with the Minimum Maintenance Standards. For building owners and managers, the Occupier's Liability Act requires a duty of care to maintain "reasonably" safe conditions for persons while on their premises. However, unlike for roads, the definition of what is reasonably safe is not stipulated and there are no standards. For parking lots, what is reasonable is determined through awareness of legal case studies, which are not too frequent, as most slip and fall claims arising from winter maintenance on parking lots are settled out of court. In addition, for private contractors, a settlement made by their insurance company often results in increases in insurance costs and/or loss of insurance completely. To ensure on-going viability of their businesses, most contractors will err on the side of caution and over apply salt.

These two pieces of legislation provide a framework for over-application of salt that is condoned by the public as necessary to ensure the protection of the travelling public. There is little recognition that this over-application may not be necessary as protection from liability is paramount. This framework is further facilitated by the following:

- the Ontario Environmental Protection Act exempts salt from being considered a contaminant if it is used "… for the purpose of keeping the highway safe …" meaning that appliers of salt do not have to be concerned about any environmental impacts by the amount they use;
- weather is difficult to predict and the weather that arrives can vary from that forecasted, which means that applications are often higher than needed in case the conditions are worse than forecasted;
- the science behind how salt works is poorly understood (i.e. it is the brine that breaks down ice, not rock salt itself, or that rock salt is not effective in temperatures below -10$^{o}$C) or is ignored due to liability concerns;
- there is increasing societal demand to maintain black asphalt in southern Ontario at all times and conditions, provide alternate forms of travel with associated high winter maintenance requirements, and addressing accessibility concerns in winter for accessibility-challenged persons; and
- rock salt is on the order of 40% cheaper than the next cheapest winter de-icing chemical, forcing most municipalities and private contractors to default to this chemical even though other chemicals may improve winter maintenance performance with less environmental impact.

All of the above factors contribute to the public's perception that salt does not affect the environment and creates a "laissez-faire" attitude towards the presence of salt on paved surfaces.

Factors Influencing Winter Maintenance on Roads

As noted above, the obligations to maintain roads arise from the Municipal Act and Minimum Maintenance Standards. These provide some level of liability protection against municipalities in

the event of vehicle accidents or slip and fall claims on roads. However, the capacity of each municipal agency to adopt new and/or implement sophisticated practices varies and many municipalities have budget pressures which may limit the introduction of these practices. In addition, the impact of joint-and-several liability often results in municipalities paying the majority of the costs resulting from an accident even if their contribution to the fault is minimal, further exacerbating the financial challenges for municipalities. Finally, most municipalities set a single performance standard for each road class and segment and most if not all municipalities are not willing to change the standard if the road comes in and out of a vulnerable drinking water protection area. These issues coupled with the voluntary nature of the ECCC Code could force municipalities to minimize adoption of practices to meet the Code or not participate at all.

Application on roads also differs from that on parking lots for the following reasons:

- most winter maintenance on roads are performed by municipal staff and/or larger contracted companies (e.g. province of Ontario) which provide stable working conditions that can attract long term employees ensuring consistency in approach reducing the need to train revolving staff;
- there are a relatively modest number of road agencies compared to hundreds and possibly thousands of private contractors; and
- the passage of cars on roads assists in the break down of the solid winter maintenance chemicals into the liquid brine needed to break the bond between snow/ice and the underlying surface, resulting in the need for less salt to be applied.

All of these factors can help reduce the amount of salt applied on roads compared with that applied on parking lots.

Many road authorities have made considerable improvements in technology, operational approaches and training to help improve application and reduce impacts to the environment. However, further changes will be difficult to achieve in part due to the risks associated with liability. In addition, the benefit of these reductions could be off-set by changes in climate, e.g. more freezing rain events, which will necessitate changing the approach to winter maintenance on roads. Further, the expansion of the Minimum Maintenance Standards to sidewalks in 2018 could result in an overall increase in the amount of salt being applied to the road network. This will exacerbate the impact to municipal drinking water supply sources. In Ontario, several organizations are promoting changes to the liability framework including the following:

- the Association of Municipalities of Ontario submitted a letter to the Ontario Attorney General requesting reform of the joint and several liability framework in Ontario as it relates to municipalities;

  (https://www.amo.on.ca/AMO-Content/Policy-Updates/2019/AMOSubmitsReporttoAttorneyGeneralonLiabilityandIns).

- a combined working group representing the Ontario Good Roads Association and Conservation Ontario submitted a letter to the Ontario Attorney General requesting a review of the liability related to application of winter maintenance chemicals (**Appendix A**); and
- the World Wildlife Federation provided comments on the Province of Ontario's Environmental Plan as posted on the Environmental Registry advocating for review of the liability framework in Ontario.

  (http://assets.wwf.ca/downloads/ero_roadsalt_final_signon.pdf)

These letters highlight the challenges with the liability framework in Ontario and support the discussion contained in this report. Undertaking this review in addition to strengthening training programs for road agencies to reduce winter maintenance chemical application rates without compromising road safety would assist with mitigating risks to municipal drinking water systems.

Factors Influencing Winter Maintenance on Parking Lots

As persons responsible for parking lots do not have standards or guidance to follow, the approach to winter maintenance for a particular event is based primarily on their experience which results in inconsistent application rates and/or levels of service for each parking lot. In most cases, building parking lots and sidewalks are maintained by private winter maintenance contractors and the nature of the winter maintenance services is determined by the contract with the property owner. These contracts often contain an unrealistic level of service requirements, e.g. maintain bare pavement at all times, which the contractor addresses though over-application of salt and/or chemical "plowing" which uses excessive amounts of salt to melt all the snow. The contracts often attempt to assign the liability to the contractor, which is very difficult legally, and may have pricing structures that financially incentivize the application of salt on the property.

Much of the private winter maintenance contracting industry is performed by small and medium sized businesses. As a result, and because of the tendering process to compete for clients, they are less likely to invest in best practices/advanced technologies as part of their operation in order to make them profitable. The individual contracting company is also trying to maintain their insurance coverage, have high staff turnover rates which reduces the incentive to invest in staff, and the competition/bid process results in little sharing of management practices within the industry. In addition, as contractors are a for-profit business, they will also attempt to maximize the number of contracts they have which forces them to over apply to meet the contract requirements in recognition that it could be many hours until they are able to service the property again. All of these factors contribute to excess application.

The primary purpose of most buildings and properties is not for winter maintenance but rather for some other manufacturing, service or retail operation. So winter maintenance is seen as a cost of doing business. For most building owners or tenants, the winter maintenance contract is awarded to the lowest cost bid which does not encourage contractors to consider alternate practices as these would require capital investments for new technologies and/or approaches. In addition, even if the owner/operator were interested in reducing application rates, they would be exposed to liability in the event of an injury if they had directed the contractor to apply the salt at a lower rate.

The liability framework and challenges noted above prevent Risk Management Officials from negotiating Risk Management Plans (RMPs) that require reductions in application rates. Some of the ways these barriers present themselves have been observed through the implementation of salt application RMPs in the Region of Waterloo where approximately 1,600 RMPs will need to be negotiated in chloride and/or sodium ICAs in the current approved Source Protection Plan and expanding to over 3,000 existing properties in the October 2019 proposed amended plan. These include the following.

- The approach taken by the Region of Waterloo to negotiate salt application RMPs is to use a collaborative, education approach in order to secure buy-in and achieve a more self-sustainable/self-regulating model of enforcement. This is needed because most persons involved in the negotiation have little to no experience in winter maintenance. This approach necessitates a greater time commitment as part of the negotiation as a level of education is required to raise the general knowledge on the impacts of salting to the point where risk mitigation practices can be implemented effectively.

- Currently, the RMPs for parking lots focus on contractor training and certification, i.e., Smart about Salt program, winter maintenance record keeping, and minimizing ice formation through site assessments. As in many cases these measures do not represent a drastic shift from current practices and because application rates cannot be stipulated in the RMP, only a minor amount of reduction in salt loading is likely to occur from these properties. This is much less than is needed to mitigate the impacts to the Region's wells with chloride impacts. Region of Waterloo staff have assessed the reduction in application rates needed to reduce and or stabilize chloride concentrations based on the amount currently observed in their supply wells. This amount is on the order of a further 10 percent reduction in application on roads above and beyond the 25 percent reduction achieved through advances in technology, and 30 to 50 percent reduction in application rates on parking lots at four of its well systems. This amount does not include the salt already in the groundwater that hasn't made it to the supply wells and will not reach the wells for a further 10 to 20 years.
- Since application rates cannot be specified in the RMP, it is difficult to require changes in operational methods and procedures. Examples of more effective practices may include pre-wetting, liquid application, and/or standardizing application rates. These practices have been adopted by many road agencies and may represent the most effective opportunity to achieve salt reduction targets.

As noted for roads, changes to the liability framework would provide building owners and contractors to consider the impacts to the environment and their assets in addition to liability considerations. However, unlike road agencies that are meeting ECCC's Code of Practice, there is no mechanism to ensure private contractors consider the environment in the determination of winter maintenance chemical application rates. The Smart About Salt Council has created the Smart About Salt program that encourages contractors to take training courses to improve their winter maintenance operations and to become certified demonstrating that they are implementing the program. And while this is helping to educate property owners and contractors, many of the recommended practices in the Smart About Salt program are not implemented by contractors due to the liability issues discussed above.

Opportunities for Liability and Training/Certification Program Changes

Several states in the US including Illinois and New Hampshire have changed the liability framework to help address the impacts to water resources due to the over-application of salt and as noted above several organizations are advocating a review of the liability framework in Ontario. Several other US states including Wisconsin have implemented various training, certification and/or education programs to help changes in the winter maintenance approach.

Specifically, the approach taken in New Hampshire is worth noting because the approach includes a combination of liability reform and training/certification. New Hampshire has introduced changes to the liability framework and developed a training/certification program to address the over-application of salt. This approach was required to gain permission to extend a state highway because a nearby lake had elevated chloride and sodium levels due to winter maintenance chemicals. The legislation requires contractors to undertake a one-day training program and become certified. In exchange, road and parking lot contractors would be provided partial protection against slip and fall and/or traffic accidents. This approach provides the liability relief and knowledge needed to change winter maintenance practices to minimize impact to water resources.

**Changes Needed to the Source Water Protection Director's Technical Rules**

The current Director's Technical Rules under the *Clean Water Act, 2006* provide significant drinking water threat (SDWT) thresholds based on road density or impervious surfaces. In many parts of the province, the thresholds did not trigger a SDWT for road salt application, despite a number of municipal drinking water wells that have increasing sodium and chloride concentration trends. As such, the original technical approach failed to recognise areas where trends were present that may result in an ICA. This problem was identified by the Region of Waterloo and an alternate approach to assessing the threat of road salt application was prepared and implemented for the Region of Waterloo. These changes were not implemented elsewhere in LESPR.

Similarly, road salt storage thresholds are currently set at 5,000 tonnes outside storage. This volume far exceeds typical storage volumes found at small to medium municipalities or private contractors. As a result, there are no known documented SDWTs for road salt storage outside of an ICA within LESPR. This is despite the fact that there are many municipal and private road salt storage facilities within wellhead protection areas of lesser volumes.

The practical result of these shortcomings in the Technical Rules is that the prescribed threats for road salt application and storage only get flagged as significant drinking water threats (SDWTs) when water quality data for a municipal drinking water system documents an increasing trend in chloride concentrations and the municipality declares the well as having an issue as defined by the Technical Rules. Since ICAs are only identified and delineated when there is a demonstrated water quality concern in a municipal well, this approach to protecting water quality in municipal drinking water systems becomes reactive rather than proactive.

Another concern is that the current Director's Technical Rules and Ontario Regulation 287/07 – General pursuant to the *Clean Water Act, 2006* lists the prescribed drinking water threat as "the application, handling and storage of road salt". Although road salt is a common term used for winter maintenance chemicals, the term can be misleading. The term road salt is used interchangeably with rock salt. Salt application at parking lots or on walkways can be more of a concern due to over-application than application on roadways. Additionally, road salt commonly refers to sodium chloride; however, there are many alternative products that are also chloride based, for example, calcium chloride or magnesium chloride. Strict interpretation of the wording may lead some readers to consider only salt applied to roads and that is sodium chloride based is a prescribed drinking water threat pursuant to the *Clean Water Act, 2006* and Source Protection Plans. A simple solution could be to rename the prescribed drinking water threats to application, handling and storage of winter maintenance chemicals and then define the term in the regulation.

A complementary change to the above would be to make application of winter maintenance chemicals on roads, parking lots and sidewalks different circumstances in the Table of Circumstances to reflect the different approach to winter maintenance, the legislative and liability framework, and the mitigation measures possible associated with each surface type. This would also help highlight that it is more than just application of winter maintenance chemicals on roads that is affecting drinking water supply sources.

Since 2017, the Province has been considering changes to the Director's Technical Rules to address the shortcomings noted above. Recently, the Province held technical engagement sessions at the end of November 2019 to consult on proposed changes. Details at the time of preparing this report are limited, but we understand that the Province intends to lower the thresholds for the activities and circumstances that result in a significant drinking water threat for the handling and storage of salt and the application of salt. A summary of the proposed changes to road salt storage and application are presented in **Table 1.** Lake Erie Region staff and municipal representatives have participated in the stakeholder engagement sessions and there will be

opportunity for staff to comment on the proposed rule changes directly with Provincial staff and through the more formal Environmental Registry process later on.

**Table 1: Phase II Technical Rules Project: Proposed Amendments to Road Salt Storage and Application**

| Topic | | Current Approach | Objective of the Amendment | Proposed Amendment | Notes |
|---|---|---|---|---|---|
| **Prescribed Drinking Water Threats** | **Road Salt Application** | Thresholds for impervious areas that identify significant risks are 80% in WHPAs scored 10 and 8% in IPZs scored 10. | Use an improved scientific approach to better identify areas where the application of road salt and storage of road salt may cause impairments to the quality of drinking water sources. | Thresholds for impervious areas that identify significant risks will be: 30% for WHPAs scored 10; 6% or greater for IPZ scored 10 and; 8% or greater for IPZ scored 9 to 10. | New thresholds were developed based on the analysis conducted in consultation with municipalities and SPAs/SPCs. |
| | **Road Salt Storage** | Volumes that identify significant risk are: 500 tonnes for IPZs scored 10; 5000 tonnes for IPZs scored 9 or greater, or WHPAs scored 10 for uncovered storages; covered storage can not be a significant risk. | | Using same scores of IPZs and WHPAs, proposed volumes are:<br>(1) Any quantity for uncovered storages;<br>(2) 100 kg or greater for covered storage excluding engineered facilities,<br>(3) 500 tonnes or greater for engineered facility or structure. | Engineered facilities: permanent building anchored to a permanent foundation with an impermeable floor and that is completely roofed and walled. |

**Recommended Actions to Address the Over-Application of Winter Maintenance Chemicals Report Recommendations**

To address the above concerns, the following recommendations are provided to the Lake Erie Region Source Protection Committee for consideration:

THAT the Province of Ontario explore ways to reduce the factors that contribute to excess application of winter maintenance chemicals on road ways and parking lots through a review of the liability framework in Ontario.

THAT the Province of Ontario work with municipalities to strengthen training programs for road agencies that apply winter maintenance chemicals on roads and sidewalks to reduce application rates without compromising road safety that would assist with mitigating risks to municipal drinking water systems.

THAT the Province of Ontario require property owners and contractors responsible for maintaining safe parking lots and sidewalks be trained and certified in the application of winter maintenance chemicals.

THAT the Province of Ontario change Prescribed Drinking Water Threats, “the application of road salt” and “the handling and storage of road salt” to “the application of winter maintenance chemicals” and “the handling and storage of winter maintenance chemicals”, and define the term in the regulation.

THAT the Province of Ontario change the Table of Circumstances related to the application of winter maintenance chemicals to differentiate between application on roads, sidewalks and parking lots to reflect the different liability issues and the nature of winter maintenance conducted for each surface type.

AND THAT the Province of Ontario amend the Clean Water Act’s Director’s Technical Rules to enable municipalities to proactively protect their municipal drinking water supplies from the application and storage of winter maintenance chemicals.

**Appendix A:**

Letter from Ontario Good Roads Association and Conservation Ontario to the Ontario Attorney General requesting a review of the liability related to application of winter maintenance chemicals

November 1, 2019
The Honourable Doug Downey
Attorney General of Ontario
McMurtry-Scott Building, 11th Floor
720 Bay Street
Toronto, Ontario
M7A 2S9

Dear Attorney General Downey,

Re: Municipal Liability and Insurance Costs

The excessive use of road salt has been shown to impact our environment including aquatic life and drinking water sources, and also our infrastructure. In Ontario, several drinking water sources are identified under the *Clean Water Act* as being impacted by elevated levels of chloride, a chemical found in road salt.

In 2016, the Ontario Good Roads Association (OGRA) and Conservation Ontario (CO) established a multi-stakeholder 'Salt Vulnerable Areas' working group, that developed a road salt best practices guidance document in 2018 for consideration by municipalities of varying capacities and budgets. In 2019, the OGRA and CO established the 'Ontario Road Salt Management Advisory Committee' in order to further the discussions around the broader policy and legislative framework related to the use of road salt, and to provide recommendations to help find the balance between environmental considerations and road safety.

The following recommendations are provided for the consideration of the Attorney General of Ontario:

**Address excessive liability issues for municipalities**

Ontario municipalities follow a Council approved Level of Service to ensure the safety of the travelling public, and they proactively work with government agencies and others in order to optimize the amount of road salt usage that balances public road safety with environmental concerns. However, excessive liability issues severely impact municipalities (and other road operation authorities) and in many cases may limit their ability to further adjust the application of road salt in order to meet environmental legislation that protects water resources.

Therefore it is recommended that the applicable liability framework be reviewed, such that road operation authorities can continue to ensure road safety while also supporting a further reduction in the amount of road salt applied.

**Establish standards and address excessive liability issues for private contractors**

There are many others that also use road salt besides municipalities, such as private contractors maintaining privately or municipally owned parking lots. The private sector often uses excessive amounts of road salt, in order to avoid liability claims. Training programs such as 'Smart about Salt' are available to the private sector to help them optimize road salt usage, but these programs are not mandatory.

Therefore, it is recommended that standards for road salt application and storage be established for the private sector to help reduce road salt reaching our water bodies. Further, it is recommended that the applicable liability framework be reviewed, such that private contractors can continue to ensure safety during the winter while also supporting a significant reduction in the amount of road salt applied.

In summary, steps to address liability, combined with standards (where they do not exist) for road salt application, can help preserve our precious natural resources.

We thank you for the opportunity to provide comments. Please feel free to contact Chitra Gowda (cgowda@conservationontario.ca) at CO or Fahad Shuja (fahad@ogra.org) at OGRA if you have any questions.

Sincerely,

Joe W. Tierney
Executive Director
Ontario Good Roads Association

Kim Gavine
General Manager
Conservation Ontario

Sent via email to: doug.downeyco@pc.ola.org; magpolicy@ontario.ca