

To: Community and Operations Services Committee

From: Ron Diskey, Commissioner,
Community and Operations Services Department

Report Number: CO-23-09

Date of Report: February 8, 2023

Date of Meeting: February 13, 2023

Subject: Staff Response to OEAC Report CS-22-44 concerning a
reduction in use of road salt

Ward: All Wards

File: 03-05

1.0 Purpose

The purpose of this report is to respond to the following Council direction on April 25, 2022:

“That based on Report [CS-22-44](#) being the Third Report of the Oshawa Environmental Advisory Committee concerning the use of Road Salt, the City of Oshawa investigate the recommendations contained in the Report regarding the reduction of the use of road salt in the City and that staff report back on the various recommendations at intervals that allow for various items to be responded to as staff feedback is prepared.”

2.0 Recommendation

That the Community and Operations Services Committee recommend to City Council:

1. That Report CO-23-09, dated February 8, 2023, concerning Oshawa Environmental Advisory Committee recommendations on the use of road salt in the City be received for information; and,
2. That Report CO-23-09, dated February 8, 2023, be forwarded to the Oshawa Environmental Advisory Committee.

3.0 Executive Summary

The following report responds to the recommendations made by Oshawa Environmental Advisory Committee (O.E.A.C.) in Report CS-22-44, dated April 5, 2022, concerning the use of road salt in the City. Staff undertook an extensive review of comparator

municipalities across Ontario to further understand industry best practices and compare against the City's current winter maintenance operations. Overall, the City's winter response and winter maintenance activities meets or exceeds best practices, while balancing the priority of public safety with environmental responsibility, with flexible winter maintenance options based on the needs of the City. Staff are aware that the use of rock salt on roads is associated with negative environmental impacts and City staff work to reduce those impacts as much as possible by actively managing salt use. Staff continue to monitor and adjust winter operations to account for continuous improvement as best practices change and in response to new approaches and technologies to ensure effective salt management practices.

4.0 Input From Other Sources

- Legal Services
- Review of best practices from other municipalities including:

Town of Ajax
City of Belleville
Municipality of Clarington
Region of Durham

City of Greater Sudbury
City of Hamilton
City of Markham
City of Vaughan

5.0 Analysis

5.1 Background

The City of Oshawa provides efficient and effective winter maintenance in keeping with applicable provincial legislation and accepted standards while striving to minimize adverse impacts to the environment. [O.Reg. 239/02](#), Minimum Maintenance Standards for Municipal Highways (M.M.S.) regulates the minimum maintenance standards of repair for municipal roads in Ontario. This regulation, along with Council approved Quality Standards, dictate how and with what frequency different classifications of the road network are maintained by the City throughout the year, which includes winter maintenance operations.

Environment and Climate Change Canada (E.C.C.C.) requires that municipalities and other organizations using over 500 tonnes of road salt per year comply with the Code of Practice for the Environmental Management of Road Salts (Code of Practice). The Code of Practice, developed alongside the Transportation Association of Canada (T.A.C.), provides guidance to organizations on how to manage and report on the use of salt in jurisdictions under their responsibility, including the development and implementation of an organizational Salt Management Plan. The E.C.C.C. Code of Practices requires organizations that use over 500 tonnes of road salt to report on the application and management of winter maintenance materials. At the end of each winter season, Operations staff compile all relevant winter data and report to E.C.C.C..

The City of Oshawa's Salt Management Plan (S.M.P.) was developed and endorsed by Council in 2005 in response to the release of E.C.C.C.'s Code of Practice. The S.M.P. was updated in 2014, with the support of Golder Associates Ltd., to account for guidance from

the Code of Practice and T.A.C.'s Syntheses of Best Practices, Road Salt Management. The S.M.P. sets out a policy and procedural framework to ensure that the City of Oshawa continuously improves on its effective delivery of winter maintenance services while managing winter road materials used in operations. The S.M.P. is dynamic and allows the City to adjust operations in response to financial and environmental considerations as new approaches and technologies come forward while ensuring road safety is not compromised.

5.2 Road Salt and Environmental Impacts

Response to O.E.A.C CS-22-44 Recommendations bullet number 1:

Several organizations, including the Region of Durham, have already developed promotional and educational programs related to the environmental impacts of the excessive use of road salt. City staff will investigate sharing similar information with residents as part of the annual winter operations communication plan without duplicating efforts.

Response to O.E.A.C. CS-22-44 Recommendation bullet number 4:

Indicators of success are difficult to develop and monitor due to the variables associated with winter road operations. Salt use is variable, depending on the severity of annual winter activity. As a result, salt usage may differ from year to year as temperatures and precipitation fluctuate throughout the season. With the introduction of Automatic Vehicle Location (A.V.L.) in 2021, there is more opportunity to track the use of winter maintenance materials. Staff are currently discovering ways to report and disseminate this information, and better inform winter operations to support road safety and the reduction of environmental impacts. Staff will continue to explore new ways to communicate winter maintenance information with the public where feasible and practical. Staff do report salt use annually as part of the E.C.C.C. Code of Practices which allows E.C.C.C. to measure progress across Canada for those municipalities that participate in the voluntary program.

Response to O.E.A.C. CS-22-44 Recommendations bullet number 5:

As detailed in [CS-22-44](#), there are adverse environmental impacts associated with the application of road salt, affecting both the natural and built environment. O.E.A.C. recommended that "the City estimate the externalities associated with road salt application (including impacts on the natural and built environments) and incorporate these figures into their budget". However, this is a difficult and complex task. The use of road salt during winter operations has the potential to impact the environment in a variety of ways which are difficult to measure at this time. It should be noted that public road maintenance is only a portion of all winter road salt activity, as private property owners contribute significantly to the use of salt. This external factor, along with unpredictable variables, make it difficult to effectively quantify the City's environmental impact. Staff will investigate possible TeachingCity project(s) that might help us better understand these impacts in the future.

5.3 Winter Road Treatments

Response to O.E.A.C. CS-22-44 Recommendations bullet numbers 3 and 7:

The application of anti-icing and de-icing treatments (road salt and alternatives) is an essential tool used to maintain a safe transportation network. The choice of treatment options depends on many factors, including climate, cost, operations, effectiveness and environmental impacts. City of Oshawa Road Operations employs a suite of winter road treatments which include road salt (sodium chloride), liquid salt brine (23% sodium chloride, 77% water, by volume), pre-wet road salt (road salt sprayed with liquid salt brine) and salted sand (12% sodium chloride, 88% sand, by weight) to manage winter conditions on City roads. When compared to other municipalities, the City's treatment choice and application rates are similar to those surveyed across the Greater Toronto Hamilton Area (G.T.H.A.).

Optically, more progressive winter road treatments, including treated salt (road salt treated with magnesium chloride) and liquid plant / salt brine (beet or corn mixed with liquid salt brine), provide an alternative to more conventional treatments noted above, but have their own complement of operational, economic and environmental concerns. Although several comparator municipalities had identified the piloting of alternative winter road treatments, the application of pre-wet road salt remains the primary method anti-icing and de-icing in the urban environment. Staff will continue to monitor and adjust winter operations to account for continuous improvement as best practices change.

In the rural portion of the City, north of Winchester Road, the winter road operations treat roads with salted sand (12% road salt, 88% sand, by weight). The City has previously piloted a lower mix ratio (5% road salt, 95% sand, by weight) resulting in the ineffective treatment of roads. A review of operations and best practices from other municipalities finds that Oshawa's current mix ratio has a lower concentration of salt than municipalities with similar climates and built environments (urban / rural mix). Municipalities with lower mix ratios use more sand to assist in maintaining road traction in harsher climates and on different road surfaces.

The application of salted sand within the rural areas of Oshawa is common among comparator municipalities. Salted sand is not generally used within the urban environment as there are concerns about effectiveness in the treatment as it relates to Council approved Quality Standards (bare and centre bare pavement), the significant cost of cleaning the road network and catch basins. Adjustments to the current treatment practices would require changes to the Quality Standards as sand is not as effective at melting snow or ice in the urban environment and bare pavement would not be achievable. Amendments to the Quality Standards are not recommended.

Historically, the City has done giveaways for salted sand to the public, which occurred at the former Ritson Depot. The City's current depots could not support public giveaways, as they do not have a mechanism to control public access to the site and limit private contractors from taking material.

5.4 Salt Vulnerable Areas

Response to O.E.A.C CS-22-44 Recommendation bullet number 2:

Salt vulnerable area terminology is used at both the federal and provincial level and have different implications for different organizations. E.C.C.C.'s Code of Practice identifies a salt vulnerable areas as areas where the environment may be particularly sensitive to road salts. Although the City has not formally identified any salt vulnerable areas, Operations Services has implemented several of the Code of Practice's recommendation for winter operations related to environmental impact mitigation across Oshawa, in the form of new technology and equipment. These steps have improved the management of road salt application throughout Oshawa, and balance the priority of road safety with environmental impacts. Staff will continue to monitor and adjust winter operations to account for continuous improvement as best practices change.

5.5 Liability Costs

Response to O.E.A.C CS-22-44 Recommendation bullet number 6:

Winter event response and the use of winter maintenance treatments on City property (roads, sidewalks, parks, trails, walkways, facilities, etc.) follows industry best practices with the primary focus of public safety. Over the past 5 years, the City has received 63 claims for slip and falls on City property due to icy surfaces. Of those claims, 30 have been denied or dismissed and 12 have been closed and settled. City staff cannot provide an accurate or reasonable estimate on the liability costs associated with future slip and fall claims, as claims are dependent on multiple unpredictable variables.

5.6 Salt Application and Conservation Efforts

Winter conditions and the maintenance response associated with weather events is not predictable and requires active monitoring and decision making to meet provincial M.M.S. and Council approved Quality Standards. Operations staff actively patrol and report on the City's road network and advise on road conditions and appropriate application rates. These decisions are based on industry best practices, formal training and extensive experience in winter operations along with the guiding framework of the City's S.M.P.

Since the development of the S.M.P., Operations Services has taken several steps to improve road salt management and increase road salt consciousness:

- 100% of the winter road operations fleet, including contracted units, are equipped with pre-wet units. Pre-wetting road salt with liquid salt brine before application to the road surface significantly reduces the amount of road salt needed to be effective in anti-icing and de-icing operations. Pre-wet road salt has a more narrow dispersion pattern and can reduce the amount of salt scattered on to boulevards from 30% to 4%.
- When suitable and weather permitting, Operations Service engages in proactive anti-icing road maintenance by using direct liquid application (D.L.A.) of liquid salt brine on City roads. D.L.A. treatment reduces the ability for water to bond and

freeze to the road surface and uses less sodium chloride per lane kilometer than road salt.

- 100% of the winter road operations fleet, including contracted units, are equipped with electronics spreader controllers connected to A.V.L. technology. This connection allows Operations Services staff to monitor and query winter operations data live, and allows for the identification and correction of instances of inconsistent salting.
- Spreader controllers are calibrated once per year, with additional calibrations if the vehicle is serviced. This ensures that set application rates are controlled and accurate, in line with industry best practices.
- Green treated salt, which is used on walkways, sidewalks and multi-use paths, is more effective in lower temperatures thereby requiring less application. The green colour also provides a visual identifier that helps avoid over application.
- All winter operations staff, including contracted staff, take part in annual winter operations training. Management train staff in the effective use of winter materials and the importance of using pre-wet road salt to reduce environmental impacts.
- City Operation Depots support the safe and effective management of winter maintenance materials. Road salt and salted sand are stored in enclosed buildings to reduce the environmental impacts on surrounding area.
- Operations Services staff, through the TeachingCity program, are working with Ontario Tech University to consider how route optimization techniques could conserve resources associated with winter operations, including road salt, which could result in both environmental and financial benefits.

Operations Services will update the S.M.P. to account for these changes outlined above and will continue to explore opportunities to improve efficiency and reduce the adverse environmental effects of road salt.

6.0 Financial Implications

There are no financial implications as a result of this report.

7.0 Relationship to the Oshawa Strategic Plan

This report addresses the Oshawa Strategic Plan by responding to the goal of “Social Equity”, with the theme of “An Active, Healthy and Safe Community” by continuing to support safe, shared use of roadways, trails, and other transportation systems.



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