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Thawrox / Catch Basin Cleaning Program Information Report to Council

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In accordance with the Procedure By-law, any member of Council may make a request to the Town Clerk that this Report be placed on an upcoming Committee of the Whole agenda for discussion.

Purpose

The purpose of this report is to update Council on the pilot program implementation of treated salt (Thawrox) as the primary material application for Town roads for winter maintenance and the subsequent changes to the catch basin cleaning program due to eliminating the use of sand.

Background

A pilot program implementing treated salt as the primary de-icing material for application during winter maintenance was performed during the 2017/18 winter season. Previous material application consisted of a 50/50 mix of treated salt and sand. Utilizing treated salt allowed use of material in lower temperatures, down to -17 degrees C, which broadened the lower range of which regular road salt is effective. The second part to this operational change was to stop using sand entirely. With implementation of more Low Impact Development (LID) areas within Town, eliminating granular deposits in these types of infrastructure and catch basins allows them to work efficiently and reduces migration of material into storm ponds and streams. Granular material discharged to streams can drastically affect watercourse species by smothering critical habitat and spawning grounds. Sediment migration from the storm system due to heavy rain events and quick thaws greatly contribute to these deposits. By not applying sand to the roads, catch basin sumps can work more effectively and periods between clean out can be extended.

Discussion

Use of the previous treated salt/sand mix contributed to significant amounts of sand on streets when spring arrived. Application rates were at 180, 210 up to 250 kg/km. For reference purposes, the 2015/16 winter season had 45 snow events with total applied de-icing material at 5410.63 tonnes averaging between 110 – 130 tonnes per event. 2016/17 had 58 snow events with total material applied being 6353.02 tonnes with an average between 110 – 140 tonnes per event. 2017/18 saw the start of Thawrox as the primary de-icing product applied with 3867.93 tonnes applied for 58 snow events with an average between 55 – 70 tonnes applied per event. The use of Thawrox has provided the opportunity to lower application rates to 100/130 kg/km with 100 kg/km being the predominant application rate utilized. In relation to salt management, using this application rate has enabled staff to actually lower the overall salt used to maintain roads for the winter season.

This review looks at a two-year winter maintenance window. The 2016/17 winter season saw the use of 50/50 salt/sand mix, and the 2017/18 winter season using only treated salt as the primary material applied. Both of these seasons saw the same number of events, 58. Springtime street sweeping is performed by a contracted service each year. On average, 3 to 5 sweepers have taken 4 to 6 weeks to sweep the entire Town. In 2017, the spring cleanup still saw the use of sand/salt mix being applied to roads and consisted of 599.5 sweeping hours costing \$73,176.60 along with disposal costs of \$30,775.64 making the total costs \$103,952.24. The 2018 spring cleanup, which was after the pilot program began, using treated salt, consisted of 302.75 sweeping hours working out to \$35,730.55 with additional disposal costs of \$9,438.99 totaling \$45,169.54. The reduction in sweeping hours was 296.75 due to minimal debris on the roadway, which subsequently reduced disposal costs. This reduction in operating hours helped decrease the carbon footprint of sweeping units. It has also shortened the carbon footprint of salt trucks as they are able to go further with a load of salt decreasing trips back to fill up and even eliminating coming back entirely in some runs. Total fuel consumption for the 2016 /17 winter season was 27,178.91L. With the implementation of treated salt, fuel consumption was decreased to 25,201.29L showing a reduction of 1,977.62L.

In 2018, over 2900 catch basins were cleaned within Wards 1, 2 & 3. Random inspections took place after the winter season to determine sediment levels in basin sumps. In the attached photos, the first is of a catch basin after a winter of only treated salt usage on area roads. The sump remains empty of debris and only melt water is left. The second photo shows a catch basin that was not cleaned since the change to treated salt. Debris accumulation is almost up to the outlet and affecting the performance of the restrictor plate. This visual gives merit to the reduction of sand that has previously been deposited, as the average capacity of a catch basin sump is 600mm or 24 inches. The reduction of silt/sand also benefits storm water collection areas, as there is much less debris to migrate during spring melt and heavier rainfall events throughout the summer

settling to the bottom of these bodies of water. The implementation of Thawrox has provided an opportunity to review the catch basin cleaning program and assess future needs and scheduling. With this aspect of the storm system operating more efficiently the need to clean catch basins would be extended lowering maintenance costs. A further report will be forthcoming after all catch basins have been cleaned (4-year rotation) and a better understanding of costs/savings for this new process have been determined.



Photo 1 – Catch basin after a winter of treated salt usage on area roads. The sump remains empty of debris and only melt water is left.



Photo 2 - Catch basin that was not cleaned since the change to treated salt.

Conclusion

Due to a reduction in cost and environmental impact, the use of Thawrox will continue as the primary applied material on all roads for winter maintenance.

Business Plan and Strategic Plan Linkages

Collaborates with Councils strategic priorities in the following categories - Environmental Stewardship regarding the continued implementation of low impact design and development, and relates directly to Safe Transportation (Streets) for winter maintenance.

Consultation

This pilot was discussed and endorsed by the LSRCA before implementation. Each year the Lake Simcoe Region Conservation Authority (LSRCA) celebrates 'Watershed Heroes' through a Healthy Water Award. 'Watershed Heroes' are individuals and or organizations that engage in positive environmental actions. These actions help clean up Lake Simcoe, restore the banks of our rivers and streams, improve the health of our soil, conserve precious water resources and contribute to healthier communities.

The Town of Newmarket was awarded a [Healthy Water Award](#) at the [2019 Lake Simcoe Region Conservation Awards](#) ceremony which took place on November 7, 2019. The Town was recognized for its commitment to more environmentally friendly winter

maintenance practices.

Newmarket strives to continuously improve winter maintenance practices. This includes monitoring the amount of salt application that is required to keep our roads/sidewalks safe for our community. With the switch in 2017 to [Thawrox](#), a higher performing and more environmentally friendly de-icer, the Town was able to reduce the amount of material required for each snow event, which led to:

- Less fuel used for winter maintenance equipment,
- Less time needed for street sweepers to clean the streets in the spring and for catch basin cleaning (due to less sand on the road),
- Smaller amounts of harmful storm water run-off going into our storm water ponds, wetlands, lakes and streams, which in turn promotes fish reproduction and the health of benthic invertebrate populations (bugs in the water).

Human Resource Considerations

None

Budget Impact

Thawrox is more expensive than bulk coarse road salt. Present pricing is \$103.74 per tonne compared to bulk coarse road salt which is at \$86.83. Some of the benefits observed with Thawrox is that it works to lower temperatures, sticks to the road better due to it being treated. It also enables a lower application rate helping PWS to actually lower overall material amounts used. This relates to effective salt management and savings in other areas. Staff will report back once actual financial costs and savings are known.

Attachments

None

Contact

For more information, please contact Mark Gregory at mgregory@newmarket.ca or 905-895-51936 extension 2552.

Approval

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