

Road Salt Management- Strategies and Operation Plan City of Barrie

PRESENTED BY

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Source Water Protection Group, Roads Parks and Fleet Operations

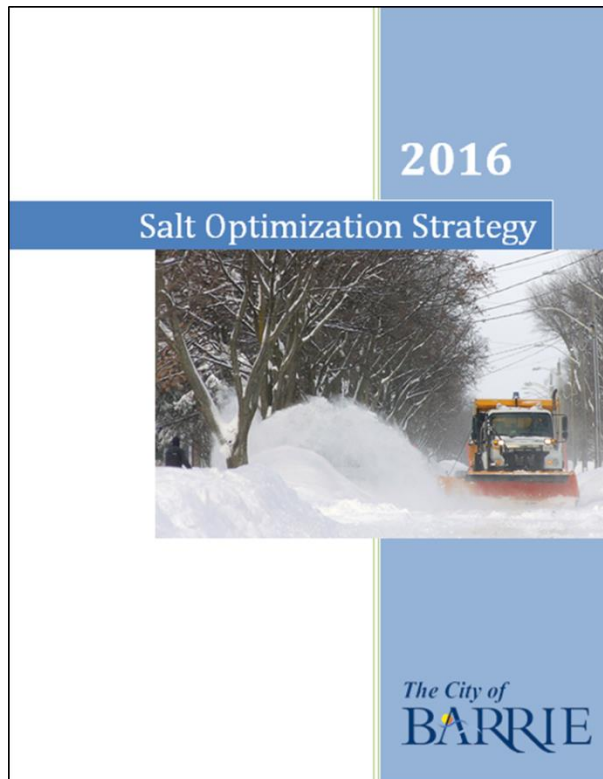
Wednesday, December-07-16



Our Challenge

- Requirement to Protect quality of Raw Drinking Water Sources
 - Increasing trend of salt in the water supply aquifer, lake and creeks
- Requirement to maintain safe surfaces for pedestrians and vehicles

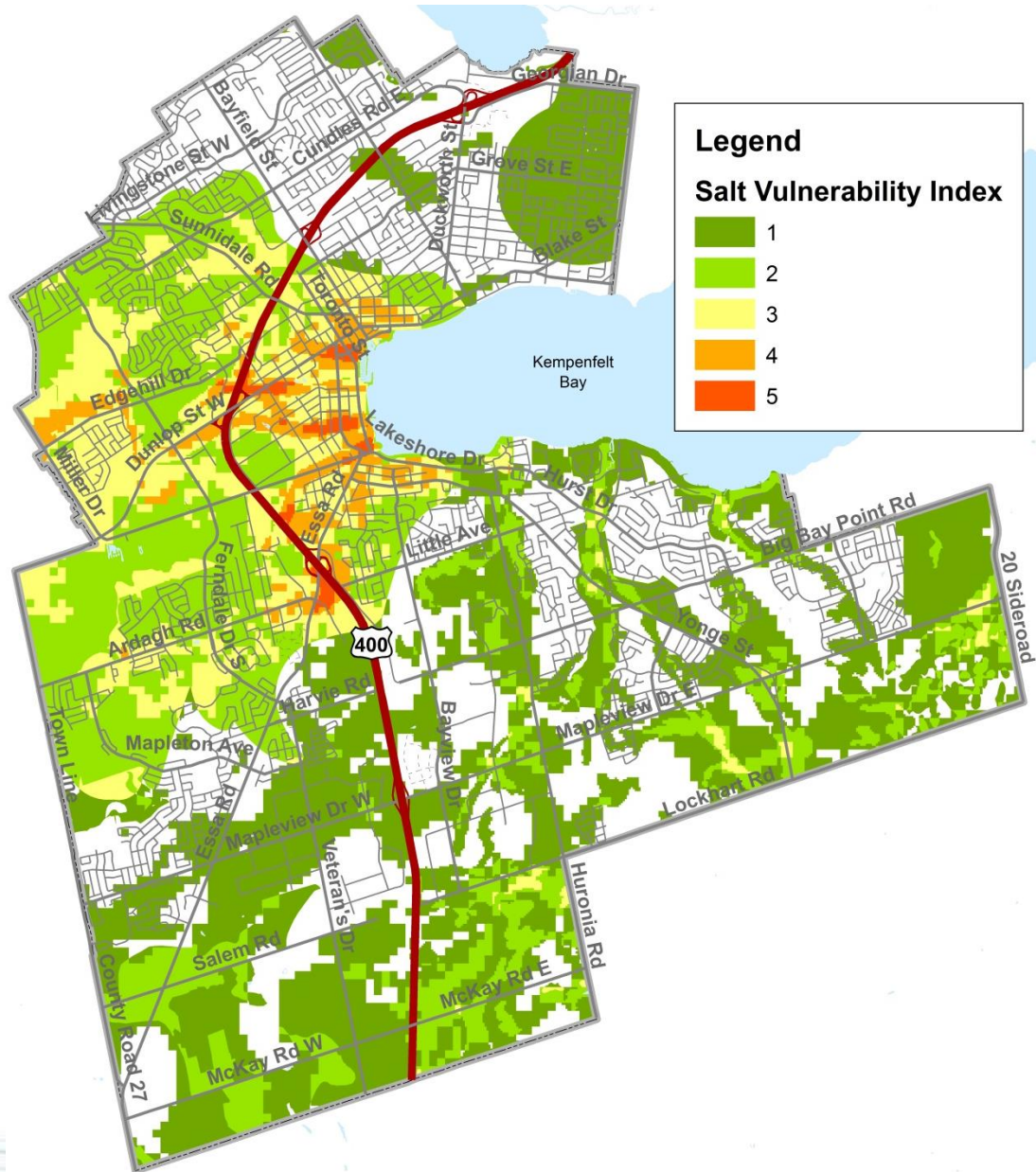
Salt Optimization Strategy



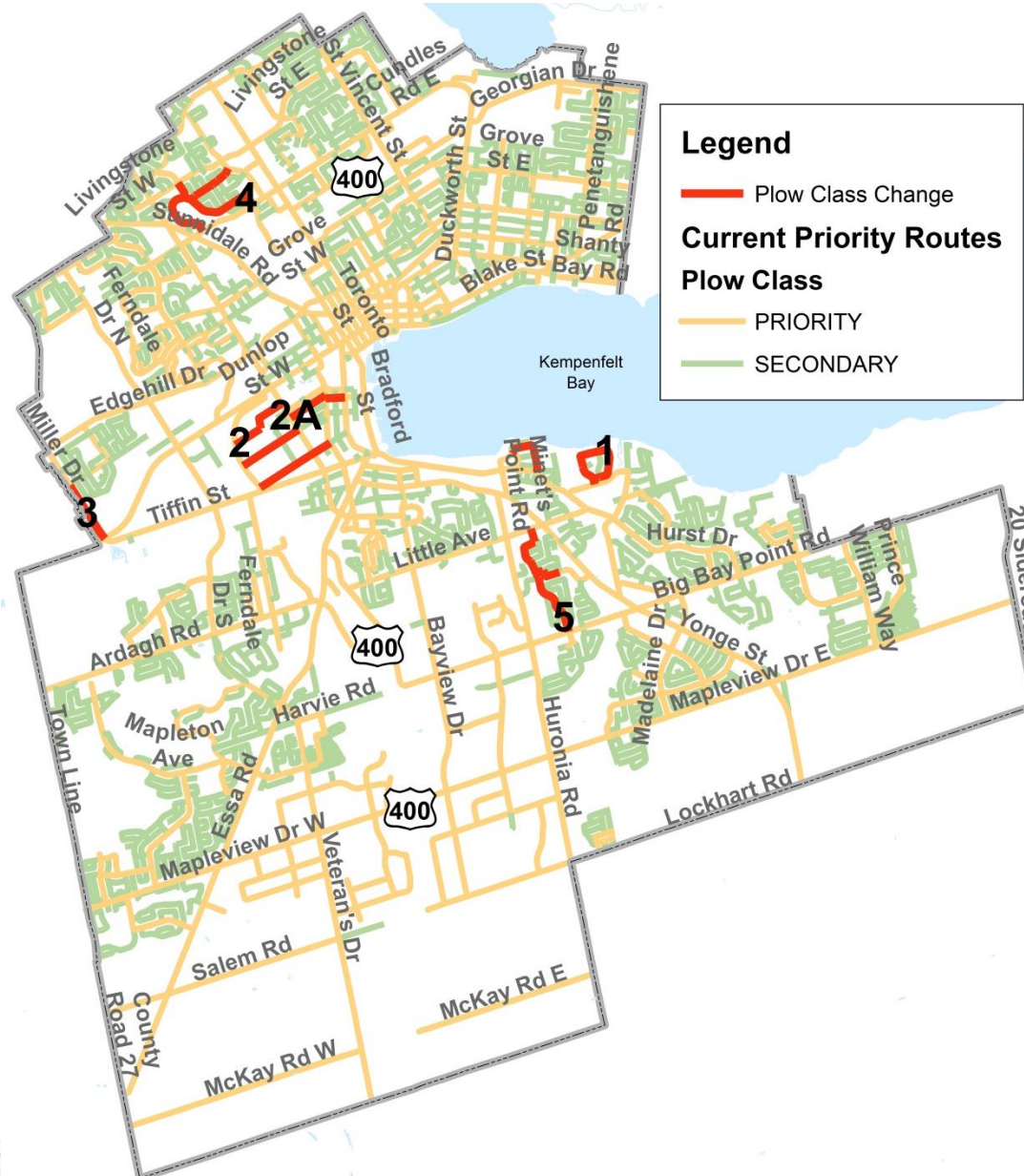
Our Vision

- To minimize the environmental impact of road salt application, while maintaining safe surfaces for pedestrian and vehicular traffic.

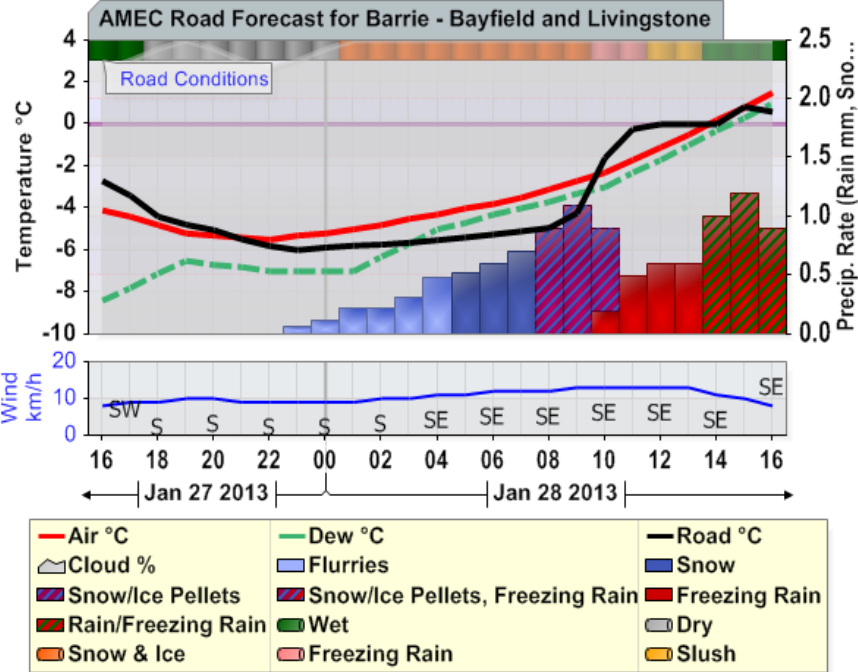
Baseline Understanding



Level of Service



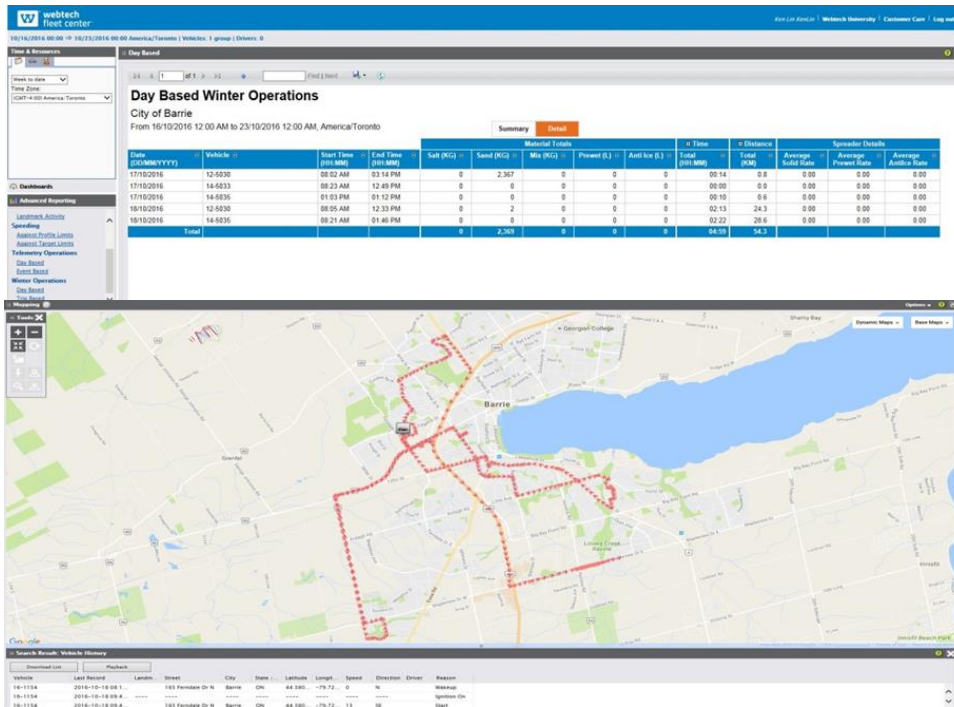
Technology and Control Techniques



Pilot Projects

- Refine application rates
- Increase mechanical removal
- Explore alternative materials
- Monitor chloride levels
- Winter Severity Indicators.
- Engage with Post Secondary institutions

Material Tracking and Monitoring



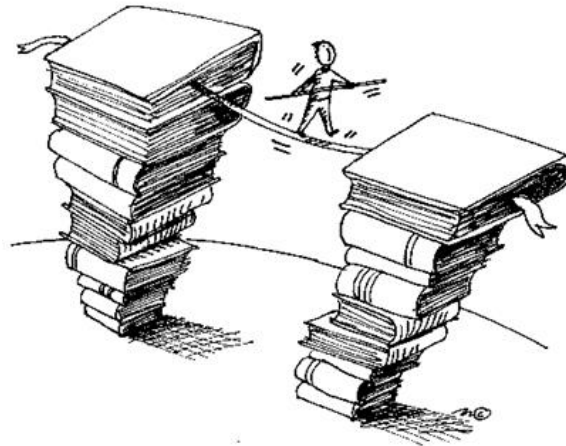
Winter Seasons	Salt Usage (T)	Two-Lane KM	Winter Event #	Average per ton/km/event
2004/2005	18,910	220	136	0.63
2005/2006	18,249	228	116	0.69
2006/2007	14,722	259	99	0.57
2007/2008	24,500	242	109	0.93
2008/2009	N/A	N/A	N/A	N/A
2009/2010	11,000	298	62	0.60
2010/2011	15,000	298	65	0.77
2011/2012	23,000	298	87	0.89
2012/2013	18,400	298	120	0.51
2013/2014	28,268	341	135	0.61
2014/2015	19,500	341	109	0.52
2015/2016	16,380	341	128	0.38

Education and Outreach



Big Picture Objectives

- Formalizes objectives to reduce the use of salt
- Establishes initiatives and a continuous improvement approach
- Balance risk to the environment and safety of travelling public



Preliminary Results (2015, 2016 Season) Salt Reduction

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- 27% reduction over previous season – 4688Tonne \$297,800
- 43% reduction over 10yr average – 7566Tonne \$480,700

Projected 2016/2017 Total Lane-km and Salt Reduction

Proposed Change Route	Lane-km Savings	Salt Savings (T)* **
1	4.77	164.3265
2	3.95	136.0775
2A	3.65	125.7425
3	1.59	54.7755
4	5.23	180.1735
5	4.76	163.982
Total	23.95	825.0775

Proposed Change Type	Lane-km Savings
Secondary	6.36
Secondary Plus	17.59

*Salt savings calculated using an average of 0.65 tonne/(2-ln km)/event obtained from winter maintenance seasons 2004/2005 to 2015/2016. An average of 106 winter events was also used.

**Note Salt Savings assume no salt will be used on proposed changes routes

Initiatives 2017 and Beyond

- Explore further reductions
- Develop guidance on considering winter maintenance in transportation infrastructure design
- Smart About Salt Course
- Implement pilot projects
- Technology advancements
- Ontario Road Salt Management Group
- Training and reinforcement of Best Management Practices