



**INFRASTRUCTURE & RECREATION COMMITTEE – April 14, 2009**  
**EPW.09.033**

---

In the 2008 / 2009 season, de-icing salt applied to parking lots and sidewalks has been tracked and these volumes will be included in the 2009 Road Salt Annual Report. In 2009 a minimum maintenance standard for sidewalks is expected to be released. The Ontario Good Roads Association is working with the Province to establish a reasonable level of care that Municipalities need to take for sidewalks. This information will be brought forward as it becomes available.

**C. The Blue Mountains' Strategic Plan**

This engineering assignment furthers the Town's Strategic Goal #2, "Addressing the Town's municipal infrastructure needs".

**D. Environmental Impacts**

Staff will continue to monitor the Environment Canada Code of Practice for the Environmental Management of Road Salts. Town staff will continue to review and implement new technologies in an effort to reduce the impact of road salt on the environment. This includes the use of pre-wetting materials before applying them to the road and the use of anti icing agents.

**E. Budget Impact**

The Salt Management Plan and the Roads Salts Annual Report are updated and completed by Town staff. No additional costs anticipated.

**F. Attached**

2009 Salt Management Plan

Respectfully submitted,

---

Jim McCannell  
Manager of Roads and Drainage Division  
Engineering and Public Works  
Office: 519-599-3131 Ext 271  
Fax: 519-599-3664  
[jmccannell@thebluemountains.ca](mailto:jmccannell@thebluemountains.ca)

---

Reg Russwurm  
Director of Engineering and Public Works



# Salt Management Plan 2009

Town of The Blue Mountains  
26 Bridge St. E.  
Thornbury, ON N0H 2P0

Updated: January 2009

---

## 1.0 INTRODUCTION

### 1.1 Overview

The Town of The Blue Mountains has approximately 254 kms of roads within the framework of a classification system, which provide for the safe, efficient and affordable means of surface transportation for all road users. Of those 254 kms, 123 kms are hard topped and subject to possible salt application during the winter months. Transportation users rely on the Town's roadway network throughout the year for transport to the workplace, to recreation and leisure facilities, for the transport of goods and services, and for emergency services.

Snow and ice conditions on the road system have a dramatic impact on public safety, roadway capacity, travel time and economic costs. The Town, like other road authorities, must use road salt to maintain safe roads for the travelling public during the winter.

In 2001, Environment Canada released an Assessment Report stating that roads salts are entering the environment in large amounts and are imposing a risk to plants, animals, birds, fish, lake and stream ecosystems and groundwater. The report recommended that salt be designated toxic under the Canadian Environment Protection Act (CEPA). It should be noted that Health Canada stated that road salts are not harmful to humans. Later that year, the Minister announced road salts could be designated as CEPA-toxic. Environment Canada stated they will not ban road salts, but rather they will encourage users in developing a management strategy.

Given the environmental concerns regarding road salt, the Town of The Blue Mountains has developed a Salt Management Plan. This plan addresses growing concerns about the affect that road salt is having on our natural environment and at the same time continue to provide for road safety by better managing the Town's use of salt. It will also enable the Town to comply with Environment Canada's future regulations regarding its use.

Although there is ongoing research into the use of alternatives to road salt and winter maintenance, salt continues to be the most cost effective de-icer. However, because of the adverse affects salt has on the environment, a Salt Management Plan strives to minimize the amount of salt entering the environment by including best salt handling practices and using new technologies to ensure its most effective use over the road system.

The Town of The Blue Mountains is not a road authority with a large discretionary budget. It will therefore, adopt measures developed and proven by other Ontario road authorities. Progress and changing salt management practices will be tempered by the Town's ability to invest in capital equipment upgrades and new technologies discussed in annual assessments.

## **1.2 Purpose of the Plan**

The Salt Management Plan sets out a policy and procedural framework for ensuring that the Town continuously improves the management of road salt used in winter maintenance operations. It is based on a comprehensive comparison of past practices against best management practices. The plan sets out specific goals for improving the Town's salt management practices. Any modification to the Town's winter maintenance activities must be carried out in a way that provides roadway safety and user mobility consistent with the weather conditions experienced during the snow and ice control season.

This plan is dynamic allowing the Town to phase in new approaches and technologies in a way that is responsive to physical demands and the needs to ensure the roadway safety is not compromised.

## **1.3 Format of the Plan**

Chapter 2.0 of the Salt Management Plan presents the policy direction approved by Town Council. These policies are summarized in Chapter 2.0.

Chapter 3.0 of the Plan presents the winter maintenance policies that are relevant to salt management. It lists the current policies for level of services, including patrolling, plowing and sanding/salting operations, spreader settings and snow removal and disposal.

Chapter 4.0 of the Plan presents the summary of operational practices and strategies for snow and ice control as they relate to the effective management of road salt. This chapter is presented as a series of sub-sections that can be modified as new policies, procedures and practices are introduced and refined. The key goals are summarized in Chapter 4.0 of this Report.

Chapter 5.0 of the Plan presents the approach to monitoring the implementation of the plan and to maintaining and updating the plan in the spirit of continuous improvement.

## **1.4 Responsibilities**

Director of Engineering and Public Works - responsible for ensuring that the Salt Management Plan is developed and maintained throughout the Town of The Blue Mountains.

Manager of Roads and Drainage - responsible for ensuring that the Salt Management Plan is developed, maintained and implemented throughout the Town of The Blue Mountains.

Foremen - responsible for ensuring that the Salt Management Plan is maintained and implemented within the Town of The Blue Mountains.

Winter Maintenance Personnel - responsible for ensuring that they carry out their winter maintenance duties in accordance with the policies and procedures set out in the Salt Management Plan as directed by their Supervisor.

## **2.0 SALT MANAGEMENT POLICY**

### **2.1 Mission, Mandate**

#### **Mission**

The Roads and Drainage Division of the Engineering and Public Works Department will optimize responsible use of de-icers on Town roads while striving to minimize salt impacts to the environment.

#### **Mandate**

The Roads and Drainage Division is to provide safe winter conditions for vehicular movement as required by level of service policies and funding guidelines established by the Town of The Blue Mountains Council.

### **2.2 Policy Statement**

The Roads and Drainage Division will provide effective winter maintenance to ensure the safety of users of our road network in keeping with Provincial legislation and accepted standards while striving to minimize the adverse effects the use of road salt can have on our environment. To meet this commitment, the Town of The Blue Mountains will:

- Meet and adhere to the guidelines contained within the Division's Salt Management Plan;
- Strive to review and update, as necessary, the standards contained in the Salt Management Plan on an annual basis to take into account new technologies and developments;
- Work with Environment Canada, other transportation agencies, other Municipal Agencies and environmental groups to upgrade best winter maintenance practices; and
- Commit to ongoing staff training and education.

### **2.3 Application**

This policy is adopted by the Roads and Drainage Division and applies to all employees involved in winter maintenance operations on our Town roads.

## **2.4 Conditions**

The following principles will guide the ongoing process to upgrade the Salt Management Plan:

- The plan is activity based and follows an environmental management system framework consistent with the principles of continual improvement. It includes the following elements:
  - Periodic review and analysis of industry practices;
  - Implementation and documentation of the plan;
  - Education and training of staff;
  - Monitoring and analysis;
  - Management review;
  - Environmental review;
  - Practices and policy revisions;
  - Record keeping and reporting.
  
- The plan is reviewed and refined on an ongoing basis.

## **2.5 Implementation**

The policy statement is to promote the continuous development of practices and procedures to improve winter maintenance activities and procedures while striving to reduce the effects of salt on our environment.

## **3.0 WINTER MAINTENANCE STANDARDS**

### **3.1 Introduction**

The major activities related to winter maintenance are:

- Snow plowing
- Salt/sand spreading
- Salt and sand storage
- Snow removal and disposal

### **3.2 Winter Operations - Snow Plowing**

The Town has four (4) classes (classes 3, 4, 5 & 6) of road within its municipal road network based on posted speed and traffic volumes and the classes are documented in the Road Needs Study Summary Report 2002 Update dated September 2003.

For the purpose of planning the winter plowing operations, the Town recognizes Ontario Regulation 239/02 made under the Municipal Act and shall generally conform to Section No.4. The objective of plowing operations should be to complete one coverage of the road within the timeframe as noted in Table 1.

## Ontario Regulation 239/02 - Section 4

- 1) The minimum standard for clearing snow accumulation is:
  - a) While the snow continues to accumulate, to deploy resources to clear the snow as soon as practicable after becoming aware of the fact that the snow accumulation on a roadway is greater than the depth set out in Table 1 below and
  - b) After the snow accumulation has ended or after becoming aware that the snow accumulation is greater than the depth set in Table 1 below, to clear the snow accumulations in accordance with subsections (2) and (3) or subsections (2) and (4), as the case may be, within the time set out in the table below.
- 2) The snow accumulation must be cleared to a depth less than equal to the depth set out in Table 1 below.
- 3) The snow accumulation must be cleared from the roadway to within a distance of 0.6 metres inside the outer edges of the roadway.
- 4) Despite subsection (3), for a Class 4 highway with two lanes, the snow accumulation on the roadway must be cleared to a width of at least 5 metres.
- 5) This section
  - a) Does not apply to that portion of the roadway designated for parking; and
  - b) Only applies to a municipality during the season when the municipality performs winter highway maintenance.
- 6) In this section,

“snow accumulation”, means the natural accumulation of new fallen snow or windblown snow that covers more than half a lane width of roadway.

<b>Class of Highway</b>	<b>Depth</b>	<b>Time</b>
3	8 cm	12 hours
4	8 cm	16 hours
5	10 cm	24 hours
6	10 cm	48 hours



### 3.3 Winter Operations - Sanding and Salting

For the purpose of planning the winter spreading operation, the Town recognizes Ontario Regulation 239/02 and shall generally conform to Section 5.

Class 3 - The objective of treatment is to achieve centre bare or track bare pavement by applying salt or sand within the timeframe noted in Table 2. It is understood that in cold or windy conditions, sand will be used in place of salt.

The only Class 3 roadway under the Authority of the Town is the Highway 26 Connecting Link through Thornbury. Winter maintenance on the Highway Connecting Link is undertaken by way of a Contract with the County of Grey.

Class 4 and 5 - The objective is to provide a sanded surface by applying sand within the timeframe as noted in Table 2. Bituminous roads in the category should not be bared after the storm by applying salt. Salt will only be applied to bituminous roads whenever a serious build up occurs on the road or when in a sleet storm. In addition, hills, curves, intersections and bus routes will get first priority. Gravel roads in this category should be spot sanded only on hills, curves and intersections. The gravel roads will only be sanded continuously when in a sleet storm or when the roads become quite slippery.

The Town's current composition for a salt and sand mix is 16% salt to sand (672 tonnes of salt to 4200 cubic metres of sand).

#### Ontario Regulation 239/02 - Section 5

- 1) The minimum standard for treating icy roadways is:
  - a) To deploy resources to treat an icy roadway as soon as practicable after becoming aware that the roadway is icy and
  - b) To treat the icy roadway within the timeframe set out in Table 2 below after becoming aware that the roadway is icy.
- 2) This section only applies to a municipality during the season when the municipality performs winter highway maintenance.

<b>Class of Highway</b>	<b>Time</b>
3	8 hours
4	12 hours
5	16 hours

The object of the Town's Roads and Drainage Division will be to provide the best winter maintenance given the resources available for winter control purposes and given the weather conditions. It is understood that budgets for winter maintenance activities are based on average weather conditions and that the actual expenditures may be higher or lower than budgeted.

### 3.4 Winter Operations - Snow Removal and Disposal

The Town's Roads and Drainage Division will only be responsible for the removal of snow in built-up areas if, in the opinion of the Manager, the snow is impeding with the movement of traffic or build up of snow at roadway intersections is causing a visibility problem at that intersection.

### 4.0 CURRENT PRACTICES

4.1 The Town of The Blue Mountains uses a mixture of sand and salt to provide traction in icy and snow packed conditions. The salt is used to prevent the sand from freezing and sticking together. Currently, the salt makes up approximately 16% of the mixture.

4.2 In accordance with the Town's sanding and salting procedures, Class 4 and 5 hard top roads are spot sanded on hills, curves, intersections and bus routes where needed. Gravel roads are treated with an ice blade to provide traction without the use of sand.

4.3 A winter road patrols are divided into 3 shifts:

During the regular day shift from 7:30 am to 5 pm the Foreman and Lead Hand monitor road conditions.

An operator is on duty for an evening shift from 4 pm to 1 pm. This Operator patrols the arterial or main road and is responsible to "call out" contract drivers at 1 am when warranted by conditions. This driver tracks weather conditions and leaves a weather report, activity report, call out report and General Comments sheet for the morning patroller. This information allows the morning patroller to assess the activities from the evening before.

The morning shift is 3 am to 12 noon. This patroller monitors conditions and again coordinates the "call out" of Town Operators at 4 am, as needed.

Each patroller/operator monitors temperature, wind and snowfall conditions. The patroller will plow and/or sand/salt road during the course of patrol as required to meet our Level of Service standards.

4.4 A fleet of three vehicles apply the sand/salt mixture throughout the Town. The Town does use a private contractor for sanding.

Truck 2 - 2009 International Single axle with sander, plow and wing, electronic spreader control, pre-wetting system

Truck 5 - 2003 International tandem axle with sander, plow and wing, electronic spreader control, pre-wetting system

---

Truck 6 - 2005 International tandem axle with sander, plow and wing, electronic spreader control, pre-wetting system

Contract Snow Plows

Three tandem axle trucks with sander, plow and wing, electronic spreader control.

Contract Sidewalk Plows

Specialized equipment is used to clear and sand sidewalks.

Contract Parking lots and other areas.

Tractor blowers hired to clear parking lots, sand applied with tail gate sander on a pickup truck.

4.5 The Town vehicles are cleaned in the main Ravenna Road Works building. The building has a cement floor with a drain that leads to an oil/grit separator.

4.6 Sand and salt is currently stored inside domes and shed at the County of Grey's Clarksburg Depot which is 43% owned by the Town. The sand dome has a capacity of 4230 m<sup>3</sup> and the salt shed, a capacity of 150 m<sup>3</sup>.

Sand/salt used for sidewalks and parking lots is stored at a central location in Thornbury . This is an uncovered site at the water tower.

4.7 The Town uses wing plows to widen the roads and push back snow banks after major storm events. The snow remains on site in the rural areas and in the built up areas where snow disposal is required, the snow is removed and disposed of on Town owned lands. There is a site in Craigleith and Thornbury.

4.8 The Town uses a minimal amount of snow fencing to reduce drifting snow onto the roadways.

## **5.0 SENSITIVE ENVIRONMENTAL AREAS**

5.1 The Town has done a preliminary study to identify potential environmentally sensitive areas. Areas that possess shallow overburden with karst topography have been identified by the Town. Shallow overburden applies to those lands that have less than one metre of natural soil over bedrock. Karst topography is a geological feature in limestone formation, which may include fissures, caves, sinkholes and springs. These features have the potential of being extremely sensitive because those areas could affect groundwater sources. The Town will continue to explore new salt application technologies for the areas identified as being potentially vulnerable. The Town will continue to identify other environmentally sensitive areas that need to be addressed now and in future updates of the plan.

- 
- 5.2 The Town recognizes the environmentally sensitive nature of cold water streams. There are several cold water streams in the Town, which are found primarily near Class 4 and 5 roads, where sand is applied only on hills and intersections. The environmental impact upon the streams from current sanding practices is minimal.

## **6.0 TRAINING**

- 6.1 Operator training is an essential part of the winter maintenance program. The training program is made up of two elements, internal training provided by the Manager and Foreman plus training provided by an outside source. This training is held by Grey County for all drivers prior to the start of the winter season. Contract drivers will also be included in the fall training that is held by Grey County.
- 6.2 The Roads and Drainage Foreman reviews plow routes, policies, procedures and safe operating practices.
- 6.3 External training is used to provide further formalized training including relevant legislation. Operators attend the Winter Operations Annual Training Seminar held by the County of Grey. There are 3 sessions provided, one for new driver, for returning drivers and for patrollers. This will include the Plow Operator's role in a Salt Management Program.

## **7.0 RECORDS**

- 7.1 A Salt Management Monitoring Report will be completed each year to monitor the use of road salt by the Town.
- 7.2 A Winter Patrol Record will be used to collect daily data on road conditions and weather events in accordance with the Winter Patrol Procedure.
- 7.3 Records of data reported, a copy of the Salt Management Plan, Plan revisions, training records and any yearly review reports, including those that contain corrective actions will be retained for a minimum of seven years.
- 7.4 All records referred to in Sections 7.1 to 7.3 will be made available to the Minister of the Environment upon request. The Town will maintain the records for a period of not less than 7 years.

## **8.0 GOALS FOR IMPROVEMENT**

The key goal of the Salt Management Plan is to reduce the harmful effects of salt on the environment while maintaining a safe roadway system. More specific goals have been developed in relation to winter maintenance activities as listed below:

### **Level of Service**

The Level of Service is defined in sections 3. The Level of Service will be reviewed each year and updated as required.

### **Winter Patrolling**

A winter patrol has been established by the Town to monitor weather and road conditions throughout the Town through visual, media and Environment Canada forecasts. The patrols will include written documentation to provide the Town with a reliable data history.

### **Storm Response**

Using data obtained with winter patrols, storm response records will be improved to assist in analyzing the effectiveness of the Town's winter maintenance strategy. Town will provide annual training on interpreting weather information when making snow and ice control decisions.

### **Equipment**

The Town will continue to explore the use of electronic spreader controls with Pre-Wet capabilities and data retrieval capability as new equipment vehicles are purchased and finances permit. The Town will investigate the use and effectiveness of anti-icing agents.

### **Sand/Salt Blends**

The Town will continue to investigate how salt levels can be reduced in the sand blend while maintaining effectiveness and cost efficiency.

### **Material Usage/Record Keeping**

The Town will maintain records of salt and sand usage and record keeping training will be provided annually.

### **Snow Removal and Disposal**

To ensure snow removal and disposal operations are done efficiently and in an environmental friendly manner the Town will work with the County of Grey to develop an engineered snow disposal site and management plan. The two agencies will use TAC's Salt Management Synthesis of Best Practices for Snow Storage and Disposal Sites as a guide for the selection of new disposal sites.

### **Technology Transfer Review**

---

The Town will ensure that the latest technologies are studied, reviewed, tested and adopted as appropriate. The Town will participate in other conferences and forums geared to development of Road Salt Best Management Practices.

### **Vulnerable Areas**

The Town will monitor Environment Canada's approach to addressing vulnerable areas, work with other agencies (Conservation Authority, Niagara Escarpment Commission, MNR, MOE) to identify vulnerable areas and identify strategies to reduce salt impacts to salt vulnerable areas.

### **Training**

Training programs will continue to develop with an emphasis on salt management techniques.

### **Communications**

Information on the Town's program for winter maintenance and salt management will be made available to the public through the Town's website.

## **9.0 CONCLUSION**

The Town is committed to ensuring that the roads within the Town's jurisdiction are properly maintained in accordance to its level of service policy and procedures. While the Town is committed to maintaining safe roadways, it is further committed to reducing the impacts that de-icing chemicals, such as salt, have on the environment.

The Town continues to develop a comprehensive Salt Management Plan that it is committed to implementing over the next few years. The Town will also continue to improve and update the Salt Management Plan as new techniques and technologies become available. A formal review of the Plan will occur on a yearly basis.

## **10.0 REFERENCES**

- Synthesis of Best Practices Road Salt Management, Transportation Association of Canada, [www.tac.atc.ca](http://www.tac.atc.ca), September 2003
- Ontario Good Roads Association, [www.orga.org](http://www.orga.org)
- Salt Management Plan, County of Grey, October 2003
- Salt Management Plan, Township of Tiny, February 2005
- Canadian Climate and Weather Information, Environment Canada, [www.climate.weatheroffice.ec.gc.ca](http://www.climate.weatheroffice.ec.gc.ca), August 2004

- Road Needs Study Summary Report, 2002 Update; Town of The Blue Mountains, TSH, September 2003