Ministry of Transportation and Infrastructure

Annual Report on Road Salts
Winter 2024/25

Service Area: _____

Contact Name/Title: _____

Telephone: _____ Email: _____

Section 1 – Salt Management Plan

1.1 Has your organization developed and implemented a salt management plan that covers all elements described in the Code of Practice?

Yes ○ No ◉

1.2 In the past year, did your organization conduct a review of its salt management plan?

Yes ○ No ○

1.3 In the past year, did your organization update its salt management plan?

Yes ○ No ○

1.4 In the past year, was a training program offered to personnel involved in winter maintenance operations and decision making? Indicate which levels of responsibility were offered training (new or refresher):

	Yes	No
Manager(s)	○	○
Supervisor(s)	○	○
Operator(s)	○	○
Mechanical	○	○
Patroller(s)	○	○

1.5 Indicate the number of objectives[1] that were identified and achieved for this year in your salt management plan within the following areas: (*refer to Appendix A for a sample list of objectives)*

Areas for Improvement	Number of Objectives for Winter 2024/25	
	# Identified	# Achieved
Material Storage Facilities		
Salt Application		

[1] The salt management plan should include a description of planned improvements to be undertaken over time. Achievement of the objectives is an indicator of performance in the implementation of the salt management plan and will be taken into consideration in the second review of progress on the Code of Practice to be conducted by Environment Canada.

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Section 2 – Winter Operations Information

2.2 What is the total length of road on which any salt is applied in your Service Area (roads with or without abrasive)?

_____ Km of two-lane equivalent (centre line)

2.3 What was the total number of days requiring salt application for winter road maintenance during the winter season?

_____ days

Section 3 – Materials Applied

3.1 Provide the total quantity of material used for winter road maintenance (including sidewalks) as of May 31st 2025. (If your organization uses multi-chloride[4] products, see question 3.2)

NOTE: Please provide solid quantities in TONNES and liquid quantities in LITRES

SOLIDS		TONNES
De-icers	Sodium chloride (NaCl)	
	Magnesium chloride ($MgCl_2$)	
	Calcium chloride ($CaCl_2$)	
	Acetate[2]	
Treated Abrasives Specify the types & quantities of solid salts added to stockpile of abrasives (freeze protection & free flowing). *Indicate number of tonnes before mixing*	Sand, stone dust, or aggregates	
	Sodium chloride (NaCl)	
	Magnesium chloride ($MgCl_2$)	
	Calcium chloride ($CaCl_2$)	

[2] calcium-magnesium or potassium acetates

LIQUIDS		LITRES
Pre-wetting Liquid Concentrated liquid product sprayed (with on-board equipment) to the solid de-icing agent or the abrasive directly as it is spread or discharged from the truck to the pavement	Sodium chloride (NaCl)	
	Magnesium chloride ($MgCl_2$)	
	Calcium chloride ($CaCl_2$)	
	Acetate[2]	
	Non-chloride organic products[3]	
Pre-treatment Liquid Concentrated liquid product added to the solid de-icer and the abrasive at the time it is stockpiled at the storage site or added by the supplier before delivery	Sodium chloride (NaCl)	
	Magnesium chloride ($MgCl_2$)	
	Calcium chloride ($CaCl_2$)	
	Acetate[2]	
	Non-chloride organic products[3]	
Direct Liquid Application (aka Anti-icing) Concentrated liquid product that is sprayed directly on the pavement surface with a truck or by a sprayer system (e.g. Fixed Automated Spray Technology FAST) before a storm or the formation of frost.	Sodium chloride (NaCl)	
	Magnesium chloride ($MgCl_2$)	
	Calcium chloride ($CaCl_2$)	
	Acetate[2]	
	Non-chloride organic products[3]	

3.2 If your organization uses multi-chloride liquids[4], specify litres used and concentration for each salt in the liquid:

Multi-chloride (A) _____ Litres NaCl _____ % $MgCl_2$ _____ % $CaCl_2$ _____ %

Multi-chloride (B) _____ Litres NaCl _____ % $MgCl_2$ _____ % $CaCl_2$ _____ %

[2] calcium-magnesium or potassium acetates

[3] record only pure non-chloride (e.g. beet juice, corn bi-product, molasses or other organics), excluding pre-mixed blends with salt brine

[4] Describe multi-chloride liquids that contain more than one type of salt in the same mix

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Section 4 – Design and Operation at Road Salt Storage Sites

4.1 How many salt storage sites (locations, not stockpiles) are in your Service Area? _____

4.2 Provide the number of stockpiles that are stored under the following conditions. If your organization manages more than one site, provide the information for each site.

Site Name	MoTI Owned? Y / N	Road Salts				Treated Abrasives			
		# stockpiles	# on impermeable surface	# under permanent roof	# under tarp	# stockpiles	# on impermeable surface	# under permanent roof	# under tarp

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Site Name	MoTI Owned? Y / N	Road Salts				Treated Abrasives			
		# stockpiles	# on impermeable surface	# under permanent roof	# under tarp	# stockpiles	# on impermeable surface	# under permanent roof	# under tarp

4.3 Provide the characteristics of your storage site design and the working activities that support good housekeeping practices. If your organization manages more than one site, indicate the number of sites with the given characteristic.

Good Housekeeping Practices	Yes	No	# of Sites
All materials are handled in a designated area characterized by an impermeable surface	◯	◯	
Equipment to prevent overloading of trucks	◯	◯	
System for collection and/or treatment of wastewater from cleaning of trucks	◯	◯	
Control and diversion of external waters (non salt impacted)	◯	◯	
Drainage inside with collection systems for runoff of salt contaminated waters	◯	◯	
Specify discharge point into:			
• A municipal sewer system	☐		
• A containment for removal	☐		
• A watercourse	☐		
• Other	☐		
Ongoing cleanup of the site surfaces, and spilled material is swept up quickly	◯	◯	
Risk management and emergency measures plans are in place	◯	◯	

Section 5 – Salt Application

Management of Equipment

5.1 a) Indicate the total number of vehicles (trucks) used for winter maintenance: _____

b) Indicate the number of vehicles used for salt application (with or without plowing).

Vehicle Equipment	Number of Vehicles
Total number of vehicles assigned to solid salt application	
Vehicles with conveyors and ground speed sensor electronic controller	
Vehicles equipped with pre-wetting equipment	
Vehicles designed for direct liquid application (DLA)	

Spreading equipment is regularly calibrated? _____ Frequency: _____ times per year

Weather Monitoring

5.2 Indicate the sources of information your organization relies on to make decisions for winter event responses, supplementing road patrol observations.

Sources	Yes	No	Number
Infrared thermometer[7]	○	○	
Meteorological service[8]	○	○	
Fixed RWIS stations	○	○	
Mobile RWIS mounted on vehicles	○	○	

Maintenance Decision Support

5.3 Indicate the type of system your organization relies on to help improve decision making for maintenance strategy, materials and application rate.

Types	Yes	# of Vehicles	No
Automated vehicle location (AVL)	○		○
Record of salt application rates	○		○
Use of a chart for application rates adapted to road or temperature conditions	○		○
Testing of Maintenance Decisions Support System (MDSS)	○		○

Section 6 – Snow Disposal

Management of Snow	Yes	# of sites	No
6.1 Does your organization perform snow disposal at a designated site?	○		○
6.2 Does your organization use snow melters?	○		○
6.3 Is the meltwater from snow melters discharged though the storm sewer system?	○		○

[7] Different versions available: hand-held, truck-mounted, or stationary pole

[8] Meteorological service such as customized weather forecasts updated during the day or monitoring websites such as Environment Canada weather forecasting and radar

Section 7 – Management of Salt Vulnerable Areas

Salt Vulnerable Areas	Yes	No
7.1 Has your organization completed an inventory of salt vulnerable areas within your Service Area?	○	○
7.2 Do you have salt vulnerable areas within your Service Area? (provide list below)	○	○
7.3 Has your organization prepared an action plan to prioritize areas where measures will be put in place?	○	○
7.4 Did your organization implement supplementary and specific protection or mitigation measures to eliminate or reduce road salt impacts on vulnerable areas?	○	○
7.5 Does your organization conduct environmental monitoring to measure impacts of road salts on vulnerable areas?	○	○

Types of Vulnerable Areas

Type of Vulnerability	# of Areas Identified	# of Areas with protection measures	# of Areas with chloride monitoring
Drinking Water (surface or ground water)			
Aquatic Life (lake and watercourse)			
Wetlands and associated aquatic life			
Delimited areas with terrestrial fauna/flora			
Valued Lands			

List the Vulnerable Areas in your Service Area: *(insert additional rows as needed to table below)*

Hwy #	Latitude	Longitude	Feature (ie: lake, stream)	Type	Type of Protection Measures (refer to Salt Mgmt Plan)	Is Environmental monitoring in place? (Y/N)	Comments
						☐	

NEW

Provide a copy of current Salt Management Plan when submitting report to: Maintenance.Programs@gov.bc.ca

Appendix A

Sample List of Objectives for Salt Management Plan

Material Storage Facilities		Identified	Achieved
1	Quality of salt supplied is verified through the following steps: 1. a quality control program is put in place; 2. humidity test on salt delivered; 3. granulometry; and 4. chemical analysis for salt concentration		
2	Install a new salt dome(s) with an impervious pad		
3	Install a new salt dome(s) with indoor storage for all salts and treated abrasives and inside loading capacity		
4	Upgrade existing salt storage sites to add a permanent roof		
5	Construct a permanent structure to cover salts (can be made of different rigid materials including wood, steel, aluminum, fibreglass, or fabric)		
6	Install an impermeable pad to store treated abrasive		
7	Construct or expand inside building capacity to cover treated abrasives		
8	Use tarps to cover abrasives		
9	Reconfigure storage capacity to store abrasives within an existing storage structure		
10	Reconfigure operation facilities to conduct equipment washing inside		
11	Design an area specifically for truck loading		
12	Establish a method to control truck loading		
13	Install equipment wash bay (including collection and treatment of wastewater with oil/grit separator)		
14	Design the site to control runoff water and keep it away from working areas and material storage. Ensure water from outside is diverted from the storage sites.		
15	Design a collection system and manage salt contaminated waters. Select option for disposal: transported from the site for treatment, brine production, released to municipal storm water or release to the environment		
16	Ensure measures and a plan are in place to prevent or reduce the probability or the significance of a spill (e.g. recover mechanism for de-icing liquid tanks in case of leaking, regular inspection of installation and recording)		
17	Remove and dispose of salt contaminated snow from the storage site in a snow disposal site		
18	Other (specify):		

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Salt Application		Identified	Achieved
1	Install ground speed oriented electronic spreader controls		
2	Increase the number of trucks with pre-wetting equipment (new or retro-fit)		
3	Install new or replacement of liquid anti-icing equipment		
4	Install infrared thermometers on vehicles		
5	Install additional fixed RWIS station(s)		
6	Acquire access to RWIS data provided by others		
7	Install mobile RWIS to be mounted on vehicle		
8	Acquire access to meteorological service		
9	Adopt pre-wetting practice on the vast majority of the road network		
10	Use pre-treated salt on the vast majority of the road network		
11	Adopt pre-wetting or pre-treatment of abrasives		
12	Testing of new products (e.g. organics, de-icer mixed to increase performance at different temperature)		
13	Adopt anti-icing as a standard practice (early treatment)		
14	Install GPS and computer system on trucks to record salt application rates & service mapping (route)		
15	Use of a chart to make decisions on application rates adapted to the meteorological and pavement conditions and level of service		
16	Use of a maintenance decision support system that incorporates meteorological data, pavement temperatures and recommended application rates to respond to conditions and plan operations		
17	Review yearly overall salt use, identify areas and operations where salt quantities could be reduced (i.e. reduction of the salt applied/road km/year). Ensure level of service for each roadway segment is adequate (check traffic to avoid over use of salt).		
18	Assess the efficiency of plowing operations (timing, type of plows and blades, etc.)		
19	Other (specify):		

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Snow Disposal		Identified	Achieved
1	Develop a program to phase out unacceptable snow disposal sites		
2	Install a new snow disposal site(s), ensuring it is entirely on a low permeability surface		
3	Upgrade an existing snow disposal site(s) and install a low permeability surface		
4	Collect all melt water and discharge at a specific point		
5	Construct a collection pond to allow water to settle before its discharged, and control the time and rat of discharge		
6.	Other (specify):		

Vulnerable Areas		Identified	Achieved
1	Identify salt vulnerable areas		
2	Prioritize areas where additional protection or mitigation measures will be implemented to eliminate or reduce road salt impacts		
3	Implement additional protection or mitigation measures to eliminate or reduce road salt impacts on vulnerable areas		
4	Conduct environmental monitoring to measure success of mitigation measures for protecting vulnerable areas		
	Other (specify):		
	Other (specify):		