



**To:** Public Works and Transportation Committee    **Date:** February 21, 2007  
**From:** Dave Semple    **File:** 10-6000-01/2007-Vol 01  
Director-Parks and Public Works Operations  
**Re:** 2006/2007 Report on Frost & Snow Control Operations

**Staff Recommendation**

It is recommended that:

1. Current service levels, as per Policy 7013, be maintained.
2. Staff be authorized to proceed with the acquisition of equipment and resources, as outlined in the staff report from the Manager – Fleet & Environmental Programs, dated February 21, 2007, to support current service levels for salting and snow removal operations, with funding from prior years' capital programs.
3. Annual operating impacts and proposed 2008 capital cost items be included in the applicable 2008 budget submissions.

Dave Semple  
Director of Parks and Public Works Operations  
(3350)

Att. 1

FOR ORIGINATING DEPARTMENT USE ONLY					
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>		<b>CONCURRENCE OF GENERAL MANAGER</b>		
Budgets .....	Y <input checked="" type="checkbox"/>	N <input type="checkbox"/>			
Communications .....	Y <input checked="" type="checkbox"/>	N <input type="checkbox"/>			
Law .....	Y <input checked="" type="checkbox"/>	N <input type="checkbox"/>			
Parks Maintenance and Operations .....	Y <input checked="" type="checkbox"/>	N <input type="checkbox"/>			
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

**Staff Report**

**Origin**

This report presents a summary of frost and snow control activities for the 2006/2007 Winter season. Information is provided on current levels of service as per established City policies as well as discussion on the financial impacts associated with increased service levels. Finally, this report outlines requests for additional funding for salting/snow removal operations to support existing service levels.

**Analysis**

Weather patterns in 2006/2007 resulted in a higher-than-average number of frost and snow events. To date, there have been 4 snow events and 8 frost events. A summary of these dates and the associated response costs are as follows:

Year	Dates	Event
2006	March 10 <sup>th</sup>	Snow
	November 25 <sup>th</sup> – December 6 <sup>th</sup>	
2007	January 9 <sup>th</sup> – 22 <sup>nd</sup>	Snow
	February 27 <sup>th</sup> – March 1 <sup>st</sup>	
2006	January 3 <sup>rd</sup> , 11 <sup>th</sup>	Frost
	February 9 <sup>th</sup> , 10 <sup>th</sup>	
	March 3 <sup>rd</sup>	
	October 31 <sup>st</sup>	
	November 1 <sup>st</sup> , 25 <sup>th</sup>	
	December 14 <sup>th</sup> –18 <sup>th</sup> , 22 <sup>nd</sup> , 27 <sup>th</sup> – 29 <sup>th</sup>	
2007	January 2 <sup>nd</sup>	Frost
	January 25 <sup>th</sup> – February 2 <sup>nd</sup>	

Response Cost	2006	2007
Equipment	\$40,102	\$24,662
Labour	\$236,168	\$109,945
Materials/Supplies	\$72,036	\$8,183
MRN Costs	\$71,406	\$17,811
<b>Total Expenditures</b>	<b>\$419,712</b>	<b>\$185,263</b>
Available Budget*	\$207,900	\$209,000
<b>Difference</b>	<b>(\$211,812)</b>	<b>\$23,737</b>
<b>% Spent</b>	<b>201%</b>	<b>88%</b>

\* MRN Funding:

2006 = \$29,200

2007 = \$37,400

Of the total costs, approximately 98.5% relates to snow events, with the remaining 1.5% associated with frost events.

The City has a fleet of 10 dump trucks which we are normally used for public works operations construction and maintenance projects. When necessary, these trucks are outfitted with the capability to apply salt and/or plough roads in inclement weather, i.e. salt inserts and/or ploughs are installed. The severity of the event will dictate the level of response. During a full snow response activation, up to 10 vehicles will be used at any given time for salting and/or ploughing activities.



<b>Ice/Snow Removal Program</b>					
<b>Issues and Proposed Solutions to Maintain Current Service Levels</b>					
No.	Operational Challenge	Suggested Solutions	Cost/Proposed Funding Source		
			Prior Years' Capital	2008 Annual Operating	2008 Capital Budget
3.	Operators have difficulty identifying and attaching required equipment to vehicles due to poor lighting. The current system also presents safety concerns for operators.	<ul style="list-style-type: none"> <li>Acquire and install improved lighting, spreader bars (to hold inserts) and a tailgate racking system (to hold tailgates).</li> </ul>	\$30,000		
4.	Currently have limited equipment for clearing sidewalks/pathways/parking lots at City facilities.	<ul style="list-style-type: none"> <li>Purchase sidewalk clearing equipment (with blade attachments for ride-on lawnmowers). Obtain one piece of specialized equipment.</li> </ul>	\$210,000	\$30,000	
<b>Sub-Total</b>			<b>\$380,000</b>	<b>\$51,600</b>	<b>\$283,000</b>

In addition to the above suggestions, which target requirements to maintain existing service levels, some additional challenges and concerns were raised. These are areas where improvements are required due to environmental and safety concerns associated with current practices.

<b>Ice/Snow Removal Program</b>					
<b>Proposed Operational Improvements Not Directly Related to Current Levels of Service</b>					
No.	Operational Challenge	Suggested Solutions	Cost/Proposed Funding Source		
			Prior Years' Capital	2008 Annual Operating	2008 Capital Budget
5.	Lack of compliance for containment of run off from the salt storage area.	<ul style="list-style-type: none"> <li>Relocate existing drainage area and install leak-proof roof over containment area and/or install sump.</li> </ul>	\$80,000		
6.	Equipment operators have difficulty properly and safely cleaning the salt from vehicle inserts. Runoff is not managed properly.	<ul style="list-style-type: none"> <li>Construct platform in truck wash area.</li> <li>Construct storage/treatment system for management of storm run-off.</li> </ul>	\$30,000		\$150,000
<b>Sub-Total</b>			<b>\$110,000</b>		<b>\$150,000</b>
<b>Grand Total</b>			<b>\$490,000</b>	<b>\$51,600</b>	<b>\$433,000</b>

Note that recommendation 2, bullet 2, would result in an addition to the staff complement in Equipment Services. This recommendation is made on the basis that there is adequate work on a year-round basis to employ an additional truck and operator. Operating budget impacts would result in an increase to the Roads snow/ice control budget for the portion of staff salaries associated with frost/snow control activities. There is no additional impact to the operating budget for the balance of salary costs, as these charges would be assessed to user departments in association with regular maintenance and construction projects. These costs are already being paid by these departments via hiring the truck and operator from private firms. This would represent an additional vehicle to our vehicle

replacement reserve budget, with the replacement costs being recovered from the hourly rates charged for this equipment.

There were other operational challenges, including impacts associated with a lack of enclosed storage for specific equipment containing apparatus subject to damage from freezing (sweepers, flushers, inserts, etc.) Staff will continue to explore potential solutions to these issues.

Increased Service Level

Often during snow events, the City is questioned about increasing the level of service to provide salting/snow control in residential subdivisions. This is not done due to the increased pieces of equipment and number of resources that would be required. There must also be an on-going operational need throughout the balance of the year to employ these equipment and resources to effectively use them when salting/snow control services are not being performed.

A cursory examination of the costs associated with increasing our level of service to include subdivisions revealed the following:

	<b>Capital</b>	<b>Operating</b>
1. 15 additional trucks @ \$283,000 each	\$4,245,000	\$971,250
2. 15 equipment operators @\$70,000 each		\$1,050,000
3. Subdivision application per treatment (one treatment in 24 hours – all subdivisions)		\$80,000
<b>Total – Above Items</b>	<b>\$4,245,000</b>	<b>\$2,101,250</b>

In addition to the above, there would be considerable additional capital costs associated with re-configuring the Works Yard compound to create housing for additional vehicles, salt/snow ploughs as well as other needed equipment and supplies. Scoping and costing has not been undertaken for these items.

Each additional truck would also result in the need for one additional staff position to operate the equipment not only during snow events, but also during the remainder of year. The City does not have sufficient work to employ this number of additional resources on a year-round basis. Therefore, this would result in additional operating costs (as outlined above) for staff salaries during those times of the year when salting/snow control operations are not operational. Alternatively, staff in existing positions in other departments could be provided the opportunity to acquire the required licensing and certifications and be reassigned to frost/snow control operations, when required. Limitations on driving experience could, however, be a negative factor with this option. Further, the additional equipment would sit idle for a large portion of the year (when not being used for frost/snow control operations).

In light of the financial and operational considerations, coupled with the fact that severe weather events are not a frequent and regular occurrence in Richmond (i.e. every 2 – 3 years), is it not

recommended to increase levels of service beyond that already establish under current Council policy.

### **Financial Impact**

The current annual budget for frost and snow control activities is \$209,000 (including \$30,400 of MRN funding). This annual budget is established based on an 8-year average of actual costs. The 2006 expenditure budget was overspent by approximately \$212,000. The 2007 budget is approximately 88% expensed to date. Public Works Operations staff work with Finance to identify alternate funding sources in situations where budget allocations are exceeded.

This report outlines a number of items which are required to maintain existing service levels in light of population growth as well as improvements to address safety and environmental concerns. The total amount requested for 2007 items, with recommended funding from prior years' capital programs, is \$490,000. The total annual operating impact of these items and those capital items suggested for 2008 is \$51,600. Total capital costs proposed for consideration in the 2008 capital budget are \$433,000. If approved, staff will proceed with acquiring the items recommended for funding from prior years' capital programs at this time. The remaining items will be submitted for consideration as part of the 2008 operating budget and/or included as a capital submission in 2008.

### **Conclusion**

This report recommends affirmation of the current Council Policy 7013, which establishes the level of service for frost/snow control, i.e. limited to major arterial roads, bus routes and major collector roads only. There is not a sound business case to acquire additional equipment and resources to expand that level of service to residential neighbourhoods.

There are, however, a number of operational challenges which have resulted from population growth and lack of enhancements to this program within recent years, resulting in recommendations for capital purchases and operating budget increases. These recommendations will result in current service levels being maintained, as well as in enhancing overall response efficiency.



Suzanne Bycraft  
Manager, Fleet & Environmental Programs  
(3338)

SJB:



# **Snow, Ice and Frost Operational Response Plan**

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**9 February 2007, Version 1**



**City of Richmond**

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## Purpose

This document outlines the City of Richmond’s operational guidelines associated with inclement weather where safe travel on City roadways is affected. This operational plan is focused specifically at snow, ice and frost events. It outlines the measures the City takes to mitigate the impacts of these weather events on traffic flow in accordance with the resource capabilities of the City.

This document does not outline the operational procedures associated with snow, ice and frost control. Such procedures are the responsibility of the various departmental areas with defined roles as per this plan.

## Policy Guidance

The “Snow, Ice and Frost Operational Response Plan” is developed in accordance with the following policy documents:

- ❑ City of Richmond Policy 7013 – “Roadways – Ice and Snow Removal”, Appendix 1, and
- ❑ City of Richmond Traffic Control and Regulation Bylaw No. 5870, Section 6.1, Appendix 2

In accordance with Policy 7013, salting and/or snow ploughing will be undertaken when conditions warrant on major arterial roads and bus routes, followed by major collector roads. Salting and/or ploughing are not undertaken in residential subdivisions except in extraordinary circumstances and at the direction of the General Manager of Engineering and Public Works.

City of Richmond Traffic Control and Regulation Bylaw No. 5870, Section 6.1 requires the owners or occupiers of commercial, industrial and multi-family dwellings to remove all snow and ice from any sidewalk adjacent to such parcel for a distance which corresponds with the property line.

This operational plan is designed around the priorities as established via Policy 7013.

## Situation Assessment

Richmond's terrain is flat, which aids in both navigating the roads in ice/snow events, as well as in undertaking ice/snow control. The low-lying nature of the island's topography, combined with the proximity to ocean waters, however, increases humidity levels.

While weather conditions are generally mild, weather over the winter months (November – February) can cause freezing of moisture on roads and/or result in snowfall.

These and other various factors lead to inversions at various areas throughout the island, where temperature changes in altitude can vary considerably and change rapidly over short periods of time. This complicates operational response in that there can be frost/snow in one area of the island, but not in others. It can also lead to roads becoming icy over a very short period of time. This can lead to road condition assessments changing within extremely short periods of time.

## Objective

The main objective of this operational plan is to reduce the threat to public safety from snow, ice and frost events and help maintain traffic flow.

## Activation

The Senior Roads Foreman of Engineering and Public Works Operations will make the determination to activate this plan. Such determination is made based on the following factors:

- Monitoring of Environment Canada weather conditions, and road sensor monitoring via SCADA system,
- Upon notification by Richmond's protective service agencies (RCMP, Richmond Fire Rescue) of road conditions,
- Physical assessment of road conditions by qualified Public Works Operations staff,
- Anticipated weather forecasts, where activities are pre-scheduled in anticipation of the impact to road conditions.

The Senior Roads foreman will consult with senior staff, including the Director of Public Works Operations, as required, to assist in making the determination to activate.



## Concept of Operations

The **Roads Department** of Engineering & Public Works Operations has principal responsibility for the overall coordination of frost and snow operations. They are supported by Equipment Services, which provides the professional drivers and operators to undertake salting and/or ploughing operations. The Fleet Training Officer is responsible for ensuring all drivers and operators are appropriately trained. Fleet Services also actively supports ice/snow operations by providing regular maintenance of equipment to ensure continuance of activities and minimize downtime of equipment. The Roads Department is also responsible for monitoring the use of salt, in accordance with Environment Canada Codes of Practise. When used in large amounts, road salts can adversely impact freshwater ecosystems, soil, vegetation and wildlife. To mitigate this impact, strategies are integrated to minimize salt use, such as using technologies which optimize the effectiveness of salt, i.e. pre-wetting. Roads will prepare a Salt Management Plan, at such point when salt use exceeds 500 tonnes.

**Parks Operations** is responsible for undertaking salting/snow removal at City facilities (walkways, pathways, etc.) and coordinating this activity with facility operations staff. Parks will also support the Roads Department by coordinating salting/snow removal operations from Bus Stops. Other departments, i.e. Litter Operations, will report through Parks Operations via supervisory staff, and provide resource support to assist. Water and Sewer Services will also provide secondary support operations, where required. In situations where departments have re-allocated staffing to support operations (Litter/Water/Sewer) and are unable to perform their normal duties due to the weather event, funding will be from within their normal operating/maintenance budgets.

**Sewer Services** has principal responsibility to review and monitor conditions as it relates to the potential for flooding (from block catch basins due to icing, etc.) and take measures to mitigate any potential impacts.

The roles and responsibilities associated with these operational areas of focus are outlined in Appendix A, in the following 4 functional areas:

1. Planning (May 1<sup>st</sup> – November 1<sup>st</sup>)
2. Pre-Event Activities (November 1<sup>st</sup> – February 28<sup>th</sup>)
3. Operational Response (During Event)
4. Post Event

Details on the various activities undertaken in each area and the associated responsibility and method of funding are included in Appendix 3.

## Equipment/Resources

The following City equipment and resources are available to support salting and ploughing operations:

Equipment			
No.	Description	Unit No.	Department Assigned
3	Single-Axle Dump Trucks with Flincs	1300, 1208, 858	Equipment Services
1	1-tonne Flat Deck Truck with Insert	491	Roads
7	Tandem Dump Trucks with Insert and Plough Attachments	859, 876, 877, 1074, 1165, 1207, 1278	Equipment Services
1	Mobile Road Grader	570	Equipment Services
2	Mobile (Walk-Behind) Snow Blowers	978, 979	Parks
5	Backhoes	913, 961, 1169, 1301, 1302	Equipment Services
500 tonnes	Salt/sand mix		Roads
14,000 litres	Brine Mix (for pre-wetting)		Roads
216 pails (6 skids)	Ice Melt (walkways, stairs, etc.)		Roads/Parks/Facilities

## Financial

Activities undertaken under this operating plan are funded primarily from the Engineering & Public Works - Roads operating budget. The amount of funding is determined each year based on 8 year averages of actual expenditures. Current annual funding is \$209,000 (including MRN funding). In the event expenditures exceed the annual budget amount in any given year due to excessive weather conditions, the matter is referred to Finance & Corporate Services to evaluate alternate funding sources to cover the over-expenditures.



Parks Operations funds salting/snow removal operations from City facilities. Funding for departments which provide re-directed support to assist (and where their staff are unable to perform regular duties due to weather conditions), will be from the normal operating budgets for these areas. However, separate work order tracking will be set up to capture all costs associated with salting/ploughing activities for reporting and evaluation purposes.

## Suppliers

<b>Company Name</b>	<b>Type of Suppliers</b>	<b>Telephone No.</b>
Walker's Gradall	Single-Axle with Flink	604-240-2068
John Gladiuk	Grader	604-644-2270 and 604-277-5269
Mainroad Contracting	Salt and Brine	604-581-3710
McTar Petroleum	Salt	604-521-7707
Del Equipment	Inserts, Flinks, Ploughs	604-941-6241
PSI Hydraulics	Hydraulics	604-278-4481
First Choice Auto Parts	Various Parts	604-233-1303
UAP NAPA	Various Parts	604-270-9221
Loraco Supply	Various Parts	604-276-1866
Freightliner Canada	Truck Parts	604-888-1311
Co Van International	Truck Parts	604-526-8631
Richmond Machine	Machining/Fabrication	604-273-8841
Kal Tire	Tires, Plough Wheels	604-278-9181
CWP	Blades, Blocks	604-533-9667
Finning Canada	Truck, Equipment Parts	604-881-2600
Brant Equipment	Truck, Equipment Parts	604-882-8888
Vimar Equipment	Equipment Parts	604-430-4274
Danco Equipment	Insert, Flink, Ploughs	604-888-0513

## **Distribution**


Director of Public Works Operations  
Public Works Dispatch  
Senior Roads Foreman  
Equipment Supervisor  
Fleet Training Officer  
Trades Foreman II  
Senior Manager, Corporate Communications  
Manager, Public Works Administration  
Manager, Fleet and Environmental Programs  
Manager, Parks Operations  
Manager, Water Services  
Sanitation & Recycling Foreman  
Manager, Sewerage & Drainage

## **Appendices**

Appendix 1 – Policy 7013 – Roadways Ice and Snow Removal  
Appendix 2 – Bylaw 5870 Section 6 – Obstruction of Traffic  
Appendix 3 – Snow, Ice and Frost Operational Response Action Plan



## Appendix 1 – Policy 7013 – Roadways Ice and Snow Removal

		<h1>City of Richmond</h1>	<h1>Policy Manual</h1>
Page 1 of 1	Adopted by Council: Dec. 22/80	Amended: February 28/05	<b>POLICY 7013</b>
File Ref: 6360-00	<b>ROADWAYS – ICE AND SNOW REMOVAL</b>		
<p><b>POLICY 7013:</b></p> <p>It is Council policy that:</p> <p>A salt mixture will be applied on specified roadways to provide safe winter driving conditions during adverse weather.</p> <p><b>Major salting operations</b> will commence:</p> <ol style="list-style-type: none"> <li>1. Upon verification of poor street conditions as determined by the Duty Superintendent.</li> <li>2. Upon request by the RCMP.</li> <li>3. Pre-scheduled in response to weather forecasts.</li> </ol> <p><b>Program Response Time:</b> As it takes City forces approximately 1 1/2 hours to prepare and begin salting on City streets with a completion time of up to five hours, depending on conditions, the following priorities have been established:</p> <ol style="list-style-type: none"> <li>1. <b>First Priority:</b> All major arterial, section line roads and bus routes.</li> <li>2. <b>Second Priority:</b> Major collector roads.</li> <li>3. <b>Residential Subdivisions:</b> No salting will be done on internal roads.</li> <li>4. <b>Snow Plowing:</b> Snow plowing will only be done when salting is ineffective.</li> <li>5. <b>Minor, localized icing conditions:</b> Duty Superintendent (or Foreman) will investigate and assess the conditions. If salting is needed to improve the road condition, the Superintendent or Foreman may request barricade men to spread the salt.</li> </ol> <p>In extraordinary circumstances, the General Manager of Engineering and Public Works or his designate is authorized to order the removal of snow from subdivision streets.</p> <p style="text-align: center;">(Engineering and Public Works)</p> <p style="text-align: center;">1447391 / 6360-00</p>			

## Appendix 2 – Bylaw 5870 Section 6 – Obstruction of Traffic

BYLAW NO. 5870

7

### 5. VISIBILITY CLEARANCE AT INTERSECTIONS

- 5.1 There shall be no obstructions to the line of vision at an intersection between the height of 0.9 metres (2.95 feet) and 3.0 metres (9.84 feet), as measured from the top of any **curb** fronting a property, or if there is no such **curb**, as measured from the crown of the roadway, in that area bounded by the property lines adjoining the streets and a line drawn to connect the property lines at a distance of 7.5 metres (24.61 feet) from their point of intersection.

### 6. OBSTRUCTION OF TRAFFIC

- 6.1 The **owner** or occupier of any parcel of real property which is developed for, or used in whole or in part for, commercial, industrial or multi-family dwelling use other than a two-family dwelling shall remove all snow and ice from any sidewalk adjacent to such parcel for a distance that coincides with the property line of his real property, not later than 10:00 a.m. of any day, except Sunday.
- 6.2 No person shall excavate in, cause a nuisance upon, encumber, obstruct, injure, foul or otherwise damage any portion of a highway or other public place whether on, in, over, or under such highway without having a written permit to so do from the **General Manager, Engineering & Public Works**, provided that the **General Manager, Engineering & Public Works** shall not issue such a permit where the proposed use involves undue or lengthy public inconvenience.
- 6.3 Subject to Section 7, no person shall do anything which will direct the attention of persons and cause them to congregate in a group upon any highway in such a manner as to obstruct the free passage of pedestrians or vehicles, or in such a manner that persons so congregated might thus be in danger of injury, except with the written permission of **Council**.

### 7. PARADES

- 7.1 No person shall be a member of, or take part in any parade on any highway unless:
- (a) such parade is under the direction or control and in the charge of some one person as marshal or organizer;
  - (b) the marshal or organizer has obtained the approval of **Council** to hold the parade; and
  - (c) flags are carried or displayed according to Subsection 7.5.
- 7.2 No parade shall be held unless application therefor has been made in writing to the **City** and **Council** has thereafter approved the application. Annual parades listed in Schedule N of this bylaw may be approved by the Director of Transportation unless there is a change in any of the criteria listed in subsection 7.3 from the previous years parade format. Any change must be approved by **Council** before a permit may be issued.

2040874

November 14, 2006



### Appendix 3 – Snow, Ice and Frost Operational Response Action Plan

No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services	
1.	<b>Planning</b> <i>(Annually: May 1<sup>st</sup> – November 1<sup>st</sup>)</i> 1. Conduct operational assessment of inserts, ploughs, flinks 2. Undertake maintenance and operational repairs for equipment readiness 3. Establish dedicated list of salting/snow removal personnel. 4. Initiate refresher training of drivers and operators, including protocols for salting and ploughing 5. Initiate training for mechanics 6. Review and update salting/ploughing routes 7. Ensure salt/sand supplies are at maximum quantities	Vehicle Maint.						X						
		Vehicle Maint.						X						
		N/A					X							
		Training						X						
		Fleet												
		N/A												
		Roads – Snow												



No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
1.	<b>Planning (cont'd)</b> <i>(Annually: May 1<sup>st</sup> – November 1<sup>st</sup>)</i> 8. Review and update set-up/operational procedures specific to each piece of equipment and ensure information is placed into each vehicle	N/A				X	X						
2.	<b>Pre-Event</b> <i>(Annually: November 1<sup>st</sup> – February 28<sup>th</sup>)</i> 1. Monitor weather conditions 2. Conduct operational planning meetings involving Roads Foreman, Equipment Foreman, Trades Foreman II – Garage, Fleet Training Officer 3. Monitor and assess road conditions 4. Make determination to place staff on Stand-By and/or pre-scheduled overtime, as appropriate to the specific circumstances of the incident	N/A N/A Roads – Snow N/A		X	X				X		X	X	



No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services		
<b>2.</b>	<b>Pre-Event (cont'd)</b> <i>(Annually: November 1<sup>st</sup> – February 28<sup>th</sup>)</i> 5. If instructed by Roads, make arrangements for placing staff on Stand-By and/or Pre-Scheduled overtime 6. Make determination for pre-loading of vehicles/equipment, if specific circumstances warrant 7. If instructed by Roads, prepare and load vehicles/equipment for operational readiness 8. Conduct a test run with fully loaded equipment 9. Establish pre-defined routes and provide to Equipment Services, where applicable.	Roads – Snow		X	X	X		X							
		N/A			X										
		Roads – Snow				X			X						
		Roads – Snow					X								
		Roads – Snow					X								
		N/A				X									
<b>3.</b>	<b>Operational Response – During Event</b> 1. Conduct operational response meetings involving <i>Roads Foreman, Equipment Foreman, and Trades Foreman II – Garage, Fleet Training Officer</i>	N/A	X												

No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
3.	<b>Operational Response – During Event (cont'd)</b> 2. Establish work order tracking system for associated costs 3. Make determination to activate and initiate operational response activities appropriate to the event type – frost, ice or snow event: Level 1 – frost event Level 2 – major frost/ice event/minor snow Level 3 – major snow event 4. Schedule staffing 5. Notify <i>Senior Manager, Corporate Communications</i> regarding City activities for media advisory 6. Issue media advisories	N/A  N/A			X  X								
		Roads – Snow N/A N/A	X		X	X		X					
									X				







No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
3.	<b>Operational Response – During Event (cont'd)</b> 9. Level 2 Events: Initiate salting activities as per secondary response priorities: <ul style="list-style-type: none"> <li>• Bus Stops (Parks assumes overall coordination responsibility)</li> <li>• Stairs and entrances at City facilities</li> <li>• Perimeter and interior pathways at City facilities</li> <li>• Perimeter and interior pathways at Works Yard</li> </ul>	Parks Litter Ops. Water Services Sewer Services Parks Parks Water Services								X	X	X	X



No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
3.	<p><b>Operational Response – During Event (cont'd)</b></p> <p>10. Level 3 Events: Initiate salting and ploughing activities as per primary response priorities:</p> <ul style="list-style-type: none"> <li>• Major arterial roads</li> <li>• Bus Routes</li> <li>• Parking lots in City facilities</li> <li>• Stairs and entrances at City Hall, Works Yard and RCMP Building</li> </ul> <p>11. Monitor salting/ploughing activities to ensure conformance with operational procedures.</p>	Roads – Snow			X								



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3.	<p><b>Operational Response – During Event (cont'd)</b></p> <p>12. Initiate salting, ploughing and/or snow clearing activities as per secondary response priorities:</p> <ul style="list-style-type: none"> <li>• Bus Stops (Parks assumes overall coordination responsibility)</li> <li>• Major subdivision entrances/exits</li> <li>• Stairs and entrances at City facilities</li> <li>• Perimeter and interior pathways at Works Yard</li> </ul> <p>13. Monitor and track operational response costs</p> <p>14. Monitor and ensure adequate salt/sand supplies are maintained</p> <p>15. Monitor operational response and make appropriate adjustments</p> <p>16. Undertake equipment repairs and maintenance</p>	<p>Parks</p> <p>Litter Ops.</p> <p>Water Services</p> <p>Sewer Services</p> <p>Roads – Snow</p> <p>Parks</p> <p>Water Services</p> <p>N/A</p> <p>Roads – Snow</p> <p>Roads – Snow</p> <p>Roads – Snow</p>								X				



No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
3.	<b>Operational Response – During Event (cont'd)</b>												
	17. Establish mechanism to ensure mechanical/operational issues or concerns are clearly communicated to Repair Services Shop	N/A				X							
	18. Update Senior Staff and Council on operational activities	N/A	X										
	19. Monitor use of salt in accordance with Environmental Salt Management Plan and report accordingly.	N/A			X								
4.	<b>Post-Event</b>												
	1. Initiate snow clearing from drainage conveyances	Roads – Snow			X								
	2. Initiate snow clearing from accumulations on major arterial roadways	Roads – Snow			X								
	3. Monitor conditions to determine potential for flooding from snow accumulations.	Sewer/Drain											X
	4. Initiate operations to clear catch basins where required to mitigate potential for flooding	Sewer/Drain.											X



No.	Activity	Funding Source	Director – Public Works Operations	Dispatch	Senior Roads Foreman	Equipment Supervisor	Fleet Training Officer	Trades Foreman II - Garage	Senior Manager - Corporate Communications	Parks Operations	Water Services	Litter Operations	Sewer Services
<b>4.</b>	<b>Post-Event (cont'd)</b>							X					
5.	Undertake maintenance on inserts and ploughs to minimize potential for rust and equipment seizing, etc.	Vehicle Maint.	X										
6.	Conduct operational debriefs	N/A	X										
7.	Prepare, initiate and assign actions arising from operational debriefs	N/A	X										
8.	Assemble response cost information and present to Senior Staff and Council	N/A	X										
9.	Evaluate overall operational response and revise accordingly, as required.	N/A	X										