SAINT JOHN

WINTER MANAGEMENT PLAN FOR STREETS AND SIDEWALKS

CITY OF SAINT JOHN
MUNICIPAL OPERATIONS

NOVEMBER 2011

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PLAN OVERVIEW: SHARED RESPONSIBILITY

PURPOSE

Canadian winters bring a host of wonders and challenges; affecting our individual outlooks, shifting our activities and disrupting our routines. The snow, ice, sleet, freezing rain, rain and fluctuating temperatures of Saint John winters also produce public safety emergencies of varying type and degree that impact users of municipal streets and sidewalks; conditions accentuated by hilly terrain and coastal weather influences.

The *Winter Management Plan for Streets and Sidewalks* seeks to keep the community functional through the months of winter; to coordinate preparations, organize resources and guide operational protocols for servicing the network of public streets and sidewalks under widely varying conditions. Its activities are vital to quality of life, commerce, and, most importantly, safety of the public.

Effectiveness of winter service activities depends on the community working together. Ultimately, success means the public sharing in responsibility, working with the City and having realistic expectations of winter service. On its part, the City must "connect" with the public and understand needs - where service is effective and where improvements need to be made.

Appendix "A" outlines challenges associated with winter services.

SEVEN PRINCIPLES

Public safety first ... public safety is always foremost

Manage the Plan ... plan winter operations; manage to the *Plan*

Evaluate ... understand conditions when deploying resources

Entire storm ... manage winter conditions over days and weeks

Consistency ... strive to deliver expected service levels

Resources ... resource levels are set through budget allocations

Citizens ... property owners and others have obligations

CLIENT BASE

The community, its services, institutions and commerce are impacted:

- 68,000 citizens, other pedestrians, commuters and motorists
- Public transit system and its users
- Emergency services – ambulance, fire, police
- Public institutions – schools, hospitals, university, colleges
- Neighbourhoods, transportation companies, utility agencies, commercial enterprises and affiliate jurisdictions (NBDOT)

STREET PRIORITY A structure of priorities forms the basis for all winter operations:

1. Arterial streets, highway connections, emergency routes
2. Major bus routes, schools, community centres, business districts
3. Collector streets, minor bus routes, industrial parks
4. Local or subdivision streets

ACCOUNTABILITY Commissioner, Municipal Operations and Engineering

RESPONSIBILITY Deputy Commissioner, Municipal Operations is responsible to the Commissioner for execution and continuous improvement of this *Plan*.

PLAN ACTIVITIES This plan comprises a series of interrelated activities, in 12 parts:

1. ENGAGING THE PUBLIC: to maintain a shared dialogue with the public on services, neighbourhood collaboration and winter conditions.
2. COORDINATION OF WINTER OPERATIONS: to provide effective coordination of service activities and liaison with the public during storm events.
3. STREET PLOWING: to maintain safe passage and the usability of public streets during and after adverse winter weather conditions.
4. WINTER SIDEWALKS: to maintain safe pedestrian access and usability of designated sidewalks and walkways throughout the winter season.
5. SALT MANAGEMENT: to optimize supply and usage of road salt and other winter materials while minimizing their environmental impact.
6. SNOW AND ICE REMOVAL: to expand access of pedestrians and vehicles by removing accumulated snow from the public right of way.
7. MAINTAINING STREET RIGHT-OF-WAY: to ensure availability of the right-of-way for safe and efficient movement of pedestrians and vehicles.
8. EQUIPMENT RESOURCES AND FACILITIES: to optimize use of winter service resources through preparation, operator care and timely repair.
9. WINTER DRAINAGE: to keep drainage systems open and functional, and ready for periods of rainfall, mild temperatures and snow/ice melt.
10. WINTER ASPHALT MAINTENANCE: to provide emergency repair of street defects and potholes for roadway safety and winter driveability.
11. RESPONSIBILITIES AND REPORTING: to clearly delineate responsibilities and reporting protocols for effective winter operations and service.
12. TRAINING AND PLAN ADMINISTRATION: to ensure overall readiness for winter operations and continuous improvement of this Plan.

PART 1: ENGAGING THE PUBLIC

PURPOSE

To maintain a shared dialogue with the public on services, neighbourhood collaboration and winter conditions

COOPERATION

The success of winter operations depends very much on the public sharing in the responsibility to mitigate the effects of winter conditions and having realistic expectations of municipal service. The cooperation and assistance of citizens, businesses and property owners is a key to achieving the underlying goal of a "liveable winter city". True success will be realized through a collaborative effort of stakeholders working together to reduce hazards, assist neighbours and minimize costs.

On its part, the City shall be responsive to the concerns and issues of citizens; to understand where service is effective and where greater emphasis needs to be given.

EMPHASIS

Public information activities shall emphasize the following:

- Establishing a constructive community dialogue on the notion of a "liveable winter city"
- Promoting joint responsibility for desired outcomes
- Encouraging neighbourhood "Snow Angel" initiatives to assist seniors and neighbours with special needs, and supporting other community and volunteer efforts
- Encouraging citizens to clear snow and ice from neighbourhood fire hydrants, walkways and catch basins, and to prevent extra snow being dumped or pushed onto sidewalks and the street right-of-way
- Visiting schools, presenting reports to Council, preparing briefing packages, and being available to the media
- Participating in neighbourhood or ward meetings, and establishing a dialogue with community groups and organizations
- Inspecting and giving notice of right-of-way obstructions, travel lane restrictions and other impediments to winter service
- Communicating on policies and by-laws, and their enforcement
- Encouraging businesses to clear ice and snow from their building frontage and adjacent sidewalk - "Adopt a Sidewalk".
- Connecting with property owners and private snow plowing contractors to ensure By-Law provisions concerning the public

right-of-way are respected; reminding them of their responsibility to not dump or push snow onto sidewalks and streets.

INFORMATION

The model for public information shall include public service advisories (PSAs) in advance of storm events, regular updates during significant winter emergencies, and a designated spokesperson available to the media.

The public needs to understand the many variables that affect snow and ice control, including snowfall accumulations, temperatures, wind conditions, type of precipitation (i.e. freezing rain or plain snow), and the time of day the precipitation occurs. Clean-up times will vary depending upon severity of conditions.

Additional staff shall be assigned to taking calls during significant storm events and the Resource Desk shall integrate with the *Winter Operations Centre* (WOC) to help connect the public with operations in the field.

LIABILITY

Exposure to liability is a reality of municipal service delivery. As such, careful attention shall be paid to the service parameters set out in this Plan. The City's exposure to liability is controlled when the Plan is followed and services are delivered as consistently as possible.

EXPECTATIONS

The City of Saint John, the community and individual citizens need to appreciate the realities of winter conditions in an era of climate change and the challenges inherent to mitigating those conditions. We need to further temper expectations in line with the severity of winter weather events and the resources available to counter those events.

"Best" outcomes are realized when "shared responsibility" for mitigating winter conditions becomes a way of life; ingrained in the community's psyche.

RESPONSIBILITY

Deputy Commissioner: establish public information protocols and provide human resources for public information activities

Communications: establish public information protocols, support public information activities, and coordinate media liaison

PART 2: COORDINATION OF WINTER OPERATIONS

PURPOSE

To provide effective coordination of service activities and liaison with the public during storm events

WOC

A *Winter Operations Centre* (WOC) shall be established by the Deputy Commissioner for each significant winter emergency. The WOC shall coordinate overall operational direction through the storm event, keep municipal officials informed and maintain liaison with the public.

The WOC shall be established and operated under the direction of the Deputy Commissioner or his designate, staffed with an operations officer and necessary support personnel through the emergency to the recovery phase after the storm event.

The Resource Desk shall form part of the WOC.

The WOC, working with Corporate Communications, shall provide regular information updates - disseminated to the Commissioner, the City Manager, the Mayor, Members of Council and other officials, the media and the general public. The City of Saint John website and e-mail notifications (for parking bans) shall be used.

INFORMATION

Timely and informative communications to the news media and the general public is vital during snow and ice control operations, and in follow-up thereto. This *Plan* has made public information an essential priority for winter operations; maintained throughout the winter season.

COORDINATION

Coordination activities include the following:

- The *Winter Management Plan for Streets and Sidewalks* shall be updated by October 31st of each year
- Training sessions on the *Winter Management Plan* for all Municipal Operations staff between October 1st and October 31st of each year
- Winter services (table top) training exercise and full equipment readiness inspection between October 15th and October 31st
- Winter operations mode into effect on the first Sunday of November
- Annual pre-season advertisement of *Winter Management Plan* features, snow tips and FAQ's by November 15th
- Ongoing public notifications concerning general on-street parking restrictions (midnight to 7:00 am), South Central overnight parking bans, weather warnings, PSAs, and other information necessary for service coordination

- Winter Operations Centre (WOC) , incorporating the Resource Desk, shall be established for all significant winter storm emergencies
- Operations shall be conducted in accordance with this *Winter Management Plan*, with necessary field direction and operational adjustments as directed by the Deputy Commissioner or designate.
- Operational managers, foremen and operators shall maintain ongoing coordination of operations and service activities

WEBSITE

The *Winter Management Plan for Streets and Sidewalks* shall be posted on the City website and include information on routing and street priorities, winter parking restrictions and frequently asked questions.

REMINDERS

A "Winter Safety Reminders" brochure shall be made available to the public prior to the winter season.

STORM SEVERITY

Storm/temperature severity and successive storms could limit or preclude attainment of objectives, and severely restrict capacity to clear ice/snow-pack from street and sidewalk surfaces.

RESPONSIBILITY

Deputy Commissioner: establish WOC during significant emergencies

Manager: staff the WOC and provide updates, direct operations, prioritize activities, and assist in drafting PSAs

Foreman: coordinate with operational managers and equipment operators, and provide updates to the WOC

Operator: report on field conditions and status of assigned route

Resource Desk: provide contact with public and assistance to the WOC

Communications: coordinate media liaison and information updates

PART 3: STREET PLOWING

PURPOSE

To maintain safe passage and the usability of public streets during and after adverse winter weather conditions

CONTENT

Snow plowing activities are summarized as follows:

- Apply anti-icing (brine solution or salt) prior to or in the early stages of the winter storm event to reduce the potential for ice/snow-pack formation on roadway surface.
- Plow accumulated snow off the travel lanes of public roads and streets to provide accessibility and vehicle movement, and to facilitate emergency and other services.
- Apply de-icing (salt) and abrasive (mix) materials in right amounts on street surfaces for vehicle traction and safety of movement.
- Push back on public roads and streets to widen travel lanes, open drainage courses/basins and facilitate safe travel and manoeuvring.

PRIORITIES

The structure of priorities forms the basis for all winter operations:

1. Arterial streets, highway connections, emergency routes
2. Major bus routes, schools, community centres, business districts
3. Collector streets, minor bus routes, industrial parks
4. Local or subdivision streets

OBJECTIVES*

Priority 1: 8 hours after end of storm - bare pavement, travel lanes
2 days after end of storm - bare pavement, curb to curb

Priority 2: 8 hours after end of storm - bare pavement, centre line
2 days after end of storm - bare pavement, travel lanes

Priority 3: 12 hours after end of storm - bare pavement, centre line
3 days after end of storm - bare pavement, travel lanes

Priority 4: 12 hours after end of storm - accessible, snow pack
4 days after end of storm - bare pavement, centre line

*Storm/temperature severity and successive storms could limit or preclude attainment of objectives, and severely restrict capacity to clear ice/snow-pack from street surface.

PLOW ROUTES

City streets are organized into 31 winter plow routes for servicing, with route maps provided at Appendix "B". Deployment of personnel, equipment and contracted resources for street plowing is also outlined in Appendix "B".

#	ROUTE	CENTRE-LINE KILOMETRES
1.	Bayside Drive Grandview Heatherway Priority 1	24.3 km
2.	Rothesay Ave McAllister Loch Lomond Priority 1	18.5 km
3.	Rothesay Road Sandy Point University Priority 1	21.1 km
4.	Southern Peninsula Priority 1	16.0 km
5.	Millidge Ave Main St Chesley Drive Priority 1	14.5 km
6.	Lancaster Avenue Market Place Priority 1	6.6 km
7.	Main St W Westfield Road Manchester Priority 1	13.6 km
8.	Fairville Boulevard Ocean Westway Priority 1	15.7 km
9.	Central Business District South	14.1 km
10.	Peel Plaza Waterloo	13.9 km
11.	Old East	12.1 km
12.	Westmorland Silver Falls	17.5 km
13.	Forest Hills Glen Falls	25.0 km
14.	Champlain Heights Heatherway	28.8 km
15.	Bon Accord Lakewood Heights Greenwood	26.9 km
16.	Loch Lomond Airport	13.2 km
17.	Golden Grove Hillcrest Churchland	31.0 km
18.	Red Head Old Black River	37.7 km
19.	Kennebecasis Foster Thurston	20.4 km
20.	Millidgeville	23.6 km
21.	Portland Place Sandy Point	20.6 km
22.	Old North End Douglas Avenue	18.1 km
23.	Mount Pleasant Wright Street	15.5 km
24.	Lower West	17.1 km
25.	Fundy Heights	16.7 km
26.	Plateau	14.1 km
27.	Greendale Quinton Heights	18.9 km
28.	Milford Randolph	13.4 km
29.	Westgate Lorneville	33.8 km
30.	South Bay	7.7 km
31.	Morna	11.3 km

RESPONSIBILITY

Manager: program delivery and performance in area of jurisdiction

Foreman: level of service, resource usage in snow management zones

Operator: plow route efficiently/effectively; use materials carefully

Resource Desk: track hired resources, coordinate costing

MEASURES

% kilometres serviced to service level objective @ storm severity index

Cost per street kilometre serviced @ storm severity index

PART 4: WINTER SIDEWALKS

PURPOSE

To maintain safe pedestrian access and usability of designated sidewalks and walkways throughout the winter season

CONTENT

Designated sidewalks only in each priority grouping will be serviced in accordance with the objectives set out below; other sidewalks will not be serviced. Winter sidewalk activities are summarized as follows:

- Plow or blow accumulated snow off public sidewalks designated for service.
- Apply winter de-icing and/or abrasives materials (treated sand or salt) to sidewalk surfaces to improve traction for pedestrians or to de-ice the sidewalk surface.
- Push back snow (with heavy equipment) to clear sidewalk and associated R-O-W where feasible.

PRIORITIES

The structure of priorities forms the basis for all winter operations:

1. Major retail areas and major SJ Transit bus stops
2. Immediate school areas
3. Remaining arterial streets
4. Remaining local or subdivision streets

OBJECTIVES*

Priority 1: 12 hours after end of storm - pedestrian passage
2 days after end of storm - walking surface with traction*

Priority 2: 24 hours after end of storm - pedestrian passage
3 days after end of storm - walking surface with traction*

Priority 3: 24 hours after end of storm - pedestrian passage
3 days after end of storm - walking surface with traction*

Priority 4: 72 hours after end of storm - pedestrian passage
4 days after end of storm - walking surface with traction*

*Storm/temperature severity and successive storms could limit or preclude attainment of objectives, and severely restrict capacity to clear ice/snow-pack from sidewalk surface.

SIDEWALKS

Only designated municipal sidewalks shall be serviced in accordance with the objectives set out.

These designated municipal sidewalks are organized by priority for the clearance of snow, maintenance of safe pedestrian access and usability during the winter.

Sidewalk service levels cannot mirror (in practical terms of time, consistency and quality) what is possible on streets. This reflects the physical characteristics of sidewalks (limited width and lack of direct drainage), effects of pedestrian traffic versus vehicles, and limitations of sidewalk equipment. Service expectations need to be tempered; severity of weather is much more a determinant of sidewalk conditions.

Of the City's 401.95 kilometres of sidewalk, 247.6 or 61.6% are designated for winter service. Resource limits make it impossible to provide consistent and satisfactory service to the entire inventory.

Winter sidewalk servicing zone maps are provided at Appendix "C". Deployment of personnel, equipment and contracted resources for winter sidewalks is also outlined in Appendix "C".

S/W ROUTES

Only designated municipal sidewalks shall be serviced in accordance with the objectives set out. Resource limits make it impossible to provide consistent and satisfactory service to the entire inventory. Winter sidewalk operations are organized into 14 sidewalk plow routes; each assigned a primary sidewalk equipment unit and operator. Two units are assigned to provide sidewalk plows with salt or sand for traction. Winter sidewalk route maps are attached hereto.

ROUTE	UNIT	SERVICING AREA	KM SERVICED
South 1	798	Old East and North of Union	21.2 km
South 2	781	SC Peninsula (NW quadrant)	10.3 km
South 3	783	SC Peninsula (NE quadrant)	14.6 km
South 4	796	SC Peninsula (South quadrants)	17.6 km
East 1	792	Glen Falls, Golden Grove	19.1 km
East 2	793	Loch Lomond, Champlain Hts	18.1 km
East 3	790	Rothesay Ave, Westmorland	18.9 km
North 1	791	University Ave, Millidgeville	15.2 km
North 2	795	Old North End, Douglas, Chesley	17.1 km
North 3	786	Wellesley Avenue	13.8 km
North 4	788	Mount Pleasant, Sandy Point	19.4 km
West 1	797	Sand Cove, Fairville Blvd.	21.5 km

West 2	794	Lower West	24.1 km
West 3	775	Manchester, Dever, Westfield Rd.	16.7 km
Material	611	Salt/sand to S/W units	
Material	572	Salt/sand to S/W units	

SNOW REMOVAL

Heavy and successive snowfalls and general accumulation will mean a need to remove (blow and truck away) snow from sidewalk rights of way. Sidewalk snow removal will be integrated with general snow removal operations, in accordance with the structure of priorities.

RESPONSIBILITY

Manager: program delivery and performance in area of jurisdiction

Foreman: level of service, resource usage in snow management zones

Operator: service route efficiently/effectively; use materials carefully

Resource Desk: track hired resources, coordinate costing

MEASURES

% kilometres serviced to service level objective @ storm severity index

Cost per sidewalk kilometre serviced @ storm severity index

PART 5: SNOW AND ICE REMOVAL

PURPOSE

To expand access of pedestrians and vehicles by removing accumulated snow from the public right of way

CONTENT

Snow and ice removal operations involve utilizing a combination of internal and contracted resources to remove (truck away) accumulated snow from the street right-of-way. Activities are summarized as follows:

- Inspect and report on snow accumulation, identify critical areas.
- Free blow or remove snow/ice from designated streets after defined accumulations impede safe traffic and pedestrian movement.
- Free blow or remove snow after heavy or multiple snowfall events resulting in network congestion, to create space for future events.
- Site, operate and manage snow dumps in strategic locations.
- Remove snow/ice build-up along sidewalk and gutter lines as temperatures warm up.

GUIDELINES*

Priority 1a: Emergency routes; before 20 cm accumulation

Priority 1b: Arterials/connections; before 20 cm accumulation

Priority 2a: Major bus routes; before 30 cm accumulation

Priority 2b: Business districts; before 30 cm accumulation

Priority 2c: Schools/community centres; before 30 cm accumulation

Priority 3a: Minor bus routes; before 60 cm accumulation

Priority 3b: Collector streets; before 60 cm accumulation

Priority 4: Local streets; designated as determined by conditions

*Storm/temperature severity and successive storms could limit or preclude attainment of objectives, and severely restrict capacity to remove snow/ice accumulations.

RESPONSIBILITY

Deputy Commissioner: initiate snow removal operations

Manager: establish snow removal plans, organize resources, report

Foreman: supervise operations, effective use of resources, report

Operator: operate equipment efficiently and effectively, report

Resource Desk: track hired resources utilized, coordinate costing

MEASURES

% kilometres serviced to service level objective @ storm severity index

Loads removed and cost of removal by per load

PART 6: SALT MANAGEMENT

PURPOSE

To optimize supply and usage of road salt and other winter materials while minimizing their environmental impact

- To control consumption of road salt through its effective management, without compromising public safety, and
- To ensure an adequate supply of winter materials is available at all times throughout the winter season.

MATERIALS

The primary de-icing material is road salt (sodium chloride NaCl); a proven, cost effective solution for this climate.

Pre-wetting with brine solution, immediately prior to application, increases the effectiveness of salt dramatically, adding moisture to accelerate melting capability. Pre-wetting also enhances adhesion so that the material stays on the road surface.

Salt is applied as an anti-icing material prior to a storm event or accumulation of snow, creating a layer between pavement and snow to reduce adhesion and prevent ice build-up. Anti-icing is performed primarily on Priority 1 and 2 streets, on steep hills or sharp turns and in areas where water may accumulate.

Once precipitation has begun to accumulate or ice has formed, salt is used to melt snow and ice; breaking it up and facilitating removal.

Below about 12°C, the minimum effective temperature of salt, a sand/salt mix (3-5:1 sand-salt ratio) is used to enhance traction. Sand provides an abrasive quality while salt inhibits freezing prior to application and provides some ice melting upon application.

Other products or methods are continuously evaluated and, where operationally and cost effective, will be considered for use.

SUPPLY/DEMAND

Road salt is in high demand during the winter season and supplies are limited; its careful use is an important part of the winter strategy.

WEATHER

Weather plays an important role in determining the type and amount of material that is appropriate for a given situation. Temperature, temperature trends and type/amount of precipitation are key factors.

*Storm/temperature severity and successive storms will affect usage levels and could limit effectiveness of salt, and severely restrict capacity to de-ice streets and sidewalks.

CONSUMPTION Average annual consumption of materials over last five years:

- Road Salt 14,000 metric tons (MT)
- Abrasive Sand 6,000 metric tons (MT)

FACILITIES Salt and sand/salt mix are stored in two weather-protected municipal facilities. Each building has an asphalt floor to prevent leaching into the environment and to reduce exposure of the material to moisture.

- McAllister Drive Facility: 8,000 MT capacity shed
- Bay Street Facility: 13,500 MT capacity structure

PRE- SEASON Supplies of sand and salt are replenished annually by October 31st.

- Sand delivered during dryer months minimizes moisture content.
- Salt procured when demand is relatively less allows for higher delivery rates and permits use of a stacker in stockpiling.
- Mixing of the sand/salt mix is done inside the facility in order to prevent loss of salt and unnecessary addition of moisture.

STOCKING LEVELS The following quantities shall be stocked prior to the winter season:

McAllister Drive	Salt	5,000 MT
McAllister Drive	Salt/Sand Mix	3,000 MT
Bay Street	Salt	9,000 MT
Bay Street	Salt/Sand Mix	4,500 MT

REPLENISHMENT Salt replenishment begins immediately following the first winter snow or ice storm event, based on the following procedure:

- Purchase Orders (PO) in amounts of 3000 MT for salt and 2000 MT for sand shall be approved prior to November 1; re-stocking to begin immediately following the first application of materials. Those purchase orders shall be renewed and ready for January 1st.
- Material loads received will be accounted for on a daily basis, with salt packing slips gathered by foremen and delivered to the Resource Desk. Administrative staff will log all receipts, output a daily total and provide a report for the Manager and Purchasing.
- Deviation from the normal load schedule (6 loads per day) will result in a call to the supplier through Purchasing.

- Weekly monitoring will flag the point when 2000 MT or less remains on the PO, initiating a new requisition process.
- A minimum 4000 MT total supply of salt will be maintained.
- Material deliveries shall be made during non-inclement weather unless loads are tarped and unloaded under protective cover.
- Re-order for abrasive sand, which requires preparation prior to storage, will commence before the sand/salt mix inventory reaches 50% of capacity.

TRACKING USAGE

Materials consumption data shall be accurately recorded:

- Yard loader operator will maintain daily log of vehicles loaded, material amounts taken and loads of new materials received.
- Operators will maintain a daily log of quantity received, routes completed and quantity returned to salt shed at end of shift.
- Foremen will gather daily logs, record weather conditions and route completion, and deliver logs to the Resource Desk along with material receipts.
- Staff at the Resource Desk will log daily consumption data.
- Manager will review weekly materials usage report, including relevant storm conditions.

Material spreading vehicles are equipped with Dickey-John application controllers that regulate the rate of salt or sand/salt mix spreading.

MANAGING USE

Foremen, operators and staff undergo formal training on the use of de-icing materials; training that guides operational staff in making material choice and application rate determinations, including:

- Pavement temperature and condition
- Traffic patterns
- Wind speed and direction
- Atmospheric temperature and humidity

Forecasted weather also plays an important role in determining the ongoing impact of de-icing materials.

SALT BRINE

Salt brine shall be produced at materials facilities or procured in bulk, where feasible and cost-effective. An adequate supply shall be available to support operations.

Brine pumping and application equipment shall be maintained and kept in good working order.

USAGE CONTROL

The right amount in the right place at the right time is critical to effective and efficient use of winter materials. Each spreader truck is equipped with a 'Dickey-John' (DJ) controller that allows the operator to set and control the material spread rate. Excessive salt usage is expensive and can affect the environment. Too much sand creates sewer and clean-up problems.

Operators shall apply an optimum spread rate at all times.

The 'Dickey-John' (DJ) application controller is capable of transmitting usage data through the automatic vehicle location (AVL) system.

Equipment must be kept in good operating condition. DJ controllers and associated spreading equipment shall be thoroughly inspected and calibrated prior to the winter season. Operators will inspect equipment daily throughout the winter to ensure it is kept in full running order.

TRAINING

Annual refresher training to update operators on the application of winter de-icing materials shall be conducted between October 15th and 30th in conjunction with best practices for snow-plowing and other operational strategies.

Spreader equipment is inspected and calibrated.

RESPONSIBILITY

Manager: manage material inventory, re-order points and usage, report

Foreman: preparation/mixing, storage, allocations, usage, report

Operator: care of equipment, DJ system operability, usage, report

Resource Desk: track usage and inventories, prompt re-order

Purchasing: supply agreements, order in accordance with procedures

MEASURES

Usage and cost by kilometre serviced @ storm severity index

Available inventories (%) - daily and at outset of storm events

PART 7: MAINTAINING STREET RIGHT- OF- WAY

PURPOSE

To ensure availability of the right-of-way for safe and efficient movement of pedestrians and vehicles

PUBLIC R- O- W

The public street right-of-way (R-O-W) is intended to provide space for public infrastructure and the movement of people, goods and vehicles. Maintaining the capacity of the public R-O-W is critical for attainment of winter streets and pedestrian service objectives; supporting emergency and utility services, providing for street drainage and the safe, effective movement of pedestrians and vehicles. Vehicle lanes must be clear of ice and snow, with sufficient width for the safe and efficient passage.

Ditches and storm sewer components convey water away and mitigate icy conditions on the street. Curbs/gutters define edge of roadway and direct rain water and snow melt to catch basins and storm sewers.

Sidewalks are intended for the safe passage of pedestrians; a network of pedestrian ways open for school children, walkers, transit commuters and commercial enterprises across the community.

Medians and other R-O-W space also provide essential storage capacity for placement of snow and ice pushed back from streets and sidewalks.

It is essential to service that clear priority be given to maintaining the intended purposes of the street R-O-W. Failure to do this will mean undue limitations on winter service effectiveness and avoidable costs.

BY- LAWS

Policies and by-law provisions for traffic, on-street parking, and street or sidewalk obstructions are designed to enhance effectiveness of service delivery and to help control service costs.

Appendix "E" includes municipal by-laws that help the City deal with the circumstances, persons or objects that compromise its ability to clear streets and sidewalks of snow and to re-establish the functions of the public street R-O-W in winter conditions.

OBSTRUCTION

Section 30.1 of *A By-Law Relating to the Public Streets in the City of Saint John and to Prevent Nuisances in the Said City* provides that:

"No person shall place, put, throw, deposit or sweep upon the paved or main-travelled portion of any street or a sidewalk, or cause to be placed, put, thrown, deposited or swept upon the paved or main-travelled portion of any street or a sidewalk, any snow or ice"

Penalties for violations are prescribed in the *By-Law*.

PARKING

Vehicles parked or abandoned on City streets during the winter seriously disrupt service and create hazards for public safety. Parked cars interfere with emergency vehicles, impede buses and passengers, make clearance of snow from the right-of-way virtually impossible and markedly increase costs to taxpayers generally. Service cannot be effective or operations efficient when plows and removal equipment must try to navigate around parked obstacles. For quality and cost-effective maintenance of winter streets and sidewalks, on-street parking needs to be restricted during the winter months.

Section 113(5) of the *Motor Vehicle Act* permits the municipality to prohibit on-street parking without a traffic control device (sign), providing the restriction is for purposes of winter snow control and does not extend beyond the midnight to 7 am time period.

Appendix "D" details *Winter Street Parking Restrictions* that prohibit parking on all municipal streets, except designated exceptions, between midnight and 7 am each day from December 1st to March 31st.

Section 5(9)(a) of the *Traffic By-Law* provides:

"Notwithstanding any other provision of this by-law or the presence of parking meters or the presence of signs that have been erected in the City of Saint John prohibiting or permitting the parking of vehicles upon streets or portions of streets during the hours stated thereon, no person shall, between December 1 and March 31, inclusive, of each year, park a vehicle on a street, except for those streets listed in Schedule "R", between the hours of 00:01 and 07:00."

EXCEPTIONS

Appendix "D" provides maps and a listing of streets excluded from the *Restriction*; in five areas of the city with particular parking challenges:

- Wright Street area immediately north of Throughway
- Old North End
- Lower West
- South Central Peninsula
- Old East

SUSTAINABILITY

Achieving consistent winter service standards across the community, at reasonable cost to taxpayers, depends on streets being free of parked vehicles and other impediments to service. Available off-street parking space must be fully utilized to free vehicle clogged streets. Taxpayers

generally should not be expected to subsidize those owners who do not make adequate provision for parking. Service inefficiencies and added costs can be avoided.

PART 8: EQUIPMENT RESOURCES AND FACILITIES

PURPOSE

To optimize use of winter service resources through preparation, operator care and timely repair

EQUIPMENT

Winter services require dedication of heavy equipment. Maintaining the operational availability of these essential resources is critical to service:

- Heavy trucks equipped with front plows and spreader units - 12
- Heavy trucks equipped with front and wing plows - 18
- Graders equipped with plows and wings – 2 (1 leased)
- Loaders equipped with plows and wings – 8 (2 leased)
- Loaders equipped with front plows – 2 (1 leased)
- Yard loaders with front buckets only – 2 (2 leased)
- Heavy snow blowers (attachments for above loaders) - 4
- Wheeled (Trackless) sidewalk units with attachments – 16
- Tracked (Bombardier) sidewalk units with attachments – 3
- Heavy truck to provide material support to sidewalk units – 1
- Light truck to provide material support to sidewalk units - 1
- Backhoes (for winter drainage support) - 6
- Towed culvert thawing machines (for winter drainage support) - 3
- Asphalt recycling machines (for winter asphalt maintenance) - 2
- Various light equipment and vehicles for support and supervision

FACILITIES

The following facilities support winter service operations:

- MUNICIPAL OPERATIONS & ENGINEERING COMPLEX (175 ROTHESAY AVENUE): Winter Operations Centre (WOC), with Resource Desk for inquiries and support; and staging for plow routes and some sidewalk units
- MCALLISTER DRIVE: Staging for plow routes and some sidewalk units; salt and sand management facility; and storage site for supplies
- BAY STREET (MATERIALS BUILDING): Salt and sand management facility
- BOARS HEAD ROAD: Staging for most sidewalk units, and sidewalk support vehicles
- SNOW DUMPS: Locations for dumping of the snow and ice removed from City streets – Bayside Drive

SUPPLIES Winter supplies include: cutting edges for plows (both plain steel and carbide tipped), side and cross chains to fabricate tire chains; cold mix for pothole patching; propane for culvert thawing and asphalt recycling equipment; and calcium chloride for thawing frozen catch basins.

OTHER Contracted resources are also used, including: hired tandem trucks and dump trailers for snow removal; graders for ice cutting operations, as required; loaders and heavy trucks with front plows and wings for several plow routes; bulldozers for maintenance of snow dumps.

READINESS Equipment care and readiness activities are summarized below:

- Preventive maintenance servicing; MVI for all winter equipment scheduled/completed between April 1st and October 31st.
- Contract resource specifications advertised by August 31st.
- Inventory of supplies by May 15th; orders placed with delivery by October 1st.
- AVL and DJ spreader control systems checked and calibrated not later than October 15th.
- Winter tires ordered, studded, installed by November 15th.
- Heavy equipment, truck bodies and plow attachments sandblasted and/or re-painted, as required, no later than October 31st.
- Equipment inspections by operators; mechanical maintenance and repairs identified and scheduled with Fleet Services.
- Thorough interior/exterior cleaning/washing on bi-weekly basis.
- Post-season equipment inspection with attachments by May 15th; welding and mechanical repairs identified and scheduled; pieces labelled and stored in locked accommodation or yard location.

RESPONSIBILITY *Manager*: assigned fleet, inspect, arrange contract resources, report

Foreman: preparedness and servicing of assigned sub-fleet, report

Operator: inspect, clean and wash, report required servicing/repair

Fleet Services: preventive maintenance and timely repairs

MEASURES Equipment availability rate: by unit and overall fleet

Incidents of equipment downtime greater than 12 hours

Cleanliness of equipment and documented walk-around inspections

PART 9: WINTER DRAINAGE

PURPOSE

To keep drainage systems open and functional, and ready for periods of rainfall, mild temperatures and snow/ice melt

CONTENT

Winter drainage activities are summarized as follows:

- Inspect, remediate and mark all key drainage points prior to November 1st.
- Minimize build-up of snow and ice at catch basins and system inlets and outlets.
- Inspect all key catch basins and storm system inlets weekly over the winter season.
- Remove ice and snow from key catch basins and storm system inlets during periods between winter storms.
- Steam frozen culverts; apply de-icing materials to frozen catch basins and stormwater laterals.
- Respond to localized flooding and clear compromised drainage systems.

OBJECTIVES*

Key catch basins and storm system inlets open and operational during periods of precipitation and mild temperatures (snow/ice melt).

Program effectiveness tied to Snow and Ice Removal and demanding drainage issues in some snow management zones.

*Storm/temperature severity and freeze/thaw fluctuations will impact drainage and could limit effectiveness of mitigation measures.

RESPONSIBILITY

Manager: organize general program deployment, report on results

Foreman: coordinate inspections, record, direct crews, report status

Drainage Crews: service key drainage points as directed

Resource Desk: receive/track requests for service and follow-up

Municipal Engineering: drainage infrastructure plans, engineering

MEASURES

Record of drainage inspections

% identified drainage issues (inspections/calls for service) addressed

% key catch basins/storm inlets open in snow management zone

PART 10: WINTER ASPHALT MAINTENANCE

PURPOSE

To provide emergency repair of street defects and potholes for roadway safety and winter driveability

CONTENT

Winter asphalt maintenance activities are summarized as follows:

- Inspect street system on a bi-weekly cycle to identify surface defects and potholes resulting from alternating freeze thaw cycles in the road base and vehicular traffic.
- Receive requests for service and organize action response to reported road defects.
- Deploy crews to make emergency (temporary) street surface repairs with cold mix asphalt, granular materials or recycled hot mix (portable units), as appropriate.
- Public notices and media advisories on road conditions during freeze/thaw cycles
- Recording winter defects/potholes for permanent hot mix asphalt repairs

OBJECTIVES*

Service response by priority based on need:

1: Arterial streets, highway connections, emergency routes

2: Major bus routes, schools, community centres, business districts

3: Collector streets, minor bus routes, industrial parks

4: Local or subdivision streets

*Storm/temperature severity and successive storms will impact ability to undertake emergency street repairs

RESPONSIBILITY

Manager: organize and prioritize asphalt repair activities, report

Foreman: coordinate inspection, recording and repairs, report repairs

Maintenance Crews: carry out repairs using appropriate materials

Resource Desk: track service requests, inspections, follow-up

Pavements Coordinator: monitor defect/pothole reports, use in plans

MEASURES

Recorded street system inspections

Recorded calls for service appropriately acted upon

% identified defects/potholes repaired by priority grouping and street

PART 11: RESPONSIBILITIES AND REPORTING

PURPOSE

To clearly delineate responsibilities and reporting protocols for effective winter operations and service

COMMISSIONER

The Commissioner shall approve the *Winter Management Plan for Streets and Sidewalks* and oversee delivery of associated services, and report issues and outcomes to the City Manager and Common Council.

D/COMMISSIONER

The Deputy Commissioner, Municipal Operations is responsible to the Commissioner for winter operations and execution of this *Plan*.

MANAGERS

RESPONSIBILITIES

Managers are responsible for the following:

- Service delivery in their area of jurisdiction
- Establishing human resource and equipment requirements, and assigning those resources
- Managing inventory of anti-icing, de-icing and abrasive materials and other supplies, such as cutting edges, tire chains and cold mix
- Coordinating and sharing of resources with other areas, as required
- Proper use, maintenance and inspection of equipment
- Monitoring of work progress and quality control
- Scheduling of crews, including call-ins and overtime
- Reporting progress and other information to key stakeholders
- Annual training of staff on this Plan
- Table top exercise in preparation for winter operations

REPORTING

Managers shall report to the Deputy Commissioner and the Winter Operations Centre on operations:

- Percentage route completion, measured by individual route and summarized as an overall task completion percentage,
- Exceptions; right of ways that could not be plowed due to restrictions such as parked cars or excessive snow,
- Equipment and personnel availability,
- Trouble spots; areas where conditions are unusually bad (and what is planned to deal with the circumstances).

FOREMEN

RESPONSIBILITIES

Reporting to the Manager, each Foreman is responsible for:

- Ensuring that operations are carried out safely, efficiently and in accordance with the Winter Management Plan
- Preparing personnel for winter operations by reviewing routes, assigned equipment and new procedures
- Maintaining an accurate call out roster
- Calling in their crews during call-in situations
- Reacting to changing conditions during snow events by reassigning personnel and resources where required
- Proper use, maintenance and care of equipment
- Monitoring work progress and performing quality control checks
- Control of working hours and productivity individual operators
- Reporting progress and other information to the Manager and/or the Winter Operations Centre, depending on circumstances
- Adherence to safety and standard operating procedures
- Participating in annual training/exercises in preparation for winter

Foremen play a vital role during snow events coordinating activities in the field. They provide first hand information to the Winter Operations Centre regarding conditions, changing weather and equipment status.

REPORTING

Foremen are responsible for tracking the progress of their operators and reporting to the Manager and the Winter Operations Centre, as required, on the following:

- Snow event response phase; sanding/salting, plowing and push back
- Percentage route completion, estimated from individual operator progress reports
- Exceptions; right of ways that could not be plowed due to restrictions such as parked cars or excessive snow and ice
- Equipment and personnel availability
- Trouble spots; areas where conditions are unusually bad and might affect traffic flow.

OPERATORS

RESPONSIBILITIES

Each operator and employee is responsible to the foreman for:

- Learning their assigned route, including street priorities and levels of service
- Performing pre-operation checks on equipment, ensuring that accessories such as flashlights, shovels, signs and PPE are available
- Operating equipment in a safe, efficient manner
- Proper use, maintenance and care of the equipment operated,
- Reporting equipment damage or deficiencies as soon as possible
- Reporting problematic issues to the foreman, including vehicles and illegally dumped snow blocking access
- Monitoring and reporting on route progress
- Completing annual pre-season training on winter operations

Operators are directly engaged in service delivery to citizens. Using their training, experience and judgment, they are expected to respond to ever changing circumstances to provide best service at all times.

REPORTING

Operators shall report on the following to their foremen:

- Completion status of their route
- Impassable or restricted streets; streets that cannot be completed
- Equipment problems
- Accidents or incidents
- Any changes in local street or weather conditions

WOC

The Deputy Commissioner, Municipal Operations shall closely monitor operational progress during a winter storm event through the Winter Operations Centre (WOC). Members of staff involved in snow response have a role to play in ensuring complete and accurate status reporting.

The public shall be kept informed throughout the event. The WOC shall provide a spokesperson for the media and communiqués for the public through Corporate Communications.

The WOC shall maintain liaison with Fleet and Materials Management regarding supplies, equipment status and repair priorities.

PART 12: TRAINING AND PLAN ADMINISTRATION

PURPOSE

To ensure overall readiness for winter operations and continuous improvement of this Plan

RESPONSIBILITY

The Deputy Commissioner, Municipal Operations is responsible to the Commissioner for the administration and continuous improvement of the *Winter Management Plan for Streets and Sidewalks*, including coordination of staff training and exercises related thereto.

ANNUAL REVIEW

Overall effectiveness of the *Plan* and its various components shall be reviewed annually before September 30th and updated.

TRAINING

Training on the *Plan* shall provide officials and staff (employees) with an understanding of service standards and performance expectations over the winter season and prepare Municipal Operations for delivery of essential winter street maintenance and sidewalk services.

All staff employed in the delivery of winter street maintenance and sidewalk services shall complete this training and participate in an annual refresher seminar.

EXERCISES

Exercises shall be organized and carried out to acquaint officials, staff and others with winter responsibilities, to practice response procedures and to verify *Plan* effectiveness. The experience gained through these rehearsals shall be used to enhance the *Plan* and strengthen winter service response capabilities.