SUBJECT: 2008 Winter Control Program Update (PW08100) - (City Wide) Committee of the Whole Outstanding Business List

RECOMMENDATION:

(a) That staff develop a sustainable funding plan for the Winter Control Program Reserve for consideration during the 2009 Budget Process;

(b) That the recommendations for a Winter Control Program service level enhancement for municipal sidewalk snow clearing as recommended by the Advisory Committee for Persons with Disabilities not be pursued at this time;

(c) That the item relating to Sidewalk snow removal - Advisory Committee for Persons with Disabilities (ACPD) be requested to be removed from the Committee of the Whole Outstanding Business List.

EXECUTIVE SUMMARY:
This report is intended to provide an overview of the Winter Control Program (WCP) performance through the 2008 season and an update on the status of current issues affecting the program and ongoing improvement initiatives.

BACKGROUND:
The information/recommendations contained within this report have City wide implications.
1.0 Winter Control Program - Overview

The Winter Control Program (WCP) is planned and implemented to support pedestrian and vehicular traffic safety by ensuring that the City’s inventory of roadway infrastructure remains serviceable during the Winter Season through the delivery of the following activities:

- Road Patrol
- Anti Icing and De Icing
- Snow Plowing
- Snow Removal and Haulage
- Snow Storage & Melting

WCP services are activated as required to maintain established service levels (per Report TOE02080) relative to the demands of weather and road conditions. The services are provided through a combination of in-house resources and contracted external service providers. Forces and equipment contracted through “Integrated Maintenance Operations Services” (IMOS) are assigned to plowing and spreading activities on primary and secondary roads. Heavy construction and agricultural equipment contracted through various other vendors and service providers are assigned to general snow clearing and snow removal operations, while contracted small equipment is utilized in the area of clearing bus stops, sidewalks and neighbourhood pathways. The majority of all contracted equipment and resources are supplementary to all in-house resources and services currently providing winter control maintenance activities.

2.0 2008 Winter Control Program - Overall Performance

The first 3.5 months of the 2008 Winter Season presented above average demands on the Winter Control program requiring a total of 61 days of activation overall to maintain service levels.

Four major storms and 56 other activations (sanding, salting and plowing) presented challenges with respect to delivering the WC Program and meeting the program service levels under the Highway Traffic Act (HTA - 70 Hours of Work Regulation).

Program “improvement” initiatives in the area of “Snow Fence Control” were temporarily suspended and/or non-activated in 2007/08 due to staff turnover.

Continuous improvement initiatives and strategies in “Salt Management”, “Contract Management”, “Inventory Control” and “Customer Service Quality” will remain a priority as the year ending 2008 winter season approaches. Above average program expenditures, continuous program improvement initiatives, and future challenges facing winter control will be addressed in this report.

Notwithstanding the extraordinary demand of the winter season, program service levels were essentially maintained with some deficiencies relative to timeliness in bus stop maintenance and sidewalk snow clearing, particularly during events of protracted duration wherein resource availability affected response capability.

2.1 2008 Winter Control Program - Issues

Apart from the weather demands the 2008 WCP has been challenged by six key issues:

- Infrastructure Growth
Highway # 6 South transfer,
Red Hill Parkway commissioning

Road Salt Shortage
Canada and Northern United States experienced a shortage due to above average snowfall

Hours Of Work Legislation
Compliance impacts on the delivery of the WCP.

Snow Removal
Activation of limited area snow removal operations

Snow Melting
Activation of snow melting operations

Staff Overtime
Directly related to winter storm response

Infrastructure growth challenges all operating programs, however two major additions to the City’s roadway infrastructure Red Hill Valley Parkway and Highway 6 South (now 6,600 lane kms) required specific attention as reported within the 2008 budget presentation and as addressed by Council through program budget adjustments (base increase and reserve transfer).

The Road Salt shortage was addressed by invoking a Salt Conservation Plan which involved a reduction of salt application rates on Class 1 and 2 road for approximately one week through the use of 3 to 1 sand/salt mixture (“Pickle Mix”) until an alternate salt supply was found. On average material consumption totals in previous winter seasons, primarily in salt, have experienced totals as high as 90,000 tonnes per year. 2008 total salt utilization is projected at 88,000 tonnes.

Hours of Work Legislation compliance requirements impacted the achievement of service levels in various circumstances particularly where significant after hour response was needed (i.e. shortage of in-house operators on weekends after prolonged periods of snow during the preceding week, salting/sanding bus stops & court snow removal under the same criteria as mentioned above).

Snow Removal operations were required in the downtown areas and to a limited extent within certain residential areas to maintain emergency access. At critical points during the winter season, staff increased monitoring of residential roadways vis a vis snow storage, using long range weather forecasts in deciding not to activate large scale snow removal operations which successfully avoided unplanned program expenditures in the range $1,000,000. Downtown snow removal operations were significant and the recent loss of a snow storage site and the actual storage requirements triggered the need to activate snow melting activities to a greater degree than normal.

In-house staff overtime is largely driven by the variable component of winter related storm activity and has typically exceeded annual WCP budgets by 200%. To date the above average winter weather conditions of 2008 have further increased overtime expenditures to deliver program service levels.
3.0 Winter Control Program - Improvement Initiatives

In addition to managing program delivery, staff continue to pursue various WC program improvement initiatives. The following provides a brief summary and status update of current program improvement initiatives:

3.1 Snow Fence Policy Review

An “in house” study supporting the development of a WCP “Snow Fence Policy” was suspended through the 2007/08 WC Program as workplan adjustments were required due to the departure of the Road Operations Manager. This initiative will resume in 2009 and a final report with activity service level recommendations will be provided for consideration.

3.2 Snow Storage Facilities

The loss of the snow storage site on Sherman Avenue North due to environmental concerns from US Steel and the Port Authority necessitated the reactivation of the city owned Stuart Street site and continued use of the parking lot at Bayfront Park as snow storage facilities. A separate recommendation report will be provided to the Public Works Committee this Fall addressing the matter of snow storage facilities.

3.3 Snow Melting - Technology Development Initiative

Staff are assisting with the preparation of the “Snow Bird” project plan which is a steam based snow melting technology development initiative intended to yield cost savings and environmental benefits through alternative non hydro carbon fueled melting technology. The initiative involves a working relationship with the firm CaPaRim with project funding from the Federation of Canadian Municipalities to develop and test this technology in a “just in time” snow melting operating model. The primary objective of project “Snow Bird” is to establish alternative snow melting technology that is more cost effective and environmentally sustainable. Secondary benefits include enhanced quality of meltwater effluent (by re-treating the water prior to discharge) and reduction of Green House Gas emissions in melting and material handling through “just in time operations”. A staff report along with the project proposal will be provided for consideration of Council in September.

3.4 Driveway Snow Windrow Clearing

In response to Council direction to explore the feasibility of establishing a driveway snow clearing program, an Information Report (PW08069) was submitted to the Public Works Committee on June 16, 2008, identifying a service level, methodology and budget, based on a recently implemented program in Toronto; the information was received.

3.5 Sidewalk Snow Clearing Program Enhancement Budget Estimate (City Wide)

In response to Council direction to provide a budget estimate for the provision of City wide sidewalk snow clearing services, a staff report is planned for consideration by the Public Works Committee later in 2008.

3.6 Alternative Plowing Methods Review

In response to direction to investigate the feasibility and benefits of alternative plowing methods (as proposed by Councillor Merulla during the 2008 Budget Process) staff are
investigating the matter and will report with findings to the Public Works Committee later in 2008.

3.7 **Bus Stop Winter Control Maintenance**

Upon review of service levels in conjunction with the Advisory Committee for Persons with Disabilities (ACPD) and HSR who identified deficiencies in our program, staff have reassigned and reallocated available contracted service resources to address noted concerns. The areas of concern will be monitored and assessed during the 08/09 WCP.

3.8 **Sidewalk Snow Clearing Service Level**

Service level recommendations identified by the report from the ACPD committee which would require commencement of snow removal within 24 hours from the start of the storm versus current standard within 24 hours from the end of the storm have been reviewed and are not supported by staff given logistical and practical considerations within its own operations (e.g. HTA 70 Hour Regulation, Employment Standards Act, etc). However, Parking and By-Law Services staff are currently investigating possible enforcement service level improvements such as a more aggressive approach to laying charges to chronic offenders, using their current roster of property maintenance contractors to clear sidewalks instead of or in addition to Operations and Maintenance staff, as well as the number of staff resources normally assigned to this enforcement activity.

As part of a major re-engineering of Divisional activities and priorities, Parking and By-Law Services staff intend to seek approval from the Building and Licensing Operational Review Sub-Committee this Fall, of an overall by-law enforcement strategy including the approach to enforcement and the number of staff and priority assigned to each by-law enforcement activity including sidewalk snow clearing/enforcement. The ACPD’s June 10, 2008 resolution requesting that this matter be given a high level of prioritization will be forwarded to the Building and Licensing Operational Review Sub-Committee for consideration.

The Snow Angel Program also provides service to qualified citizens. The Snow Angel program in 2006/07 had 69 angels for ninety service recipients with over 200 service recipients registered. In 2007/08 the program had 65 angels for 150 service recipients with 307 service recipients registered. Another program run by Community Services “Helping Hands” had 160 snow clients and their program completed 260 requests for service during the period.

3.9 **Residential Street Snow Removal Activation Standard Review**

That the standard will be a minimum width of 2.9 metres and sufficient to accommodate the movement of Hamilton Emergency Services and Fire vehicles. This will be a working guideline until a formal and more detailed report is brought forward.

3.10 **Anti Icing Program Monitoring and Reporting**

“Anti-icing” is a proactive snow and ice control program that involves spraying a chemical solution onto the road surface to prevent the formation of slippery conditions and/or a bond between the snow and the road. The anti-icing material is applied in advance of anticipated/forecasted below zero pavement temperatures when the probability of precipitation is greater than 25% or when forecasts predict the possibility of frost. The program is used throughout all 5 Maintenance Districts in identified road section and in
specific locations such as bridge decks, culverts shade areas, rock cuts low-lying frost-prone locations. The anti-icing material is applied during the period prior to frost forming on the road surface, or prior to the start of “winter precipitation” adhering to or polishing on the road surface. The anti-icing material is not applied after the accumulation of snow or ice.

With the intention of preventing minor frost conditions and of preventing early bonding of snow or ice under winter storm conditions, weather and road conditions normally will be closely monitored to determine when the timeliest liquid application is appropriate. Regular scheduled applications are to be made up to twice per week as a contingency, provided both the applicable air and road temperature criteria are met. Applications are normally made during daylight hours, preferably during a period of rising temperatures. Ideally, applications should be scheduled during the late morning or early afternoon. The material used is either a NaCl (Sodium Chloride) salt brine or a 70/30 mixture of Salt Brine and Geo-melt 55 beet extract and is to be applied at a rate of 80 litres/single-lane km. The brine liquid is typically spread across the middle two-thirds of the driving surface width by the use of tanker trucks with rear-mounted spraybars typically mounted 18” above the road surface. Two lanes in the same travel direction may be sprayed at once. Preferably, opposing lanes are sprayed on the return trip. Staff will continue to monitor the current anti icing program and investigate expansion of the program with a report back to committee in the future.

3.11 Contract Management

Contracted service providers supplement the WC Program’s “in house” resources in many areas including specialized hired equipment contracted for specific conditions that only warrant periodic activation (i.e. the heavy equipment contract which is only deployed upon major snow events - accumulation in excess of 8 cm). As such, this aspect of the program delivery model constitutes a variable cost centre and may generate positive budget variances during winter seasons with sub normal storm activity. The snow clearing activity is another variable program cost centre wherein contracted equipment is utilized for clearing residential courts and cul-de-sacs, sidewalks and wheel chair ramps, bus stops, side streets and turning lanes where heavier equipment cannot gain access.

IMOS Contract Contracted Winter Control Services

In August 2007 I.M.O.S. (Integrated Management Operating Services) Contract C11-121-07 was awarded to a single vendor. IMOS was the successful bidder for a new three year of a three year, plus two -one year optional terms, contract. The services provided under this major snow clearing contract are critical to the delivery of the WCP. Staff have improved the performance annually since its inception and AVL technology is proving to be a valuable tool in providing staff with real time performance measures and monitoring capabilities in confirming hours of activation, program status and performance data.

Within this contract the equipment specifications are unique and specifically designed to provide the highest level of service in road clearing and material application on Class 1 roads throughout the City. Recent program performance issues concerning plowing and stripping of stone shoulders on rural Class 2 and 3 roads during the 2006 season has resulted a shift of work assignments (as permitted under the contract) wherein city equipment and operators will perform services to some of the lower rural Class 2 and 3 roads in an effort to minimize damage to road shoulders and ditches. This alternative is
now possible given that over the last three years the City’s in-house fleet has been significantly upgraded by replacing approximately 44 sander/plow combination vehicles, an approximate 44% of the designated winter control in-house snow clearing and material application equipment. 2008 will have another 29 sander/plow combination vehicles replaced. Given this improvement in the in-house equipment condition rating, staff is now in a position to extend the life of approximately five of six in-house units and deploy this equipment to the designated Class 2 and 3 rural routes that were previously serviced within this contract. Staff are confident that improved program delivery will be achieved on the lower classed routes currently being serviced by the contracted Class 1 specific equipment. Not only will this change allow staff to more effectively manage this component of the WCP but it will also allow for improved service delivery of the contracted snow clearing and material application component through to the end of the 2007/08 winter season at the previously established program unit costs.

During the autumn of 2007 the Red Hill Valley Parkway (north/south) was commissioned thus requiring winter control maintenance. Given the environmental sensitivity of this project and parkway, staff are developing environmental procedures for all the required maintenance within the limits of this project. WCP maintenance operations will be subject to strict adherence to plowing and salting environmental procedures that will be unique to the north/south parkway.

3.12 Salt Management Plan Implementation

The Salt Management Plan was approved in 2002 and included several “best practice” initiatives in material handling to minimize the amount of salt entering the environment. The Salt Management Plan also supports continuous improvement in the development of practices and procedures to improve the effectiveness of the winter control maintenance activities while striving to reduce the environmental effects of road salt use. For example with the introduction of pre-wetting the salt at the discharge spinner we are able to reduce our application rate to 105 kg/2 lane from the 130 kg/2 lane km untreated rate. This translates into an overall material reduction of 20% to both our Salt and Abrasive, while still maintaining the same required level of service. With the completion of the Salt Storage structures in 2007 at the Rymal Road, Brock Road and Shaver Road Yards all of the City’s Salt and Abrasive material are now stored under cover and on impermeable pads. In 2008, Roads will submit a plan for the 2009 Capital Budget to construct a new Truck Wash-bay with an Oil/Grit separator at the Rymal Road Yard. The introduction of this facility will be the first steps towards the City controlling the wash-water prior to the water entering the storm sewer system.

In 2008 the liquid salt brine(70%)/ GeoMelt55(30%) will continue to be applied with all salt spreading operations to further enhance winter control chemical application in our efforts to reduce quantities of road salt used in the WCP. Applications of anti-icing practices will also continue as a proactive approach in winter control. Applying liquid salt brine prior to and during snow events is proving to be beneficial in assisting staff in preventing the bond between the pavement surface and snow and ice accumulation during winter weather conditions. Staff will be assessing in-house production of salt brine versus purchasing from a vendor and expansion of the anti-icing program.
ANALYSIS/RATIONALE:

1. The following rationale is provided relative to recommendation a) “That staff develop a sustainable funding plan for the Winter Control Program Reserve for consideration during the 2009 Budget Process”:
   - The 2008 Winter Control Reserve balance at year end will be approximately $1.8 million. The Winter Control program is forecasting a $2.9 million negative variance. Assuming the Public Works Department and the Corporate year end position will not assist the winter control deficit, the entire winter control reserve will therefore have to be utilized. This will start the 2009 calendar year with a zero balance in the winter control reserve. The need to establish a sustainable WCP reserve is imperative for the ongoing support of the current Winter Control Program and service level.

2. The following rationale is provided relative to recommendation b) “That the recommendations for a Winter Control Program service level enhancement for municipal sidewalk snow clearing as recommended by the ACPD be denied”:
   - ACPD recommendations for enhanced sidewalk snow clearing service are considered impractical under current resource and legislative contexts (i.e. H.T.A. and the E.S.A. Regulations).

ALTERNATIVES FOR CONSIDERATION:

As an alternative to Recommendation 1 (that staff develop a sustainable funding plan for the Winter Control Program Reserve for consideration during the 2009 Budget Process) Council may consider the status quo wherein the WCP Reserve is supported on an adhoc basis when surpluses in Departmental or Corporate Budgets arise. This alternative is not recommended as it does not ensure the availability of sustainable program funding, and places program delivery at risk.

As an alternative to Recommendation 2 (that the recommendations for a Winter Control Program service level enhancement for municipal sidewalk snow clearing as recommended by the ACPD be denied) Council may wish to consider changing the program service level as requested by the ACPD therein enhancing the service standard for the clearing of sidewalks requiring full compliance as of 24 hours after the start of a snow event as opposed to the current requirement of as of 24 hours after the end of the snow event. This alternative is not recommended given the impracticality of compliance in protracted or back to back storm events for both city programs and private property owners. Improved compliance with existing by-law requirements is recommended to address concerns raised by the ACPD.

FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

Pending approval of recommendation 1, (that staff develop a sustainable funding plan for the Winter Control Program Reserve for consideration during the 2009 Budget Process) financial implications of both the status quo and a proposed sustainable funding plan will be addressed. There are no associated staffing or legal implications anticipated at this time.
POLICIES AFFECTING PROPOSAL:

The recommendations support the following Public Works Strategic Plan Objectives:

- Open, transparent and accountable working relationships
- Work is undertaken at approved service levels with budgets that match
- Program Budgets are sustainable

RELEVANT CONSULTATION:

Business Services staff has been consulted to discuss future program improvement opportunities respecting bulk material handling practices and tracking of employee hours for HTA (seventy hours). Community Services - Helping Hands, Volunteer Hamilton - Snow Angels, Labour Relations - Employee issues, Finance & Administration - Financial Data, Operations & Maintenance Division staff and Hamilton Emergency Services (Fire).

CITY STRATEGIC COMMITMENT:

By evaluating the “Triple Bottom Line”, (community, environment, economic implications) we can make choices that create value across all three bottom lines, moving us closer to our vision for a sustainable community, and Provincial interests.

Community Well-Being is enhanced. ☑ Yes ☐ No
Public services and programs are delivered in an equitable manner, coordinated, efficient, effective and easily accessible to all citizens.

Environmental Well-Being is enhanced. ☑ Yes ☐ No
Human health and safety are protected. Consumption of all natural resources is reduced. Climate-related risks are managed; Greenhouse Gas emissions are reduced.

Economic Well-Being is enhanced. ☑ Yes ☐ No
Economic well being is enhanced through the facilitation of safe traffic movements across the city's roadway infrastructure during the winter season.

Does the option you are recommending create value across all three bottom lines? ☐ Yes ☑ No

Do the options you are recommending make Hamilton a City of choice for high performance public servants? ☐ Yes ☑ No