SUBJECT: 2006/07 Winter Control Program Planning Report (PW06091) - (City Wide)

RECOMMENDATION:
That the planned improvements to the Winter Control Program be endorsed to increase program effectiveness, efficiency, and customer satisfaction.

EXECUTIVE SUMMARY:
This report assesses the performance of the City’s Winter Control (WC) Program and addresses ongoing and planned improvement initiatives.

From November through December of 2005 the City of Hamilton experienced “typical” winter weather conditions and winter temperatures excluding any major storm events. WC Program service levels were achieved with minimum effort as winter related weather conditions, although consistent in terms of temperatures, actual precipitation accumulation totals were moderate to below recent seasonal averages. Above average temperatures through January and into February, 2006 also presented nominal challenges with respect to delivering the WC Program and meeting the program service levels.

Program “improvement” initiatives in the area of “Snow Fence Control” and “Snow Removal Services” were temporarily suspended and/or non-activated in 2006 due to the mild and below average winter weather conditions that directly impact these
maintenance components. Continuous improvement initiatives and strategies in “Salt Management”, “Contract Management”, “Inventory Control” and “Customer Service Quality” will remain a priority as the year ending 2006 winter season approaches. Below average program expenditures, continuous program improvement initiatives, and future challenges facing winter control will be addressed in this report.

**BACKGROUND:**

The information/recommendations contained within this report have city wide implications.

1. **2006 Winter Control Program Performance (Update)**

The WC Program is designed to support pedestrian and vehicular traffic safety by ensuring that the transportation network remains accessible and serviceable during winter storm events and is monitored on an ongoing basis for improvement opportunities. As noted in the executive summary, 2006 winter weather conditions have proven relatively unchallenging to the current year WC Program, and accordingly this report confirms that program service levels have been achieved.

The Operations & Maintenance Division delivers a planned 22 week WC Program serving an inventory of 6,300 lane kilometres of roadway with a range of activities including snow plowing, de-icing-salting/sanding, anti-icing, snow removal, and the clearing of snow from sidewalks (fronting municipal property), bus shelters, intersections and crosswalks. The WC Program 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. **2005/06 Winter Control Program - Improvement Initiatives (Update)**

The following improvement initiatives planned for implementation during the 2005/06 program (listed below) were temporarily suspended and/or non-activated as a direct result of below average winter weather conditions. These initiatives will resume as conditions permit.

2.1 **Winter Control Snow Fence Policy Review.**

A background study being undertaken by staff towards the development of a WC Program “Snow Fence Policy” was suspended through the 2006 WC Program as sub average snow accumulation rates yielded incomplete and insufficient data to effectively assess fencing applications. This initiative will resume as weather conditions permit and the resultant snow fence policy will be provided for consideration once testing activities are completed.
2.2 Snow Removal Operations

The snow removal component of the WC Program was not activated during the 2006 winter season due to below average snow accumulation; notwithstanding, staff continued its pursuit of alternative practices and technology in snow storage and melting activities. In this regard, Operations and Maintenance Division Staff in partnership with representatives from Stelco Inc. and CaPaRim (strategic partnering and business development) have submitted a grant application to the Sustainable Development Technology Canada Program to fund project “Snow Bird” a “just in time” snow melting technology initiative. Project “Snow Bird” is intended to develop a more cost effective and environmentally friendly alternative to current snow storage and hydrocarbon fuelled melting practices. The objective of this project is to establish a sustainable business that can be incorporated by municipalities, institutions and organizations to deal with the increasingly stringent environmental requirements (air, water, soil) associated with snow collection and snow management. This project will recycle water (by retreating the water prior to discharge) and endeavour to recycle the salts and sands. The “just in time” feature of Snow Bird eliminates the snow management requirements and associated Green House Gas emissions. Furthermore, the Snow bird concept will reduce the collection times, idling times at snow collection sites, accelerate snow removal procedures from city streets by providing a single central disposal site, with reduced materials handling requirements and energy inputs to perform snow melting activities with significantly lower GHG implications.

Using industrial process steam and hot water that is currently expelled directly into the atmosphere to melt snow will not only replace fossil fuel fired burners but it will also maximize efficiency in waste thermal energy. Preliminary project designs have been completed and Stelco has identified a parcel of land and industrial location for the proposed site. Grant program assistance has been requested to fund the construction of an advanced technological solution for snow melting in the City of Hamilton.

3. 2006/07 Winter Control Program - Improvement Initiatives (Proposed)

Proposed WC Program improvements focus on opportunities within the areas of Customer Service Quality and the management of Service Contracts and Bulk Materials.

3.1 Customer Service Quality

The Division continues to assess and effect administrative improvements to enhance customer service effectiveness in complaint investigation and response, and in communicating program status updates during storm events. A WC Program control centre or “snow desk” has been introduced into the operation and will continue to evolve, providing improved internal communications and coordination (program related and emergency issues), as well as supporting operating program status reports and updates to the call centre and the “myhamilton” web site.

The implementation of the Hansen MMS financial tracking system will also improve staff’s ability to more effectively plan, schedule, and coordinate program services in the area of resource deployment for call-out response in program activities (i.e. patrols, plowing, material applications, etc.) and will assist in managing program material
consumption, inventory control and the ability to report on program performance and expenditures in a more timely fashion.

3.2 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 wheelchair ramps, bus stops, side streets and turning lanes where heavier equipment cannot gain access.

Proposed IMOS Contract Extension - Year 5 of 5

As reported in 2005, I.M.O.S. (Integrated Management Operating Services) has just completed the 4th year of a 3 year plus 2 -1 year optional terms. The services provided under this major snow clearing contract are critical to the delivery of the WC program. 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 that is available which is required on class 1 roads throughout the City. Recent performance related 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 3 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. Given this improvement in the in-house equipment condition rating, staff now are in a position to consider extending the life of approximately 5 of 6 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 specified equipment. Not only will this change allow staff to more effectively manage this component of the WC Program but it will also allow for improved service delivery of the contracted snow clearing and material application component through to the end of the 2006/07 winter season at the previously established program unit costs.

During the autumn of 2007 the Red Hill Valley (north/south) Expressway will be commissioned thus requiring winter control maintenance. Given the environmental sensitivity of this project and expressway, staff are developing environmental procedures for all the required maintenance within the limits of this project. WC program
maintenance operations will be subject to strict adherence to plowing and salting environmental procedures that will be unique to the north/south expressway. The associated WC program costs described above will be planned and incorporated into the 2007 budget process, for the program delivery period of November and December of 2007.

3.3 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.

3.3.1 2006 Initiatives

In 2006 the liquid salt brine will continue to be applied with all salt spreading operations to further enhance winter control chemical application in our efforts to reduce road salt. Increased applications of anti-icing practices (DLA) 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. Three additional material storage facilities are being constructed (as approved through earlier capital budgets) in an effort to continue our commitment to improved practices in handling and storage of winter control bulk materials.

3.3.2 Inventory Control and Handling of Bulk Materials

Inventory control of bulk materials used in the WC Program will continue to be managed proactively in an effort to track and control material handling. Staff is currently reviewing the possibility of effectively utilizing “work accommodated employees” to be stationed in the operating centres during the winter months to assist in tracking and recording of bulk materials, specifically with in-house operations.

**ANALYSIS/RATIONALE:**

Continuous improvements in the Winter Control Program are a demonstration of the commitment to environmental awareness, improved safety and the well being of the citizens of Hamilton.

**ALTERNATIVES FOR CONSIDERATION:**

Alternatively, the program could be implemented without proposed improvements to the previous years plan; however, this would result in no further enhancements to the program’s operation year to year.
FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

Proposed WC Program Improvement Initiatives

The proposed program improvement initiatives identified for implementation have in the aggregate no net financial impact to the program budget and demonstrates a commitment to improving customer satisfaction through program efficiencies.

Projected WC Program Budget Variance

Based on sub average winter weather conditions experienced to date, a favourable year end program budget variance is projected in the total amount of $1.37 M which reflects projected positive variances within the following areas of the WC Program:

- **Contracted Services**
  
The hired equipment component of the winter control program is primarily utilized to supplement the snow clearing operations in residential side streets, sidewalks and bus stops. The current contracts involve a fixed cost associated with guaranteed performance and an operating cost associated with activation hours during snow events. January to date costs associated with operating costs specifically in this area experienced significant reductions as a direct result of the minimum activation.

- **Winter Control Bulk Materials - de-icing chemicals, salt/sand.**
  
  On average material consumption totals in previous winter seasons, primarily in salt, have experienced totals as high as 90,000 tonnes per year. In 2006, staff estimates that salt consumption will be down by approximately 35%. Reductions in consumption totals for sand/salt are also anticipated, however with less significance given the lower unit costs.

  **Staff Overtime - directly related to winter storm response.**

  In-house staff overtime in this category is largely driven by the variable component of winter related storm activity. To date the moderate winter weather conditions of 2006 proved to be favourable in terms of program costs associated with hours of activation in response to winter storms. Overtime expenditures in this category in 2005 and recent previous seasons have exceeded expenditures of 200% consistently as the current program budget in this category is substantially under funded and will be reviewed and addressed within the 2007 budget submission.

A report planned for submission to the 2007 budget process will address the following issues affecting the program:

- **Winter Control Program Reserve – Sustainable Funding Model Base on Program Experience (5 Year Rolling Average)**

- **Updated Program Budget Estimate addressing inventory growth, fixed and variable cost escalations.**
POLICIES AFFECTING PROPOSAL:

There are no policies affected by the recommendations contained within this report.

RELEVANT CONSULTATION:

Human Resources Department staff have been consulted to discuss future program improvement opportunities respecting bulk material handling practices and inventory control through involvement of “work accommodated” employees.

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
Continuous improvements to the current service delivery models will allow staff to work toward providing services in an efficient and economical manner, focusing on driver and pedestrian safety and environmental awareness. This will also provide staff with the necessary tools to have effective plans to identify, and respond to and defend risk related issues.