CITY OF **VANCOUVER**

A12

ADMINISTRATIVE REPORT

Report Date:	June 25, 2008
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Meeting Date:	July 8, 2008

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Transfer & Landfill Operations Capital Projects and Studies

RECOMMENDATION

A. THAT Council approve the issuance of a Request For Proposals for the supply and commissioning of a Machine Control Global Positioning System at the Vancouver Landfill ("Landfill") at an estimated cost of $620,000 to be funded with a loan from the Capital Financing Fund (Solid Waste Capital Reserve) to be repaid over an eight-year period by the various users of the Landfill at an annual interest rate to be set by the Director of Finance.

B. THAT Council approve the extension of the UBC yard trimmings & compost agricultural use study from 2008 to 2010 at an annual cost of $30,000 to be funded from the Composting Operating Budget.

C. THAT Council approve increasing the scope of the existing consulting contract with Earth Tech (Canada) Inc. to update their 2003 Building Inspection Report, including a detailed Repair and Maintenance Plan and Inspection Schedule at an estimated cost of $25,000 to be funded in 2008 from a reduced transfer to the City's Solid Waste Capital Reserve and a reduction in the surplus payment to Metro Vancouver.

D. THAT Council approve the issuance of a Request For Proposals to complete a Detailed Site Traffic Management Improvement Plan for the Vancouver South Transfer Station at an estimated cost of $125,000 to be funded in 2008 from a reduced transfer to the City's Solid Waste Capital Reserve and a reduction in the surplus payment to Metro Vancouver.

COUNCIL POLICY

Expenditures from reserves require Council authorization.

Consultant agreements exceeding $30,000 require Council authorization.

Contracts for the purchase of equipment, supplies, and services are to be awarded on the basis of best overall value to the City in terms of quality, service, and price.

SUMMARY

This report outlines a number of projects and studies proposed for the Transfer & Landfill Operations Branch. These projects include:

- Implementing a Machine Control Global Positioning System (MCGPS) at the Vancouver Landfill necessary for achieving final design grades to facilitate meeting the Landfill's legal obligations while maximizing air space utilization, improving machine efficiency and providing a safer working environment
- Extending Council's previously approved funding to the University of British Columbia, for research into local agricultural uses of yard trimmings compost
- Updating the 2003 Inspection Report for the Transfer Station
- Conducting a detailed review with design and construction supervision for improved traffic management at the Transfer Station

The total cost of these projects is $860,000. MCGPS is proposed to be funded by a loan from the Solid Waste Capital Reserve which will be repaid through landfill tipping fees by the various users of the Landfill.

The remaining projects are to be funded by the appropriate Branch Operating Budgets. These proposed expenditures will have minimal impact on the Operating Budgets as the costs for these projects are shared among the users of the facilities.

PURPOSE

The purpose of this report is to recommend the implementation of two projects at the Landfill and Transfer Station and the issuance of a Request For Proposals (RFP) for a Machine Control GPS system at the Landfill as well as a Traffic Management Improvement Plan for the Transfer Station.

BACKGROUND

The City of Vancouver owns and operates the Vancouver Landfill and the Vancouver South Transfer Station. The Landfill, located in Delta, serves a population of almost 1,000,000, which corresponds to 40% of the population in Metro Vancouver. In 2007, the Landfill received approximately 660,000 tonnes of municipal solid waste (MSW).

Heavy equipment is extensively used for constructing lifts, roads, and ditches, and placing MSW, road materials and cover soils at the Landfill. Several areas of the site are approaching final design grades in the coming months. A Global Positioning System (GPS) based machine-mounted (machine-control) system is an advanced technology tool that will enable City staff to accurately construct the Landfill to final design grades and maximize airspace.

The second Landfill project is the extension of the current funding for UBC studies on agricultural use of compost on local farms in Delta.

The Vancouver South Transfer Station and Recycling Depot, located at 377 West Kent Avenue North, have been in operation since June 1989. The Transfer Station was built to provide a convenient drop-off location for Vancouver residents and commercial haulers as well as to reduce traffic flow along the roadways in Delta leading to the Landfill. Garbage from Vancouver and neighbouring communities is dropped off at the Transfer Station and then loaded into tractor-trailers for delivery to the Landfill.

In 2001, Vancouver City Council approved an Infrastructure Review of the Vancouver South Transfer Station (RTS 02184). The goal of the review was to determine the additional infrastructure requirements needed to manage increasing traffic at the Transfer Station and to provide additional waste reduction and recycling opportunities. The Infrastructure Review is currently being finalized with several options identified.

However, in light of recent proposals by Metro Vancouver to amend the Regional Solid Waste Management Plan, these major upgrades have been put on hold. In the interim, there is a need for building repairs, as indicated by extensive repairs completed in 2005, 2006 and 2008. These repairs addressed excessive wear of the pit floor and walls and the commercial tipping floor. An updated Vancouver South Transfer Station Inspection Report is required to properly assess, prioritize, plan and budget the building repairs needed to maintain effective, economic and safe operation of the Transfer Station and Recycling Depot.

Lastly, an ongoing concern has been traffic congestion at the Transfer Station. Specifically, customers routinely endure lengthy queues on West Kent Avenue North to enter the facility. In addition, customers can originate from one of five different lanes which are all required to merge onto the weighscale to exit the facility. Because major upgrades are on hold, a detailed review of traffic flows and the development of a site traffic management plan are required to identify the best options to relieve congestion. The consultant will be required to provide recommendations, including costs, detailed design and construction supervision.

Loans from the Solid Waste Capital Reserve used to fund projects, such as MCGPS, are repaid through landfill tipping fees by the various users of the Landfill at an annual interest rate to be set by the Director of Finance. The other two projects are to be funded by the appropriate Branch Operating Budgets. These costs are shared among the users of the facilities.

DISCUSSION

Machine Control Global Positioning System

In March 2005, a consultant was retained to assist with the implementation of the GPS Mapping Program using an inexpensive backpack-style GPS unit. The goals were to

demonstrate the role of GPS technology for achieving design grades at the Landfill and to assess the viability of a machine-mounted GPS system. Since inception, GPS technology has proven to be an effective tool in improving operational efficiencies at the Landfill.

Now that filling activities in Phase 2 and the Western 40 Hectares are reaching final height, considerable accuracy in the coming months is required to meet final design for pre-closure. Due to the limitations of the current backpack-style GPS unit, implementation of a Machine-Control Global Positioning System (MCGPS), an advanced technology tool, is necessary.

There are significant concerns with not meeting the final pre-closure design grades in both areas as well as the rest of the site including:

- Final design grades for Phases 1 through 9 of the Landfill were developed based on the 1999 Vancouver-Delta Agreement in which it was agreed that 20,000,000 additional tonnes of garbage would be disposed of starting October 1, 1997. This tonnage was translated into the 2000 Design & Operations Plan for the Landfill which was approved by the Ministry of Environment in accordance with the Landfill's Operational Certificate.
- The conceptual design plan for closure of the Western 40 Hectares and Phase 2 was developed by a steering committee comprised of staff from The Corporation of Delta, Metro Vancouver and Vancouver and then approved by the Ministry of Environment. A final contour plan was included to allow a range of end uses to be developed in consultation with Delta in future, including a golf course or recreational uses.
- As final pre-closure grades are approached in these areas, finer accuracy is required to ensure that areas are not underfilled, losing valuable airspace, or overfilled, requiring extensive and costly corrections.

To illustrate, if the current GPS was used to complete the final lift on Phase 2 to design, filling would be limited to basic contours with finer work employing dirt instead of garbage to meet the approved pre-closure design. Specifically, the design would have to be greatly simplified to a step down grade from east to west. This simplification results in dirt displacing garbage that would have occupied approximately 80,000 m^3 of airspace in the approved pre-closure design. This airspace which can accommodate 0.94 tonnes of garbage per cubic metre with revenue of approximately $17 per tonne corresponds to approximately $1,300,000 in lost revenue to Vancouver (based on Vancouver's portion of any surplus revenues).

In addition to meeting the Landfill's legal obligations, a number of operational efficiencies will be realized by implementing an on-board earthmoving system (MCGPS) as follows:

- improve safety by eliminating the need for constant use of survey stakes by crews
- ensure maximum airspace utilization by minimizing use of road building materials and conserving cover soil
- achieve desired grade/slope
- maximize compaction of the garbage while improving machine efficiency
- measure settlement more accurately for use in Landfill life projections
- create digital records of new and old infrastructure as well as hazardous waste burials

To accurately achieve the final design grades going forward while maintaining compliance with the Landfill's obligations and realize the above efficiencies, a minimum of six machines are proposed to be outfitted with a MCGPS. Installation on new machines is preferable, more economical and easily done during outfitting. Two new bulldozers are currently being deployed at the Landfill and two new compactors are about to be ordered.

A standard Request for Proposals process will be conducted and award will be through a subsequent Council Report. This project is estimated to cost $620,000 based on a quotation provided by a local vendor for a commercially available product.

UBC Yard Trimmings & Compost Agricultural Use Study Funding

For many years, the City of Vancouver has worked with the University of British Columbia (UBC) Agroecology Soil Science Group to investigate the use of yard trimmings compost for local agricultural purposes. The goal of the research has been to demonstrate the benefits of using compost combined with other materials, such as poultry manure, in both conventional and organic agriculture on local farms in Delta. A new aspect of the proposed program is to investigate the use of compost and ground yard trimmings as a soil amendment and mulch for blueberry farming.

The program has provided significant benefits to both the City of Vancouver and Delta farmers through improved agricultural practices and a better understanding of the role of the Landfill in the community. Participation in the project supports Vancouver's sustainability objectives as well as Vancouver's food strategy by encouraging local growing of conventional and organic produce.

UBC is seeking funding for an extension of the program for the next three years. This funding assists UBC to leverage funds from other levels of government, as well as foundations and agencies. Their research is supported by local farmers through in-kind contributions and attracts the in-kind input of scientific collaborators in Agriculture and Agri-Food Canada as well. UBC is seeking a proposed contribution is $30,000 each year for 2008 through 2010 for a total of $90,000.

Inspection Report Update and Development of a Repair & Maintenance Plan for the Transfer Station and Recycling Depot

In 2005, Council approved the award of professional services for the Infrastructure Review for the Transfer Station to Earth Tech (Canada) Inc. (RTS 05198). This report recognized that if the existing building was not replaced as a result of the Infrastructure Study, upgrades would be needed to reduce offsite odours, improve indoor air quality, and improve health and safety systems. Also, several expensive repairs of building components have been conducted since 2005, including repairs to the pit floor and walls and most recently, the commercial tipping floor.

In 2003, an inspection report was completed by Earth Tech which evaluated all of the structural, mechanical and electrical components of the facility. An update to the 2003 Vancouver South Transfer Station Inspection Report is recommended to properly assess, prioritize, plan and budget the work needed to address the above concerns to maintain effective, economic, and safe operation of the facility. A detailed plan and work schedule, including routine inspections, are required to outline and perform routine preventive

maintenance for all aspects of the facility over time frames of 5 and 10 years until Metro Vancouver makes some concrete decisions on municipal solid waste management for the region.

It is recommended that Earth Tech update the inspection report based on their considerable experience with Transfer Station projects, specifically, producing the 2003 Inspection Report and supervising the repairs in 2005, 2006 and 2008. Sole sourcing this work will ensure best value to the City based on Earth Tech's familiarity with the site and past work on the inspection report. The cost to update the 2003 Inspection Report and prepare a 10 year maintenance plan for the facility is approximately $25,000.

Detailed Site Traffic Management Improvement Plan for the Transfer Station

Traffic congestion on West Kent Avenue North is regularly caused by customers queuing on the street while waiting to enter the facility. The queue may be a result of the maximum processing capacity at the outbound scales, and the inability for account customers to bypass the outbound scales. In addition, customers can originate from one of five different lanes which are all required to merge onto the weighscale to exit the facility.

A detailed review of interim traffic management options is required due to the delay of major facility upgrades which were to have addressed traffic congestion. Upgrades are delayed due to the significant amendments proposed to the Regional Solid Waste Management Plan by Metro Vancouver.

Following a review of traffic flows for the site, the consultant will be required to present recommendations, including costs, in order to select the best options. Once a selection has been made, the consultant will be required to provide detailed design and construction supervision to implement the selected option(s).

A standard Request for Proposals process will be conducted and award of the consulting contract will be through a subsequent Council Report. The cost for this detailed review, design and construction supervision to improve traffic management at the Transfer Station is estimated at $125,000.

FINANCIAL IMPLICATIONS

This report recommends the implementation of two projects at the Landfill and Transfer Station and the issuance of a Request For Proposals (RFP) for a Machine Control GPS system at the Landfill as well as a Traffic Management Improvement Plan for the Transfer Station. The total cost for MCGPS is $620,000 plus applicable taxes which will be funded as a loan from the Capital Financing Fund (SWCR) to be repaid by the various users of the Landfill (Metro Vancouver, Vancouver and Delta) over a term of eight years at an annual interest rate to be set by the Director of Finance. The SWCR accumulates as a result of Vancouver's portion of net revenues from tipping fees which are split between Metro Vancouver, Delta and Vancouver. This loan will result in an additional cost to Vancouver homeowners, through their residential garbage fees, of about $0.12 per year for 8 years. Operating costs for projects at either facility are funded through the associated Operating Budget and are shared among the users of the facilities.

The following table lists the projects as well as the proposed source of funds for each project.

Project	Amount	Source of Funds
Machine Control GPS	$620,000	Capital Financing Fund loan with an eight-year amortization period
UBC Yard Trimmings & Compost Agricultural Use Study Funding	$90,000	Composting Operating Budget
Inspection Report Update and Repair & Maintenance Plan	$25,000	Reduction in a transfer to the SWCR and a reduction in the surplus payment to Metro Vancouver
Detailed Site Traffic Management Improvement Plan	$125,000	Reduction in a transfer to the SWCR and a reduction in the surplus payment to Metro Vancouver
Total Expenditures	**$860,000**	

CONCLUSION

The General Manager of Engineering Services recommends that Council approve the recommendations of this report to implement the outlined projects and issue the RFPs at the Vancouver Landfill and the Vancouver South Transfer Station.

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