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FOIPOP Review

N/A

Approved to Release Motion of Council

Date Sept. 17/19 Yung

Solid Waste Resource Advisory Committee
December 6, 2004
In Camera

TO: Councillor Jim Smith, Chairman and Members of SWRAC

Original Signed

SUBMITTED BY:

Jim Bauld, Manager, Solid Waste Resources

DATE: December 3, 2004

SUBJECT: MIRROR CONTRACT - RESIDUAL DISPOSAL FACILITY (RDF)

PRIVATE & CONFIDENTIAL INFORMATION REPORT

ORIGIN

The design and construction of Cell 4 in 2005.

BACKGROUND

In 1996, Regional Council adopted in principal the Citizens Stakeholder Committee Strategy (CSC) for the new Integrated Solid Waste/Resource Management System. The CSC strategy was the culmination of an extensive public process which has received a national award as a leading example of a community-based solution to a major municipal undertaking. A key component of the CSC strategy was the application of very specific siting criteria for the location of a new landfill, which identified the Otter Lake site.

HRM's commitment to principles of the strategy is enshrined in a contract with MIRROR Nova Scotia, the operator of the Otter Lake facility, and through a contract with the Community Monitoring Committee (CMC). HRM's annual operating budget includes \$65,000 solely for the purpose of the ongoing monitoring of the solid waste/resource management system by the CMC.

On July 25, 1997, HRM entered into a twenty-five-year contract with MIRROR Nova Scotia entitled "Agreement for The Design, Construction and operation of Components of Halifax Regional Municipality's Solid Waste Facilities".

The purpose of the Agreement was for MIRROR to design, construct and operate a mixed waste processing (i.e. Front End Processor (FEP) and Waste Stabilization Facility (WSF)) and residual disposal facility (i.e. landfill) in accordance with the intendant criteria as established by the CSC, and the NS Department of Environment and Labour (NSDEL). As specified in the Agreement, Section 2, subsection 85 (page 21), the Agreement is for a period of twenty-five years, or the date the site has reached capacity as a landfill, whichever occurs first.

Between June 1997 and July 1998, MIRROR completed the design and construction of the facility, including:

- all associated site buildings and installation of equipment;
- the construction of an interchange at highway 103 (a connector road);
- all associated components of a modern state-of-the-art second generation landfill;
- a full leachate containment and collection system;
- settling ponds for surface water; and
- a total of 56 surface and ground water monitoring wells.

Regular monitoring of sediment pond performance is performed along with a quarterly and annual surface and ground water monitoring protocol, as established by the Province. On a monthly basis, MIRROR provides HRM staff (who in turn provide the information to the CMC) with a report of the full operations of the facility, including total tonnes of waste received, recycled and disposed, and the performance (duration of temperature and moisture) of the waste material containing residual organics as it is made stable in the WSF.

Since the full operation of the site began (January 1999), cells 2 and 3 have been constructed, the FEP was expanded, cells 1 and 2 were capped, and a gas collection and flare system installed to control odours in 2003/04. Staff plan to assess the potential for electrical generation and green house gas credits from the recovery of gas from the residual disposal cells.

The initial total cost (totally borne by the municipal taxpayer) for the Otter Lake facility, including the land, overpass and connector road, was approximately \$60 million. The closure of cells 1 and 2 and the construction of cells 2 & 3, in the interim five years of operations, has been completed at an additional cost of approximately \$29 million. Staff and MIRROR continue to seek opportunities, both operationally and for the long term, to optimize design and to maximize value for the significant money invested in the Otter Lake facility by the HRM tax payer.

The location of the footprint for Cells 1 through 9, which will be constructed over a period of twenty years, was based upon specific siting criteria (over 30 criteria in total) established by the CSC and specific NSDEL requirements. The CSC criteria exceed Provincial standards, particularly the required separation distance to a building service by a well. Where the Province requires a separation of 1,000 metres to a building, the CSC strategy specified that the landfill is to be at least 3,000 metres from a property with a well. The original designed footprint of cells 1 through 9 met or exceeded the 3 km separation criteria.

MIRROR has notified staff that cell 4 is to be constructed during the 2005 construction season (between April and December) for usage in 2006. The construction of cell 4 will be identified in the 2005-06 capital budget.

DISCUSSION

Prior to MIRROR undertaking the design and construction of cell 4, staff and MIRROR agreed that it was prudent to reconfirm the exact location of cell 4, (and cells 5-9), which were configured on the eastern boundary based upon the 3 km separation distance from the nearest well. In November, HRM Survey staff (using GPS technology), along with staff from Dillon Consulting, established the exact location of those properties with domestic wells nearest to the residual disposal facility.

The results of this resurvey determined that the current separation distance from the landfill footprint to the nearest domestic well, on Big Indian Road, is greater than 3 kms. Through discussions with MIRROR, staff identified that there were some potential design and construction advantages to slightly shifting the landfill footprint. Dillon Consulting, a consultant for MIRROR, was requested to advise as to the feasibility of shifting of the footprint of cell 4 (and cells 5-9) with the proviso that the original siting criteria established by the CSC not be compromised, and that all Provincial regulations must be met.

Dillon Consulting (Attachment # 1, letter dated November 22, 2004) has advised that the shifting of the footprint of cell 4 (and cells 5-9) has several substantial benefits for HRM, including:

- access to and better use of natural soil deposits at the site for future cell construction and/or capping (reducing the need for importation of soils);
- maximizing the usage of the existing infrastructure at the site (e.g. sedimentation control systems and leachate storage, etc.); and
- increasing the capacity of the residual disposal facility by approximately 420,000 tonnes.

The shifting of the location of cell 4 (and cells 5-9) to the east, by approximately 100 metres at the north end and 150 metres at the south end, while maintaining and exceeding the 3 km separation distance to the nearest well, also meets the criteria of NSDEL that all cells be located in the Nine Mile River watershed. An additional 420,000 tonne capacity in the cells allows an opportunity to maintain site life allowing for growth in HRM's population (which wasn't fully factored into the original projections) or, at the current disposal rate, would extend the life of the landfill by approximately 3 years.

The increase in capacity by optimizing the footprint and/or extension of the life of the landfill at the Otter Lake site, in staff's view, is very positive and beneficial for HRM. It will maximize the significant tax dollars already invested in the site. It is Staffs and MIRROR role to seek opportunities that maximize the significant municipal tax dollars already invested in the Otter Lake site. Following discussion and comments by members of SWRAC, staff plan to advise CMC of these results and advise MIRROR to proceed with the design of cell 4 with the new footprint (that meets all siting

criteria of the CSC Strategy and all provincial regulations), which will enable staff to conduct a cost review of the cell 4 design/construction required for the 2005/06 budget.

As noted in the letter from Dillon Consulting, staff also requested a preliminary assessment of the feasibility of increasing the height of cells 4-9. Dillon has advised a one metre lift would increase the capacity by approximately 125,000 tonnes, with an additional one metre lift, allowing an additional 119,000 tonnes. Although the design and cost of cell 4 is not dependent upon the final height of cell 4, staff (in consultation with SWRAC and CMC) intends to further investigate the aesthetics issue prior to looking at any changes. A change in the height of cells 4-9 would require the approval of NSDEL.

BUDGET IMPLICATIONS

N/A

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

N/A

ATTACHMENTS

1. Letter from Dillon Consulting dated November 22, 2004.

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Jim Bauld, Manager, Solid Waste Resources, EMS 490-6606

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November 22, 2004



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ATTENTION: Jim Bauld, Manager
Solid Waste Resources

*Otter Lake RDF
RDF Boundary – Cells 4 to 9*

Further to your request Dillon has reviewed the boundaries of the Otter Lake RDF to take advantage of the natural site conditions during the construction of Cells 4 to 9.

A Community Stakeholders Committee (CSC) identified the siting process for the RDF on behalf of Halifax County Municipality in the mid 1990s. A number of siting criteria were used by the CSC including an "Opportunity Factor Criteria" relating to the distance between the RDF and "Buildings on Well Water Supply". The CSC set this criterion at 3 km. The October 6, 1995 "Documentation Report for the Residuals Disposal Facility Siting Process" does not clearly indicate where the 3 km measurement is to be taken from: (i) the water well; (ii) the building; or, (iii) the lot on which the building is located. The siting document notes that the 3 km criterion was put in place to "minimize the potential of contaminating water supplies which are based on groundwater extraction". This suggests that the point of extraction is the important criteria and not the location of the building or the lot on which the building is located. The Nova Scotia Department of Environment and Labour (NSDEL) Municipal Solid Waste Landfill Guidelines indicate "the distance between the active disposal area and the nearest residential, institutional, commercial or industrial building is recommended to be a minimum of 1000 metres". The initial site layout by Dillon as contained in the 1997 submission to the NSDEL, was prepared using a distance of 3 km from the nearest lot line of a building on a groundwater well.

Given the above interpretation of the 1995 siting criteria, and, with a continued commitment to a 3 km separation distance to an existing well, we feel that HRM could refine the eastern boundary of cells 4 through 9 as developed in 1997.

To establish a refined limit of the RDF footprint a survey team from HRM, using GPS technology, located the water supply wells to the east of the RDF in the area of Prospect Road and Big Indian Lake. Based on a HRM review of development, this area was identified as having the nearest buildings to the RDF on water wells. The survey crew reported that most buildings were within 20 m of their respective groundwater wells.

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The attached figure shows the 3 km distance from groundwater wells on the existing RDF footprint as well as a proposed refined footprint. The proposed refined boundary is approximately 3.1 km from the nearest water wells which indicates that the revised boundary could be implemented within the 3 km siting criteria adopted by the CSC.

Soils information from the 1997 submission indicates that up to 7 plus metres of soil may be available in some of the proposed refined area. Recent testing in the area of cell 4 indicates that the area at the east end of the proposed cell contains approximately 5 metres of soil. The area also contains Monitoring Wells MW14A, MW14B, MW13B, MW13C, and MW 12B which would have to be relocated outside of the proposed new limit of the RDF after consultation and approval from the NSDEL if the proposed area were adopted for use. These wells could potentially be relocated over time as the cells are developed.

Preliminary calculations indicate the potential increased capacity in the revised footprint would allow for the placement of an additional 400,000 to 420,000 tonnes of residuals. These calculations were based on extending Cells 4 through 9 to the east as noted on the attached figure while maintaining the other boundaries similar to those in the 1997 application, an average in-place residuals density of 750 kg/cubic metre, a daily cover ratio of 5 parts residuals to 1 part cover and the top elevations similar to the 1997 NSDEL submission.

In summary the proposed refined RDF footprint will potentially allow HRM to:

- To better use the available soils on the site and thereby reduce the need for the importation of soils for cell construction and/or final capping;
- Increase the capacity of the RDF;
- Maximize the usage of the existing sedimentation control systems and leachate storage systems;
- Maintain the RDF footprint within the Nine Mile River watershed as stated in the original application to NSDEL; and,
- Maintain the 3 km siting criteria.

In response to the question relating to changing (increasing) the overall height of the RDF it is noted that the top elevation was established to be similar to the top elevation of the trees in the area of the RDF. This elevation was set with input from the CSC at the time the site was developed who expressed interest in reducing the visual impact of the landfill on the area. Given this concern with aesthetics, it would be prudent to discuss the implications of any change in height with the current monitoring committee and the NSDEL if this direction is adopted. The remaining cells at the facility have a top surface area of approximately 22.5 hectares. Increasing the height of Cells 4 to 9 by 1 metre will increase the capacity of RDF by approximately 125,000 tonnes based on the placement

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criteria identified above and continuation of the existing side slopes of the facility. Increasing the height by another metre (2 metres in total) would increase the capacity by an additional 119,000 tonnes.

If you have any questions on the above please do not hesitate to contact the undersigned.

Yours truly,

DILLON CONSULTING LIMITED

Original Signed

G. Isenor, P.Eng.
Partner

GI:jep
cc: K. Jacobs
Our File: 04-3949-0100