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ERM 18-03

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JANUARY 10, 2018

SUBJECT **Integrated Resource Management – Next Steps**

ISSUE

To present next steps to address the Capital Regional District (CRD) Board's Integrated Waste Management priority.

BACKGROUND

In its 2015-2018 Strategic Plan, the CRD Board indicated that pursuing Integrated Waste Management (IRM), liquid waste and solid waste integration, was a strategic priority. Integrated Resource Management is defined by the Capital Regional District as the integration of solid and liquid wastes, using currently landfilled or diverted materials along with biosolids, to maximize resource recovery through combined processing of some, or all, of these materials.

The CRD has advanced planning of IRM through a number of committees. Initially, the Board formed the Integrated Resource Management Task Force (January to April 2016), for the purpose of examining options for integrated resource management of liquid and solid waste and recommending options for Board endorsement. This Task Force recommended that the CRD establish a pilot project for biosolids, kitchen scraps and municipal solid waste (MSW) as soon as possible.

Following the work of the Task Force, the Integrated Resource Management Select Committee (April to December 2016) was established to oversee and make recommendations to the Board regarding integrated resource management planning. This Committee recommended that a Request for an Expression of Interest (RFEOI) be issued asking the private sector for a regional IRM solution dealing with solid and liquid wastes in the region.

In February 2017, the IRM Advisory Committee issued the RFEOI. Key findings from this call to the market include:

- preference that the CRD provide the site, and many prefer the CRD to own the facility
- majority of respondents did not recommend undertaking a pilot
- all of the respondents indicated that their technology was capable of managing the biosolids stream, although in some cases there was a lack of clarity as to how exactly it would be managed; in some cases, the submissions indicated that they could manage biosolids or sewage sludge
- respondents generally focused on organic processes (aerobic/anaerobic) to process organic wastes and mechanical/thermal processes (refuse drive fuel, gasification) for mixed waste sources
- many respondents are open to a variety of project development, financing and ownership models

In July 2017, the CRD Board directed a number of deliverables to advance the IRM initiative, in addition to initiating the procurement process. Over the past six months, HDR Consulting has

prepared a number of technical reports, including: a draft Integrated Resource Management Project Plan outline, a gap analysis to complete the evaluation of the broader array of technologies and feedstock combinations (as required in the provincial approval of the Core Area Liquid Waste Management Plan, Amendment No. 11) and a summary of potential policy/project implications resulting from the CRD's lack of flow control over much of the waste feedstock.

At the November 8, 2017 IRM Advisory Committee meeting, HDR Consulting presented an IRM Consolidation and Project Criteria Development report. This report summarized the work of the Board on IRM to date and provided case studies of IRM facilities throughout Europe and North America. Included in the report are key procurement criteria, such as waste supply, facility siting, ownership and financing and risk tolerance, that are important factors in the successful procurement and development of such facilities.

To advance a successful procurement and to address the numerous project criteria identified above, the IRM Advisory Committee (IRMAC) worked with the consultants to provide feedback on project criteria at its meeting of December 13. A series of questions was posed to the committee, seeking input on project criteria such as siting, affordability, environmental objectives, flow control and risk. Consensus was received on siting a facility at Hartland landfill; however, there was significant variability amongst Advisory Committee members regarding a number of critical procurement assumptions, including flow control, risk, responsibility for securing end-markets for products from IRM, and the potential for land application of thermally-processed biosolids products (such as biochar or aggregate). A number of questions were not addressed due to time constraints, including feedback on an affordability ceiling for the project. A table summarizing the IRMAC project criteria feedback is presented in Appendix A.

The CRD's Core Area Liquid Waste Management Plan, Amendment No. 11, requires that the CRD determine a definitive plan for the beneficial use of biosolids by June 30, 2019. Late in 2017, the preferred proponent for the Residuals Treatment Facility (RTF) was announced by the Core Area Wastewater Treatment Project Board. The proponent will produce a dried Class A biosolids product. Regardless of the long-term beneficial use for this dried project, an interim beneficial use option must be identified that does not include the use of a biocell for storage of the material at Hartland, as directed by the Minister of Environment in her letter of November 2016.

ALTERNATIVES

That the Environmental Services Committee recommend to the CRD Board:

Alternative 1

That the CRD modify the IRM work plan by:
1. concluding the current IRM procurement process
2. issuing a Request for Proposals for the beneficial use of dried Class A biosolids produced by the Residuals Treatment Facility as a stand-alone procurement, according to the CRD's land application policy
3. pursuing an in-region organics (kitchen scraps/yard and garden) processing facility by initiating a new procurement process for a facility to be located at Hartland landfill

4. informing the Project Board of the new direction and requesting that any Core Area wastewater treatment project implications be included in the upcoming update report to the Core Area Liquid Waste Management Committee in February; and
5. submitting a revised project plan for the beneficial use of biosolids and the IRM initiative to the province

Alternative 2

That the CRD advance the IRM work plan by:

1. initiating consultation with the public and First Nations, with input on the consultation plan from the Solid Waste Advisory Committee, on an IRM project based on the following procurement assumptions:
   - Hartland landfill as the site
   - waste supply:
     - Class A biosolids produced at the Residuals Treatment Facility
     - organics (kitchen scraps/yard and garden) secured through negotiated agreements with municipal and/or private waste collection service providers
   - restriction of land application of any product using CRD biosolids as a feedstock
   - IRM affordability ceiling of no more than $120/tonne (net of IRM revenue streams); and
2. bringing the consultation results and the final draft IRM Request for Qualifications to the IRMAC in May 2018

Alternative 3

That the CRD advance the IRM work plan by:

1. initiating consultation with the public and First Nations, with input on the consultation plan from the Solid Waste Advisory Committee, on an IRM project based on the following procurement assumptions:
   - Hartland Landfill as the site
   - waste supply:
     - Class A biosolids produced at the Residuals Treatment Facility
     - organics and residual waste secured through negotiated agreements with municipal and/or private waste collection service providers
   - restriction of land application of any product using CRD biosolids as a feedstock
   - IRM affordability ceiling of no more than $75/tonne (net of IRM revenue streams); and
2. bringing the consultation results and the final draft IRM Request for Qualification to the IRMAC in May 2018

ECONOMIC IMPLICATIONS

The IRM Consolidation and Project Criteria Development report prepared by HDR Consultants identified a number of project criteria that led to successful IRM projects, along with project risks that need to be mitigated. For the CRD, the highest risk for an IRM project is the lack of regulatory flow control of waste supply. Without secure waste flow, it will be difficult for proponents to secure financing for the project, resulting in higher tipping fees and/or risk transfer to the CRD.

There are no facilities included in the case studies brought forward by HDR that currently process biosolids, raw sludge, organics and residual solid waste through one technology or facility. To advance a procurement process with an expectation of processing all of these waste streams at one facility represents a high technology risk for the project. This risk, coupled with lack of flow control, will likely result in an unsuccessful procurement process for IRM as it is currently scoped, unless the CRD is willing to finance the project and take on significant project risks. Based on input from the consultant, it is highly unlikely that the price/tonne for processing all waste streams, net of potential IRM revenue streams, will be within range of the CRD's current cost to dispose of residual solid waste at Hartland landfill, $75/tonne (the current Hartland tipping fee is $110/tonne: $75/tonne landfill expenses + $35/tonne waste diversion expenses).

Under Alternative 1, the CRD will advance two procurement processes to deal with a narrowed set of waste streams, one for the beneficial reuse of Class A dried biosolids and one for organics (kitchen scraps and yard and garden waste) processing. Past experience and current market conditions for such beneficial use opportunities will likely result in options that are within the range of Hartland's current kitchen scraps transportation and processing costs of $120/tonne, with reasonable risk transfer to the private proponent.

In September of 2017, staff met with private waste hauling industry representatives to discuss at a high level the concept of flow control within the region. Preliminary feedback from industry was not positive, indicating no support for regulatory flow control, as well as little support for entering into long-term waste supply agreements unless at very high prices.

ENVIRONMENTAL IMPLICATIONS

The CRD Board initiated the IRM strategic priority with the expected outcome of decreased waste management costs and increased environmental benefits using currently landfilled or diverted materials along with biosolids, to maximize resource recovery through combined processing or some, or all, of these materials. In addition, the CRD has been exploring a renewable natural gas (RNG) opportunity at Hartland landfill that has the potential to address the desired environmental and financial outcomes of the Board's IRM strategic priority by further optimizing the beneficial use of Hartland's landfill gas.

Alternative 1 could result in a non-land application beneficial use of the biosolids produced from the RTF and in-region processing of organic materials, in a separate facility with the potential for the nutrients from the organics processing to be applied on lands within the region.

Alternatives 2 and 3 would result in co-processing of biosolids with other solid waste residuals in an IRM facility. The outputs from any resulting IRM facility would need to beneficially use the outputs of the IRM process without applying the materials to land.

SOCIAL IMPLICATIONS

Alternative 1 consultation would not be required for the beneficial reuse of biosolids Request for Proposals. Under the CRD's current Solid Waste Management Plan (SWMP), the CRD does have approval for a composting facility, but that would not likely extend to an anaerobic digestion facility. An organics anaerobic digestion facility at Hartland would require an amendment to the existing SWMP, and associated public consultation.

Consultation with the public and First Nations is a critical next step to advance an IRM project under Alternatives 2 and 3. Staff will initiate a consultation plan based on the project assumptions determined by the Board, and seek feedback on the planning process from the Solid Waste Advisory Committee.

INTERGOVERNMENTAL IMPLICATIONS

For each of the alternatives laid out in this report, secure waste supply is a critical project criteria to advance a successful procurement process. Under Alternative 1, agreements must be secured with those willing municipal jurisdictions and private haulers that collect kitchen scraps and yard and garden waste in order to guarantee minimum tonnages for the proponent to process. Without these agreements, costs for processing organics will likely be much higher. Under Alternatives 2 and 3, agreements with willing municipalities and private haulers must also include residual solid waste tonnages.

CONCLUSION

Moving forward and building a comprehensive Integrated Resource Management facility at Hartland landfill, given the diversity of the waste feedstock materials, would likely need to involve an array of technologies. Achieving reduced costs and improved environmental performance through a single IRM facility is not realistically achievable given the project risk associated with the CRD's lack of control over waste flows and the IRM technology risk. A stepwise movement into additional resource recovery at Hartland landfill, through an organics processing facility procurement process, has the potential to have significant financial and environmental benefits.

The selection of a preferred proponent for the Residuals Treatment Facility has confirmed that the facility will produce a dried Class A biosolids product. As a result, a beneficial biosolids reuse Request for Proposals will allow the CRD to meet its Core Area Liquid Waste Management Plan biosolids requirements by providing a market based response to determine the availability and cost of a single waste stream beneficial biosolids reuse strategy.

RECOMMENDATIONS

That the Environmental Services Committee recommend to the Capital Regional District (CRD) Board:

That the CRD modify the Integrated Resource Management (IRM) work plan by:

1. concluding the current IRM procurement process
2. issuing a Request for Proposals for the beneficial use of dried Class A biosolids produced by the Residuals Treatment Facility as a stand-alone procurement, according to the CRD's land application policy
3. pursuing an in-region organics (kitchen scraps/yard and garden) processing facility by initiating a new procurement process for a facility to be located at Hartland landfill
4. informing the Project Board of the new direction and requesting that any Core Area Wastewater Treatment project implications be included in the upcoming update report to the Core Area Liquid Waste Management Committee in February; and
5. submitting a revised project plan for the beneficial use of biosolids and the IRM initiative to the province

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Attachment: Appendix A – Integrated Resource Management Advisory Committee – Project Criteria Feedback