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TO: Chair and Directors
Comox Valley Regional District
(Comox Strathcona Waste Management) Board

Supported by Russell Dyson
Chief Administrative Officer

FROM: Russell Dyson
Chief Administrative Officer

R. Dyson

RE: Procurement Requirements for Advanced Technology

Purpose

To provide the procurement requirements to pursue a Solid Waste Advanced Technology (SWAT) as an alternate waste disposal method and to summarize and highlight previous analysis as requested by the Board.

Recommendation from the Chief Administrative Officer:

THAT the Comox Valley Regional District (Comox Strathcona Waste Management) Board continue to support implementation of the 2012 Comox Strathcona Waste Management Solid Waste Management Plan and reassess the viability of advanced alternate disposal technologies in 2022 as part of the major 10 year update of the Solid Waste Management Plan.

NB. Staff and the SWAT committee will continue to monitor the performance of Advanced Technology including the Chester, NS facility.

Executive Summary

The Comox Strathcona Waste Management (CSWM) Board has an interest in continuing to explore Solid Waste Advanced Technologies (formerly Waste to Energy) in an effort to provide a cost effective alternative to landfilling. At the September 6, 2018 Board meeting staff were directed to develop the procurement requirements, including cost and schedule necessary to select an advanced technology as an alternate disposal method to landfilling. A solid waste management plan (SWMP) update would be required as outlined by the Ministry of Environment and Climate Strategy (MoE) staff in their October 11, 2018 presentation to the CSWM Board. This would be followed by an extensive procurement process.

A SWMP update is multi-year process that includes the following key steps:

- Establish project teams (Public Advisory, Technical Advisory, and Steering Committee) and develop a consultation plan and a budget.
- Set plan direction including identify principles, goals and targets, develop background, assess the current situation, consider trends and consult with the public and First Nations.
- Develop potential strategies, assess financial, social and environmental implications, consult with the public, First Nations and other interested parties, and evaluate the options.
- Prepare the draft plan, consult with the public and first nations, prepare the final draft and then submit to the MoE for approval.
- The SWMP must consider alignment with the MoE- [A Guide to Solid Waste Management Planning](#). Failure to align an update of the SWMP, would likely not receive MoE approval.

The update process normally takes three years from initiation through to final approval. The estimated cost to complete this work, including all consulting fees and consultation is \$800,000. Following completion of a SWMP update an extensive procurement process consisting of the following key elements would be required:

- Determine and select the most effective performance based procurement process (pending results of approved SWMP process);
- In collaboration with consultants and legal advisors, develop and issue procurement documents;
- Work with the successful proponent, the MoE and other regulatory authorities to achieve required environmental permissions;
- Procure the project.

This type of process would normally take one to two years to complete prior to construction and require technical staff, procurement staff, consultants and legal resources.

The SWMP update and procurement process is a significant undertaking involving staff resources from across the organization as well as a new dedicated staff to lead and coordinate all internal and external activities. The resource requirements, cost and schedule, are summarized in the main body of this report and total \$1.58 million and three to five years to complete prior to construction.

In 2016 the Board initiated the Solid Waste Advanced Technology (formerly Waste to Energy) Select Committee in an effort to investigate and evaluate alternate waste disposal technology available. There was a desire to understand whether technology had developed to a point where it might be viable for the CSWM service. Morrison Herschfield (MH) was retained to assist in developing a Request For Information (RFI) and in evaluating responses received. Their work included a full cost model for comparison of advanced technology options ([2018 Waste to Energy Business Case Assessment](#)). In support of the consultant's work, staff validated the modeling by completing a separate, stand alone, full cost analysis of the service. At the conclusion of the work, the following findings were presented to the Board:

- The full cost of the current solid waste service is \$243¹ per tonne;
- The only component of the above costs that would be displaced by implementing a different waste disposal technology (other than landfilling) is \$48 per tonne;
- The least costly alternate solution would require \$86 to \$111 per tonne² compared to the current status quo of \$48 per tonne. Over a 25 year time period, this would equate to costs for the service between \$48 and \$80 million higher than the status quo;
- Of the responses received the lowest cost technology is unproven and does not have a commercially scaled facility in operation (a full scale facility is nearing completion and is expected to be operational in March or April 2019);
- The current solid waste program provides the lowest cost to the tax payer at this time.

MH's conclusion was that although some new technologies are emerging this is not the right time for the CSWM to pursue an alternate final disposal method. The report suggests that more time is required for emerging technologies to mature and become more reliable and cost effective, and for well-known technologies to become more competitive. It should also be noted that CSWM waste volumes currently do not create the economic model for advanced technologies to deliver a cost per tonne lower than the current landfilling costs.

¹ Based on 10 year modelling

² Based on MH study

Considering the high costs required to update the SWMP and procure advanced technology, combined with the conclusion that advanced technology is more costly than the status quo, continued implementation of the 2012 SWMP (including the improved organics diversion) is recommended with a review of advanced technologies in 2022 as part of a SWMP update at that time.

Prepared by:

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Background/Current Situation

The CSWM Board has an interest in continuing to explore advanced waste disposal technologies to potentially provide a cost effective alternative to landfilling. At the September 6, 2018 Board meeting, staff were directed to develop the process and procurement requirements, including cost and schedule necessary to select an advanced technology as an alternate disposal method to landfilling. The following motion was approved at the September meeting:

THAT staff be directed to work with the select committee on the timeframes for the procurement process for an alternative waste management solution.

In order to select an alternative final disposal method a SWMP update is required followed by an extensive procurement process for alternative disposal technology.

Solid Waste Management Plan Update:

A SWMP update is multiyear process that includes the following key steps:

- Step 1: Initiate the Planning Process – establish teams and committees, design the consultation process and develop the budget.
- Step 2: Set the Plan Direction – identify principles, goals and targets, prepare background information, assess the current solid waste management system, consider trends affecting solid waste management and consult with the public and first nations.
- Step 3: Evaluate Options – develop potential strategies, assess the financial and administrative implications, consult the public, first nations and interested parties on the options.
- Step 4: Prepare and Adopt the Plan – prepare draft plan, consult the public and first nations on the draft plan, prepare final draft for submission, ministry review and approval, final adoption.

The process normally takes three years from initiation through to final MoE approval. The estimated cost to complete this work including all consulting fees and public and First Nations consultation is \$800,000.

Procurement:

Following successful completion of the Solid Waste Management Plan update, the service would complete a procurement process to select the final disposal technology. As with any procurement process the overall objective is to ensure best value for money for tax payers. Optimally, the process would be a performance based open public process allowing the marketplace to respond to the services requirements.

A key element of this procurement would be the receipt of environmental permits required for technology involving either the on-site combustion of residual waste, or the production of fuel pellets and oils which are then burned at an offsite location. The MoE views the combustion of waste fuel pellets and oils the responsibility of the CSWM service regardless of where the products are burned. MoE will require that minimum efficiency standards be met.

This type of procurement process would take one to two years to complete and require technical, procurement and legal resources.

Resource Requirements, Cost and Schedule:

A SWMP update and procurement of an alternative final disposal option for the service is a significant undertaking involving staff resources from across the organization as well as a new dedicated staff to lead and coordinate all internal and external activities. The new resource would be required for two to three years and would have the technical and project management skills required to manage the process. This position would require an annual salary of \$100,000+ per year plus benefits. Total budget for this item is \$400,000 for the three year term.

In addition to this staff resource and the SWMP update costs described above, other costs associated with procurement consultants, travel to inspect alternate facilities, legal review and environmental assessments would be required. The following Table 1 summarizes the resource requirements, estimated costs and schedule associated with a SWMP update and procurement of advanced technology.

Table 1: Estimated Resources, Costs and Schedule:

Procurement Activity	Resource Requirements	Costs	Schedule
Technical staff resource	2-3 yr. term position	\$400,000	3 years
SWMP Update	Consultant for study work, public and FN consultation	\$800,000	3 years
Procurement options analysis	Consultant and travel	\$130,000	1 year
Legal review	Lawyer	\$50,000	6 months
Environmental Requirements	consultants	\$200,000	18 months
Totals:		\$1,580,000	3 to 5 years³

Current SWMP and Advanced Technology Assessment Findings:

In 2012, the CSWM service completed a multi-year SWMP update. Through extensive technical study as well as public and First Nations consultation, the plan compared multiple options and demonstrated that the most cost effective and socially acceptable approach for the service was to:

- Permanently close all environmentally non-compliant landfills (two regional and three smaller community landfills);
- Install landfill gas collection systems at Comox Valley and Campbell River landfills;
- Construct a new regional engineered landfill (cell 1) at Comox Valley;
- Construct a new leachate treatment system at Comox Valley;
- Adopt a unified trucking arrangement across the service to level the cost of transportation for all participants regardless of their location from the new regional landfill;
- Increase the diversion of waste from landfilling by optimizing existing recycle programs and implementing regional organics composting; and

³ Some tasks can be completed in parallel

- Consider Waste to Energy technologies as part of the solid waste management system once reaching 70 per cent diversion (350 kg per capita annually) of reduce, reuse and recycle options.

On May 23, 2013, the MoE approved the plan. Once approved the service is accountable for following the plan and any deviation requires a plan update. Following plan approval the CSWM service immediately began implementation with the completion of the phase 1 partial closure and construction of the municipal solid waste retaining wall at the Campbell River Waste Management Centre (CRWMC), the 70 per cent partial closure and construction of the gas flare system at the Comox Valley Waste Management Centre (CVWMC) as well as the construction of a new engineered landfill and leachate treatment facility at the CVWMC. Other SWMP projects are planned to be implemented over the remaining five years of plan life including regional organics diversion and final closure of CVWMC and CRWMC historical landfills.

A SWMP sets the long term waste management policy for a region. The plan is meant to be updated each 10 years and reviewed for effectiveness every five. In April 2018 the Board approved the five-year effectiveness review which concluded that plan implementation had achieved the following improvements:

- Reduction of waste disposal from 660kg to 570kg per capita from the year 2012 to 2016;
- Establishment of a pilot project composting residential organics in the year 2013, and securing grant funding for a regional organics composting facility;
- Closure of CSWM landfills in compliance with MoE's requirements (Cortes, Sayward, and partial closure at CVWMC);
- Construction of a landfill gas collection system and construction of a new engineered lined landfill and leachate treatment facility at the CVWMC;
- Continued review of Waste to Energy as an alternative option to landfilling.

The Board continues to have a keen interest in minimizing the cost of solid waste management for residents in the service area. In support of this goal, the Board implemented an Advanced Technology Select Committee in 2016. The committee has completed the following work:

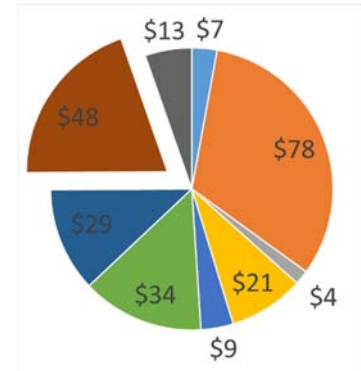
- Developed a RFI document and issued it to the marketplace;
- Evaluated, compared and ranked multiple technology responses (including an evaluation of risk);
- Developed a full cost model for the service to compare highest ranked technologies to the status quo;
- Invited highest ranked technologies to present to the Board;
- Invited MoE staff to present to the Board regarding the provincial recycling hierarchy.

As part of the above MH was retained to assist in developing the RFI and in evaluating responses. They also provided a full cost model for comparison of options. In support of the consultant's work, staff validated the modeling by completing a separate, stand alone, full cost analysis of the service. At the conclusion of the work, the following findings were presented:

- The full cost of the "status quo" solid waste service is \$243⁴ per tonne. This cost per tonne is made up of the following categories:

⁴ Based on 10 year modelling

- Host Community Agreements - \$7
- Diversion Programs (recycling) - \$78
- Illegal dumping \$4
- Organics processing (future estimate) - \$21
- Solid waste corporate support services - \$9
- Transfer stations and remote landfills - \$34
- Landfilling (fixed) - \$29 (historic landfill closure)
- **Landfilling (variable) \$48**
- Transfer of waste received at the Comox Valley and Campbell River Waste Management Centres \$13



- The only component of the above costs that would be displaced by implementing a different waste disposal technology (other than landfilling) is \$48 per tonne.
- The least costly alternate technology solution required a tipping fee range for solid waste disposal of \$86 to \$111 per tonne⁵. Over a 25 year time period, this would produce costs for the service between \$48 and \$80 million higher than the status quo.
- The least costly alternate technology is unproven at this time and does not have a commercially scaled facility in operation (a full scale facility is nearing completion in Nova Scotia and is expected to be operational in April 2019).
- There does not appear to be a local west coast final market (that would pay) for the refuse derived fuel pellets (RDF) produced by the least costly technology process.

MH's conclusion was that although some new technologies are now emerging this is not the right time for the CSWM service to pursue an alternate final disposal method. The report suggests that more time is required for emerging technologies to mature and become more reliable and cost effective, and for well-known technologies to become more cost effective.

Policy Analysis

On May 23, 2013, pursuant to section 24(5) of the *Environmental Management Act*, the MoE approved the CSWM 2012 SWMP. The approved plan sets waste management policy for the service.

The MoE has prepared “A Guide to Solid Waste Management Planning” dated September, 2016. The guide provides the suggested methodology for plan preparation and includes target recycling rates prior to disposal or recovery. SWMP's that do not follow the Ministry's guideline are likely to not be approved.

Options

The Board has the following options to consider:

1. Proceed with a SWMP update with the objective of identifying an advanced disposal option for residual waste;
2. Continue to implement the 2012 CSWM Solid Waste Management Plan and reassess the viability of advanced disposal technologies in 2022 as part of a major ten year update of the Solid Waste Management Plan.

The CSWM service has recently completed a five year effectiveness review of its 2012 Solid Waste management and found that plan implementation has delivered positive results on many of the original plan objectives. The service is approximately half way through plan implementation and half way through the life of the SWMP. Detailed analysis with full life cycle cost modelling shows that advanced technologies are more costly and more risky than the status quo of landfilling residual wastes. A SWMP update, followed by an extensive procurement process, is expected to cost \$1.58

⁵ Based on MH study, Sustane break even costs, years 1-25

million and take approximately three to five years to complete. As such, only option two above is recommended.

Financial Factors

If the Board chooses to complete an update to the 2012 SWMP followed by a procurement process for advanced technology, the following costs should be added to the proposed 2019-2023 CSWM Financial Plan.

Salaries and Wages	\$400,000
Professional Fees	\$1,080,000
Travel	\$50,000
Legal	\$50,000
Total	\$1,580,000

The resources to undertake this work do not exist within the service or the preliminary 2019-2023 Financial Plan at this time.

Legal Factors

The procurement of advanced technology as a final solution could require extensive legal work in the form of a contract between the CSWM service and the technology provider. This would largely depend on the final ownership of the equipment and technology.

The issue of risk was discussed during the latest advanced technology assessment completed in April of 2018. Various technology proponents have suggested that they offer ‘no risk’ if their products, processes and resources are adopted by the CSWM Board. Risk comes in many different forms; financial/investment risk, budgetary risk, service management risk, legal liability risk, safety risk, reputational risk, etc. All risks must be considered when the service is looking to make changes from the current method of business to another. Risk is managed for both parties in the details of the contract.

Intergovernmental Factors

The Comox Valley Regional District (CVRD) has consulted extensively with the regional staff level CSWM Solid Waste Advisory Committee. The committee is in support of continuing to implement the 2012 SWMP and revisiting the advanced technologies as part of the 2022 SWMP update at that time.

Extensive intergovernmental collaboration and consultation will be required between the CSWM service and the MoE as well as between CVRD and the eight municipalities and seven electoral areas within the service.

Staff continue to work with the members of the Association of Vancouver Island and Coastal Communities special committee on solid waste to share information, ideas and opportunities.

Interdepartmental Involvement

The Engineering Services department has taken the lead on this analysis.

Citizen/Public Relations

In order for a SWMP to be approved, the plan must demonstrate extensive public, first nations and stakeholder consultation and support.