



Making a difference...together

**CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE**  
Notice of a Meeting on **Wednesday, February 11, 2015, at 9:00 am**  
Board Room, 6th Floor, 625 Fisgard Street, Victoria, BC

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N. Jensen (Chair)	S. Brice (Vice Chair)	M. Alto	R. Atwell
D. Blackwell	J. Brownoff	V. Derman	B. Desjardins
C. Hamilton	L. Helps	B. Isitt	C. Plant
D. Screech	L. Seaton	G. Young	

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**AGENDA**

1. Approval of Agenda
2. Adoption of Minutes of January 7 and February 4, 2015 (to be circulated separately)
3. Chair's Remarks
4. Presentations/Delegations
5. Market Sounding for Emerging Technologies and Best Practices for Wastewater Treatment
6. Amendment No. 9 Conditional Approval Submittals to the Ministry of Environment – Core Area Liquid Waste Management Plan
7. Seaterra Program and Budget Update No. 19
8. Extension of the Conditional Financial Agreement for the Biosolids Energy Centre
  - a) Letter from John McBride, Chief Executive Officer, PPP Canada, 9 January 2014, re: Extension of the Conditional Financial Agreement for the Biosolids Energy Centre with Capital Regional District
  - b) Accompanying staff report to be circulated separately.
9. Correspondence

W.H. Shoemaker, Deputy Minister, Ministry of Environment, 5 February 2015, re: letter from Westside Wastewater Treatment and Resource Recovery Select Committee
10. Motions with Notice
  - a) Options for Wastewater Treatment (Director Hamilton)
  - b) Recommendation to Request Province to Extend Completion Date (Core Area and West Shore Sewage Treatment Technical and Community Advisory Committee, November 27, 2014)
11. New Business
12. Motion to close the meeting in accordance with the Community Charter, Part 4, Division 3, 90 (1) (a) personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the municipality or another position appointed by the municipality; and (e) the acquisition, disposition or expropriation of land or improvements, if the board considers that disclosure could reasonably be expected to harm the interests of the regional district
13. Adjournment

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*To ensure quorum, please advise Nancy More at 250-360-3024 if you or your alternate cannot attend.*

**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE  
MEETING OF WEDNESDAY, FEBRUARY 11, 2015**

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**SUBJECT     MARKET SOUNDING FOR EMERGING TECHNOLOGIES AND BEST PRACTICES FOR WASTEWATER TREATMENT**

**ISSUE**

To provide the Core Area Liquid Waste Management Committee (CALWMC) with options for carrying out a market sounding that will identify emerging and best practices technologies presently available for processing wastewater, resource recovery and potentially integrating with solid waste processing.

**BACKGROUND**

At its meeting of January 7, 2015, the CALWMC approved the following motion:

*That staff be directed to report back, at the next meeting of the Core Area Liquid Waste Committee, on how a process for a market sounding and other possible measures to investigate emerging technologies and best practices for wastewater technologies, as described in the rationale [attached], might be implemented.*

Appendix A provides the rationale referred to above and described in the Notice of Motion.

The development and implementation of new technologies to solve environmental problems related to wastewater management is a rapidly evolving area. The United States Environmental Protection Agency (USEPA) and the Water Environment Federation (WEF) are two well accredited groups that provide information and technical support to solve environmental problems today and to build a knowledge base necessary to protect public health and the environment in the future. They periodically update their publications to provide the current state of development in emerging wastewater technologies worldwide.

The USEPA has published the following documents that relate to the proposed market sounding:

- *Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather Management* (prepared by Tetra Tech Corporation, March 2013)
- *Emerging Technologies for Biosolids Management* (prepared by Parsons Corporation, September 2006 – due for updating)

These two documents provide information on emerging technologies, including each technology's objective, description, state of development, available cost information, contact names and related data sources. Each technology is evaluated against various criteria, but not ranked or recommended over another. (See appendices B and C for executive summaries; full documents are available on the CRD website.)

The Water Environment Federation, along with the National Biosolids Partnership (NBP) and the Water Environment Research Foundation, published the following document focussing on solids processing:

*Enabling the Future – Advancing Resource Recovery from Biosolids* (prepared by WEF, NBP, CH2M HILL, Hazen and Sawyer, Black & Veatch, CDM Smith, 2013)

(See Appendix D for executive summary; the full document is available on the CRD website.)

As part of the original Core Area Wastewater Management Program Path Forward, the consulting firms CH2M HILL and Associated Engineering prepared the following discussion papers provided in Appendices E and F respectively:

*Core Area and West Shore Sewage Treatment Technology Assessment (Discussion Paper No. 3, February 5, 2007)*

*Core Area and West Shore Sewage Treatment REI Technology Review (Discussion Paper No. 8, March 21, 2007)*

Using the above documents as a base for moving forward, a comprehensive market sounding exercise could focus on all wastewater treatment plants and solids processing plants, including plants integrating in other municipal solid waste streams that have been built in the last three years across North America and Europe. Information of interest would include the number of facilities, location, proximity to development, design capacity, process technology, sewage characterization, resources recovered and capital cost, which would speak to best practices in technologies currently being implemented. Evaluation of technologies could include suitability for residential locations, resource recovery and capital and operating costs for representative plant design capacities ranging from 5 ML/day to 100 ML/day.

## **ALTERNATIVES**

1. That the Core Area Liquid Waste Management Committee direct staff to conduct a high-level Request for Technical Information market sounding of emerging technologies and best practices for wastewater treatment.
2. That the Core Area Liquid Waste Management Committee recommend to the CRD Board that a sole source consultant be engaged to conduct a desktop review of current and relevant documentation that assess emerging technologies for wastewater treatment, biosolids management and integration of other waste streams.
3. That the Core Area Liquid Waste Management Committee recommend to the CRD Board that a sole source consultant be engaged to complete a comprehensive market sounding of emerging technologies and best practices for wastewater treatment.
4. That the Core Area Liquid Waste Management Committee conduct a Request for Qualifications/Request for Proposals process to engage a consultant to complete a comprehensive market sounding of emerging technologies and best practices for wastewater treatment.

5. That the Core Area Liquid Waste Management Committee not proceed with the market sounding at this time.

### **FINANCIAL IMPLICATIONS**

The estimated cost for completing the market sounding could range from \$20,000 for the high-level option Request for Technical Information (RFTI) up to \$100,000 for the comprehensive option (RFP consultant approach).

Also, conducting even the high-level market sounding will take at least 8-12 weeks to complete. This may be in conflict with timeline constraints associated with federal funding under the PPP Canada grant for the biosolids facility, which will be discussed on this committee agenda.

### **SOLID WASTE MANAGEMENT IMPLICATIONS**

The time required to complete the market sounding for emerging technologies for biosolids management and evaluation of the possibility for integrations with other waste streams will result in a delay in the Request for Proposals for a regional kitchen scraps processing facility. This would require the continued shipment of a local resource off Vancouver Island with an ongoing cost for hauling and processing material out of region of \$142/tonne. The envisioned regional facility may result in an overall lower cost.

The Solid Waste Management Plan review process, currently underway, would be put on hold pending the outcome of this study.

### **PROCUREMENT IMPLICATIONS**

The market sounding process can be completed either in a relatively quick and high-level manner, similar to that used by the Westside Select Committee, or in a more time-consuming, comprehensive manner, consistent with the previous work done by Associated Engineering/CH2M HILL during the Path Forward phase.

#### **High-Level Process**

The high-level market sounding approach would be based on the Westside RFTI (Appendix G) with the inclusion of other waste stream (i.e., kitchen scraps and organics, garbage, etc.) integration technologies and processing systems. This RFTI process could be completed by staff in 8-12 weeks and would provide a summary matrix of all submissions covering criteria of interest, but would not include evaluations, opinions on acceptability or recommendations. All submissions received would be appended unedited to the final summary document.

#### **Comprehensive Process**

Given the availability of considerable current and relevant documentation that assess emerging technologies for wastewater treatment, biosolids management and integration of other waste streams, a desktop summary review could be completed by a sole source consultant in a relatively short timeframe.

Alternatively, a consultant could be retained to complete a more rigorous process, as detailed in

the draft terms of reference provided in Appendix H, which would provide an opportunity to address other solid waste streams. Retaining the services of the consultant can be done by either sole sourcing to a preferred proponent or through a Request for Qualifications (RFQ) and Request for Proposals (RFP) process. The sole source contract could be in place in about 3 weeks (subject to agreement on the preferred consultant and Board approval), while the RFP process would take about 12 weeks to complete (including Board approval). The total estimated time to complete (including retaining the consultant) is at least 15-24 weeks respectively.

### **Market Sounding by Consultant**

The comprehensive market sounding process would consist of the following phases:

1. Hire a lead consultant either via sole sourcing or by the following process.
  - Request for Qualifications (RFQ)
  - Request for Proposals (RFP) from shortlisted proponent(s)
  - Award consulting contract and issue notice to proceed
2. Completion of the market sounding and investigation assignment, as set out in the terms of reference provided in Appendix H.
3. Presentation of the final report by the consultant to the Technical and Community Advisory Committee for comment and to the CALWMC for approval.
4. Distribution of the final report to the participant municipalities, First Nations, Westside and Eastside Select committees for information.

### **CONCLUSION**

As stressed in Appendix A, the market sounding and investigation of emerging technologies and best practices for wastewater technologies needs to be completed by a consultant (i.e., individual, firm or group) that has the confidence and trust of the committee members to be considered credible by stakeholders and the public.

Retaining the services of a suitable consultant could take between 3-12 weeks, depending on the procurement process adopted. The completion of the market sounding and investigation of emerging technologies, along with presenting the final results to the CALWMC, could take an additional 12 weeks. The overall time to complete could take at least 15 weeks or 24 weeks, depending on the process chosen.

In order to obtain a comprehensive product in a reasonable amount of time, the sole source consultant procurement option would be the most expeditious process, if agreement is reached on a preferred sole source consultant for this assignment.

### **RECOMMENDATION**

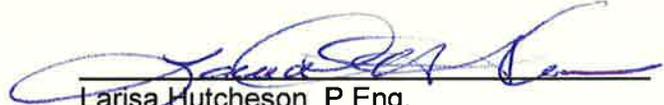
That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

That a sole source consultant be engaged to complete a comprehensive market sounding of emerging technologies and best practices for wastewater treatment.



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Dan Telford, P.Eng.  
Senior Manager, Environmental Engineering



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Larisa Hutcheson, P.Eng.  
General Manager  
Parks & Environmental Services  
Concurrence



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Robert Lapham, MCIP, RPP  
Chief Administrative Officer  
Concurrence

DT:jt

**Attachments: 8**

- Appendix A Notice of Motion – Core Area Liquid Waste Committee
- Appendix B Overview – Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather Management
- Appendix C Executive Summary – Emerging Technologies for Biosolids Management
- Appendix D Executive Summary – Enabling the Future – Advancing Resource Recovery from Biosolids
- Appendix E Core Area and West Shore Sewage Treatment Technology Assessment (Discussion Paper No. 3, February 5, 2007)
- Appendix F Core Area and West Shore Sewage Treatment REI Technology Review (Discussion Paper No. 8, March 21, 2007)
- Appendix G Westside Solutions – Request for Technical Information
- Appendix H Terms of Reference – Wastewater Treatment and Resource Recovery from Biosolids Technologies Best Practices Sounding and Options Analysis

## Notice of Motion – Core Area Liquid Waste Committee

Director Vic Derman – August 13, 2014 (Updated October, 2014)

### Rationale

It appears that one or more municipalities or groups of municipalities are moving to investigate “individualized” solutions to sewage treatment. Within this changing environment, likely involving a number of solutions, the CRD could play a positive role by undertaking a “Best Practices Sounding”.

Such a sounding would involve a broad scan of the best technologies currently available as well as the best system designs applying those technologies. In addition, a sounding should **actively seek** submissions from organizations, companies and individuals, large and small, who have shown particular knowledge, expertise and leadership in leading edge designs including distributed systems. A final report should be accompanied by an appendix containing unedited versions of all submissions received.

This process need not incur the time and expense involved in a full scale Request for Proposals (RFP). A much swifter and less expensive process should be able to give a credible evaluation of “what is out there”. If carried out appropriately, this could result in a “**toolkit for sewage treatment options**”, something that could only serve to inform individual municipalities or groups of municipalities embarking on sub-regional projects. To insure such a “sounding” is seen as credible and above reproach, terms of reference should insure that it is:

1. *open to all ideas, technologies and designs*
2. *active in reviewing the literature and seeking to encourage submissions,*
3. *comprehensive in presenting all technologies, approaches and opportunities,*
4. *leading edge without being “bleeding edge”*
5. *independent and objective with no connections to special interests or “traditional” interests in the sewage industry*

Furthermore, the terms of reference should go beyond secondary treatment required by federal regulations and look at solutions that:

1. **MAXIMIZE response to climate change.** Given the unfolding crisis that climate change presents, it is absolutely unacceptable to plan and build any major project without insuring that our response to climate change, especially greenhouse gas reduction, is optimized.
2. **MAXIMIZE opportunities for resource recovery.** This is critical for an appropriate climate change response. Also, life cycle costs can be reduced and scarce resources recovered.
3. **Accomplish a high standard of treatment.** Tertiary disinfected treatment providing high quality effluent and substantially deals with emerging chemicals should be seen as essential.

4. **Provide best value for money to taxpayers.** Value for money is accomplished by achieving benefit substantial enough to justify money spent. It is possible a different approach could have higher initial capital costs. However, accomplishing much higher environmental benefit, including very substantial climate change mitigation and potential lower life cycle costs, could still provide superior value for money to taxpayers.
5. **Look for opportunities to integrate other parts of the waste stream.** Existing gasifier technology might, for example, be able to handle biosolids on a relatively small site for a cost in the order of \$50 million. This contrasts with nearly \$300 million projected for the biosolids solution in the Seaterra project. In addition, gasifiers are relatively compact and could be located to maximize opportunities for resource recovery. Finally, in addition to biosolids, gasifiers could likely use kitchen scraps as a feedstock. This would deal with two CRD "waste" problems in an environmentally appropriate and fiscally prudent manner.
6. **Restore public trust in regional government.** There is little doubt that the sewage issue has caused much of the general public to question the effectiveness of the CRD. A new, clearly objective, and efficient process of investigation resulting in a comprehensive best practices sounding could do much to restore public confidence in the value of regional government.

Finally, the sounding should insure that all advantages of a given design are considered in decisions made. A distributed system might, for example, present the ability to:

1. Phase in capacity on a "just in time" basis. Thereby making expenditures as needed.
2. Provide greater flexibility to incorporate future innovation by equipping plants designed for new capacity with "the latest and greatest".
3. Provide greater resiliency through redundancy. A major catastrophe such as an earthquake could render virtually an entire centralized system inoperable. There is a much greater chance that a distributed system would be able to maintain at least some level of operability.
4. Provide better opportunities for resource recovery and lower life cycle costs. Distributed plants can be located close to where resources are actually used. This advantage makes substantial resource recovery much more likely.

It is important to note that the **Best Practices Sounding** would not be intended as prescriptive for municipalities or groups of municipalities. Instead, it would provide them with valuable due diligence and research that would remove the need for each group and municipality to carry out such a process themselves.

**Moved** – That staff be directed to report back, at the next meeting of the Core Area Liquid Waste Committee, on how a process for investigating best practices, as described in the rationale above, might be implemented.

# Emerging Technologies

## for Wastewater Treatment and In-Plant Wet Weather Management



# Overview

In 2008, there were 14,780 municipal wastewater treatment plants operating in the United States. These plants ranged in size from a few hundred gallons per day (GPD) to more than 1440 million gallons per day (MGD). Early efforts in water pollution control began in the late 1800s with construction of facilities to prevent human waste from reaching drinking water supplies. Since the passage of the 1972 Amendments to the Federal Water Pollution Control Act (Clean Water Act [CWA]), municipal wastewater treatment facilities have been designed and built or upgraded to abate an ever-increasing volume and diversity of pollutants. With few exceptions, the CWA requires that municipal wastewater treatment plant discharges meet a minimum of secondary treatment. However, in 2008, nearly 37 percent of the municipal facilities produced and discharged effluent at higher levels of treatment than the minimum federal standards for secondary treatment. In many cases, this is due to more stringent water quality based requirements.

This document updates the original 2008 publication "Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather Management" EPA 832-R-06-006 and provides information on four of the five categories of development regarding emerging wastewater treatment and in-plant wet weather management technologies. Information in the form of technology fact sheets on established technologies is not included. The five categories are:

- 1. Research** – Technologies in the development stage and/or have been tested at a laboratory or bench scale only.
- 2. Emerging** – Technologies that have been tested at a pilot or demonstration scale, or have been implemented at full scale in 3 or fewer installations or for less than 1 year.
- 3. Innovative** – Technologies that have been implemented at full scale for less than five years, or have some degree of initial use (i.e., implemented in more than three but less than 1 percent [150] of US treatment facilities).
- 4. Established** – Technologies that have been used at more than 1 percent (150) of US treatment facilities or have been available and widely implemented for more than five years. (Note: Fact sheets for established technologies are outside the scope of this document and, therefore not included.)
- 5. Adaptive Use** – Some wastewater treatment processes have been established for years, but their use has not been static. In some cases, an established technology may have been modified or adapted resulting in an emerging technology. In other cases, a process that was developed to achieve one treatment objective is now being applied in different ways or to achieve additional treatment objectives. During the operation of treatment systems using these established technologies, engineers, and operators have altered and improved their efficiency and performance. This document includes established technologies that have undergone recent modifications or are used in new applications.

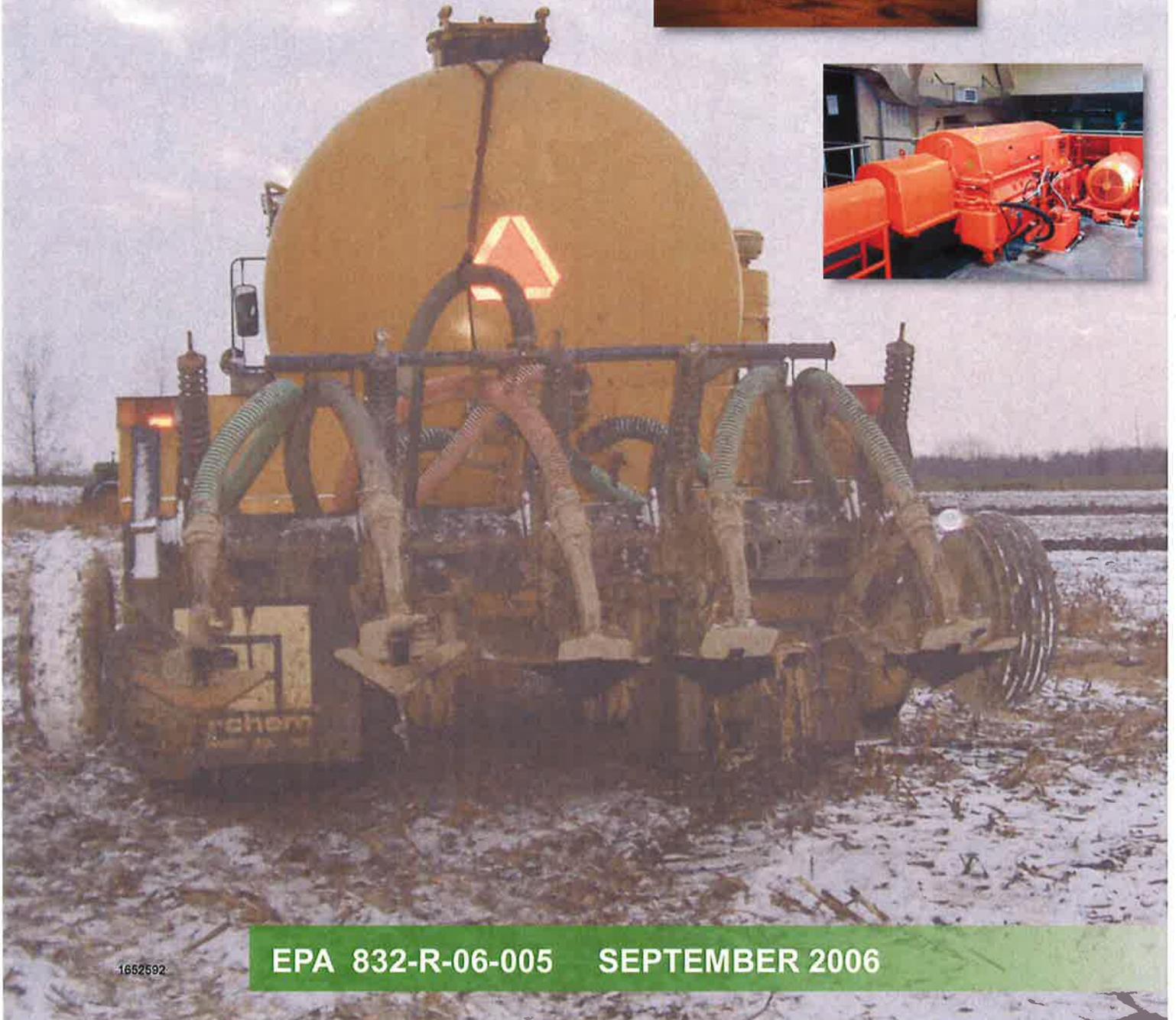
This document also provides information on each technology, except for “established”, its objective, its description, its state of development, available cost information, associated contact names, and related data sources. For each technology, this document further evaluates technologies against various criteria, although it does not rank or recommend any one technology over another. In some cases, the only available information is from the vendor or researcher, and has not been independently verified. Research needs are also identified to guide development of innovative and emerging technologies and improve established ones.

Knowledge about technologies tends to evolve. The information provides a snapshot at a point in time; what is understood at one point in time may change as more information develops. This includes knowledge about operating mechanisms as well as the relative and absolute costs and features of a particular technology. Inquiries into the current state of knowledge are an important step when considering implementation of any technology.



# Emerging Technologies

*for Biosolids Management*



# Executive Summary

Biosolids (sewage sludge) are the nutrient-rich organic materials resulting from treatment and processing of wastewater residuals. U.S. Environmental Protection Agency (U.S. EPA) estimates that the publicly owned wastewater treatment works (POTW) generate over 8 million tons (dry weight) of sewage sludge annually. Figure 1.1 summarizes how this material is managed. The technologies in this document help reduce the volume of residuals, and produce biosolids that can be used, help improve soil fertility and tilth, while decreasing the use of inorganic fertilizers, and promote the conservation of energy.

This document provides information regarding emerging biosolids management technologies organized into three categories based on their stage of development:

**Embryonic** – Technologies in the development stage and/or tested at laboratory or bench scale. New technologies that have reached the demonstration stage overseas, but cannot yet be considered to be established there, are also considered to be embryonic with respect to North American applications.

**Innovative** – Technologies meeting one of the following qualifications: (1) have been tested at a full-scale demonstration site in this country; (2) have been available and implemented in the United States (U.S.) for less than 5 years; (3) have some degree of initial use (i.e. implemented in less than twenty-five utilities in the U.S.; and (4) are established technologies overseas with some degree of initial use in the U.S.

**Established** – Technologies widely used (i.e. generally more than 25 facilities throughout the U.S.) are considered well established.

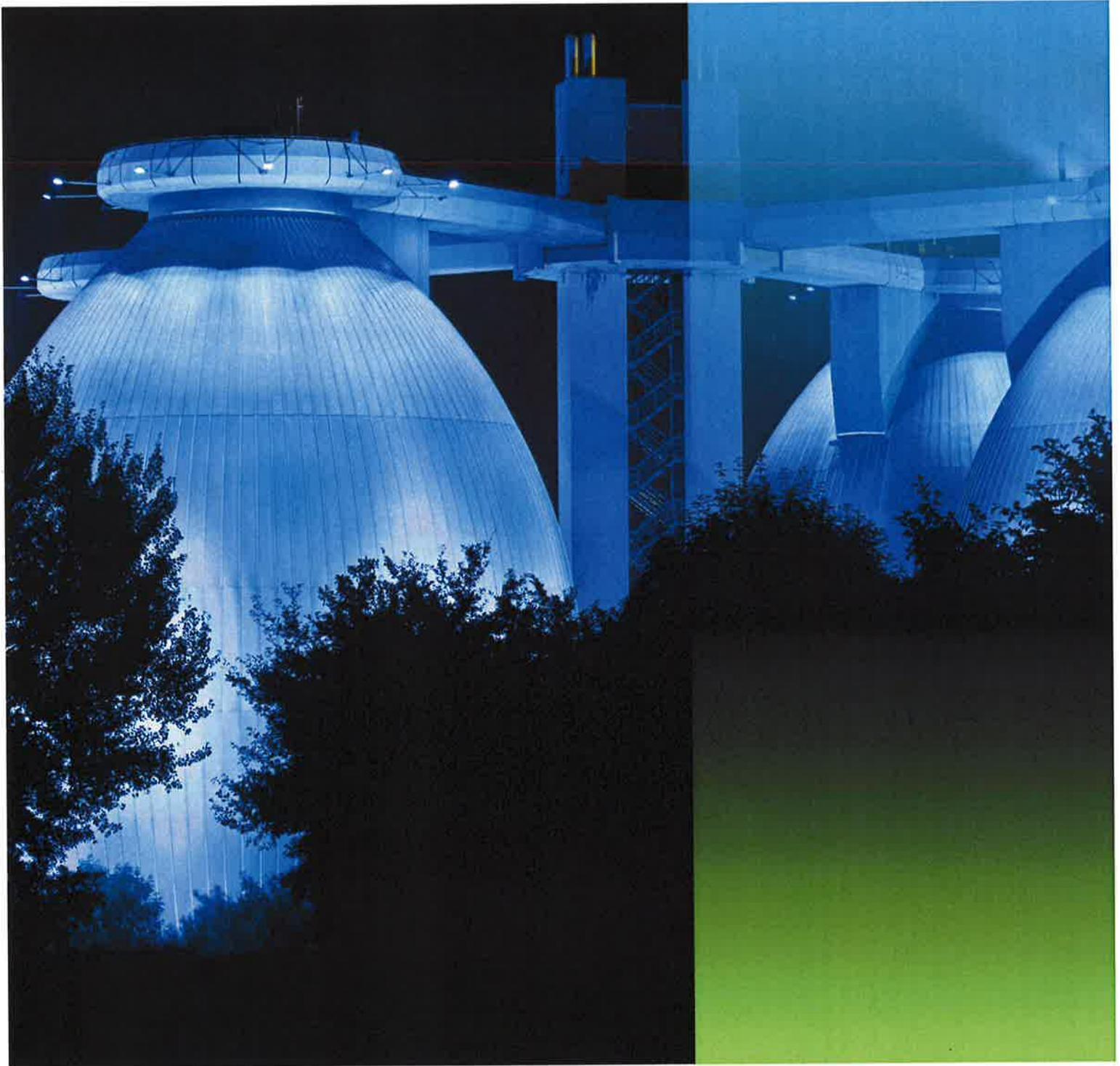
The document also provides information on each technology—its objective, its description, its state of development, available cost information, associated contact names, and related data sources. For each innovative technology, this document further evaluates with respect to various criteria, although it does not rank or recommend any one technology over another. Research needs are also identified to help guide development of innovative and embryonic technologies and improve established ones.

## References

U.S. EPA. Office of Solid Waste. Biosolids Generation, Use, and Disposal in the United States. EPA 530-R-99-009 (1999).

# ENABLING THE FUTURE

Advancing Resource Recovery from Biosolids



1652592



# Executive Summary

Over the past several years, there has been a paradigm shift in how wastewater solids are perceived, and today, biosolids are viewed as a renewable resource too valuable to waste. This perception reflects the widespread interest in sustainability, energy, climate change, resource depletion, materials cycling, and zero-waste goals.

The evolving view of biosolids was highlighted in the Water Environment Federation (WEF) and the National Biosolids Partnership (NBP) 2011 report [\*Charting the Future of Biosolids Management\*](#), which identified current trends, as well as the trajectory of change stemming from those trends.

The journey toward meaningful change is further explored with *Enabling the Future: Advancing Resource Recovery from Biosolids*. Specifically, the document examines the unprecedented opportunities that now exist and are emerging for the organics, energy, and nutrients in biosolids. Lessons learned and documented experiences have also been captured in this publication as part of an effort to provide practical guidance for utilities embarking on the road to resource recovery.

A first step on that journey is defining regulatory and policy requirements that might promote or hinder resource recovery. While regulations at the federal level do not appear to actively support resource recovery from biosolids, some states are developing regulations and policies that remove barriers to resource recovery. These activities are driven, in part, by "zero-waste initiatives" in many cities, which seek to maximize the diversion of recyclables away from landfills. Key examples include Massachusetts regulations and policies intended to facilitate co-digestion and California's recent efforts to encourage composting. This regulatory evolution will need to continue to support resource recovery, and may soon need to address a portfolio of new products such as biosolids-derived bioplastics.

In the absence of regulatory drivers, policies and market needs help shape resource recovery opportunities. With respect to policy and planning, the overarching driver for resource recovery is the broader focus on sustainability, viewed through the perspective of triple bottom line (TBL) analyses that reflect environmental, economic, and social concerns. This focal shift is reflected in the increasing use of TBL analyses for solids planning, but is also driving research, voluntary programs, and a renewed interest in the environmental benefits of biosolids. Many TBL focal points – which are actually tools to forward resource recovery – address multiple elements in the sustainability trifecta.



The new view of a traditional beneficial use – land application – provides an example of our changing focus. Once viewed primarily as an approach to add nutrients and organics for soil improvement only, we now understand that biosolids can play a critical role with respect to climate change through a variety of mechanisms. First, the organic matter provided by biosolids can replenish soil organic carbon (SOC) lost through climate change-induced wind and water erosion. Additionally, biosolids can reduce agricultural carbon footprints through both fertilizer production offsets and biosolids use to meet plant nutrient requirements. A better understanding of the role that biosolids can play in carbon footprint reduction will serve as a catalyst for their recognition as a valued resource.

Biosolids also play a key role in carbon footprint reduction through the conversion of the energy in solids to a useable form (heat or fuel) via biological or thermal processes. Energy recovery options range from mature, well established systems, such as anaerobic digestion and incineration, to emerging technologies, such as Supercritical Water Oxidation (SCWO) and hydrothermal gasification. Solids treatment provides the greatest potential for energy recovery and production, with the chemical energy embedded in biosolids greater than the energy needed for treatment. Recovering that energy is an opportunity for wastewater utilities to reduce costs and increase sustainability.

In addition to organic and energy resources, nutrients in biosolids are also a focus for resource recovery, going beyond recycling of nutrients through land application to nutrient extraction and recovery. Extractive nutrient recovery provides a mechanism to both effectively remove nutrients from liquid streams and create a marketable product. At present, commercial technologies for extractive nutrient recovery primarily produce chemical nutrient products that are used in agricultural applications (because 85% of all nutrient products are associated with agriculture). Since food demand is expected to rise

with an increasing global population, it is expected that demand for chemical nutrient products will also increase. This represents an opportunity for the wastewater treatment market to develop niche products that can be used in this field.

In exploring technologies to recover any of the resources discussed here, it is important to note that the evolutionary path for emerging technologies is not an easy one. New technologies must overcome tremendous obstacles to travel from “emerging” to “established” status. Incentives to utilities by state and federal programs to test and implement innovative technologies would facilitate the development and application of these technologies by reducing the economic risk. To that end, a joint WEF/Water Environment Research Federation (WERF) initiative, the Leaders Innovation Forum for Technology (LIFT) program, was developed to help move innovation into practice in the water quality industry. The LIFT Technology Evaluation Program Working Group provides facility owners a forum for technology prioritization and evaluation. To date, the Working Group has selected five technology areas for evaluation: short-cut nitrogen removal (e.g., deammonification); phosphorus recovery; biosolids to energy; electricity from wastewater; and predigestion.

Enabling the future will require enhancing the capacity, skills, and knowledge in the public and private sectors involved in biosolids management. As the focus on resource recovery from biosolids intensifies, the importance of the distributed network of support for biosolids professionals becomes even greater. Communication of research findings – both historic and new – is a specific pressing need, as it appears that existing research has been underutilized as a tool to communicate the safety of biosolids to the public. The increased complexity of biosolids management and the need for increased communications with more diverse audiences requires that these support mechanisms continue to grow and evolve to meet future needs.

Engaging in effective communication continues to be a key tenet to successfully developing systematic, proactive response and education strategies in which public outreach ensures appropriate developmental materials and biosolids curriculums are in place, as well as ensuring that working relationships with key environmental and public health organizations are cultivated. The biosolids sector should also continue to leverage and build upon the existing communication structure, which includes WEF, NBP, WERF, regional associations, and utilities, and to emulate successful outreach programs (such as the documentary “Liquid Assets”, which was co-funded by WEF).

The theme of biosolids as a renewable resource is perhaps the key to repositioning both the role and value of biosolids. This document highlights ongoing activities in this area, existing and emerging opportunities, potential challenges, and activities required to fully leverage biosolids potential.

## DISCUSSION PAPER NO. 3

### Capital Regional District

### Core Area and West Shore Sewage Treatment Technology Assessment

**Issued:** February 5, 2007

**Previous Issue:** January 19, 2007

## 1 Objective

The wastewater management strategy that will ultimately be developed and implemented by the CRD will incorporate a variety of wastewater treatment and resource recovery technologies. The objective of this discussion paper is to identify available technologies and determine which of the technologies best reflect "representative" technologies that can be used to develop specific wastewater management options.

The review and selection process consists of three steps. The first is to review and pass or fail the technologies that may be applicable for liquid stream treatment, wet weather overflow treatment, and biosolids management. The second is to define and weight the list of the criteria that will be used to assess the applicable technologies. The third is to score the short-listed technologies for each criterion, and rank each technology as ranging from "very high" to "very low" using the weighted criteria in a multi-criteria analysis.

It is important to understand that this selection is done in the context of the CRD situation, in terms of opportunities and scale of the wastewater management program. In terms of treatment technologies, the application of the technology in both a centralized and decentralized context is considered. Treatment technologies are also reviewed based on the premise the ultimate disposal of effluent, if not used for reuse, will be to the marine environment.

## 2 Treatment and Resource Recovery Technologies

A long list of the wastewater treatment and biosolids management technologies that may be applicable to the CRD is presented in Table 3-1. The technologies are broadly divided into embryonic, innovative and established technologies, depending on their level of development and application. Resource recovery technologies are also listed for each technology development level.

Each technology is given a pass/fail ranking, based on its suitability for application in the CRD situation. Only the technologies that received a "pass" in this initial evaluation are subjected to a more detailed evaluation.

TABLE 3-1

CAPITAL REGIONAL DISTRICT  
CORE AREA AND WEST SHORE SEWAGE TREATMENT  
DECISION INFORMATION REPORT

TECHNOLOGY ASSESSMENT

PASS / FAIL ANALYSIS

Technology	Application	Potential Benefits	Discussion	Pass / Fail
<b>Embryonic</b>				
<b>Treatment Technologies</b>				
Combined wastewater treatment-electricity generation via microbial fuel cells	Liquid stream treatment	Energy efficient treatment	Not proven at required scale	Fail
Granular biomass processes	Liquid stream treatment	Compact process footprint	Not proven for municipal wastewater treatment	Fail
Anaerobic nitrogen removal processes	Liquid stream treatment	Energy efficient treatment	Not proven at required scale	Fail
<b>Resource Recovery Technologies</b>				
Combined wastewater treatment-electricity generation via microbial fuel cells	Liquid stream treatment	Energy efficient wastewater treatment	Not proven at required scale	Fail
Wastewater fermentation	Liquid stream treatment	Hydrogen fuel production	Not proven at required scale	Fail
Biomass bio-polymer extraction	Biosolids management	Biodegradable plastics production	Not proven at required scale	Fail
Oil-from-Sludge	Biosolids management	Fuel generation	Not proven at required scale	Fail
<b>Innovative</b>				
<b>Treatment Technologies</b>				
Advanced primary-secondary effluent blending	Liquid stream treatment	Reduced process size	Proven at required scale	Pass
Advanced secondary processes in series	Liquid stream treatment	Compact footprint	Proven at required scale	Pass
Membrane bioreactor followed by wetlands	Liquid stream treatment	No surface or ocean discharge	High capital cost; suitable site must be available	Pass
Bioreactor bioaugmentation using side-stream seed reactors	Liquid stream treatment - ammonia removal	Reduced process size	Ammonia removal not likely to be required	Fail
Recycle-stream anaerobic nitrogen removal processes	Liquid stream treatment - ammonia removal	Energy efficient treatment	Ammonia removal not likely to be required	Fail
Biological fluidized bed	Liquid stream treatment	Compact footprint; secondary effluent quality	Failure at recent large municipal application	Fail
Compact high-rate clarification systems	Wet weather overflows	Compact footprint	Proven at required scale	Pass
Ultra-fine screening	Wet weather overflows	Compact footprint	Proven at smaller scale; may be applicable	Pass
Waste biological sludge reduction processes	Biosolids management	Reduced biosolids; increased energy recovery	Not proven at required scale; however, may be applicable	Pass
Biosolids stabilization using landfill bioreactors	Biosolids management	On-site stabilization	Proven at required scale	Pass
<b>Resource Recovery Technologies</b>				
Phosphorus crystallization and recovery	Liquid stream treatment - phosphorus removal	Slow-release fertilizer production	Not feasible if phosphorus removal is not required	Fail
Water reuse via various technology application	Water reuse	Reduced discharge through effluent re-use	Proven at required scale	Pass
Digester gas utilization in conventional fuel cells	Biosolids management	Energy recovery	Not proven at required scale	Fail
Biosolids vitrification	Biosolids management	Biosolids is melted to form glass aggregates	Proven at required scale	Pass
<b>Established</b>				
<b>Treatment Technologies</b>				
Conventional activated sludge	Liquid stream treatment	Secondary effluent quality	Proven at required scale; large footprint, but can be stacked	Pass
Trickling filter/biosolids contact	Liquid stream treatment	Secondary effluent quality	Proven at required scale; large footprint; odour concerns	Fail
Sequencing batch reactors	Liquid stream treatment	Secondary effluent quality	Proven at required scale; large footprint, but can be stacked; mechanically complex	Fail
Rotating biological contactors	Liquid stream treatment	High quality effluent suitable for re-use	Not economical at required scale; prone to mechanical problems	Pass
Membrane bioreactors	Liquid stream treatment	Compact footprint; secondary effluent quality	Proven at required scale	Pass
Biological aerated filters	Liquid stream treatment	Compact footprint; secondary effluent quality	Proven at required scale	Pass
Deep shaft activated sludge process	Liquid stream treatment	Compact footprint; secondary effluent quality	Proven at required scale	Pass
High purity oxygen activated sludge	Liquid stream treatment	Compact footprint; secondary effluent quality	Proven at required scale	Pass
Integrated fixed film/activated sludge (IFAS)	Liquid stream treatment - ammonia removal	Reduced process size	Ammonia removal not likely to be required	Fail
Powdered activated carbon activated sludge	Liquid stream treatment	Compact footprint; secondary effluent quality	Proven, but not used for municipal applications	Fail
Physical/chemical treatment	Liquid stream treatment	Compact footprint	High chemical costs; sludge production; not used for municipal applications	Fail
High-rate primary treatment	Liquid stream treatment	Compact footprint; better than primary effluent quality	Proven at required scale	Pass
Ultra-violet disinfection	Effluent disinfection	No residual chemicals in effluent; fewer safety issues	Proven at required scale with adequate upstream treatment	Pass
Mesophilic anaerobic digestion	Biosolids management	Class B biosolids produced	Proven at required scale	Pass
Thermophilic anaerobic digestion	Biosolids management	Class A biosolids produced	Proven at required scale	Pass
Enclosed biosolids composting processes	Biosolids management	Class A biosolids produced	Proven at required scale	Pass
Sludge drying/pelagization	Biosolids management	Biosolids are incinerated or used as fertilizer	Proven at required scale	Pass
Sludge drying/cement production	Biosolids management	Biosolids used as fuel source and in fly ash	Proven, but requires nearby cement plant	Pass
Thermal Oxidation / Incineration	Biosolids management	Biosolids are incinerated with possible energy recovery	Proven at required scale; emissions control required	Pass
<b>Resource Recovery Technologies</b>				
Membrane filtration of secondary effluent	Water reuse	Reduced discharge through effluent re-use	Proven at required scale	Pass
Biosolids land application	Biosolids management	Soil amendment; nutrient recovery	Proven at required scale if suitable land available; concerns about long-term effects	Pass
Digester gas utilization in internal combustion engines	Biosolids management	Power and heat generation	Proven at required scale	Pass

### 3 Assessment Criteria

The selection of the most suitable wastewater treatment, biosolids management, and resource recovery technologies for application in the CRD must consider both economic and non-economic criteria. The CRD has placed a high value on the use of sustainable practices and resource recovery. In addition, various site-specific factors must also be considered.

The assessment is based on both economic and non-economic criteria. The principal economic criterion used is the relative life cycle cost, based on the experience of the consultant team. A more detailed life cycle cost analysis will be used in the next phase to decide between the various technologies for particular applications. The non-economic assessment criteria used are divided into the following three categories: technical, operations, and environmental/aesthetic. The criteria used to assess the alternative technologies are presented below. The relative weightings (from 5 to 10, with 10 being the most important) for each criterion are shown in Table 3-2.

#### *Economic Criteria*

- *Cost Effectiveness:* On the basis of life-cycle costs, is the technology cost effective relative to other technologies?
- *Energy Requirements:* What are the energy requirements relative to other technologies?

#### *Technical Criteria*

- *Space Requirements:* How much land area is required to build the full-scale facility?
- *Process Reliability:* Has the technology been proven at the required scale? Can the technology reliably meet the effluent criteria under all expected operating conditions?
- *Flexibility:* Can the technology be adapted to meet more stringent effluent standards in the future? Can the process be readily expanded to treat higher flow and loads in the future?
- *Residuals Generation:* What is the quantity of screenings, grit and biosolids that cannot be beneficially reused and will require disposal?
- *Potential for Resource Recovery:* What is the potential to beneficially reuse the effluent and biosolids? Are heat and power generation possible?

#### *Operating Criteria*

- *Ease of Operation & Maintenance:* How much operator attention is required during normal operations? Does the technology involve a high degree of mechanical complexity with high service requirements?

- *Operator Environment & Safety:* What are the risks to O&M staff inherently associated with the technology? Will the facility be noisy or odorous for plant staff?

#### ***Aesthetic/Environmental Criteria***

- *Impact on Local Environment:* Are there any odours that are inherently associated with the technology? What are the visual, noise and traffic impacts on the surrounding neighbourhood?
- *Greenhouse Gas Emissions:* Does the application of the technology result in excessive greenhouse gas emissions?
- *Chemical Demand:* Does the technology require chemicals that use up significant amounts of energy and resources in their manufacture and transport?

## **4 Multi-Criteria Analysis**

The twenty-five applicable technologies that received a “pass” grade in the initial assessment are listed in Table 3-2. There are nine liquid treatment stream technologies, three wet weather overflow treatment technologies, one effluent disinfection technology, two water reuse technologies, and eleven biosolids management technologies.

The results of the multi-criteria analysis, using the twelve weighted assessment described above, are also presented in Table 3-2. Each technology was given a score of either -1, 0 or +1 for each of the weighed criteria. The weighted scores were then added, and the total value used to rank each technology into terms of its suitability in a CRD application. The rankings are arranged in terms of “very high” to “very low”.

## **5 Selection of Representative Technologies**

As noted, the objective of the technology assessment is to determine what technologies are most applicable to CRD situation. In other words, what technologies will the CRD likely ultimately chose? These representative technologies will then be used in the next phase of the decision making to develop overall wastewater management system options. The use of “representative” technologies in this manner will reduce the possibility of technology bias, impacting the overall system decisions.

Representative technologies for each area are discussed below. It should be noted that “representative” does not necessarily mean the highest scored technology. The selection by the consultant team uses the scoring as a guide but also reflects the judgment of the team in the combination of technologies for a particular application.

TABLE 3-2

**CAPITAL REGIONAL DISTRICT  
CORE AREA AND WEST SHORE SEWAGE TREATMENT  
DECISION INFORMATION REPORT**

**PASSING TECHNOLOGY ASSESSMENT**

**SUITABILITY RANKING**

Technology	Application	Multi-criteria Analysis													Total	Ranking
		Cost Effectiveness	Energy Requirements	Space Requirements	Process Reliability	Flexibility	Residuals Generation	Resource Recovery Potential	Ease of O & M	Operator Environment & Safety	Impact on Local Environment	Greenhouse Gas Emissions	Chemical Demand			
		Weighting	10	6	9	9	7	5	8	6	7	10	8	5		
Advanced primary/secondary effluent blending	Liquid stream treatment		1	1	1	1	1	-1	-1	1	1	1	0	-1	46	High
Advanced secondary processes in series	Liquid stream treatment		-1	-1	0	1	1	0	0	-1	0	1	1	1	17	Low
Membrane bioreactor followed by wetlands	Liquid stream treatment		0	-1	0	1	1	1	1	-1	1	1	1	1	47	High
Membrane bioreactors	Liquid stream treatment		0	-1	1	1	1	1	1	0	1	1	1	1	62	Very High
Biological aerated filters	Liquid stream treatment		1	0	1	1	1	1	0	0	1	-1	1	1	50	High
Deep shaft activated sludge process	Liquid stream treatment		1	-1	1	-1	-1	1	0	0	1	1	1	1	32	Medium
High purity oxygen activated sludge	Liquid stream treatment		-1	-1	1	1	0	-1	-1	-1	-1	1	1	1	-1	Very Low
Conventional activated sludge	Liquid stream treatment		1	0	0	1	1	1	0	1	1	-1	1	1	47	High
High-rate primary treatment	Liquid stream treatment		1	1	1	1	1	-1	-1	1	1	1	1	1	64	Very High
Compact high-rate clarification systems	Wet weather overflow treatment		1	1	1	1	1	-1	-1	1	1	1	1	1	64	Very High
Ultra-fine screening	Wet weather overflow treatment		1	1	0	1	1	-1	-1	1	1	1	1	1	55	High
Ultra-violet disinfection	Effluent disinfection		1	-1	1	1	1	1	1	1	1	1	1	1	62	Very High
Water reuse via series technology application	Water reuse		-1	-1	1	1	1	1	1	-1	1	1	1	1	66	Very High
Membrane filtration of secondary effluent	Water reuse		0	0	1	1	1	1	1	0	1	1	1	1	68	Very High
Waste biological sludge recyclop processes	Biosolids management		1	0	-1	1	1	1	0	0	1	1	1	0	65	Very High
Biosolids stabilization using landfill bioreactors	Biosolids management		1	1	1	0	0	0	1	1	0	0	0	1	44	High
Mesophilic anaerobic digestion	Biosolids management		1	0	-1	1	1	0	0	1	1	1	0	1	45	High
Thermophilic anaerobic digestion	Biosolids management		1	1	0	1	1	1	1	1	1	0	1	0	61	Very High
Enclosed biosolids composting processes	Biosolids management		1	0	1	1	0	1	1	-1	0	-1	1	1	38	Medium
Sludge drying/pelletization	Biosolids management		-1	-1	1	1	1	1	0	-1	1	0	1	1	28	Medium
Sludge drying/cement production	Biosolids management		-1	-1	1	1	1	1	1	-1	1	0	0	1	28	Medium
Thermal Oxidation / Incineration	Biosolids management		-1	0	1	1	-1	1	0	-1	0	-1	-1	1	-13	Very Low
Digester gas utilization in internal combustion engines	Biosolids management		1	1	1	1	1	0	1	-1	0	0	1	1	66	High
Biosolids land application	Biosolids management		1	0	0	1	0	1	1	0	1	0	0	1	44	High
Biosolids vitrification	Biosolids management		-1	-1	1	1	-1	1	1	-1	0	1	-1	-1	-1	Very Low

**Notes:**

Ranking categories are based on the multi-criteria score:

Very High - more than 60 points



Low - 0 to 19 points



High - 40 to 59 points



Very Low - less than 0 points



Medium - 20 to 39 points



### ***Liquid Stream Treatment***

In a larger, centralized wastewater treatment plant application, the combination of advanced primary / secondary effluent blending is very attractive. Under this strategy, two times the average dry weather flow would be ultimately routed through a primary and secondary process. The wet weather flows, above this amount and up to a selected multiple, would go through an advanced primary process. Any surplus wet weather flow above this would go through an ultra-fine screening process. In this type of strategy, the biological aerated filtration (BAF) process is attractive, given its small footprint. Membrane bioreactors (MBR) could also be considered. In either case, the option to phase the secondary treatment portion of the works could be considered.

For a smaller, decentralized wastewater treatment plant, the MBR technology is the most attractive secondary treatment technology. This is particularly true in a water reuse situation, where MBR technology could be combined with ultra-violet disinfection technology. MBRs, followed by wetlands polishing and release to a surface water course, are also attractive at an inland location where surplus water, not used for reuse, needs to be returned to the environment.

### ***Wet Weather Overflow Treatment***

The wet weather flow management issue may conclude that stand-alone wet weather overflow plants are an attractive wastewater management solution. In this case, compact high-rate clarification systems, which can operate on an intermittent basis, or ultra-fine screening would be the technologies of choice.

### ***Biosolids Management***

Biosolids management is currently proposed at an off-site location. Whether biosolids management occurs off-site or at a plant with sufficient area to accommodate biosolids processing at the plant site, the most attractive technologies include waste biological sludge reduction processes, landfill bioreactors, mesophilic anaerobic digestion, thermophilic anaerobic digestion, digester biogas utilization in internal combustion engines and land application.

Disclaimer  
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## Capital Regional District

### Core Area and West Shore Sewage Treatment REI Technology Review

*Issued:* March 21, 2007

## 1 Objective

The Capital Regional District (CRD) is required by the Provincial Ministry of Environment to provide additional treatment to the municipal wastewater flows generated in the Core Area and West Shore areas. By June 2007, the CRD must define the number and location of facilities and set a time frame for the implementation of additional treatment.

While the CRD is in a unique position to evaluate many alternatives for treatment and conveyance, the choices are not unlimited and sites are constrained by the linear nature of conveyance facilities and key engineering constraints for treatment facilities. A system of treatment plants, conveyance lines and pump stations must ultimately be sited as essential public facilities to achieve the goals of the Liquid Waste Management Plan (LWMP), to protect public health and to achieve environmental standards.

The CRD issued a request for expressions of interest (REI) to solicit information regarding innovative wastewater treatment and resource recovery technologies and strategies that may be suitable for effectively and sustainably treating the District's wastewater. A total of twenty four submissions were received in response to the REI from a wide variety of organizations ranging from small firms to large multi-national corporations. This Discussion Paper presents the review of submissions.

## 2 Technology Review

Upon initial review, each submission was subjected to the following questions:

- What description best describes the submitting company or organization (e.g. technology vendor, service provider)? Submissions by service providers were not analyzed as they do not represent specific technology.
- Does the proposed technology(s) fit into any of the forty three generic technology categories presented previously in the Technology Assessment contained in Discussion

3, the technology was subjected to the same pass/fail and multi-criteria analyses described in Discussion Paper No. 3.

Table 1 summarizes the REI submissions, relevant information and the pass/fail analysis. Table 2 summarizes the multi-criteria analysis and ranking, as applied to each passing technology. Appendix A contains a synopsis of each submission.

### 3 Summary

The proposed technologies, as received in the REI submissions, span the entire range of application, from liquid stream treatment through to water reuse, biosolids management and resource recovery. Many of the technologies were assessed previously, in their "generic" form, as part of the evaluation conducted for Discussion Paper No. 3.

Several of the passing proposed technologies should be considered during subsequent implementation phases of the CRD program. However, none of these technologies change the representative technology assumptions made to facilitate the planning work required for the Decision Information Report project.

**TABLE 1**

**CAPITAL REGIONAL DISTRICT  
CORE AREA AND WEST SHORE SEWAGE TREATMENT  
DECISION INFORMATION REPORT**

**REI TECHNOLOGY ASSESSMENT**

**PASS / FAIL ANALYSIS**

Submission No.	Company(s)	Description	Included in District Generic Technology
1	Alternia Energy Inc.	Technology Vendor	No - sludge pyrolysis
2	CSO Technik Ltd.	Technology Vendor	Yes - waste sludge re
3	H2O Logics - Solar Bee	Technology Vendor	No - pond mixing
4	Paradigm Environmental Technologies	Technology Vendor	Yes - waste sludge re
5	N-Viro Systems Canada Inc.	Technology Vendor	No - sludge drying/ch
6	Rockwell Automation	Technology Vendor, Service Provider	No - process control s
7	Rothwell Associates Ltd.	Technology Vendor	No - mixed liquor deg
8	Zenon Membrane Solutions	Technology Vendor	Yes - membrane bior
9	J.K. Engineering	Technology Vendor, Service Provider	Yes - anaerobic diges
10	O2 Environmental	Technology Vendor	Yes - ultraviolet efflu
11	Dennis E. Bentley	Technology Vendor	Yes - membrane bior
12	Enviro Energy Ltd.	Technology Vendor	No - sludge pyrolysis
13	Hydra Renewable Resources Inc.	Technology Vendor	No - effluent filtration
14	Vanport Sterilizers	Technology Vendor	No - coal bed filtration
15	Patrick Dunn (3C Water Systems Ltd.)	Technology Vendor	Yes - high rate primar
16	NORAM Engineering and Constructors Ltd.	Technology Vendor	Yes - deep shaft activ
17	Veolia Water	Technology Vendor, Service Provider	Yes, except for the fo oxidation ditch ozone disinfection woven media filters gravity filters reverse osmosis evaporation-concent electrodialysis
18	EcoTek Ecological Technologies Inc.	Technology Vendor	No - greenhouse bas
19	Busby Perkins & Will	Service Provider	No
20	Ostara Nutrient Recovery Technologies Inc.	Technology Vendor	Yes - phosphorus cry
21	GTC Ventures Inc.	Technology Vendor	Yes - sludge incinerat
22	Siemens Water Technologies	Technology Vendor	Yes, except for the fo attached growth airli vertical loop reactor oxidation ditch media filters waste sludge reduct fuel cells (digester g No - raw wastewater
23	Terry Spragg & Associates	Technology Vendor	No - raw wastewater
24	Dennis Paul Dorman	Technology Vendor	Yes - effluent filtration

**TABLE 2**

**CAPITAL REGIONAL DISTRICT  
CORE AREA AND WEST SHORE SEWAGE TREATMENT  
DECISION INFORMATION REPORT**

**PASSING REI TECHNOLOGY ASSESSMENT**

**SUITABILITY RANKING**

Submission No.	Company(s)	Technology	
<p>3 5 7 13 17</p>	<p>H2O Logics - Solar Bee N-Viro Systems Canada Inc. Rothwell Associates Ltd. Hydra Renewable Resources Inc. Veolia Water</p>	<p>Pond mixing Sludge drying/chemical pasteurization Mixed liquor degasification Effluent filtration with ozone disinfection Ozone disinfection Woven media filters Gravity filters Reverse osmosis</p>	<p>Water Biosol Liquid Effluent Effluent Water Water Water</p>
<p>18 22</p>	<p>EcoTek Ecological Technologies Inc. Siemens Water Technologies</p>	<p>Greenhouse based wastewater treatment Media filters Waste sludge reduction (biological)</p>	<p>Liquid Water Biosol</p>

**Notes:  
Ranking**

# APPENDIX A - REI TECHNOLOGY SUBMISSION SYNOPSIS

### Submission No. 1

**Company:** Alterna Energy Inc.

**Technology:** Enviro Carbonization

**Synopsis:** The Enviro Carbonization process carbonizes biomass to create green energy and carbon that can be used to make a variety of carbon products. The process is a pyrolysis process that stops the thermo-chemical reaction of the biomass entering the energy-carbon production system at a point where almost all of the volatile matter is removed as gas, but the fixed carbon remains intact.

This embryonic technology appears to be geared towards the processing of excess wood fibre biomass, and is unproven for the processing of wastewater biosolids. As a result, it is believed that the technology cannot be applied in the CRD in a practical manner at this time.

### Submission No. 2

**Company:** CSO Technik Ltd.

**Technology:** Crown Sludge Disintegration System

**Synopsis:** The Crown Disintegration system uses a macerator, a high pressure mixer and a disintegration nozzle to pre-treat waste activated sludge prior to anaerobic digestion. The process increases the digester volatile solids reduction and the biogas production. While still in the process development phase, the Crown Disintegration system has recently been applied at full-scale in Germany, Sweden and New Zealand. In the event that the CRD builds a regional sludge handling facility that incorporates anaerobic digestion, the benefits of the Crown Disintegration system could include the following:

- Increased biogas yields in the downstream digesters
- Reduced digested sludge for disposal
- Reduced foaming and more stable digester operation

As a result of the above potential benefits, Crown Disintegration technology should be considered as a means of improving thickened waste activated sludge digestion characteristics together with other sludge pretreatment technologies.

**Submission No. 3**

**Company:** H2O Logics Inc.

**Technology:** Solar Bee solar powered reservoir mixer

**Synopsis:** H2O Logics are exclusive agents for the Solar Bee solar-powered reservoir circulator. The Solar Bee circulator consists of a pontoon-mounted vertical shaft mixer and the solar panels that provide electrical power to the mixer. Typical applications include the continuous, low intensity mixing of freshwater lakes, reservoirs and ponds, and wastewater lagoons and effluent storage basins.

While this mixing technology requires no power source and is, therefore, highly sustainable, it will have no treatment applications in the CRD given that compact wastewater treatment technologies are required. However, the system could be used to provide mixing in small effluent holding ponds that may be used in effluent reuse (irrigation) schemes.

### Submission No. 4

**Company:** Paradigm Environmental Technologies Inc.

**Technology:** MicroSludge™ sludge reduction system

**Synopsis:** MicroSludge™ is a patented chemical and pressure pretreatment process that was developed by Paradigm Environmental Technologies Inc. of Vancouver, BC. The process liquefies waste activated sludge from a secondary treatment process to increase both the rate and extent that it is degraded in conventional mesophilic anaerobic digesters. The process uses chemical pretreatment to weaken cell membranes and a high-pressure homogenizer to provide an enormous and sudden pressure change to burst the cells. The resulting liquefied WAS is less viscous and more readily converted to biogas in an anaerobic digester.

While still in the process development phase, MicroSludge has been successfully demonstrated at full-scale at the Chilliwack WWTP in BC and at the Joint Water Pollution Control Plant in Carson, California. In the event that the CRD builds a regional sludge handling facility that incorporates anaerobic digestion, the benefits of MicroSludge could include the following:

- Improved waste activated sludge pumping characteristics
- Increased digester biogas production for energy and heat generation
- Reduced quantities of digested sludge requiring disposal
- Less odorous digested sludge
- Reduced digester sizing and over capital costs
- Reduced foaming in the digester
- Reduced exposure to rising energy prices

As a result of the above potential benefits, MicroSludge technology should be considered as a means of improving thickened waste activated sludge pumping and digestion characteristics together with other sludge pretreatment technologies.

### Submission No. 5

**Company:** N-VIRO Systems Canada Inc.

**Technology:** Sludge stabilization

**Synopsis:** The N-Viro Soil process stabilizes and pasteurizes sludge to meet Class A requirements for biosolids under US EPA regulation 40 CFP 503. Alkaline admixtures (cement or lime kiln dust, fly ash and/or steel making fines supplemented in some cases with quicklime) are mixed with the dewatered sludge cake at a rate of 30 to 45 percent of the wet-weight sludge. The mixture is then dried in a mechanical rotary drum dryer. The combination of heat from the dryer and the chemical reaction between the alkaline materials and the sludge cake moisture raises the temperature and pH of the mixture. The mixture is stored at an elevated temperature for 12 hours and an elevated pH for 72 hours, after which it is ready for storage or distribution.

In the event that the CRD builds a regional sludge handling facility, the potential benefits of the N-Viro process could include the following:

- Co-disposal of industrial waste products (e.g. cement kiln dust) and biosolids to produce an alkaline soil amendment.
- Product is a source of valuable nutrients, including nitrogen, phosphorus, potassium etc.

The principal benefit of this technology is that it converts biosolids and industrial waste products in a usable soil amendment that meets the requirements for Class A biosolids, and is therefore suitable for uncontrolled distribution or land application. Feasible application of this technology requires securing suitable land application sites.

**Submission No. 6**

**Company:** Rockwell Automation Canada Inc.  
**Technology:** Instrumentation and controls wastewater treatment plants  
**Synopsis:** Rockwell Automation provide instrumentation and controls services for the design and optimization of wastewater treatment plants. They do not provide any specific wastewater treatment technology; and as a result, their submission could not be evaluated using the multi-criteria analysis. However, the firm may be retained to provide instrumentation services during the implementation phases of this project.

**Submission No. 7**

**Company:** Rothwell Associates Ltd.

**Technology:** Biodegradex Technology for BNR Process Optimization

**Synopsis:** Biodegradex is a process enhancement for BNR processes in which the mixed liquor leaving the bioreactor is subjected to vacuum degasification before entering the secondary clarifiers. Degassification improves the biomass settling characteristics, thus allowing higher MLSS concentrations to be maintained in the bioreactor and return activated sludge stream.

This technology has limited application for the CRD as it is believed that biological nitrogen removal, though nitrification and denitrification, will not be required for marine disposal of effluent. However, should effluent be discharged to a freshwater system and nitrogen removal be required, this technology could be considered for application.

**Submission No. 8**

**Company:** GE Water & Process Technologies Canada  
ZENON Membrane Solutions

**Technology:** Membrane bioreactors and ultrafiltration

**Synopsis:** ZENON Membrane Solutions recently became part of GE (General Electric) Water and Process Technologies. The company is one of the world's leading providers of membrane ultrafiltration systems for the treatment of both drinking water and wastewater. The company led the development of hollow fibre membrane systems that are immersed directly into the process tanks, thus significantly reducing the complexity and overall energy requirements of membrane bioreactor systems.

ZENON Membrane Solutions has provided membrane systems at over 550 installations in 45 countries. These installations have included approximately 200 small, medium and large wastewater treatment systems. The largest wastewater treatment plant will be the Brightwater WWTP in King County, Washington, with a capacity of approximately 150 ML/d. In 2003, the company won the Stockholm Industry Water Award for the development of energy efficient, innovative and forward-looking water treatment technologies that can be applied to the treatment of water at all stages of the water cycle. Other recent awards have been Canada's Top Corporate Citizen, Canada's Top Exporter, and Canadian Innovation Award for Sustainable Development.

Membrane technology has a high likelihood of being applied in the CRD in any scheme in which domestic wastewater or secondary effluent must be treated to a suitable effluent quality standard for reuse as irrigation or industrial water.

**Submission No. 9**

**Company:** J.K. Engineering Ltd.

**Technology:** Air aspirator-mixers, anaerobic digestion

**Synopsis:** J.K Engineering appear to be a consulting company that is in the process of developing an aspirating aeration system for activated sludge processes that sits outside of the aeration tanks. They also claim to have a novel anaerobic digestion system. Because details of these two systems were not provided, it is not possible to evaluate the submission.

**Submission No. 10**

**Company:** O2 Environmental

**Technology:** Quay Technologies UV Disinfection System

**Synopsis:** The Quay UV disinfection system differs from conventional effluent UV disinfection systems in that it uses an electrodeless lamp. This increases the lamp life and thereby significantly reduces the operating and life cycle costs of an effluent disinfection system.

The Quay system has been installed in 10 countries in both drinking water and treated wastewater applications. It recently received Title 22 validation for water reuse applications in the US. In the event that effluent disinfection using UV irradiation is used prior to disposal or reuse, this technology can be considered as an alternative to conventional UV disinfection systems.

**Submission No. 11**

**Company:** Dennis E. Bentley, Dehydration and Environmental Systems

**Technology:** Membrane bioreactors, sludge drying, gassification

**Synopsls:** Dennis Bentley is promoting a combination of flat panel membrane bioreactors for wastewater treatment, and low pressure, low temperature sludge drying followed by gasification for sludge treatment.

The flat panel MBRs could be considered for implementation in CRD facilities. However, sludge gasification is not considered to be a sustainable biosolids management solution for the CRD situation.

**Submission No. 12**

**Company:** Enviro Energy Ltd.

**Technology:** STERM Process for sludge elimination

**Synopsis:** The STERM Process transforms dewatered sludge (primary, secondary or digested) into a particulate fuel using a totally enclosed thermal drying process. The fuel created is used to provide energy for the system, and the end product (sterile ash) is available for off-site uses, e.g. concrete aggregate, plaster, roadfill/bitumen, etc.

It appears that this technology is still in the embryonic development stage, and no operating full-scale systems exist, which essentially eliminates it for consideration for the CRD program, at least in the foreseeable future.

**Submission No. 13**

**Company:** Hydra Renewable Resources Inc.

**Technology:** CleanStream continuous backwash upflow media filtration

**Synopsis:** CleanStream is a modular system that consists of a preliminary separator followed by a continuous backwash upflow media (CBUM) filter. Effluent from the primary separator is chemically conditioned using a coagulant and oxidant, and the final effluent is ozonated prior to discharge. It is not clear from the information provided how the soluble organics and nutrients present in the incoming wastewater are removed. The gross solids removed by the preliminary separator and the rejects from the CBUM filter are dewatered through an auger press.

The system shows promise in a small-scale effluent reuse scheme as the supplier claims that the CleanStream effluent meets the California Title 22 standard. There is a concern about the practical upper size limit for these systems given that the module size appears to be in the order of 950 m<sup>3</sup>/d. The system may be applicable in the CRD should there be any small- to medium scale effluent reuse schemes incorporated into the overall wastewater management plan. However, more technical information is required prior to recommending this technology at the implementation stage.

**Submission No. 14**

**Company:** Vanport Sterilizers Inc..

**Technology:** Dry pulverized coal filtration followed by pumped storage hydroelectric power generation

**Synopsis:** The proposed concept involves treatment of the raw wastewater in a dry pulverized coal (DPC) filter, and then pumping the “sterilized” effluent to generate power in a pumped storage hydro (PSH) plant upgrade of the “nearby” Jordan River Hydroelectric Project.

The proposed approach and technology is not considered to be either economically or technically viable. Firstly, no consideration is given to the level of treatment that would be required to produce an effluent quality suitable for storage and use in the proposed hydroelectric power generation scheme. Secondly, no attention has been paid to the capital and operating costs associated with conveying all of the CRD wastewater a distance of approximately 50 km.

**Submission No. 15**

**Company:** Patrick Dunne on behalf of 3C Water Systems Ltd.

**Technology:** Chemically Enhanced Primary Treatment

**Synopsis:** This patented process is a modified form of chemically enhanced primary treatment (CEPT). First, the wastewater is ground up using a submersible grinder pump, and then alum is added in an alum flash mix point. The supplier claims that this combination of grinding and flash mixing reduces the alum dosage, reduces the hydraulic retention required in the primary clarifiers (from approximately 2.5 hours to 30 minutes), and increases the suspended solids removal to between 80 and 90 percent. The submission did not include any reference facilities or data from laboratory-, pilot- or full-scale testing, which would be required for its consideration at the implementation stage.

**Submission No. 16**

**Company:** Noram Engineering and Constructors Ltd.

**Technology:** VERTREAT Effluent Treatment System

**Synopsis:** The VERTREAT technology is a high rate activated process using a modified Deep Shaft process. The submission states that the system uses "an in-ground vertical aerated shaft, a patented design that has proven effective through more than 2 years of commercial operation". This implies that the VERTREAT system includes some significant modifications to the original Deep Shaft process. However, details of these modifications were not provided in submission, and consequently, the modified process could not be evaluated in further detail.

**Submission No. 17**

**Company:** Veolia Water

**Technology:** Various Wastewater and Biosolids Treatment Equipment and Processes

**Synopsis:** Veolia Water is a major supplier of equipment and process technology to the wastewater industry, and provides a broad range of innovative and conventional treatment technologies. Examples of proprietary process technology offered by Veolia that may be applicable in the CRD program include:

- Actiflow balasted flocculation/clarification process for high-rate primary treatment
- Biosep membrane bioreactors
- BioStyr biological aerated filters
- Discfilter fabric filters

It is expected that a number of the mechanical units and proprietary processes offered by Veolia will be considered during the subsequent implementation stages of the CRD program once the overall plan has been finalized.

**Submission No. 18**

**Company:** EcoTek Ecological Technologies Inc.

**Technology:** Solar Aquatics Systems

**Synopsis:** This process utilizes a combination of a controlled wetland ecosystem and solar energy in a greenhouse or shadehouse to remove organic material and nutrients from wastewater. This technology is best suited to small, decentralized community based systems. The total greenhouse area required and problems associated with the harvesting and disposal of the biomass generated in larger systems make this technology unsuitable for larger decentralized facilities. However, it could be considered for a small facility in the CRD program.

**Submission No. 19**

**Company:** Busby Perkins & Will

**Technology:** Not applicable - Architecture and Planning Consulting

**Synopsis:** Busby Perkins & Will are an architecture and planning firm who promote an integrated design approach to wastewater treatment “that considers the totality of the flows and exchanges of the urban water and energy pattern, as well as the relationship of infrastructure systems to other elements to the other elements of the city they serve”.

While not promoting any particular wastewater treatment or resource recovery technology per se, Busby Perkins and Will have assembled a consulting team consisting of architects, planners, engineers and a utility for the subsequent implementation phases of the CRD program.

**Submission No. 20**

**Company:** Ostara Nutrient Technologies Inc.

**Technology:** Nutrient (Phosphorus) Recovery Through Struvite Formation

**Synopsis:** Ostara Nutrient Removal Technologies Inc. is a University of British Columbia spin-off company that uses proprietary technology to recover nitrogen and phosphorus from sludge handling return streams following anaerobic digestion at a wastewater treatment. The process consists of a unique fluidized bed reactor into which the sludge dewatering liquor is introduced and injected with magnesium chloride and caustic to initiate a crystallization reaction. This reaction results in the production of small struvite (magnesium, ammonium, phosphate) pellets which can be used as a slow release fertilizer after air drying. This fertilizer has been used in a number of applications, including turf farms, horticulture and salmon stream rehabilitation.

Application of this technology can result in a 20 to 25% reduction of the phosphorus load, as well as a reduction of up to 10% in the incoming nitrogen load, to plants designed for biological nutrient removal and having anaerobic digestion for sludge stabilization.

This technology is considered to be “embryonic”, with only a very limited number of demonstration-scale applications. Further, it is best suited to plants that are required to meet stringent effluent nitrogen and phosphorus standards, and that meet these standards by biological means. Because the future CRD plants are not likely to have effluent nitrogen and phosphorus standards in the foreseeable future, except for smaller systems that may be discharging effluent to a freshwater system, it is believed that the technology is unlikely to have a practical application in the CRD.

**Submission No. 21**

**Company:** GTC Ventures Inc.

**Technology:** Thermal Oxidation

**Synopsis:** GTC Ventures is a locally based firm that intends to bring together various partners in the event that some elements of the CRD wastewater plan are delivered as public-private partnerships (P3). The only treatment technology specifically mentioned in the submittal is the use of fluidized bed reactors for the thermal oxidation of wastewater biosolids, which has been considered previously for the CRD program in its "generic" form.

**Submission No. 22**

**Company:** Siemens Water Technologies

**Technology:** Various Wastewater and Biosolids Treatment Equipment and Processes

**Synopsis:** Siemens Water Technologies is a major supplier of equipment and process technology to the wastewater industry, and provides a broad range of innovative and conventional treatment technologies. Examples of proprietary process technology offered by Siemens that may be applicable in the CRD program include:

- Cannibal solids reduction process
- MEMCOR CS submerged membrane system
- Spider disk filter
- Siemens/Osram Ultraviolet Disinfection
- Convective thermal sludge driers

It is expected that a number of the mechanical units and proprietary processes offered by Siemens will be considered during the subsequent implementation stages of the project once the overall plan has been finalized.

**Submission No. 23**

**Company:** Terry G. Spragg & Associates

**Technology:** Spragg Waterbag for Wastewater Transport and Ocean Disposal

**Synopsis:** Waterbag technology was developed as a primarily as a means of transporting fresh water through the ocean. The proposed technology involves the filling of large synthetic floating bags with wastewater, towing the filled bags out to sea, and disposing the wastewater at a marine location where it would have minimal impact on the shoreline or the receiving environment. No wastewater treatment per se is provided with this option.

This concept does not meet the minimum requirements of treating wastewater to the effluent standard for marine discharge required under the CRD Liquid Waste Management Plan. It is recommended that no further consideration be given to this technology.

### Submission No. 24

**Company:** Dennis Paul Dorman; Bon Bonde Environmental Solutions

**Technology:** PURE-O-TECH Onsite Wastewater Disinfection Systems

**Synopsis:** Pure-O-Tech provides small onsite wastewater disinfection systems that can include microfiltration, ozonation and UV irradiation modules. The largest available system appear to have a capacity of approximately 42 gpm (230 m<sup>3</sup>/d). These package systems appear to be highly suited to small-scale effluent reuse schemes, but whether they are suitable for the CRD will depend on the extent of effluent reuse that is feasible at the time of implementation.



## 1. INTRODUCTION AND PURPOSE

The purpose of this Request for Technical Information (“RFTI”) is to invite interested industry representatives (collectively “Respondents”) to submit responses indicating proven technologies that would be suitable for waste water treatment for communities on the west shore of the Core Area within the Capital Regional District (Westside Solutions).

This RFTI is not a tender or an offer or a request for proposals, and there is no intention by the CRD or Westside Solutions to make an offer by issuing this RFTI, or to otherwise create any contractual obligations. The purpose of this RFTI is only to gather information.

## 2. Closing Date:

Responses should be received by January 31<sup>st</sup>, 2015. If more time is required please contact Westside Solutions.

Note: Not responding to the RFTI does not preclude any vendor from responding to any future Request for Expressions of Interest, Request for Qualifications, Request for Proposals Tender or other procurement process relating to the design or construction of waste water treatment systems or facilities with the Capital Regional District.

Information contained in the response will not be binding on either the CRD, Westside Solutions, or the Respondent.

Additional information outside the scope of the questionnaire is welcome.

Responses should indicate the Project name – Westside Solutions on the outside of the envelope or package, or in the subject line of the email and marked to the attention of **Chair, Technical Committee**.

## 3. E-mail or mail responses will be accepted.

## 4. Inquiries:

All inquiries regarding the RFTI are to be directed, by mail or email, to the contact person identified below.

Chair, Technical Committee  
Westside Solutions  
479 Island Highway  
Victoria, V9B 1H7

or

[info@westsidesolutions.ca](mailto:info@westsidesolutions.ca)

Inquiries or questions may be recorded, answered and distributed by Westside Solutions to one or more Respondents as determined by Westside Solutions.

## Request for Technical Information

### *Background*

Westside Solutions is a sub-committee of the Core Area Liquid Waste Management Committee (CALWMC) of the Capital Regional District (CRD). The membership of the Westside Solutions includes: City of Langford, City of Colwood, Township of Esquimalt, Town of View Royal, Songhees Nation and administration support by the CRD.

The purpose of this Request for Technical Information (RFTI) is to review possible technologies for the treatment of wastewater and resource recovery operations. This information in conjunction with a separate public engagement process will review possible technologies and locations for one or more facilities to meet the needs of the communities of the Westside Solutions.

Technologies submitted to Westside Solutions must be able to meet mandated treatments levels as specified by the Provincial Government and Federal regulations. However Westside Solutions is using this opportunity to assess if additional treatment levels beyond mandated can be achieved and whether resources can be recovered from the treatment process. Submitted technologies should highlight these capabilities.

The cost of the technology will play another important role in the review of this RFTI. Westside Solutions wants to identify solutions that maximize liquid and solids treatment, resource recovery and reduce life cycle (50 years) facility costs.

### *Flow Rates*

The current flow rates from each contributing municipality range from 5 to 10 ML/day. Westside Solutions is looking at possible location(s) for the siting of the plant(s) depending whether the treatment system is distributed or centralized. To aid in this endeavour, six flow rates have been determined that Westside Solutions would like information on. These flow scenarios are:

- 5 ML/day
- 10 ML/day
- 20 ML/day
- 30 ML/day
- 40 ML/day
- 50 ML/day

A map of the current trunk collection system has been attached for reference (Attachment 1).

### *Submission Requirements*

Based on the six flow scenarios, the Westside Solution is looking submitter to provide the following information:

#### ❖ Land Requirements

- What is the probable size of land parcel is required to site the stated technology?
- What are the staging capabilities in order to accommodate growth?

- Does the technology need to be situated at grade or does it lend itself to below grade conditions?
  - What are the potential power requirements for the operation of the technology?
  - Can the technology lend itself to integration into a multifunction structure (i.e. recreational/commercial/residential uses above it)?
  - What are the probable storage/parking requirements for chemicals necessary for the treatment process?
- ❖ Treatment Requirements
    - Can the provided technology meet the treatment requirements (i.e. secondary) established by the Ministry of Environment (MOE) and Federal regulations?
    - Can the provided technology achieve greater treatment levels than those established by the MOE?
    - If so what treatments levels can be achieved?
    - Can the provider provide technology to treat bio-solids onsite?
    - Does the provided technology required treatment of bio-solids off site?
- ❖ Resource Recovery
    - Detail potential resource recovery opportunities associated with the technology?
- ❖ Operations
    - Number of individuals required to operate the technology?
    - Explain about typical noise levels produced? How can these levels be lowered?
    - Explain about typical odour levels produced? How can these levels be lowered?
    - What is the typical traffic in and out of the plant on a daily basis?
    - Provide a high level cost estimate for operational and maintenance costs associated with the flow scenarios.
- ❖ Construction
    - Provide a high level budgetary cost estimate for the construction only associated with the offered flow scenarios.
    - Show the typical design and construction schedule that is expected for each of the flow scenarios exclusive of the permit processes.
- ❖ Industry Usage
    - Provide several case studies that show how this technology has been successfully implemented.
    - Include in the case studies: associated project costs, flows treated and levels both of treatment achieved and resources recovered.

**WASTEWATER TREATMENT AND  
RESOURCE RECOVERY FROM BIOSOLIDS TECHNOLOGIES  
BEST PRACTICES SOUNDING AND OPTIONS ANALYSIS**

**TERMS OF REFERENCE**

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**Purpose**

The Consultant will complete a wastewater treatment and resource recovery from biosolids technologies best practices sounding and options analysis. The proposed work will contribute to the Capital Regional District's (CRD) objective of implementing the best suitable wastewater treatment systems for the Core Area of the Capital Region.

**Introduction**

The CRD is currently in the process of planning wastewater facilities for the Core Area and West Shore of Greater Victoria. On October 8, 2014, the Core Area Liquid Waste Management Committee (CALWMC) of the CRD enabled municipalities to proceed with developing alternative options for wastewater treatment and resource recovery. The four Westside municipalities (Esquimalt, View Royal, Colwood and Langford) and the Songhees Nation have formed the Westside Wastewater Treatment and Resource Recovery Select Committee and the three Core Area municipalities (Victoria, Saanich and Oak Bay) have formed the Eastside Wastewater Treatment and Resource Recovery Select Committee to fulfill that directive.

The CRD is responsible for integrating the results of the assessment from the two committees in the Core Area Liquid Waste Management Plan.

**Scope of Work**

The objective of the work is to complete an options analysis to determine what, if any, leading edge wastewater treatment and resource recovery from biosolids technologies are best suitable to implement in the Core Area wastewater management.

These technologies must be able to meet, and possibly exceed, the mandated treatment requirements as specified by the BC provincial government and federal regulations. In addition, the long-term social, environmental and economic benefits, as compared with "established or proven technologies", must be highlighted. Specific objectives of this best practices sounding and options analysis are to provide solutions that:

- **Maximize response to climate change.** Given the unfolding that climate change presents, the new wastewater treatment systems must ensure response to climate change, especially greenhouse gas reduction, is optimized.
- **Maximize opportunities for resource recovery.** This is critical for an appropriate climate change response. Also, life-cycle costs can be reduced and scarce resources recovered.

- **Accomplish a high standard of treatment.** Advanced or tertiary treatment providing high quality effluent and substantially dealing with emerging chemicals must be addressed.
- **Provide best value for money to taxpayers.** Value for money is accomplished by achieving benefit substantial enough to justify money spent. It is possible the approach or technologies could have higher initial capital costs; however, accomplishing much higher environmental benefit, including very substantial climate change mitigation and potential lower life cycle costs, could be considered superior value for money to taxpayers.
- **Identify and investigate opportunities to integrate other parts of the waste stream.** Existing gasification technology might be cost effective and with a relatively small footprint to incorporate into the treatment facilities as part of the solution to maximise opportunities for resource recovery. The possibility of waste stream integration using kitchen scraps as a feedstock to the gasification system should be investigated.
- **Is credible and comprehensive.** Conduct a survey of wastewater treatment facilities, including “distributed systems” built in the last three years, in North America and Europe. Present the information in an unedited version as an appendix in the report.

### **Work Plan**

The proposed work plan has been broken down into a number of tasks, as described in the following sections:

#### ***Task 1: Kick-Off Meeting***

Upon signing the Consultant contract agreement, a kick-off meeting will be held to ensure that all technical, administrative, project goals and criteria are understood and to ensure that the project deliverables are clarified as much as possible. The project work plan and timeline will also be discussed, and any changes to scope or additional tasks will be finalized at that time.

#### ***Task 2: Project Plan***

Following the kick-off meeting, the Consultant shall provide the CRD with a revised work plan outline, including tasks, deliverables, and timelines for review, comment and approval. The approved work plan will reflect the outcomes of the kick-off meeting and will include a preliminary list of documents to be provided or actions to be followed up on.

*\* Deliverable: Project Work Plan*

#### ***Task 3: Development of Technology Summary Sheets***

Technologies categorized as research, emerging, innovative, or adaptive use are each summarized on an individual technology summary sheet. Each process shall include the following information:

**Objective** – Description of the goal of the technology.

**State of Development** – Where and how the technology has been applied (i.e., resulting in being placed in the corresponding category: research; emerging; innovative; or adaptive use).

**Description** - A brief overview of the technology.

**Comparison to Established Technologies** – Advantages and disadvantages of innovative, emerging and research technologies are compared to more commonly-used technologies.

**Available Cost Information** – Approximate range of capital and operations and maintenance costs, and assumptions made in developing them (when reliable information was available).

**Vendors Name(s)** – Name, address, telephone numbers, and other contact information for utilities and facilities where the technology has been used (full or pilot scale).

**Installation(s)** – Name, address, telephone numbers, and other contact information for utilities and facilities where the technology has been used (full or pilot scale).

**Data Sources** – References used to compile the technology summary. Specific citations to data sources shall be provided.

*\* Deliverable: Technology Summary Sheet Template*

#### **Task 4: Comprehensive Survey and Information Interviews**

The Consultant shall conduct a survey of wastewater treatment facilities that were built in the last three years in North America and Europe, through literature search and database from various agencies, such as BC Ministry of Environment, USEPA, etc. The information shall be summarized in a matrix format under categories defined by the CRD.

The Consultant shall engage a diverse group of organizations, companies and individuals that have demonstrated particular knowledge, expertise and leadership in leading edge wastewater treatment, including distributed systems and resource recovery designs and operations. A list of questions will be provided to the CRD for feedback and input prior to engaging with the above group.

All information received from the interview shall not be edited. They are to be included in the appendix of the final report.

*\* Deliverable: List of Interview Questions and Responses  
Survey Results Report*

#### **Task 5: Options Analysis (OPTIONAL TASK)**

The Consultant shall base the options analysis on the current CRD core area wastewater treatment requirements. The objective of this optional task is to undertake a detailed review and screening analysis of the technologies surveyed.

Prior to the actual screening analysis, the Consultant shall submit the screening criteria to the CRD for comment. Should the screening assessment identify multiple viable options, a Structured Decision Making (SDM) model will be used to evaluate and rank the shortlisted technologies. Using the SDM model, the Consultant shall use the following evaluation criteria:

- basis of cost and cost effectiveness (i.e., cost benefit, life-cycle cost, etc.);
- greenhouse gas emissions reduction implication;
- environmental and social implications;
- opportunities to integrate other parts of waste stream;
- flexibility in future expansion;
- flexibility to incorporate future innovation; and
- provide greater redundancy.

The outcome of the analysis will be a high-level ranking of options, a gap analysis and a conclusion as to the recommended options.

The Consultant shall prepare a list of recommendations in a draft report. Recommendations might include developing a comprehensive analysis based on feedback from stakeholders and the public; conducting more engineering based in-depth analysis, including a conceptual design with cost analysis; and/or business case analysis.

This optional task may be undertaken by individual participating municipalities, Eastside or Westside Select committees, or First Nations focussing on their specific facility sites and parameters.

*\* Deliverable: Draft Report for Comment*

### **Task 6: Final Report**

Should it be recognized early on during the option screening analysis that the CRD has one clearly viable cost-effective and environmentally sound solution (e.g., particular technology due to site constraints or other constraints), the Consultant will advise the CRD of that conclusion, prepare a short report describing work completed and invoice only for work complete to date.

Following review of the draft report, the Consultant will prepare a Final Report incorporating the comments and additional information requested on the draft report received from the CRD.

*\* Deliverable: Final Report Where Comments Will Be Incorporated and Addressed*

**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE  
MEETING OF WEDNESDAY, FEBRUARY 11, 2015**

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**SUBJECT**     **AMENDMENT NO. 9 CONDITIONAL APPROVAL SUBMITTALS TO THE  
MINISTRY OF ENVIRONMENT – CORE AREA LIQUID WASTE  
MANAGEMENT PLAN**

**ISSUE**

To present the Core Area Liquid Waste Management Committee (CALWMC) with revised conclusions to the Sanitary Sewer Overflow Management Plan, as well as the Public and First Nations Consultation Summary Report.

**BACKGROUND**

The Core Area Liquid Waste Management Plan (LWMP) states that the Capital Regional District (CRD) and the participating municipalities commit to reducing infiltration and inflow sufficiently to reduce maximum daily wet weather flow to less than four times the average dry weather flow by 2030.

The LWMP also states that the CRD and the participating municipalities commit to implementing the overflow reduction plans contained in the *Sanitary Sewer Overflow Management Plan* submitted to the Ministry of Environment in June 2008. These plans are summarized in Section 5 of the LWMP.

As a condition of approval of Amendment No. 9 to the LWMP, the Minister of Environment required that a progress update be submitted by December 31, 2014 on the implementation of the overflow reduction plans committed to by the CRD and the participating municipalities, as stated in Section 5 of the LWMP.

Section 3 of the draft report, titled *Sanitary Sewer Overflow Management Plan: 2014 Update*, provides an update on the reduction efforts by each participating municipality and the CRD to date, including tables of the prioritized work items committed to by each participant. Each work item listed includes an estimated completion date, estimated cost and status update. Appendix A provides these prioritized work item tables.

At its meeting of January 7, 2015, the CALWMC directed staff to revise the conclusions stated in the *Sanitary Sewer Overflow Management Plan: 2014 Update* to more clearly define what commitments remain outstanding for each of the participating municipalities and the CRD. Appendix B provides the revised conclusions for the *Sanitary Sewer Overflow Management Plan: 2014 Update*. These revised conclusions will be incorporated into both the Executive Summary and the main body of the report when approved.

As a condition of approval of Amendment No. 9, the Minister also requested a Public and First Nations Consultation Summary report, which was considered by the CALWMC at its meeting of January 7, 2015. No comments were made on this report and it is attached for reference as Appendix C.

**ALTERNATIVES**

1. That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board that staff be directed to submit the *Sanitary Sewer Overflow Management Plan: 2014 Update* and the *Public and First Nations Consultation Summary Report* to the Minister of Environment for approval.
2. That the Core Area Liquid Waste Management Committee direct staff to amend the reports prior to forwarding them to the Board.

**INTERGOVERNMENTAL IMPLICATIONS**

The progress reports for the individual municipal overflow action plan commitments, included in Appendix A, were prepared with the assistance and input of municipal staff.

**CONCLUSION**

Staff have revised the conclusions stated in the *Sanitary Sewer Overflow Management Plan: 2014 Update* to more clearly define what commitments remain outstanding for each of the participating municipalities and the CRD.

**RECOMMENDATION**

That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

That staff be directed to submit the *Sanitary Sewer Overflow Management Plan: 2014 Update* and the *Public and First Nations Consultation Summary Report* to the Minister of Environment for approval.



Dan Telford, P.Eng.  
Senior Manager, Environmental Engineering



Larisa Hutcheson, P.Eng.  
General Manager  
Parks & Environmental Services  
Concurrence



Robert Lapham, MCIP, RPP  
Chief Administrative Officer  
Concurrence

DT:jt

Attachments: 3

Appendix A – Prioritized Plan Tables – Sanitary Sewer Overflow Management Plan: 2014 Update  
Appendix B – Revised Conclusions – Sanitary Sewer Overflow Management Plan: 2014 Update  
Appendix C – Public and First Nations Consultation Summary Report (December 2014)

## PRIORITIZED PLAN TABLES

## SANITARY SEWER OVERFLOW MANAGEMENT PLAN: 2014 UPDATE

Table 4: Prioritized Order of CRD Overflow Management Plan (Update)

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	<b>Monterey Avenue (MH0130):</b> Complete and commission Trent pump station	2008 (Complete)	\$500,000	Complete
2.	<b>Macaulay Point Pump Station:</b> Complete installation of standby power	2008 (Complete)	\$800,000	Complete
3.	<b>Harling Pump Station:</b> Install a screen on the overflow pipe	2008 (Complete)	\$10,000	Complete
4.	<b>Shoreline Drive (MH0340):</b> Commence with capacity deficiency study and identify upgrade options	2010	\$50,000	The pipe was camera inspected in 2012 and found to be in good operational and structural condition.  In late 2014, an additional study will be carried out to determine if any hydraulic upgrades are required.
5.	<b>Penrhyn Lift Station:</b> Investigate pump and genset capacity	2010	\$600,000	Study complete. No follow-up work needed.
6.	<b>Humber Combined Sewers:</b> Oak Bay plans to separate the sewers in the Uplands area	2015	To be determined (Oak Bay cost)	See Section 3.6 City of Oak Bay: Uplands Separation
7.	<b>Rutland Combined Sewers:</b> Oak Bay plans to separate the sewers in the Uplands area	2015	To be determined (Oak Bay cost)	See Section 3.6 City of Oak Bay: Uplands Separation
8.	<b>Head Street (MH0040):</b> Twin the NWT from Macaulay Point to MH0055	2015	\$20,000,000	A study confirmed that this is no longer needed at this time due to increased capacity at the Macaulay pump station.
9.	<b>Sea Terrace (MH0055):</b> Twin the NWT from Macaulay Point to MH0055	2015	as above	A study confirmed that this is no longer needed at this time due to increased capacity at the Macaulay pump station.
10.	<b>Broom Road:</b> Extend Trent forcemain down to Clover Point	2017	as above	This action item is part of the CRD's core area treatment plant project which is currently on hold.

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.1.

The CRD has additional prioritized work related to the Core Area Wastewater Treatment Plant Project. This includes the construction of the new Craigflower pump station, which is currently under construction, with an estimated completion of early 2015. It also includes items that are on hold, along with the rest of the treatment plant project, including: upgrades to the Clover pump station, an extension of the Trent forcemain to Clover Point, and the building of an attenuation tank upstream of the Finnerty Outfall.

**Table 5: Prioritized Order of Colwood Overflow Management Plan (Update)**

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	Upgrade the SCADA system to collect flow data from all pump stations	2008	\$10,000	Complete. Data was first downloaded in 2012 and was first analyzed in the 2013 Annual I&I Report.
2.	CCTV inspection of all new sewers to ensure they are well constructed	Annually	\$15,000	Ongoing
3.	Continue to clean all mains and manholes, and repair as necessary	Annually	\$50,000	Ongoing
4.	Continue to maintain all lift station components to ensure that they run efficiently	Annually	\$72,500	Ongoing

*\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.2.*

**Table 7: Prioritized Order of Esquimalt Overflow Management Plan (Update)**

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	Sewer Relining Relining and repairs to sewer mains rated poor and poorest	Completed	n/a	Complete
2.	Combined manhole separation <ul style="list-style-type: none"> <li>Started with 148 combined manholes</li> <li>29 manholes separated in 2008</li> <li>Separate 5 manholes per year from 2009 to 2025</li> </ul>	2025	\$950,000	Ahead of schedule  As of the end of 2013, less than 50 combined manholes remain to be separated.
3.	Grafton PS <ul style="list-style-type: none"> <li>New electrical power supply, kiosk and controls</li> </ul>	2008	\$38,000	Complete
4.	Grafton PS: Pump replacement	2012	\$40,000	Complete
5.	Sewer Main Replacement Replacement of undersize sewer main on Craigflower Road between Tillicum Road and Lampson Street	2009	\$250,000	Complete
6.	Municipal Wide Smoke and Dye Testing <ul style="list-style-type: none"> <li>To identify cross connections in attempts to reduce I&amp;I in the future. The full scope of the project has not yet been determined.</li> </ul>	2010	Unknown	The smoke testing is complete.  The dye testing component is on hold pending the implementation of a program to address private property I&I.

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.3.

**Table 8: Prioritized Order of Langford Overflow Management Plan (Update)**

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	<b>Sewer Master Plan Upgrades</b> <ul style="list-style-type: none"> <li>Continue with infrastructure upgrades as identified in the Sewer Master Plan.</li> </ul>	Ongoing	\$0.2-0.5 Million	Ongoing
2.	<b>CCTV Inspection</b> <ul style="list-style-type: none"> <li>Continue to video inspect all new sewers that are installed to ensure that they are well constructed.</li> </ul>	Annually	\$15,000	Ongoing
3.	<b>Manhole Inspection</b> <ul style="list-style-type: none"> <li>Continue to visually inspect manholes to ensure that they do not leak.</li> </ul>	Annually	\$15,000	Ongoing
4.	<b>Pump Station Maintenance</b> <ul style="list-style-type: none"> <li>Continue to maintain all pump station components to ensure that they run efficiently.</li> </ul>	Annually	\$200,000	Ongoing
5.	<b>Sewer System Maintenance</b> <ul style="list-style-type: none"> <li>Continue to keep the sewers clean and free from defects.</li> </ul>	Annually	\$250,000	Ongoing

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.4.

Table 9: Prioritized Order of Oak Bay Overflow Management Plan (Update)

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	Uplands Sewer Separation	2015	\$12,000,000 (est.)	<p>Oak Bay had a plan in place that would have resulted in the Uplands combined sewers being separated by 2015. However, many Uplands residents resisted this plan because most of the houses would need to install sewer pumps. The council of the day therefore decided to have staff revisit other approaches for sewer separation in the Uplands. See page 22 for details.</p> <p>As of mid-2014, Oak Bay is still working on a plan to separate the Uplands sewers.</p>
2.	South Oak Bay I&I Rehab Project  (Phased I&I reduction pilot project in the Windsor catchment)	2010	\$1,000,000 (est.)	<p>Complete</p> <p>See page 23 for a summary of the work completed and results of the study.</p>
3.	Hydraulic Model	2014	\$90,000 (est.)	Estimated completion is 2016. The CRD is assisting with ongoing flow monitoring to aid in eventual calibration.
4.	CCTV Inspections	Annually	\$25,000	Ongoing. Starting in 2015, the plan is to CCTV the entire system over a period of five years to collect up-to-date videos and pipe codes.
5.	Pump Station Maintenance	Annually	\$30,000	Ongoing
6.	SCADA Upgrade	2016	\$180,000 (est.)	<p>Since 2008, Oak Bay has been adding one pump station per year to SCADA. 7 of 9 Oak Bay pump stations have been added so far. The remaining two pump stations are expected to be added by the end of 2016.</p> <p>Pump station data stored in SCADA can be used to generate flow data for the pump stations.</p>
7.	Sewer System Maintenance	Annually	Sewer Mains \$237,000	Ongoing
8.	Manhole Inspection	Annually	\$15,000	Ongoing

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.5.

**Table 10: Prioritized Order of Saanich Overflow Management Plan (Update)**

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	<p>Dysart Pump Station</p> <ul style="list-style-type: none"> <li>Complete construction of the new Dysart pump station</li> </ul>	2008	\$2,500,000 (est.)	Complete
2.	The following pump stations will be upgraded. This includes rebuilding the pump station and adding a new standby generator:	2009-2015	\$500,000 Annually	n/a
	<ul style="list-style-type: none"> <li>Vantreight Lift Station</li> </ul>			Complete
	<ul style="list-style-type: none"> <li>Murray #1 Pump Station</li> </ul>			Complete
	<ul style="list-style-type: none"> <li>Murray #2 Pump Station</li> </ul>			Ready for Tender
	<ul style="list-style-type: none"> <li>Arundel Pump Station</li> </ul>			Complete
	<ul style="list-style-type: none"> <li>Glenwood Pump Station</li> </ul>			Ready for Tender
	<ul style="list-style-type: none"> <li>Ashley Pump Station</li> </ul>			Ready for Tender
	<ul style="list-style-type: none"> <li>Dunkirk Pump Station</li> </ul>			Complete
	<ul style="list-style-type: none"> <li>Colquitz Pump Station</li> </ul>			Design being Completed
	<ul style="list-style-type: none"> <li>Gorge Pump Station</li> </ul>			Design being Completed

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.6.

Table 12: Prioritized Order of Victoria Overflow Management Plan (Update)

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	<b>James Bay I&amp;I Pilot Project:</b> Commence with the rehabilitation of sewer mains, laterals and manholes in James Bay.	2010	\$3,000,000	Complete
2.	<b>Hydraulic Model:</b> Complete a hydraulic model of the City's entire sanitary sewer collection system.	2009	\$100,000	Complete
3.	<b>Overflow Elimination:</b> Investigate, monitor and abandon, if possible, existing known overflow locations.	2010	\$300,000	<p>Ongoing</p> <p>Victoria monitors its pump station overflows using SCADA. From 2008-2013, there were no reported pump station overflows. As a result, Victoria doesn't have current plans to abandon existing overflow locations.</p> <p>Victoria investigates and monitors the sewer system for potential high risk sources of I&amp;I. The data is used when planning capital works projects. The types of data collection include:</p> <ul style="list-style-type: none"> <li>• camera inspecting the entire sewer system by the end of 2016</li> <li>• smoke testing the entire sewer system by the end of 2016</li> <li>• Narrowing down the areas with the highest I&amp;I. (In 2012 and 2013, Victoria divided its sewer system into 12 sub-catchments and monitored them with flow meters to find and mitigate areas with the highest I&amp;I.)</li> </ul>
4.	<b>Combined Manhole Separation:</b> Investigate, monitor and <u>initiate</u> a program to separate combined manholes.	2015	\$100,000	<p>Ongoing</p> <p>Victoria has investigated a number of its combined manholes to determine which ones are adequately separated versus the ones that are high priority for separation.</p> <p>In 2014, Victoria plans to put out a request for proposals (RFP) to have a consultant recommend a plan for addressing Victoria's combined sewers. Victoria plans to separate approximately 10 combined manholes by the end of 2015.</p>

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.7.

**Table 13: Prioritized Order of View Royal Overflow Management Plan (Update)**

No.	Work Description	Estimated Completion	Estimated Cost (\$2008)	Status Update (2014)
1.	<p>Upgrade Pump Stations</p> <ul style="list-style-type: none"> <li>Upgrade pump stations where required to improve pump performance, provide standby power and collect better data.</li> </ul>	2017	\$140,000	Stewart PS upgrade was completed in 2012. Hedde PS upgrade will be completed in 2014.
2.	<p>CCTV Inspections</p> <ul style="list-style-type: none"> <li>Continue to video inspect all new sewers that are installed to ensure that they are well constructed.</li> </ul>	Annually	\$20,000	Ongoing
3.	<p>Manhole Inspections</p> <ul style="list-style-type: none"> <li>Continue to visually inspect manholes to ensure that they do not leak.</li> </ul>	Annually	\$5,000	Ongoing
4.	<p>Pump Station Maintenance</p> <ul style="list-style-type: none"> <li>Continue to maintain all pump station components to ensure that they run efficiently.</li> </ul>	Annually	\$120,000	Ongoing, View Royal is gradually replacing its Hydromatic pumps with Flygt pumps.
5.	<p>Sewer System Maintenance</p> <ul style="list-style-type: none"> <li>Continue to keep the sewers clean and free from defects.</li> </ul>	Annually	\$40,000	Ongoing

\* The work items noted in this table are taken from the CRD Core Area LWMP (2010) table 5.8.

## REVISED CONCLUSIONS

**SANITARY SEWER OVERFLOW MANAGEMENT PLAN: 2014 UPDATE**

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On July 3, 2014, the Minister of Environment approved the Capital Regional District's Amendment No. 9 to the Core Area Liquid Waste Management Plan subject to four conditions being met by December 31, 2014. Condition No. 2 to the Minister's approval requires that the CRD submit a *Wet Weather Flow Management progress report that includes an update on the progress made to date in achieving the LWMP commitment to eliminate sanitary and combined sewer overflows*. This progress report was written to satisfy that requirement.

During the period from 2008 to 2013, the municipal sewer collection systems experienced a total of seven overflows. These included three overflows resulting from pump station failures and four overflows attributed to blockages in sewer pipes related to new construction. The municipal sewer systems were able to convey all peak flows, including infiltration and inflows from storm events, into the regional trunk sewer system for discharge to the marine environment via deep sea outfalls.

During the same time period, CRD regional trunk sewers experienced a total of 193 sewer overflows, of which 100 were caused by I&I flows received from municipal sewers and another 70 overflows were directly attributed to combined sewer flows coming from the Oak Bay Uplands combined sewer systems during significant storm events. The remaining 23 overflows were the result of power outages, pump station failures, or pump station upgrades in the regional system.

All but one of the CRD regional system overflows were discharged through deep sea outfalls to marine environments of low sensitivity. The only overflow to a medium or high sensitivity receiving environment occurred during a summer storm when the Trent pump station was shut down for maintenance.

The LWMP (2010) Section 5 contains the overflow reduction plan commitments for the CRD and each of the core area municipalities. These individual plans identify specific infrastructure work items including inspections, studies and upgrades to regional and municipal pump stations and sewer systems.

The CRD and the participating municipalities have completed or initiated many of the overflow reduction tasks committed to in the LWMP. I&I must be further reduced by completing all tasks to limit maximum daily wet weather flows to less than four times the average dry weather flow by 2030.

Oak Bay's commitment to separate its combined sewers in the Uplands, which collect and convey both sewage and storm water to the CRD regional pump stations at Humber and Rutland, remains outstanding.

The CRD will continue to monitor the status of the overflow reduction plans for CRD and the participating municipalities of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, and View Royal. These plans will be evaluated and updated as required.

The core area treatment plant project includes infrastructure upgrades that should further reduce the frequency I&I related overflows in the core area.

**CORE AREA LIQUID WASTE MANAGEMENT PLAN  
PUBLIC AND FIRST NATIONS CONSULTATION SUMMARY REPORT  
December 2014**

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The Capital Regional District (CRD) has been conducting a public involvement program specific to wastewater management since 2006.

Intensive consultation was done in order to develop the current Core Area Liquid Waste Management Plan (CALWMP). The LWMP is the main planning document for the core area's wastewater treatment implementation program (renamed the Seaterra Program). The plan identifies a centralized wastewater treatment plant at McLoughlin Point, a resource recovery centre at Hartland landfill and a conveyance system of pump stations and pipes throughout the core area to convey wastewater to the treatment facilities.

Since the previous Ministry update in 2010, the CRD and the Seaterra Program have developed and implemented numerous public and First Nations communications and engagement initiatives. This Public and First Nations Consultation Summary Report outlines the public consultation and engagement around major decisions leading to the current approved CALWMP.

### **CALWMP COMMUNICATION COMMITMENTS**

The communication and public engagement commitments that were laid out in the CALWMP included:

1. On a regular basis, produce a newsletter with project information and widely distribute it to individual households.
2. Continue to ensure that information posted on the project website is current, accurate, informative and balanced.
3. Continue to provide opportunities for residents to ask questions and have one-on-one conversations with CRD staff and consultants at open houses and at public and stakeholder meetings.
4. Engage neighbourhoods in interactive workshops regarding the location, design, construction and operation of the proposed treatment plants, pump stations, storage tanks or major pipelines and use general public consultation on broader issues.
5. Based on the findings of the workshops and general public consultation, develop appropriate mitigative measures to ensure that any potential negative impacts on neighbourhoods are minimized to a less than significant level.
6. First Nations Engagement
  - a) Continue to provide information to First Nations on project design, gather interests and feedback, and use the information where possible to guide project planning.
  - b) Resolve issues where possible and refer those not resolvable within the CRD legislative mandate to the provincial or federal government for resolution.
  - c) Continue to engage First Nations on interests related to use of federal crown land, impacts on the foreshore, protection of natural resources, outfall locations and effects on marine species, effects on archaeological sites and effects of discharges into inland water bodies.

**CRD PUBLIC ENGAGEMENT AND CONSULTATION**

The CRD created videos, media kits, newsletters, website updates and mall displays and used paid advertising to inform the public and receive input on how the CALWMP should move forward. The communication initiatives implemented by the CRD since the previous Ministry update on the CALWMP are outlined in the table below. This table includes links to significant engagement summary reports, which were developed for the Core Area Liquid Waste Management Committee.

COMMUNICATION TYPE	DESCRIPTION
<b>2010</b>	
<b>Public Consultation and Engagement Sessions</b>	<ul style="list-style-type: none"> <li>• Public consultation session regarding the McLoughlin Point option (January)</li> <li>• Special Core Area Liquid Waste Management Committee meeting for public delegations regarding procurement (February-March)</li> <li>• Two public Engagement Sessions for Esquimalt residents regarding the McLoughlin Point wastewater treatment facility (July)</li> </ul>
<b>Neighbourhood Validation Sessions</b>	<ul style="list-style-type: none"> <li>• Neighbourhood Validation Sessions in Saanich East about possible site adjustment (May)</li> </ul>
<b>Open Houses</b>	<ul style="list-style-type: none"> <li>• Two open houses for Westshore residents regarding a proposed treatment plant at 3300 Wishart Rd (January)</li> <li>• Two open houses for all Core Area residents regarding procurement options for wastewater treatment (February)</li> <li>• One open house for Saanich East residents regarding a possible site adjustment (April)</li> <li>• Two open houses for Esquimalt residents regarding the McLoughlin Point wastewater treatment facility (July)</li> </ul>
<b>Community Meetings</b>	<ul style="list-style-type: none"> <li>• Two Special Meetings of the Core Area Liquid Waste Management Committee inviting the public to speak directly to the Core Area Liquid Waste Management Committee (February-March)</li> </ul>
<b>First Nations Consultation and Engagement</b>	<ul style="list-style-type: none"> <li>• Meeting with Songhees/Beecher Bay Nations providing an update on marine monitoring, shellfish harvesting and archaeological work (February)</li> <li>• Meeting with Songhees Nation providing information on sewage treatment and marine monitoring (February)</li> <li>• Meeting with Esquimalt First Nation (May)</li> <li>• Meeting with Songhees and Beecher Bay providing an update on the wastewater treatment program, marine monitoring and impact assessment work (July)</li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<b>First Nations Consultation and Engagement</b> (continued)	<ul style="list-style-type: none"> <li>Meeting with Songhees and Beecher Bay providing an update on the program, marine monitoring and siting (October)</li> <li>Meeting with Songhees regarding cost-sharing and determination of wastewater flows (October)</li> <li>Meeting with Esquimalt Nation regarding cost-sharing and determination of wastewater flows (November)</li> </ul>
<b>Website</b>	<ul style="list-style-type: none"> <li>Wastewater Made Clear website updated regularly</li> </ul>
<b>Media Communication and Materials</b>	<ul style="list-style-type: none"> <li>Backgrounder (project details, next steps) distributed to media</li> <li>DVD media kit consisting of DVD clips, backgrounder, news release, booklet information</li> <li>Op-eds (editorial on project status)</li> <li>News releases (background on consultation process, project siting details)</li> <li>Media advisories inviting media to open houses</li> <li>Posting for Public Information:               <ul style="list-style-type: none"> <li>2007-2010 <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/liquid-waste-management-plans/2010_lwmp_appendixh3_websitepostingspublicinfo_wastewater_madeclearwebsite.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/liquid-waste-management-plans/2010_lwmp_appendixh3_websitepostingspublicinfo_wastewater_madeclearwebsite.pdf?sfvrsn=2</a></li> <li>Summary report on public consultation for procurement:                   <ul style="list-style-type: none"> <li>Report <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/funding-business-cases/mar_2010_provbuscase_app28_summary_report_public_consultation_for_procurement.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/funding-business-cases/mar_2010_provbuscase_app28_summary_report_public_consultation_for_procurement.pdf?sfvrsn=2</a></li> </ul> </li> </ul> </li> </ul>
<b>2011</b>	
<b>First Nations Consultation and Engagement</b>	<ul style="list-style-type: none"> <li>Meeting with Esquimalt Nation about an Esquimalt sewer study at the Esquimalt Band office (January)</li> <li>Meeting with Esquimalt Nation regarding sewer project, which would take place in 2011 (July)</li> </ul>
<b>2012</b>	
<b>Meetings with Project Director, Core Area Wastewater Treatment Program</b>	<ul style="list-style-type: none"> <li>Cost Allocation update to Township of Esquimalt</li> <li>Tour of McLoughlin Point site with Township of Esquimalt Planner, Chief Administrative Officer and Engineer</li> <li>View Royal Chief Administrative Officer and Engineer – Craigflower Pump Station</li> <li>Conference call with Infrastructure Canada regarding Environmental Assessments</li> <li>Meeting with federal agency representatives and Ministry of Environment staff regarding Environmental Assessment</li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<b>2013</b>	
<b>Open Houses and Community Meetings</b>	<ul style="list-style-type: none"> <li>• Open house regarding the rezoning of McLoughlin Point (May)</li> <li>• Eight open houses regarding the location of the Resource Recovery Centre (June)</li> </ul>
<b>Community Association and Stakeholder Meetings</b>	<ul style="list-style-type: none"> <li>• Esquimalt Chamber of Commerce regarding siting of the Resource Recovery Centre (May)</li> <li>• Lyall Street Action Committee regarding siting of the Resource Recovery Centre (June)</li> <li>• West Bay Residents Association regarding siting of the Resource Recovery Centre (June)</li> </ul>
<b>First Nation Consultation</b>	<ul style="list-style-type: none"> <li>• Letters sent to Songhees and Beecher Bay re Environmental Impact Studies and marine monitoring (July)</li> </ul>
<b>Public Hearing</b>	<ul style="list-style-type: none"> <li>• Esquimalt Public Hearing regarding rezoning McLoughlin Point (July)</li> </ul>
<b>Media Communication and Materials</b>	<ul style="list-style-type: none"> <li>• News releases (background on consultation process, project siting details)</li> <li>• Siting Public Consultation Summary Report: <ul style="list-style-type: none"> <li>- Resource Recovery Centre</li> <li><a href="https://www.crd.bc.ca/docs/default-source/crd-document-library/committeedocuments/corearealiquidwastemanagementcommittee/20130911/2013-09-11-item-6-biosolids-energy-centre-siting-process-public-consultation-final-summary-reportR.pdf?sfvrsn=4">https://www.crd.bc.ca/docs/default-source/crd-document-library/committeedocuments/corearealiquidwastemanagementcommittee/20130911/2013-09-11-item-6-biosolids-energy-centre-siting-process-public-consultation-final-summary-reportR.pdf?sfvrsn=4</a></li> </ul> </li> </ul>
<b>2014</b>	
<b>First Nations Engagement</b>	<ul style="list-style-type: none"> <li>• Meeting with Esquimalt and Songhees Elders at Beacon Hill reburial site to discuss marking ceremony, protocol, fence design and who should be in attendance for the ceremony (September)</li> <li>• Marking ceremony with Esquimalt and Songhees Elders at Beacon Hill to mark outline of cemetery, City of Victoria and CRD elected officials in attendance as well as administrative staff (September)</li> </ul>

### SEATERRA PROGRAM PUBLIC ENGAGEMENT

In 2013, the CRD formed the Seaterra Commission (initially called the Core Area Wastewater Treatment Program Commission) to oversee the design and construction of the core area's wastewater treatment program, as outlined in the Core Area Liquid Waste Management Plan (CALWMP). The major siting decisions had been made and the public engagement focus was on neighborhood-based communications that inform and engage local residents affected by nearby facilities. The opportunities for consultation during this communication phase were in the form of construction and impact reduction measures around noise, safety, air quality, traffic, etc.

The communications plan for the Seaterra Program can be found here:

[https://www.crd.bc.ca/docs/default-source/crd-document-library/committeedocuments/seaterraprogramcommission/20131122/2013-11-22-item-5-seaterra-program-communications-plan-\(sea-13-45\)R.pdf?sfvrsn=0](https://www.crd.bc.ca/docs/default-source/crd-document-library/committeedocuments/seaterraprogramcommission/20131122/2013-11-22-item-5-seaterra-program-communications-plan-(sea-13-45)R.pdf?sfvrsn=0)

The Seaterra Program engaged communities by sharing up-to-date information about the program and receiving input on construction planning. The Program achieved this by sending out household mailers, producing newsletters and fact sheets, open houses, and meeting and working with community associations, residents, First Nations and municipalities. The Seaterra Program implemented community engagement programs in neighbourhoods around the Resource Recovery Centre (RRC) at Hartland landfill, the Clover pump station and conveyance pipe, the treatment plant site at McLoughlin Point and along the route of the residual solids conveyance pipe. Community feedback was received via feedback forms, display boards and in-person discussions at community events and open houses.

The Seaterra Community Open Houses and Community Meetings were publicized by:

- Newspaper ads in the local community newspapers (i.e., Victoria News, Saanich News, etc.)
- Posters throughout affected communities
- Notification email sent via Community Association members
- Posting to Seaterra Program website
- Posting to Community Association/neighbourhood websites, where applicable
- Information mailers sent to affected residents
- Sandwich boards/local area billboards with signage
- Earned media

The below table includes links to examples of public materials, as well as engagement summary reports, which were developed for the Seaterra Program Commission.

COMMUNICATION TYPE	DESCRIPTION
<b>2013</b>	
<b>Community Association and Stakeholder Meetings</b>	<ul style="list-style-type: none"> <li>• View Royal Committee of the Whole about the Environmental Development Permit Application for Craigflower Pump Station (April)</li> <li>• Prospect Lake District Community Association about the RRC (October)</li> <li>• Highlands District Community Association about the RRC (October)</li> <li>• Willis Point Community Association about the RRC (October)</li> <li>• Highlands Council Committee of the Whole about the RRC (December)</li> </ul>
<b>Open Houses and Community Meetings</b>	<ul style="list-style-type: none"> <li>• Two open houses on the Arbutus Road Attenuation tank (February)</li> <li>• Open House on Craigflower Pump Station Upgrade (February)</li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<p><b>Open Houses and Community Meetings</b> (continued)</p>	<ul style="list-style-type: none"> <li>• Open house about the design of the treatment plant at McLoughlin Point (April)</li> <li>• Two Design Charette meetings on the Treatment Plant at McLoughlin Point (April)</li> <li>• Fairfield and Gonzales Community meeting about the Clover Pump Station (October)</li> <li>• James Bay Community meeting about the Clover Pump Station (October)</li> <li>• RRC information sheet mailed to Willis Point, Prospect Lake and Highlands residents</li> <li>• Willis Point information meeting about the RRC (December)</li> <li>• Prospect Lake information meeting about the RRC (December)</li> <li>• Highlands information meeting about the RRC (December)</li> <li>• Clover Point Rezoning Community Association Land Use Committee meeting (December)</li> </ul>
<p><b>First Nations Engagement</b></p>	<ul style="list-style-type: none"> <li>• Meeting with Songhees Council to provide an update on the Wastewater Program, cost allocation and proposed outfall modelling (April)</li> <li>• Letter sent to Esquimalt Nation Chief and Council regarding cost sharing and summary of wastewater flows (April)</li> <li>• Meeting with Tsawout regarding the results of Stage Two of the Environmental Impact Study (May)</li> <li>• Letters sent to Songhees and Beecher Bay re: Environmental Impact Studies and marine monitoring (July)</li> <li>• Meeting with Songhees Nation to provide an overview of the Seaterra Program with a focus on the proposed harbour crossing pipe, the Clover pump station and archaeological artifacts (August)</li> <li>• Meeting with Esquimalt Band Manager about project summary, flow model, archaeology and burning ceremony (August)</li> <li>• Meeting with Esquimalt and Songhees Spiritual Advisors providing an update on the Program and to discuss a ground blessing ceremony for the Craigflower pump station and the Seaterra Program (September)</li> <li>• Meeting with Esquimalt, Songhees, Beecher Bay and Cowichan Nations to request representatives from each nation to help with the ground blessing ceremony (September)</li> <li>• Ground Blessing Ceremony Event led by Esquimalt and Songhees Nation (September)</li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<b>First Nations Engagement</b> (continued)	<ul style="list-style-type: none"> <li>• Meeting with Esquimalt and Songhees Nations and the City of Victoria to discuss the dedication of land in Beacon Hill Park for reburial of remains that might be discovered when completing work for CAWTP (October)</li> <li>• Esquimalt and Songhees Nation made presentation to City of Victoria Council requesting approval to proceed with reburial site at Beacon Hill Park (November)</li> <li>• Seaterra and CRD representatives invited to take part in an Esquimalt and Songhees Nation reburial ceremony for remains discovered as part of the Craigflower Bridge project (December)</li> </ul>
<b>Website</b>	<ul style="list-style-type: none"> <li>• The Seaterra website (<a href="http://www.seaterraprogram.com">www.seaterraprogram.com</a>) was launched and updated regularly to ensure current information was available. A list of recent and upcoming community meetings could be found on the Seaterra website at the “<a href="#">In Your Community</a>” page.</li> </ul>
<b>Quarterly Newsletter</b>	<ul style="list-style-type: none"> <li>• Fall 2013 <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/seaterraprogramnewsletter_fall2013.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/seaterraprogramnewsletter_fall2013.pdf?sfvrsn=0</a></li> </ul>
<b>Media Communication and Materials</b>	<ul style="list-style-type: none"> <li>• Editorial Board Meetings</li> <li>• Op-eds (editorial on project status)</li> <li>• News releases (background on project developments)</li> <li>• Ongoing media relations activities and interviews as required</li> <li>• Quarterly newsletter providing updates on the Program (example: <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/winter-2013---2014.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/winter-2013---2014.pdf?sfvrsn=0</a>)</li> <li>• Display boards for community open houses and public meetings:             <ul style="list-style-type: none"> <li>- Resource Recovery Centre <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/community-information-sessions---display-boards.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/community-information-sessions---display-boards.pdf?sfvrsn=0</a></li> </ul> </li> <li>• Facility Information Sheets:             <ul style="list-style-type: none"> <li>- Resource Recovery Centre <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/information-sheet---resource-recovery-centre-at-hartland.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/information-sheet---resource-recovery-centre-at-hartland.pdf?sfvrsn=0</a></li> <li>- Craigflower Pump Station <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/craigflower-pump-station-in-view-royal.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/craigflower-pump-station-in-view-royal.pdf?sfvrsn=0</a></li> </ul> </li> <li>• Summary reports             <ul style="list-style-type: none"> <li>- Resource Recovery Centre engagement: <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/2014-02summaryreport_rrchartland.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/2014-02summaryreport_rrchartland.pdf?sfvrsn=2</a></li> </ul> </li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<b>2014</b>	
<b>Community Association and Stakeholder Meetings</b>	<ul style="list-style-type: none"> <li>• Provide Seaterra update to Department of National Defense (January)</li> <li>• Highlands Council Committee of the Whole (January)</li> <li>• Esquimalt Planning Committee (January)</li> <li>• Esquimalt Council (January)</li> <li>• Greater Victoria Chamber of Commerce Seaterra Update (January)</li> <li>• Prospect Lake update meeting (February)</li> <li>• Willis Point Community Association information meeting (March)</li> <li>• Saanich Community Associations information meeting (March)</li> <li>• James Bay New Horizons Forum regarding Clover Pump Station (March)</li> <li>• Esquimalt and Victoria West Community Associations and resident groups Seaterra Update (March)</li> <li>• Gorge Tillicum Community Association information meeting regarding the residual solids conveyance pipe (April)</li> <li>• Victoria Matters Public Forum – Wastewater Treatment (April)</li> <li>• View Royal Committee of the Whole situation update (September)</li> </ul>
<b>Open Houses and Community Meetings</b>	<ul style="list-style-type: none"> <li>• Open House for the Fairfield Gonzales and James Bay Communities regarding the Clover Pump Station and Conveyance Pipe (January)</li> <li>• Two open houses regarding the rezoning of McLoughlin point (February)</li> <li>• Public boat tour to view the McLoughlin Point site from the water (February)</li> <li>• Special meeting to provide information to residents living near the residual solids conveyance pipe pumping stations (April)</li> <li>• Three open houses regarding the Residual Solids Conveyance Pipe (April and May)</li> </ul>
<b>Public Hearing</b>	<ul style="list-style-type: none"> <li>• Esquimalt Public Hearing for McLoughlin Point rezoning (February and March)</li> </ul>
<b>Website</b>	<ul style="list-style-type: none"> <li>• The Seaterra website updated regularly to ensure current information was available. <a href="http://www.seaterraprogram.com">www.seaterraprogram.com</a></li> </ul>
<b>Quarterly Newsletter</b>	<ul style="list-style-type: none"> <li>• Winter 2014 <a href="https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/winter-2013--2014.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seaterra-pdf/program-facilities-information/winter-2013--2014.pdf?sfvrsn=0</a></li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<p><b>First Nations Engagement</b></p>	<ul style="list-style-type: none"> <li>• Meeting with Esquimalt Chief and Council and staff, discussed consultation, update on Seaterra, update on outfall monitoring, proposed Beacon Hill park burial project, flow demand and future communications (January)</li> <li>• Meeting with Songhees Chief and Council and staff, discussed consultation, update on Seaterra, reviewed environmental impact study, proposed Beacon Hill park burial, copy of Environmental Impact Study report distributed, reviewed flow demand (February)</li> <li>• Meeting with Esquimalt and Songhees Chiefs to discuss Beacon Hill Burial Grounds Project (March)</li> <li>• Meeting with Songhees Nation to provide an update on Harbour Projects (including the Seaterra Program) and outfall modelling (March)</li> <li>• Meeting with Tseycum Chief to discuss archaeology and Seaterra Program (April)</li> <li>• Guided walk of sacred burial site at Beacon Hill Park to be used for Seaterra Program with Esquimalt and Songhees Elders (April)</li> <li>• Meeting with Esquimalt and Songhees Elders to discuss protocols of care, treatment of remains, artifacts and site work (April)</li> <li>• Meeting with Songhees Nation staff to discuss carving commission for welcome poles for Sacred burial site for Seaterra project (May)</li> <li>• Meeting with Songhees and Esquimalt Elders to discuss Sacred burial site, update on work, treatment of remains and construction protocol (May)</li> <li>• Meeting with Esquimalt First Nation Administrator to discuss the future of wastewater treatment in the CRD, progress with Beacon Hill sacred burial site and update information shared to date with Esquimalt First Nation (August)</li> <li>• Follow-up call to Esquimalt First Nation Administrator to ensure that information was received (August)</li> </ul>
COMMUNICATION TYPE	DESCRIPTION
<p><b>Media Communication and Materials</b></p>	<ul style="list-style-type: none"> <li>• Editorial Board Meetings</li> <li>• Videos and images of various program components (example: <a href="https://www.youtube.com/watch?v=BI0liu81Xos">https://www.youtube.com/watch?v=BI0liu81Xos</a>)</li> <li>• Op-eds (editorial on project updates and facility information)</li> <li>• News releases (information on project developments and backgrounders)</li> <li>• Ongoing media relations activities and interviews as required</li> </ul>

COMMUNICATION TYPE	DESCRIPTION
<p><b>Media Communication and Materials</b> (continued)</p>	<ul style="list-style-type: none"> <li>• Display boards for community open houses and public meetings:               <ul style="list-style-type: none"> <li>- Clover Pump Station and Conveyance Pipe <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/clover-pump-station-and-conveyance-pipe-display-boards.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/clover-pump-station-and-conveyance-pipe-display-boards.pdf?sfvrsn=2</a></li> <li>- Wastewater Treatment Plant <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/wastewater-treatment-plant-display-boards.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/wastewater-treatment-plant-display-boards.pdf?sfvrsn=2</a></li> <li>- Residual Solids Conveyance Pipe <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/displayboards_rscp_250414.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/displayboards_rscp_250414.pdf?sfvrsn=2</a></li> </ul> </li> <li>• Facility Information Sheets:               <ul style="list-style-type: none"> <li>- Clover Pump Station and Conveyance Pipe <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/clover-pump-station-and-conveyance-pipe-information-sheet.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/clover-pump-station-and-conveyance-pipe-information-sheet.pdf?sfvrsn=0</a></li> <li>- Wastewater Treatment Plant <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/mcloughlin-facility-info-sheet.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/mcloughlin-facility-info-sheet.pdf?sfvrsn=0</a></li> <li>- Residual Solids Conveyance Pipe <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/infosheet_rscp_final_280414.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/infosheet_rscp_final_280414.pdf?sfvrsn=2</a></li> </ul> </li> <li>• Summary reports:               <ul style="list-style-type: none"> <li>- Residual Solids Conveyance Pipe engagement: <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/2014-05residualsolidsconveyancecommunityengagementsummaryreportfinal.pdf?sfvrsn=0">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/2014-05residualsolidsconveyancecommunityengagementsummaryreportfinal.pdf?sfvrsn=0</a></li> <li>- Clover Pump Station and Conveyance Pipe engagement: <a href="https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/summaryreport_cloverpumpstation_february2014.pdf?sfvrsn=2">https://www.crd.bc.ca/docs/default-source/seattera-pdf/program-facilities-information/summaryreport_cloverpumpstation_february2014.pdf?sfvrsn=2</a></li> </ul> </li> </ul>

## MOVING FORWARD

The municipalities of Victoria, Saanich, Oak Bay, Esquimalt, View Royal, Colwood and Langford collectively are participants of the Core Area Liquid Waste Management Services, which is managed and operated by the CRD. The Province has confirmed that the CRD is responsible for implementing secondary wastewater treatment in the core area through the Seaterra Program Commission. The CRD remains the signing authority for the funding agreements, which provide approximately \$500 million towards the \$788 million project.

Due to siting issues related to the development of the wastewater treatment plant at McLoughlin Point, work on the Seaterra Program is paused, with the exception of completion of the Craigflower Pump Station and completion of the design for the Arbutus Road Attenuation Tank.

The CRD has developed a new framework that will allow municipalities and First Nations participating in the CALWMP to take a leading role in their communities to identify local opportunities as part of a holistic regional solution.

This new framework gives CALWMP participants the opportunity to have Select Committees or to work individually with the support of staff from the CRD and their own staff to develop and evaluate treatment options for their communities, conduct costing exercises and work with other municipalities to optimize existing conveyance infrastructure. Any Select Committee that is formed will report to the CALWMC and CRD Board and will be supported by CRD staff.

Westside participants (Colwood, Esquimalt, Langford, View Royal, and Songhees Nation) are taking advantage of this new framework and have developed the Westside Wastewater Treatment and Resource Recovery Select Committee. This Select Committee will work with CRD staff and a technical working group of municipal staff and consultants to develop a sub-regional wastewater treatment plan that aligns with the needs and desires of Westside participants. An engagement and consultation campaign with Westside residents will be the first step in developing wastewater treatment options through the Westside Select Committee. The first open house for the Westside Select Committee will take place in December with five more scheduled in January.



Making a difference...together

**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE  
MEETING OF WEDNESDAY, FEBRUARY 11, 2015**

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**SUBJECT SEATERRA PROGRAM AND BUDGET UPDATE NO. 19**

**ISSUE**

The Commission must report in writing, at least once every 30 days, on the progress of the Seaterra Program. During budget discussions, the Core Area Liquid Waste Management Committee (Committee) requested monthly financial reporting on the Seaterra Program.

**BACKGROUND**

Attached is a monthly financial update for the Seaterra Program (Schedule A) year-to-date for December 2014. The 2014 Seaterra Financial Plan (Schedule B) is also attached for information. The report reflects actuals and commitments to the end of December 31, 2014.

At the July 9, 2014 Committee and Board meeting an information report was presented that discussed the Seaterra Program being placed on pause and options for reducing the work-plan for 2014. The attached program summary report reflects the reduced service level as directed by the Committee.

The 2015 – 2019 Financial Plan will be adjusted for the current known delays in timing. This budget estimate will be revised as new information becomes available on core drivers and assumptions used in establishing the original program budget.

**ALTERNATIVES**

1. That the Core Area Liquid Waste Management Committee receives Seaterra Program and Budget Update No. 19 for information.
2. That the Core Area Liquid Waste Management Committee request additional financial information.

**FINANCIAL IMPLICATIONS**

The 2014 program expenditures, including expenditures as at December 31, 2014 are within the approved 2014 Financial Plan. The current projected reduction of \$40.9 million is a direct result of the program service delivery being placed on pause.

**CONCLUSION**

The Committee will continue to receive additional information in future updates.

**RECOMMENDATION**

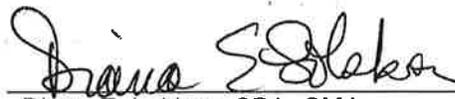
That the Core Area Liquid Waste Management Committee recommends to the Capital Regional District Board:

That Seaterra Program and Budget Update No. 19 be received for information.



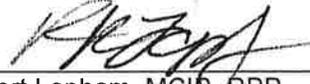
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Rajat Sharma, MBA, CPA, CMA  
Senior Manager, Financial Services



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Diana E. Lokken, CPA, CMA  
General Manager, Finance and Technology



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Robert Lapham, MCIR, RPP  
Chief Administrative Officer  
Concurrence

Attachments: Schedule A – 2014 Program Summary Report  
Schedule B – Program Financial Plan  
Seatterra Program Progress Report No. 19

**2014 Program Summary Report  
Year to Date 31-December-2014**

SCHEDULE A-1

	<b>2014 Budget</b>	<b>Year to Date Actuals</b>	<b>Commitments Unpaid (CU)</b>	<b>Total YTD Actuals + CU</b>	<b>Variance Budget - Forecast</b>	<b>Projected CU Dec 31 2014 (Note 1)</b>
<b>WASTEWATER TREATMENT - MCLOUGHLIN</b>	14,166,000	428,362	1,541,413	1,969,775	13,737,638	1,541,413
<b>CONVEYANCING PIPES AND PUMPSTATIONS</b>	19,875,000	7,527,207	3,634,366	11,161,573	12,347,793	3,634,366
<b>RESOURCE RECOVERY CENTRE</b>	4,734,000	1,657,768	2,868,424	4,526,192	3,076,232	2,868,424
<b>COMMON COSTS</b>	8,112,000	3,141,456	4,042,152	7,183,608	4,970,544	4,042,152
<b>INTERIM FINANCING</b>	435,000	13,115	0	13,115	421,885	0
<b>PROGRAM CONTINGENCY</b>	6,399,000	0	0	0	6,399,000	0
<b>TOTAL</b>	<b>53,721,000</b>	<b>12,767,908</b>	<b>12,086,355</b>	<b>24,854,263</b>	<b>40,953,092</b>	<b>12,086,355</b>

Note 1: Work-in-progress to be completed in 2015.

**Seattera**  
**Program Management Expenditure Report**  
**Year to Date 31-December-2014**

SCHEDULE A-2

	<u>2014 Budget</u>	<u>Year to Date Actuals</u>	<u>Commitments (Note 1)</u>
<b>CAPITALIZED COSTS</b>			
Salaries and Wages	2,305,000	1,237,443	
Consultants	4,261,000	1,355,931	3,959,911
Rentals and Leases	372,000	258,042	0
Operating - Other Costs	829,000	145,346	82,241
	<u>7,767,000</u>	<u>2,996,762</u>	<u>4,042,152</u>
<b>TOTAL</b>	<b><u>7,767,000</u></b>	<b><u>2,996,762</u></b>	<b><u>4,042,152</u></b>

Note 1: Work-in-progress to be completed in 2015.

**Seatterra**  
**Commission Expenditure Report**  
**Year to Date 31-December-2014**

SCHEDULE A-3

	<u>2014 Budget</u>	<u>Year to Date Actuals</u>	<u>Commitments</u>
<b>CAPITALIZED COSTS</b>			
Honoraria	243,000	105,744	0
Travel	40,000	7,868	0
Operating - Other Costs	62,000	31,082	0
	<u>          </u>	<u>          </u>	<u>          </u>
<b>TOTAL</b>	<u><u>345,000</u></u>	<u><u>144,694</u></u>	<u><u>0</u></u>

**Seatterra Program  
Financial Plan**

SCHEDULE B

	Estimated Costs to Date Dec 2013	2014	2015	2016	2017	2018	Total
<b>WASTEWATER TREATMENT - MCLOUGHLIN</b>	9,612,000	14,166,000	72,460,000	141,844,000	39,926,000	553,000	278,561,000
<b>CONVEYANCING PIPES &amp; PUMP STATIONS</b>	6,264,000	19,875,000	53,672,000	39,907,000	6,962,000	106,000	126,786,000
<b>RESOURCE RECOVERY CENTRE</b>	3,233,000	4,734,000	31,388,000	166,958,000	48,072,000	291,000	254,676,000
<b>COMMON COSTS</b>	4,786,000	8,302,000	9,460,000	9,593,000	11,234,000	6,962,000	50,337,000
<b>INTERIM FINANCING</b>	37,000	435,000	2,211,000	7,116,000	14,906,000	6,696,000	31,401,000
<b>PROGRAM CONTINGENCY</b>	0	6,399,000	9,560,000	19,944,000	4,922,000	100,000	40,925,000
<b>TOTAL</b>	<u>23,932,000</u>	<u>53,911,000</u>	<u>178,751,000</u>	<u>385,362,000</u>	<u>126,022,000</u>	<u>14,708,000</u>	<u>782,686,000</u>

**SOURCES OF FUNDING**

Government of Canada	0	35,492,000	72,808,000	61,700,000	0	74,600,000	244,600,000
Province of BC	0	0	0	0	0	248,000,000	248,000,000
CRD debt	1,932,000	6,965,000	52,633,000	183,426,000	101,021,000	(277,891,000)	68,086,000
Proponent financing	0	1,454,000	38,310,000	120,236,000	0	(60,000,000)	100,000,000
Requisition	5,000,000	10,000,000	15,000,000	20,000,000	25,000,000	30,000,000	105,000,000
CRD Capital	17,000,000	0	0	0	0	0	17,000,000
	<u>23,932,000</u>	<u>53,911,000</u>	<u>178,751,000</u>	<u>385,362,000</u>	<u>126,021,000</u>	<u>14,709,000</u>	<u>782,686,000</u>

Note 1: Actual proponent financing will be determined at contract finalization

Note 2: The budget for 2014 does not include contract amounts committed in 2014 which will be paid in 2015-2018

Note 3: Costs to date reflect Seatterra implementation costs. Costs to date do not include CAWTP Program planning costs from 2006-2013.

Note 4: The PPP Canada grant is less than the maximum funding level of \$83,400,000 by \$8,800,000. Assumes \$35,000,000 of risk costs will not be incurred.



**Seaterra Program  
Progress Report No. 19**

**November 30, 2014**

**Prepared by:**

**Seaterra Program Management Office**

**In addition to reporting on activities that are the responsibility of the Seaterra Program Commission, this progress report also includes updates on activities that are the responsibility of the Core Area Liquid Waste Management Committee (CALWMC) and the Capital Regional District (CRD) Board, namely, activities related to facility siting and agreements with municipalities or other government agencies. Those matters that are the direct responsibility of the CALWMC and CRD Board are clearly identified in the text as “CRD responsibility” and are identified in Section 1.2.**

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- 13.2 Program Schedule Update
- 13.3 Procurement
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Appendix A Monthly Program Cost Report

# Overall Program

## November 2014 Project Status

### SAFETY

-  No Lost Time Incidents in the previous 3 months.

### COST

-  Program on budget - <20% Program Contingency committed.

### SCHEDULE

-  Procurement of McLoughlin DBF Contract delayed indefinitely.
-  Uncertainty of site location has made the Program schedule unachievable. Additional delays anticipated.
-  All activities suspended from June 27, 2014, with the exception of the construction of the Craigflower Pump Station and the design of the Arbutus Road attenuation tank.

### QUALITY

-  No critical NCR's recorded.

### ENVIRONMENT

-  No incidents or breach in regulatory compliance recorded.

### RISK

-  The overall program completion of 2018 not possible as a result of the zoning impasse for the implementation of a wastewater treatment plant at McLoughlin Point.
-  Potential withdrawal of funding as a result of no wastewater treatment plant site.

### COMMUNITY

-  Public & Municipal engagement suspended.

- Key Issues :**
- No site allocated for the implementation of the WWTP, jeopardizing the overall Program.
  - Potential withdrawal of funding as a result of no WWTP site.
  - All activities suspended from June 27, 2014, with the exception of the construction of the Craigflower Pump Station and the design of the Arbutus Road attenuation tank.

### Financial Summary (\$M)

Budget	787.9
Commitment To Date	49.3
Forecast at Completion	787.9
Variance	-

### Schedule Key Dates Target

McLoughlin Pt, Outfall, Harbour Crossing	
DBF Awarded	Q3 2014
Construction Complete	Q2 2018
Commissioning Complete	Q4 2018
Resource Recovery Centre & Pipeline	
DBFO Awarded	Q1 2015
Construction Complete	Q4 2017
Commissioning Complete	Q1 2019
Conveyance Pump & Pipeline	
Macaulay PS DB Awarded	Q4 2015
Clover PS DB Awarded	Q3 2014
All Conveyance Complete	Q3 2017

Legend  On Track  Delayed At Risk  Critical/Late

# Major Program Components



Nov 30, 2014

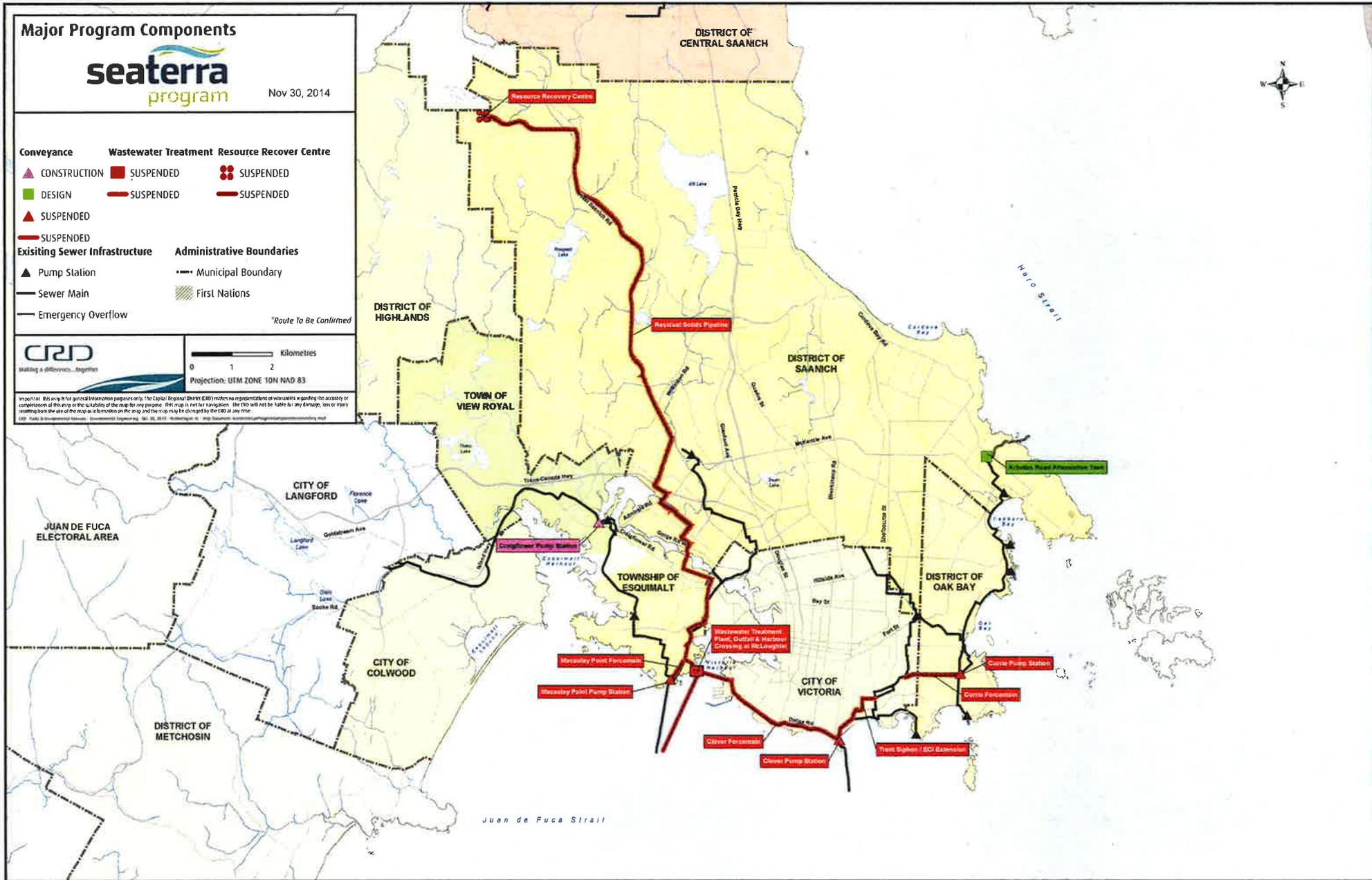
- |                                      |                                  |                                |
|--------------------------------------|----------------------------------|--------------------------------|
| <b>Conveyance</b>                    | <b>Wastewater Treatment</b>      | <b>Resource Recover Centre</b> |
| ▲ CONSTRUCTION                       | ■ SUSPENDED                      | ●● SUSPENDED                   |
| ■ DESIGN                             | — SUSPENDED                      | — SUSPENDED                    |
| ▲ SUSPENDED                          |                                  |                                |
| — SUSPENDED                          |                                  |                                |
| <b>Existing Sewer Infrastructure</b> | <b>Administrative Boundaries</b> |                                |
| ▲ Pump Station                       | - - - Municipal Boundary         |                                |
| — Sewer Main                         | ▨ First Nations                  |                                |
| — Emergency Overflow                 |                                  |                                |

*\*Route To Be Confirmed*



0 1 2 Kilometres  
Projection: UTM ZONE 10N NAD 83

Important: This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.  
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## **1. Executive Summary**

### **1.1 Seaterra Program**

- 1.1.1 Costs this period are \$495,635 for a total cost to date of \$37,309,936.
- 1.1.2 Commitments this period are -\$82,142 for a total commitment to date of \$49,346,598 (approximately 6.3% of the Program budget).
- 1.1.3 Procurement activities on the Program remain suspended for the month of November 2014 following the Township of Esquimalt's rejection of the zoning required for the implementation of a wastewater treatment facility at McLoughlin Point. The CRD Board and Core Area Liquid Waste Management Committee (CALWMC) met November 12, 2014 to discuss next steps for the Program.
- 1.1.4 As a result of the suspension of procurement activities in June 2014, the Program schedule cannot be completed before the end of 2018. Acquisition of a new site and completion of any rezoning required followed by construction and commissioning of the wastewater treatment plant (WWTP) and the Resource Recovery Centre (RRC) are the activities that will determine and drive a revised Program critical path.
- 1.1.5 The selected preferred proponent for the McLoughlin Design-Build-Finance (DBF), Harbour Resource Partners has conditionally extended the validity of their bid to March 31, 2015.
- 1.1.6 The Clover Pump Station Design-Build (DB) Request for Proposals (RFP) closing scheduled for July 10, 2014 has been suspended indefinitely pending further direction on the entire Seaterra Program.
- 1.1.7 The RFP for Clover Forcemain (Conveyance Pipe) Design Consulting Services closed in May 2014. The evaluation of the proposals has been suspended indefinitely pending further direction on the entire Seaterra Program.
- 1.1.8 Construction related activities continued on the Craigflower Pump Station project. The pouring of the suspended roof slab was completed. Internal masonry walls, mechanical and electrical installation ongoing. Glu-lam roof beams have arrived on site.
- 1.1.9 Detailed Design for the Arbutus Road Attenuation Tank is approximately 95% complete. Design drawings and specification currently under review by CRD. The construction Request for Qualification (RFQ), scheduled to be issued in the last week of May 2014, has been suspended indefinitely pending further direction on the entire Seaterra Program.

floor slab was poured, all process piping installed and walls currently being formed.

## **5.2 Schedule**

5.2.1 The shoring failure that occurred in November 2013, together with other construction related issues has caused a 6 month delay in the construction schedule. The general contractor continues to forecast a substantial completion date of March 2015. There is no impact to the Program critical path.

## **5.3 Significant Issues/Decisions Pending**

5.3.1 An insurance claim for the resulting costs of the shoring failure was compiled by the general construction contractor Jacob Bros Construction Ltd. (JBC) and presented to the insurance adjuster for review July 14, 2014. The claim is currently being assessed by the appointed adjuster Charles Taylor Adjusting. No final settlement has yet been finalized.

## **6. Activities – Clover Pump Station - Suspended**

## **7. Activities – Currie Pump Station - Suspended**

## **8. Activities – Arbutus Road Attenuation Tank**

### **8.1 Design/Engineering Status**

8.1.1 KWL completed the 95% detailed design drawings and specifications. Package is currently under review. An open house, to present design information, scheduled for early June 2014 has been deferred pending further direction on the entire Seaterra Program.

### **8.2 Procurement Status**

8.2.1 A RFQ to prequalify construction contractors scheduled to be issued at the end of May 2014 has been suspended indefinitely pending further direction on the entire Seaterra Program.

### **8.3 Status of 3<sup>rd</sup> Party Approvals**

8.3.1 LWMP Amendment No. 9 which includes updating the Arbutus Road Attenuation Tank size has been approved by the CRD Board and by MOE.

### **8.4 Major Commitments This Period**

8.4.1 None this period.

## **8.5 Schedule**

8.5.1 The detailed design for the Arbutus Road Attenuation Tank will be reviewed and finalized by January 2015. The procurement process for the construction of the Arbutus Road Attenuation Tank construction has been suspended indefinitely pending further direction on the entire Seaterra Program.

## **8.6 Significant Issues/Decisions Pending**

8.6.1 A decision was made not to proceed with construction while the existing zoning impasse for the WWTP at McLoughlin Point is being resolved.

## **9. Activities – Clover Forcemain - Suspended**

## **10. Activities – Currie Forcemain - Suspended**

## **11. Activities – ECI/Trent Twinning - Suspended**

## **12. Activities – Macaulay Forcemain - Suspended**

## **13. Program Updates**

### **13.1 Program Cost/Budget Update**

13.1.1 This report covers the period of November 2014.

13.1.2 Total Program budget is \$787,907,200.

13.1.3 Costs this period are \$495,635.

13.1.4 Costs to date are \$37,309,936 (Appendix A).

13.1.5 Commitments to date are \$49,346,598.

13.1.6 Commitments this period are -\$82,142.

- Commitments for this period include monthly program management office administration and operation costs and a reversal of CRD allocation costs.

### **13.2 Program Schedule Update**

13.2.1 The status of the Program schedule continues to degrade. Overall the program schedule has suffered a 9 month delay. The completion of the

acceptance testing for the RRC is now Q4, 2019 based on the delays encountered by the Program. Program completion in 2018 is now not possible and a new date is pending determination of a site for the WWTP.

13.2.2 Major activities and milestones achieved in November 2014 include the following:

- None to report.

13.2.3 Major activities and milestones scheduled the next 90 days include the following:

McLoughlin WWTP:

- Determination of the Program status and resolution of the WWTP site issue.

Resource Recovery Centre (RRC):

- Determination of the Program status and resolution of the WWTP site issue.

Conveyance Infrastructure:

- Finalize the detailed design for Arbutus Road Attenuation Tank.
- Complete the structure of Craigflower Pump Station and continue with mechanical and electrical installation work.

### **13.3 Procurement this Period - Suspended**

### **13.4 Major Commitments This Period - Suspended**

### **13.5 Project Controls**

13.5.1 Procurement activities on the Program are suspended.

13.5.2 A Risk Management Workshop, attended by all senior Seaterra management staff, will be conducted to reassess both systemic and project specific risks once direction has been received from the Seaterra Commission on program implementation.

### **13.6 Environmental**

13.6.1 Activities:

- Craigflower Pump Station Project – JBC continues with building construction and sewer installation. Environmental site visits were conducted throughout the course of the month and no environmental issues or significant non-compliances were noted.

### **13.7 Safety**

13.7.1 Site inspections continued on the Craigflower construction site.

13.7.2 There were no safety incidents to report this period.

**14. Communications/Public Engagement - Suspended**

**15. Program Financing - Suspended**

**Appendix A**

**Monthly Cost Report**



**Program Summary Report  
Month Ending 30-November-2014**

	<u>Budget</u>	<u>Cost to Date</u>	<u>Commitments Unpaid</u>	<u>Total CTD + CU</u>	<u>Forecast to Complete</u>	<u>Forecast at Completion</u>	<u>Variance</u>	<u>Variance from Last Report</u>
<b>WASTEWATER TREATMENT - MCLOUGHLIN</b>	283,782,392	10,141,723	1,541,413	11,683,136	272,099,256	283,782,392	0	0
<b>CONVEYANCING -PUMP STATIONS &amp; PIPES</b>	126,786,364	14,486,542	3,511,345	17,997,887	108,788,477	126,786,364	0	0
<b>RESOURCE RECOVERY CENTRE</b>	254,675,629	4,652,206	2,868,424	7,520,630	247,154,999	254,675,629	0	0
<b>COMMON COSTS</b>	50,337,316	7,979,750	4,115,480	12,095,230	38,242,086	50,337,316	0	0
<b>INTERIM FINANCING</b>	31,400,000	49,715	0	49,715	31,350,285	31,400,000	0	0
<b>PROGRAM CONTINGENCY</b>	40,925,499	0	0	0	40,925,499	40,925,499	0	0
<b>TOTAL</b>	<u>787,907,200</u>	<u>37,309,936</u>	<u>12,036,662</u>	<u>49,346,598</u>	<u>738,560,602</u>	<u>787,907,200</u>	<u>0</u>	<u>0</u>



PPP Canada

Item 8

CRD EXECUTIVE OFFICE

Received

JAN 13 2015

Chief Executive Officer

Premier dirigeant

100 Queen Street, Suite 630  
Ottawa, Ontario K1P 1J9

100, rue Queen, Suite 630  
Ottawa (Ontario) K1P 1J9

January 9, 2014

Robert Lapham  
Chief Administrative Officer  
Capital Regional District  
625 Fisgard Street, PO Box 1000  
Victoria, BC, Canada, V8W 2S6

<input checked="" type="checkbox"/> Chair	<i>AL</i>	<input checked="" type="checkbox"/> Board
<input checked="" type="checkbox"/> CAO		<input checked="" type="checkbox"/> Communications
<input checked="" type="checkbox"/> GM	<i>ELT</i>	
<input checked="" type="checkbox"/> For action / resp. by <i>T. Alton calculate</i>		
<input type="checkbox"/> Corresp. for Board / Committee meeting		
<input type="checkbox"/> For Information Only		
<input type="checkbox"/> Copies to _____		
<i>5220 20 CAWTP</i>		
<i>0400-40</i>		

Dear Mr. Lapham:

**Subject: Extension of the Conditional Financial Agreement (CFA) for the Biosolids Energy Centre with Capital Regional District (CRD)**

Thank you for your letter dated November 25, 2014, regarding an extension to the closing date of the Conditional Financial Agreement ("CFA") between the Capital Regional District ("CRD") and PPP Canada Inc., for the Biosolids Energy Centre (the "Project"), with an effective date of July 1, 2011.

As you know, my staff have been working collaboratively with your project team throughout the procurement phase of the Project. Through this collaboration, I understand that material delays associated with the wastewater treatment facility, which we consider an integral component of CRD's overall wastewater treatment solution, continue to impact the Seaterra program.

While we would be pleased to consider an extension for the Project, we first require an updated timeline and critical path that reflects a more accurate closing date for the CFA, such as March 31, 2016. Additionally, we also request that you please provide PPP Canada with an enhanced understanding of the overall implications to the Project's scope and timing given the delays in the construction of the wastewater treatment plant at McLoughlin Point.

Moreover, given the linkages of the Project to the overall Seaterra program, any subsequent extension to the CFA would be subject to confirmation that a site and all associated approvals have been obtained for the wastewater treatment location, which is currently identified as McLoughlin Point.

Canada



**PPP Canada**

Chief Executive Officer

100 Queen Street, Suite 630  
Ottawa, Ontario K1P 1J9

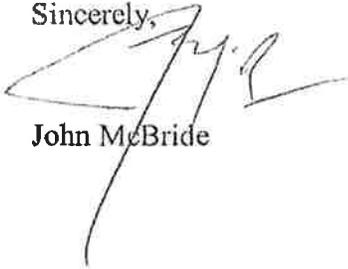
Premier dirigeant

100, rue Queen, Suite 630  
Ottawa (Ontario) K1P 1J9

In the event that CRD cannot identify and obtain necessary approvals for the site locations associated with wastewater treatment on or before March 31, 2016, PPP Canada will unfortunately need to reconsider the funding associated with the Project.

We look forward to continuing our collaboration on this important project.

Sincerely,



John McBride

**Canada**

**Nancy More**

---

**From:** Cathy Leahy  
**Sent:** Thursday, February 05, 2015 1:39 PM  
**To:** Nancy More  
**Subject:** response from Deput Minister of Environment Wes Shoemaker - re letter from Westside Wastewater Treatment and Resource Recovery Select Committee  
**Attachments:** 2014-12-12UpdateLettertoMinisterofEnvironmentMaryPolakfromWestsideCo-Chairs.pdf

**From:** WWW ENVMail ENV:EX [<mailto:env.mail@gov.bc.ca>]  
**Sent:** Thursday, February 05, 2015 8:45 AM  
**To:** 'mayor@colwood.ca'; 'Barb.desjardins@esquimaltcouncil.ca'  
**Cc:** Cathy Leahy  
**Subject:** RE: letter from Westside Wastewater Treatment and Resource Recovery Select Committee

Reference: 212857

*February 5, 2015*

Her Worship Mayor Barb Desjardins, Co-chair  
and Her Worship Mayor Carol Hamilton, Co-chair  
Westside Wastewater Treatment and Resource Recovery Select Committee  
Email: [Barb.desjardins@esquimaltcouncil.ca](mailto:Barb.desjardins@esquimaltcouncil.ca)  
and [mayor@colwood.ca](mailto:mayor@colwood.ca)

Dear Mayors Desjardin and Hamilton:

On behalf of the Honourable Mary Polak, Minister of Environment, thank you for your letter of December 12, 2014, regarding sewage treatment in the Capital Regional District. I am pleased to have this opportunity to respond.

I appreciate that you took the time to inform the ministry of the recently formed Westside Wastewater Treatment and Resource Recovery Select Committee and the Westside Solutions Project. We look forward to seeing the Capital Regional District move forward on fulfilling its legal obligations under the approved Liquid Waste Management Plan.

Thank you again for writing.

Sincerely,

W.H. (Wes) SHOEMAKER  
Deputy Minister

---

**From:** Cathy Leahy [<mailto:cleahy@crd.bc.ca>]  
**Sent:** Friday, December 12, 2014 2:03 PM  
**To:** Minister, ENV ENV:EX

**Cc:** Barbara Desjardins ([Barb.desjardins@esquimaltcouncil.ca](mailto:Barb.desjardins@esquimaltcouncil.ca)); Carol Hamilton

**Subject:** letter from Westside Wastewater Treatment and Resource Recovery Select Committee

Dear Minister Polak,

Please see the attached letter from Mayor Barb Desjardins and Mayor Carol Hamilton, co-chairs of the Westside Wastewater Treatment and Resource Recovery Select Committee.

The original copy of this letter will be sent to you via Canada Post.

Sincerely,

Cathy Leahy, Senior Administrative Secretary  
**Capital Regional District, Parks & Environmental Services**

PO Box 1000, 625 Fisgard Street, Victoria, BC V8W 2S6

**T: 250.360.3095 | F:250.360.3079 | T: 800.663.4425**

[www.crd.bc.ca](http://www.crd.bc.ca)



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Thank you.

Please consider the environment before printing this email.

December 12, 2014

Honourable Mary Polak  
Minister of Environment  
PO Box 9047, STN PROV GOVT  
Victoria, BC V8W 9E2

Dear Minister Polak:

The Westside communities would like to take the opportunity to update you on the progress we have made since our last correspondence with you.

On October 8, 2014, the Core Area Liquid Waste Management Committee (CALWMC) of the Capital Regional District (CRD) enabled municipalities to proceed with developing alternative options for wastewater treatment and resource recovery. Five (5) Westside communities – Esquimalt, View Royal, Colwood and Langford, and the Songhees Nation – have formed the Westside Wastewater Treatment and Resource Recovery Select Committee to fulfill that direction. (Terms of Reference are attached).

Under the direction of the Select Committee, the participants have initiated Westside Solutions – a project designed to evaluate options and recommend site(s) for potential liquid waste treatment and resource recovery facilities for the Westside communities as a conceptual amendment to the Capital Regional District's Liquid Waste Management Plan, which will ultimately result in a final plan amendment.

Critical to the success of this project is meaningful public engagement to developing the solution. To meet that objective, the Westside Solutions Project will need to provide:

- Clear and concise information regarding the issue and possible solutions and make it readily available to the public
- Delivery of a thorough evaluation of net benefits, innovative and workable technologies for proposed treatment facility(s)
- Meaningful engagement and consultation of Westside residents and businesses in option development
- Delivery of an economically and environmentally viable solution for Westside wastewater treatment.

Our first step in achieving our goals is to host a series of public discussion sessions, or open houses, in every community on the west side. Citizens will be presented with information basic to wastewater treatment and invited to provide input through a survey. These sessions will have information for participants to review, and there will be professional Westside Solutions staff available to listen to comments and answer questions.

Concurrent to these sessions, the same information will be made available online, in public venues (i.e. recreation centres) and through local community and business associations. We will also be conducting an industry survey to ascertain what new and innovative technologies may be available and successfully implemented in meeting our wastewater treatment needs.

It is our objective to collect and analyze the information gathered from both processes and synthesize them further to a more focused conversation with our citizens, technical experts and officials from your Ministry. We will provide you a further update as this project unfolds.

We fully appreciate what a significant job lies before us; however, we believe that we are now in a good position to move forward by: engaging the citizens of the west side, identifying innovations that will meet both environmental and economic objectives, and ultimately implementing a wastewater treatment plan that fulfils our commitments.



---

**Barb Desjardins**  
Co-chair  
Westside Wastewater Treatment and  
Resource Recovery Select Committee



---

**Carol Hamilton**  
Co-Chair  
Westside Wastewater Treatment and  
Resource Recovery Select Committee

Attachment: 1

# Terms of Reference

The logo for the Capital Regional District (CRD), consisting of the letters 'CRD' in a stylized, bold font.

## **WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE**

### **PREAMBLE**

The Capital Regional District (CRD) Westside Wastewater Treatment and Resource Recovery Select Committee is a select committee established by the CRD Board and will report to the Board through the Core Area Liquid Waste Management Committee (CALWMC) regarding a sub-regional wastewater treatment and resource recovery plan.

The Committee's official name is to be:

### **Westside Wastewater Treatment and Resource Recovery Select Committee**

### **1.0 PURPOSE**

The mandate of the committee is to:

- evaluate options and develop a conceptual plan for a wastewater treatment and resource recovery plan for participating jurisdictions
  - the conceptual plan will:
    - optimize existing infrastructure, where practical
    - be developed in a collaborative manner with the participants
    - be environmentally sound
    - decisions will be based on the best business case scenario that maximizes benefit to the best value for taxpayers
    - meet the unique needs of the Westside in a proactive and timely way
    - the process will be efficient and cost effective
    - form the basis for an amendment to the Core Area Liquid Waste Management Plan (CALWMP)
- engage and consult with Westside residents

### **2.0 ESTABLISHMENT AND AUTHORITY**

- The Co-Chairs will be elected from among its membership;
- The committee will report its findings to the Board for consideration through the Core Area Liquid Waste Management Committee (CALWMC); and
- The committee will continue until it has made its final report to the Board.

### **3.0 COMPOSITION**

- The membership is comprised of the designated number of representatives from each of the following municipalities or First Nations that are participants in the Core Area Liquid Waste Management Plan:
  - Colwood (1)
  - Esquimalt (1)
  - Langford (2)
  - View Royal (1)
  - Songhees Nation (1)
- The alternate representative shall be appointed by their Council and is invited to participate at all open and closed committee meetings. Voting privileges can only be exercised in the absence of the designated representative.

### **4.0 PROCEDURES**

- The CRD Board Procedures Bylaw will apply;
- The committee shall meet as required at the call of the Chair at least once monthly;
- Meetings will be held at CRD Integrated Water Services, 479 Island Highway, or Westside municipal halls/First Nations halls. As required, meetings will be held at CRD Headquarters, 625 Fisgard Street;
- The agenda will be finalized in consultation between CRD staff and the Committee Chair and any committee member may make a request to the Chair to place a matter on the agenda;
- With the approval of the CALWMC Chair and the Board Chair, committee matters of an urgent or time sensitive nature may be forwarded directly to the Board for consideration; and
- A quorum of 50% plus one of the committee membership is required to conduct committee business.

### **5.0 RESOURCES AND SUPPORT**

- The General Manager of Parks & Environmental Services will lead the coordination and allocation of resources to the Committee;
- CRD staff, Westside staff, consultants and the technical working group will provide support to the committee;
- A Technical Working Group Implications Section will form part of the report to the CALWMC and the Board
- Staff from Integrated Water Services and Parks & Environmental Services will provide primary administrative support with support from other departments as required; and

- Minutes and agendas are prepared and distributed by the Integrated Water Services Department.

Approved by Core Area Liquid Waste Management Committee on November 12, 2014  
Approved by CRD Board on November 12, 2014.

**NOTICE OF MOTION (REVISED) – OPTIONS FOR WASTEWATER TREATMENT – DIRECTOR HAMILTON**

WHEREAS: It is critical that there be positive action taken to meet funding deadlines and regulatory requirements for waste water treatment for the Capital Regional District;

BE IT RESOLVED that: Capital Regional District (CRD) staff be directed to support municipalities and First Nations who want to explore options for waste water treatment that are economically responsible, technically feasible, environmentally sound and meet current provincial and federal deadlines;

AND THAT funding be provided from the sewage treatment budget to support an independent assessment of alternative locations to McLoughlin and Hartland, with full and regular engagement of staff and elected representatives from participating municipalities, First Nations and the public; and,

AND THAT any decisions taken to amend the Liquid Waste Management Plan be done in an open and transparent public process;

AND THAT any further money spent be recoverable under the funding arrangement with the Provincial and Federal Governments and that clarity be sought that the funding arrangement with Provincial and Federal governments be able to support the communities to the extent it supported the CRD driven process .

August 5, 2014

**EXCERPT FROM MINUTES OF A MEETING OF THE CORE AREA AND WEST SHORE  
SEWAGE TREATMENT TECHNICAL AND COMMUNITY ADVISORY COMMITTEE (TCAC)  
held November 27, 2014**

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**1. Update on Core Area Liquid Waste Management Plan Amendment No. 9  
a) Minister of Environment July 3, 2014 Letter of Conditional Approval**

D. Telford reported that Amendment No. 9 was approved by the TCAC, CALWMC and the CRD Board in 2013 and forwarded to the Ministry of Environment (MOE) in February 2014 for final approval. Approval of Amendment No. 9 was received from the Minister of Environment in July 2014 subject to four conditions being met by the end of the year. D. Telford gave an update on these four conditions as follows:

1. The words "in a manner consistent with CRD policy" have been deleted regarding the preparation of biosolids for beneficial use and the revised Amendment No. 9 has been posted on the CRD website.
2. The Wet Weather Flow Management progress report has been completed and is ready for presentation to the CALWMC and CRD Board for approval to be submitted to the Minister of Environment.
3. The updated public and First Nations consultation summary report has been completed and is ready for presentation to the CALWMC and CRD Board for approval to be submitted to the Minister of Environment.
4. The updated October 2014 consolidated version of the Core Area Liquid Waste Management Plan has been reviewed by MOE staff for completeness and is ready to be forwarded to the Minister of Environment.

Due to the municipal elections in November, presentation of the two progress reports had to be deferred from the November 12 CALWMC and CRD Board meetings to January 2015.

D. Telford answered questions from members on the above, which included:

- The letter from MOE refers to the wastewater treatment program as being completed by the end of 2018. Is that a change of date?

The program completion date was extended from the end of 2016 to the end of 2018 in Amendment No. 9 and was approved by the Minister of Environment July 3, 2014. A further extension of the completion date would require another amendment approved by the Minister of Environment.

- Because the federal deadline is 2020, can a recommendation be sent to the CALWMC requesting the provincial deadline date be changed to 2020?

The TCAC can make the recommendation to the CALWMC. An amendment to the LWMP would then need to be approved by the CALWMC and CRD Board and forwarded to the Minister of Environment for final approval.

**MOVED** by C. Witter, **SECONDED** by M. Baxter,

That the Technical and Community Advisory Committee recommend to the Core Area Liquid Waste Management Committee to request the Province to extend the completion date of the wastewater treatment program from 2018 to 2020 to match the federal deadline.

**CARRIED**

M. Coburn, J. McIsaac, D. White **OPPOSED**