

**REPORT TO CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, MAY 08, 2024**

SUBJECT Long Term Biosolids Management Strategy

ISSUE SUMMARY

The Capital Regional District (CRD) is required to submit a long-term biosolids management strategy to the BC Ministry of Environment and Climate Change Strategy by June 18, 2024 as a requirement of the CRD's commitments under the Core Area Liquid Waste Management Plan.

BACKGROUND

The CRD submitted Amendment No. 11 to the Core Area Liquid Waste Management Plan (CALWMP) to the Ministry of Environment and Climate Change Strategy (ENV) in 2016, committing to the determination of a long-term management strategy for the beneficial use of biosolids produced at the Residuals Treatment Facility (RTF), that would be built as part of the Core Area Wastewater Treatment Program that was commissioned in 2020. ENV approved the Amendment, requiring the CRD to develop a Definitive Plan for biosolids by 2019 that outlined a short-term (2020-2025) plan for the beneficial use of the Class A biosolids, as well as a long-term beneficial use strategy.

In 2019, the Minister of Environment and Climate Change Strategy approved the CRD Biosolids Beneficial Use Strategy, forming part of the CALWMP (Amendment 11) with short-term and long-term conditions. For the Long-Term Strategy, there were three specific conditions noted, as follows:

- a) The CRD must include land application in the options analysis and conduct consultation for the long-term biosolids strategy that is intended to be implemented by January 1, 2025.
- b) Options considered should include a range of beneficial uses including, but not limited to, forestry (for example: fertilizer/soil conditioner), reclamation (for example: mines), landfill closure and agriculture.
- c) Consultation process must include citizens, local government, and Indigenous communities within the CRD.

The short-term plan had a primary focus to provide biosolids to a cement manufacturing plant in Richmond, BC, as an alternative fuel source for its kiln operations. A supplement to the short-term plan has been the beneficial use of biosolids as a cover material at the regional landfill. Due to significant maintenance, operational and economic challenges at the cement plant, and limited space for cover material, as previously reported, a significant volume of biosolids has been landfilled under emergency measures, which is out of compliance with provincial regulatory direction, while other possible short-term contingency alternatives are explored.

In July 2011, prior to introducing wastewater treatment in the core area, the CRD Board passed a resolution to ban the production and land application of biosolids at CRD facilities and parks, and on farmland in the CRD, based on public health and environmental concerns raised by members of the public. In 2023, due to ongoing challenges with existing options, the CRD Board

amended the land application ban to allow for out-of-region, non-agricultural application of biosolids as a short-term contingency alternative.

As of 2023, the RTF produces approximately 10 tonnes of dried biosolids per day, or 3,650 tonnes per year. This volume will increase over time with population growth and the incorporation of residuals from other wastewater treatment plants in the region.

PREPARING THE LONG-TERM BIOSOLIDS MANAGEMENT STRATEGY

ENV requires submission of a long-term biosolids strategy by June 18, 2024, with the expectation that all biosolids be beneficially used through a range of options, in accordance with provincial regulation. Current technical information, public consultation and First Nations engagement outcomes are key components of a Long-Term Biosolids Management Strategy.

The CRD retained a technical consultant, GHD, who provided a long-term biosolids management options analysis report, which was presented to the Environmental Services Committee in July 2023. In addition to including the options analysis, the report contained an updated review of international biosolids management practices and a summary and evaluation of the advanced thermal (gasification and pyrolysis) pilots procured in 2022.

The production, distribution, storage, sale and usage of biosolids are regulated under the BC Organic Matter Recycling Regulation (OMRR), which includes minimum standards for biosolid product quality (vector attraction reduction, pathogen and heavy metals limits) and land application practices (e.g., nutrient loading and erosion control). The biosolids from the RTF are characterized as Class A, under Section 3.2.6 of the OMRR, which regulates the production and beneficial use of compost and biosolids.

In 2023, ENV conducted a review of the OMRR, including an evaluation of emerging contaminants of concern in the context of land application. The technical working group assigned to this task completed its work in late 2023; the final report is expected to be released in May. ENV has not altered its regulatory direction at this time. On March 13, 2024, the CRD Board directed staff to reinitiate consideration of a legal liability review and a scientific literature review of biosolids land application, given the recent delays in reports supporting the current OMRR review. Staff brought forward options to undertake an independent literature review at the April 17, 2024 Environmental Services Committee meeting, and Committee recommendations on completing independent literature and legal reviews are being presented to the Board under separate cover.

On March 19, 2024, the CRD Board Chair, as directed by the Board, sent a letter to the Minister of Environment & Climate Change Strategy, requesting a meeting to discuss the extension of the submission deadline for the Long-Term Biosolids Beneficial Use Strategy. The CRD Board Chair was scheduled to meet with the Minister on May 6, 2024.

Public Consultation Summary

Public engagement on the Long-term Biosolids Management Strategy occurred from January 11 to March 6, 2024. Despite the CRD Board's 2011 resolution banning the land application of biosolids, several land application options were included for public consideration, in accordance with explicit direction from the provincial regulator. The consultation process was commissioned

to the Tavola Strategy Group (“Tavola”) for design and implementation. Tavola followed a comprehensive approach to encourage broad public participation and capture their feedback. The process included:

- A project engagement page on the CRD’s website with detailed background information, including context on provincial regulatory requirements and the Board’s direction on land application.
- An online survey (“CRD Survey”) hosted on the CRD’s project engagement page. The CRD Survey rendered 569 responses.
- A representative survey (“Ipsos Survey”) of 516 residents across the region, designed and facilitated by market research and public opinion specialist, Ipsos.
- A virtual open house on February 20, 2024, which included presentations from CRD staff and the technical consultant, as well as a moderated question-and-answer period. Approximately 59 participants attended the virtual event.
- Various avenues to submit comments, pose questions and receive answers.
- A subscription service to allow receipt of information added to the site as the engagement period progressed.

Tavola’s Summary Consultation Report summarizing the public engagement is attached as Appendix A. Key themes heard from the public during the public engagement are:

- Respondents to both the Ipsos representative survey and the CRD survey indicated that *Environmental Impacts [air, water and soil contaminants]* were the most important consideration when planning for the beneficial use of biosolids. Costs, climate/greenhouse gas emissions and community impacts (truck traffic, odour and noise emission, dust) were less important.
- The two surveys solicited very different results when it came to support for long-term biosolids management options.
 - The Ipsos survey indicates the broader general public is supportive of all options, while respondents to the CRD survey have substantial levels of opposition to most options other than Advanced Thermal, with the least support for bagged fertilizer for residential use and agricultural fertilizer.
 - For this research, Ipsos conducted an online panel survey of 516 adult (18+ years) CRD residents. The final data has been weighted to ensure that the gender/age and regional distribution reflects that of the actual population in the CRD according to 2021 Census data. The precision of Ipsos online polls is measured using a credibility interval. In this case, the poll is accurate to within ± 4.9 percentage points, 19 times out of 20, of what the results would have been had all adult CRD residents been polled.
 - Ipsos provided respondents with background information related to biosolids (including regulatory context and the Board’s ban on land application).

The most popular option (advanced thermal) in the CRD survey was the least popular for the broader general public in the Ipsos survey. The level of opposition to all options was higher in the CRD survey.

- The concerns associated with various options varied depending on the survey. The level of opposition to all options and associated concerns were much greater in the voluntary CRD survey, than in the Ipsos representative survey. Many respondents to the CRD survey

expressed concerns related to the potential contaminants (e.g., PFAS) and potential health and environmental risks of land application. Many respondents in the CRD survey felt land application options are not a “beneficial-use” due to potential risks, and advanced thermal/biochar options are the most effective method to reduce risks of biosolids.

- Many respondents who submitted correspondence, attended the open house and participated in the CRD survey would like more detail about plans, progress and timelines towards piloting advanced thermal options, and more information about the testing, scientific research and risks associated with land applying biosolids. Some would also like to better understand the cost benefit analysis of options and the feasibility, experience and case studies of various options in other jurisdictions.

First Nations Consultation Summary

First Nations consultation on the Long-term Biosolids Management Strategy is ongoing. CRD commissioned the design and facilitation of the initial outreach to 50th Parallel Public Relations (“50th Parallel”). Nineteen First Nations were provided the following opportunities for input over the last two months:

- attending separate in-person and virtual open houses
- participation in an online survey
- open invitation to meet with staff at any time regarding biosolids management planning.

To date, staff have had discussions on the topic of biosolids management with representatives from the Pacheedaht, T’Souke and Pauquachin Nations. CRD staff provided a brief presentation and overview of the wastewater treatment project and resulting requirement to beneficially use biosolids. Staff also presented the full suite of available options for biosolids management, including various land application scenarios, incineration and advanced thermal treatment. Staff also highlighted the concern raised by several groups regarding land application of biosolids.

The 50th Parallel report summarizing the First Nations engagement is attached as Appendix B. The overarching themes expressed by the First Nations included:

- a clear expectation of CRD to engage further with the Nations on any land application projects across the region
- questions regarding scenarios relevant to their traditional territories
- general questions regarding options

Opportunities to provide input are ongoing, and all feedback received will be provided to the Province with the CRD’s submission of the Long-Term Biosolids Management Strategy. Following approval of the Long-term Strategy, further engagement with First Nations will be pivotal in the development of specific land application projects located on their traditional territories.

Technical and Community Advisory Committee

In September 2023, staff reconvened the Technical and Community Advisory Committee (TCAC) to advise on several liquid waste management issues, including biosolids management. The presentation materials provided to the TCAC are attached as Appendix C. The TCAC assessed and ranked all beneficial use options. All options had majority support, with the following order of preference (highest to lowest): industrial land reclamation, forest fertilization,

wholesale distribution, residential use, advanced thermal, combustion/incineration and agricultural. While some comments and concerns were raised about land application contaminant risks, the TCAC generally felt that the nutritive value in biosolids outweighed the contaminant risks; agricultural land application had the lowest level of TCAC support due to these contaminant concerns. In addition, concerns were raised about the greenhouse gas implications, cost/benefit and feasibility of the advanced thermal option. Greenhouse gas concerns were also raised for the combustion/incineration option.

DRAFT LONG-TERM BIOSOLIDS MANAGEMENT STRATEGY

The CRD retained a technical consultant, GHD, to prepare a draft long-term biosolids beneficial use strategy. GHD assessed all available beneficial use options and provided an options analysis report, which was presented to the Board on August 9, 2023. Based on its analysis, GHD recommended that the CRD pursue a portfolio of biosolids management options to ensure beneficial use of biosolids is resilient and sustainable into the future. This is consistent with the CRD's experience to date with options that are not continuously available or reliable, as well as a review of the experiences of other jurisdictions.

Based on:

- the Minister of Environment and Climate Change Strategy's direction and provincial requirements
- the CRD Board's ban of the land application of biosolids in the CRD
- the feedback received in the various public engagement processes detailed above
- the technical recommendations provided by GHD in order to develop a robust program that is flexible and provides redundancy in order to minimize operational and compliance risks
- the CRD's goal to have a strategy that:
 - utilizes the existing RTF infrastructure and Class A biosolids already being produced but also prioritizes implementing advanced thermal technology infrastructure
 - minimizes negative impacts on the natural environment
 - protects the health and safety of the public and workers involved in biosolids operations
 - is cost effective, while balancing all of the above considerations

staff recommend procuring a portfolio of options in alignment with the GHD Long-term Biosolids Management Strategy (Appendix D) and utilizing each option under a prioritization structure, as follows:

Tier 1: Advanced thermal option

Constitutes the preferred long-term solution and will be pursued concurrently with options in other tiers. Current projects include:

- a) Develop a demonstration facility for advanced thermal processing, as planned. Outcomes from the demonstration project will serve as the basis for a scaled, long-term solution.

Tier 2: Out-of-region compliance options

Constitute measures that the CRD will utilize to ensure regulatory compliance is continuously achieved while the Tier 1 thermal processing option are being implemented and when options in Tier 1 are unable to process the totality of biosolids produced in the region. These include (in priority order):

- a) Industrial land reclamation, such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
- b) Forest fertilization
- c) Production of biosolids growing medium and/or feedstock in soil production
- d) Partnerships with established biosolids programs
- e) Continue alternative fuel combustion in the cement manufacturing facility in Richmond, BC. Prioritize this option, when available.

Tier 3: In-region contingency options

Constitute contingency options to ensure compliance with regulatory requirements. The CRD would implement Tier 3 options on a contingency basis, only when options within the Tier 2 portfolio are unavailable. These include (in priority order):

- a) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
- b) Forest fertilization
- c) Maintain the option of biosolids application in engineered cover systems at Hartland Landfill to act as an emergency support option; subject to space availability and cover needs of the Landfill

Note: The CRD will continue to explore beneficial use opportunities with those Nations that express interest both in-region and out-of-region. The CRD will also listen to any concerns Nations may have regarding the beneficial use options and is committed to working with individual Nations to address their concerns.

The Strategy focuses on pursuing the in-region thermal management of biosolids utilizing advanced thermal treatment technology to produce biochar and synthetic fuels, while the tiered approach balances the Board's direction on land application and meeting regulatory requirements. As previously reported, given that it is anticipated to take 2-3 years to design, permit, construct, commission and pilot a thermal demonstration plant and longer for a full scale facility, the other options in the portfolio will be necessary to pursue in the 2025-2035 time period. Direct agricultural application would be excluded at this time but reclamation of industrial lands where the end use is pasture lands may be considered.

The landfilling of biosolids at the Hartland Landfill would only be required as an emergency measure when the RTF fails to produce a Class A biosolids product due to an operational emergency, such as a process equipment failure.

The above recommended portfolio of options, the Long-Term Biosolids Management Strategy and the Long-Term Biosolids Beneficial Use Option Analysis documents prepared by GHD, and the summary consultation reports, together form the CRD's Long-Term Biosolids Management Strategy. The Strategy will likely require updating in the next ten years as the CRD gains experience with the portfolio implementation, further develops the thermal option, considers advances in technology over time, and responds to any regulatory or Board policy changes.

Biosolids Advanced Thermal Site Trial Update

A Request for Proposals (RFP) for a technical advisor to support CRD staff in developing terms and technical requirements for a demonstration plant closed on March 11, and a preferred technical advisor has been selected. The subsequent RFP for the demonstration plant is in

development and is expected to be issued in Q2, with a preferred proponent selected in Q3/Q4 2024. Once a proponent and technology are selected, staff will have sufficient information to support initiating the provincial permitting process, which is anticipated to take 1.5-2 years. To support the permit application, additional public and First Nations engagement will be required inclusive of project specifics (e.g., siting, air discharge (exhaust) composition and rates etc.).

Next Steps

With Board endorsement, the draft Long-Term Biosolids Management Strategy will be referred back to the TCAC for its final review and comment and posted on the CRD's webpage for a final three-week comment period between May 13 and June 3. A summary of the comments received along with the final Long-Term Biosolids Management Strategy will be presented at the June 12, 2024 Board meeting for consideration, and with final Board approval, would be submitted to the provincial regulator by June 18, 2024.

ALTERNATIVES

Alternative 1

That the CRD Board:

1. Endorse the following portfolio of options in alignment with the Long-Term Biosolids Management Strategy (prepared by GHD, April 2024), utilizing each option under a prioritization structure, as follows:
 - (a) **Tier 1: Advanced thermal option:** Constitutes the preferred long-term solution and will be pursued concurrently with options in other tiers. Current projects include:
 - (i) Develop a demonstration facility for advanced thermal processing, as planned. Outcomes from the demonstration project will serve as the basis for a scaled, long-term solution.
 - (b) **Tier 2: Out-of-region compliance options:** Constitute measures that the CRD will utilize to ensure regulatory compliance is continuously achieved while the Tier 1 thermal processing option is being implemented and when options in Tier 1 are unable to process the totality of biosolids produced in the region. These are (in priority order):
 - (i) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
 - (ii) Forest fertilization
 - (iii) Production of biosolids growing medium and/or feedstock in soil production
 - (iv) Partnerships with established biosolids programs
 - (v) Continue alternative fuel combustion in the cement manufacturing facility in Richmond, BC. Prioritize this option when available.
 - (c) **Tier 3: In-region contingency options:** Constitute contingency options to ensure compliance with regulatory requirements. The CRD would implement Tier 3 options on a contingency basis, only when options within the Tier 2 portfolio are unavailable. These include (in priority order):
 - (i) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
 - (ii) Forest fertilization

- (iii) Maintain the option of biosolids application in engineered cover systems at Hartland Landfill to act as an emergency support option; subject to space availability and cover needs of the Landfill;
2. Direct staff to continue to explore biosolids beneficial use opportunities with those First Nations that express interest both in-region and out-of-region, and to address any concerns First Nations may have regarding the beneficial use options;
 3. Refer the Draft Long-Term Biosolids Management Strategy and portfolio of options to the TCAC for review and comment;
 4. Post the Draft Long-Term Biosolids Management Strategy and portfolio of options on the CRD webpage for 21 days (May 13-June 3) for First Nations and public review and comment; and
 5. Direct staff to bring back the comments received during the 21-day posting period from the TCAC, First Nations and public, along with a final Long-Term Biosolids Management Strategy and portfolio of options for the Board's consideration and approval at the June 12, 2024 Board meeting, for submission to the Province by June 18, 2024.

Alternative 2

That the CRD Board:

1. Endorse the following portfolio of options in alignment with the Long-Term Biosolids Management Strategy (prepared by GHD, April 2024), utilizing each option under a prioritization structure, as follows:
 - (a) **Tier 1: Advanced thermal option.** Constitutes the preferred long-term solution and will be pursued concurrently with options in other tiers. Current projects include:
 - (i) Develop a demonstration facility for advanced thermal processing, as planned. Outcomes from the demonstration project will serve as the basis for a scaled, long-term solution.
 - (b) **Tier 2: Out-of-region and In-region compliance options.** Constitute measures that the CRD will utilize to ensure regulatory compliance is continuously achieved while the Tier 1 thermal processing option is being implemented and when options in Tier 1 are unable to process the totality of biosolids produced in the region. These are (in priority order):
 - (i) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
 - (ii) Forest fertilization
 - (iii) Production of biosolids growing medium and/or feedstock in soil production
 - (iv) Partnerships with established biosolids programs
 - (v) Continue alternative fuel combustion in the cement manufacturing facility in Richmond, BC. Prioritize this option, when available.
 - (vi) Maintain the option of biosolids application in engineered cover systems at Hartland Landfill to act as an emergency support option, subject to space availability and cover needs of the Landfill;
2. Direct staff to continue to explore biosolids beneficial use opportunities with those First Nations that express interest both in-region and out-of-region, and to address any concerns First Nations may have regarding the beneficial use options;
3. Refer the Draft Long-Term Biosolids Management Strategy and portfolio of options to the TCAC for review and comment;

4. Post the Draft Long-Term Biosolids Management Strategy and portfolio of options on the CRD webpage for 21 days (May 13-June 3) for First Nations and public review and comment; and
5. Direct staff to bring back the comments received during the 21-day posting period from the TCAC, First Nations and public, along with a final Long-Term Biosolids Management Strategy and portfolio of options for the Board's consideration and approval at the June 12, 2024 Board meeting, for submission to the Province by June 18, 2024.

Alternative 3

That this report be referred back to staff for additional information.

IMPLICATIONS

Climate Action Implications

All beneficial reuse long-term biosolids management options have potential greenhouse gas (GHG) emission implications. Land application options have higher emissions the further away the land application sites are due to transportation requirements. However, these could be offset by the enhanced GHG sequestration within the soils following land application. Thermal and advanced thermal options result in direct GHG emissions to the atmosphere, in addition to transportation-related emissions. Advanced thermal options partially mitigate GHG emissions with sequestration in biochar. Respondents to both the Ipsos representative survey and the CRD survey indicated that “Environmental Impacts (air, water and soil contaminants)” were the most important consideration when planning for the beneficial use of biosolids. Costs, climate/GHG emissions and community impacts (truck traffic, odour and noise emission, dust) were less important.

Environmental Implications

Under the Canadian governance framework, provincial and federal regulators and agencies are responsible to ensure that biosolids reuse options are safe for the intended purposes and protective of human health and the environment when produced and used in accordance with regulations. Agencies assess the risks and benefits associated with specific resources and products and recommend policies that are incorporated into regulatory frameworks, which are evaluated on a regular and ongoing basis. Current regulations support the beneficial use of biosolids, including all of the options considered by the technical consultant.

All options have some level of risks and benefits. Advanced thermal technologies with biosolids feedstock are not yet commercially proven in Canada or the United States. Thermal options have the benefit of reduced (but not eliminated) contaminant levels in end-products. Despite concerns for risks associated with contaminants for land application options, the most significant land application risks are associated with over fertilization (too many nutrients). Both sets of risks can be mitigated by following properly designed land application plans and complying with the OMRR. Land application options have the benefit of recycling nutrients, enhancing plant growth and offsetting use of commercial GHG-intensive fertilizers.

Community concerns around the land application of biosolids are largely based on the presence, or suspected presence, of unregulated organic chemical compounds, commonly referred to as “contaminants of emerging concern” (CECs). CECs include Volatile and Semi-

Volatile Organic Compounds (VOC & SVOC), Per and Polyfluoroalkyl substances (PFAS), Polybrominated flame retardants (PBDE), dioxins, pharmaceuticals and personal care products (PPCP) and microplastics. There is concern that biosolids with detectable levels of unregulated CECs could impact soil quality, surface water or groundwater.

In recent years, there has been an increased interest in PFAS and their effects on human and environmental health. PFAS are a class of over 4,700 substances that do not occur naturally. PFAS make products non-stick, water repellent and fire resistant, and are found in a wide range of consumer and industrial products, including cookware, food packaging, clothing and firefighting foams. PFAS are sometimes referred to as “forever chemicals” because the molecules are characterized by a chain of strong fluorine-carbon bonds, which result in highly stable and long-persisting chemicals. Exposure to sufficient concentrations of PFAS is associated with an increased risk of cancer, increased cholesterol levels, and can affect the immune system.

In June 2022, ENV released the Organic Matter Recycling Regulation Project Update, which contained some discussion of CECs. “Due to advances in analytical chemistry, the ability to measure CECs has generally outpaced the ability to understand the impacts of CECs on human health and the environment. For this reason, the impacts of CECs in biosolids and wastewater treatment discharges is the subject of ongoing scientific research.” The ENV intends to add the authority for a director to require the testing of biosolids for CECs but does not intend to regulate the concentration of CECs in biosolids. ENV advocates for a prevention-first approach to reducing CECs in biosolids by implementing source control measures to discourage the discharge of certain wastes to the system.

On May 19, 2023, the Canadian Food Inspection Agency (CFIA) proposed an interim standard for PFAS in biosolids used in Canada as fertilizers. The CFIA worked with Environment and Climate Change Canada, Health Canada and provincial partners to assess an appropriate standard for PFAS. The proposed standard will protect human health by preventing the small proportion of biosolids products that are heavily impacted by industrial inputs from being applied to agricultural land in Canada. The proposed standard is 50 ppb PFOS (one type of PFAS). The concentration of PFOS in CRD biosolids is under the proposed standard at approximately 6 ppb (ng/g) (based on two samples). For comparison, a 2020 study found that the PFOS concentration in household dust was 100 ppb (100ng/g).

With regards to the Core Area Wastewater Treatment Program, during the wastewater treatment process at the McLoughlin Point Wastewater Treatment Plant, residual solids are removed from wastewater and conveyed to the RTF for further treatment. The residual solids undergo anaerobic digestion in which microorganisms break down biodegradable material in the absence of oxygen and produce biogas. The residual solids are then dewatered and heated at a very high temperature to create Class A biosolids.

In 2022, in support of the biosolids management program, the CRD collected and submitted samples of Class A biosolids being produced at the Residual Treatment Facility for high resolution analysis of a wide range of contaminants, including contaminants of emerging concern. The results are summarized in Appendix E.

Financial Implications

The proposed portfolio includes options with a range of costs per tonne. Land application and conventional thermal options are approximately the same, at less than \$500 per tonne. Advanced thermal options are more expensive at up to \$4,500 per tonne; there is significant uncertainty regarding capital and operating costs for a permanent advanced thermal facility at this time, as well as the potential for revenue generation from advanced thermal synthetic gas, bio-oil and biochar end-products and a current lack of demonstrated facilities for cost comparisons. However, this information will be ascertained through the development of the demonstration plant initiative.

Service Delivery Implications

A portfolio of options is required to ensure redundancy and resiliency of the biosolids management strategy. Previous experience with the CRD, as well as a jurisdictional review, has indicated that relying on a single or very few options and single contingency is not suitable to maintain service delivery and regulatory compliance. Based on the consultation feedback, as well as concerns raised previously by the Board, a portfolio of beneficial use options that includes reclamation of industrial lands and forest fertilization but excludes direct application to agricultural lands is considered prudent. Use of biosolids as an alternative fuel in the current short-term plan will also be carried over as an option in the long-term strategy.

Although the long-term strategy is to address biosolids produced by the Core Area wastewater service, the RTF was designed to receive and process residual solids from the Saanich Peninsula, Sooke and Gulf Island wastewater treatment plants. Once the RTF receiving station is operational, staff will work with the Saanich Peninsula Wastewater Commission to update the Saanich Peninsula Liquid Waste Management Plan accordingly.

Alignment with Board and Corporate Priorities

The recommended Long-Term Biosolids Management Strategy aligns with the 2023-2026 CRD Corporate Plan goal of *Management of wastewater and treatment residuals*, and the initiative to *Develop and implement a long-term Biosolids Management Plan*. The Strategy also supports the initiative under this goal to *Update the Liquid Waste Management Plans for the Saanich Peninsula and Core Area* with regards to complying with the commitment to beneficially use the biosolids generated from the wastewater treatment plants.

First Nations Implications

First Nations are seeking a more respectful, reciprocal government-to-government relationship with the CRD related to service delivery and service delivery impacts in their traditional territories. As described above, First Nations consultation on the Long-Term Biosolids Management Strategy is ongoing. The CRD will continue to explore beneficial use opportunities with those Nations that express interest. The CRD will also listen to any concerns Nations may have regarding the beneficial use options and is committed to working with individual Nations to address their concerns.

Intergovernmental Implications

As the strategy is implemented, CRD staff will provide advanced and regular communication to local governments in jurisdictions where out-of-region options are being contemplated or procured. Due to the nature of some of the beneficial use options and in order to have a portfolio of options that ensures redundancy and flexibility, it is not unusual for local governments to have biosolids management programs that extend beyond the jurisdictional boundaries of the local government in terms of processing and end use, particularly in areas that are more urban and those that produce larger volumes of biosolids.

Social Implications

Based on all public and TCAC engagement, there is majority support for prioritizing a range of beneficial use options, including advanced and conventional thermal options and land application options. Both the representative survey and TCAC recommendations were in close alignment, with industrial land reclamation and forest fertilization having the strongest support. However, the voluntary survey showed more support for advanced thermal options, although some forms of land application still had support. The differences between the representative and voluntary survey results were likely due to the advocacy and efforts of a few special interest groups that are known to be opposed to land application options. Moving forward, additional public and stakeholder consultation, as required by the provincial regulator on a project-by- project basis, will be conducted.

CONCLUSION

The CRD is required to provide a draft Long-Term Biosolids Management Strategy to the provincial regulator as part of the CRD's commitments under the Core Area Liquid Waste Management Plan. The recommended strategy was informed by:

- the Minister of Environment and Climate Change Strategy's direction and provincial requirements
- the CRD Board's ban of the land application of biosolids in the CRD
- the feedback received in the various public engagement processes detailed above
- the technical recommendations provided by GHD in order to develop a robust program that is flexible and provides redundancy in order to minimize operational and compliance risks,
- the CRD's goal to have a strategy that:
 - (a) utilizes the existing RTF infrastructure and Class A biosolids already being produced but also prioritizes implementing advanced thermal technology infrastructure
 - (b) minimizes negative impacts on the natural environment
 - (c) protects the health and safety of the public and workers involved in biosolids operations
 - (d) is cost effective, while balancing all of the above considerations,

The strategy consists of a portfolio of options to ensure maximum flexibility to address market, operational and logistical challenges, continuous beneficial use of biosolids and avoiding landfilling.

RECOMMENDATION

That the CRD Board:

1. Endorse the following portfolio of options in alignment with the Long-Term Biosolids Management Strategy (prepared by GHD, April 2024), utilizing each option under a prioritization structure, as follows:
 - (a) **Tier 1: Advanced thermal option:** Constitutes the preferred long-term solution and will be pursued concurrently with options in other tiers. Current projects include:
 - (i) Develop a demonstration facility for advanced thermal processing, as planned. Outcomes from the demonstration project will serve as the basis for a scaled, long-term solution.
 - (b) **Tier 2: Out-of-region compliance options:** Constitute measures that the CRD will utilize to ensure regulatory compliance is continuously achieved while the Tier 1 thermal processing option is being implemented and when options in Tier 1 are unable to process the totality of biosolids produced in the region. These are (in priority order):
 - (i) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
 - (ii) Forest fertilization
 - (iii) Production of biosolids growing medium and/or feedstock in soil production
 - (iv) Partnerships with established biosolids programs
 - (v) Continue alternative fuel combustion in the cement manufacturing facility in Richmond, BC. Prioritize this option when available.
 - (c) **Tier 3: In-region contingency options:** Constitute contingency options to ensure compliance with regulatory requirements. The CRD would implement Tier 3 options on a contingency basis, only when options within the Tier 2 portfolio are unavailable. These include (in priority order):
 - (i) Industrial land reclamation such as mine and quarry sites (acknowledging that some reclaimed sites may eventually have a pasture land end use)
 - (ii) Forest fertilization
 - (iii) Maintain the option of biosolids application in engineered cover systems at Hartland Landfill to act as an emergency support option; subject to space availability and cover needs of the Landfill;
2. Direct staff to continue to explore biosolids beneficial use opportunities with those First Nations that express interest both in-region and out-of-region, and to address any concerns First Nations may have regarding the beneficial use options;
3. Refer the Draft Long-Term Biosolids Management Strategy and portfolio of options to the TCAC for review and comment;
4. Post the Draft Long-Term Biosolids Management Strategy and portfolio of options on the CRD webpage for 21 days (May 13-June 3) for First Nations and public review and comment; and
5. Direct staff to bring back the comments received during the 21-day posting period from the TCAC, First Nations and public, along with a final Long-Term Biosolids Management Strategy and portfolio of options for the Board's consideration and approval at the June 12, 2024 Board meeting, for submission to the Province by June 18, 2024.

Submitted by:	Luisa Jones, MBA, General Manager, Parks, Recreation & Environmental Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

ATTACHMENTS

- Appendix A: Long-term Options for the Beneficial Use of Biosolids – January-March 2024 – Tavola Strategy Group (March 2024)
- Appendix B: Long-Term Biosolids Management Plan: First Nations Engagement – What We Heard Report
- Appendix C: Technical and Community Advisory Committee – Long-term Biosolids Management Strategy Presentations
- Appendix D: GHD Technical Memorandum: Long-term Biosolids Beneficial Use Strategy – April 23, 2024
- Appendix E: Biosolids – Class A Biosolids Analysis – April 2024