

# Residuals Treatment Facility

## 2025 Annual Report

Operational Certificate ME-109471

Capital Regional District | Parks, Recreation & Environmental Services, Environmental Innovation



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### TERMS AND ABBREVIATIONS

BGM	Biosolids Growing Medium
CRD	Capital Regional District
ENV	Ministry of Environment and Parks
H <sub>2</sub> S	Hydrogen sulphide
NO <sub>x</sub>	Nitrogen oxides
RTF	Residuals Treatment Facility
SO <sub>x</sub>	Sulphur oxides

## RESIDUALS TREATMENT FACILITY 2025 ANNUAL REPORT

### 1. INTRODUCTION

The Residuals Treatment Facility (RTF) is owned by the Capital Regional District (CRD) and is operated and maintained under contract until 2040 by Hartland Resource Management Group (HRMG), wholly owned by Synagro Technologies Inc. The RTF is located 15 km northwest of Victoria, British Columbia (BC) on the northwest corner of the Hartland Landfill (Hartland) property and is authorized to operate through Operational Certificate ME-109471 issued to the CRD by the BC Ministry of Environment and Parks (ENV) (formerly BC Ministry of Environment and Climate Change Strategy) on May 29, 2020. The approved operating budget for the RTF is allocated under the Core Area Liquid Waste Management Plan.

The data reported herein is required to meet provincial regulatory requirements per Section 5.1 of the Operational Certificate and includes:

- Quantity of Class A biosolids produced each year (in dry tonnes);
- Quantity of biosolids sent to the cement kiln each year;
- Quantity of biosolids directed to the Hartland Landfill;
- Quantity of biosolids directed to other beneficial use options;
- Evaluation of treatment works performance and any changes;
- Implementation schedule for any alterations to the treatment and disposal works which may impact the discharge under the Operational Certificate;
- Summary and analysis of odour data collected as required by the approved Odour Control and Response Plan;
- Summary and analysis of all complaints received; and
- Summary and analysis of all non-compliance events.

### 2. SITE AND OPERATIONS OVERVIEW

The RTF is located in the District of Saanich, within the Tod Creek watershed, in the bedrock highlands of the Gowland Range, northwest of Victoria. The Hartland Landfill borders the site to the south and east. Mount Work Regional Park lies to the west of the RTF. The RTF site occupies approximately 2.7 hectares of the 293-hectare Hartland property. The refuse area of the landfill is 43 hectares. Willis Point Road borders the site to the north, continued by the Mount Work Regional Park to the north, and a Department of National Defense rifle range to the northeast. Private residential properties are located about 1.5-2 kilometers away to the east and southeast of the RTF.

The RTF is a component of the Core Area Wastewater Treatment Project and serves the population of the Core Area municipalities (Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, as well as the Esquimalt and Songhees Nations) totaling approximately 378,000 people. The RTF receives Core Area residual solids produced at the McLoughlin Point Wastewater Treatment Plant via the residual solids' conveyance line. Residual solids are treated at the RTF through mesophilic anaerobic digestion, thickening, dewatering and thermal drying to produce pelletized Class A biosolids, as defined by the *BC Organic Matter Recycling Regulation*, with a moisture content of around 5-7%.

Construction of the RTF was completed in September 2020 and the plant achieved operational Project Service Commencement in March 2021. Under normal RTF operations, and in accordance with the CRD's approved Short-Term Biosolids Management Plan (Definitive Plan), the CRD planned to transport biosolids to Lafarge Canada Inc.'s (Lafarge) Richmond Cement Plant to be used as an alternative fuel in their cement kiln. During planned cement kiln maintenance periods, and in accordance with the CRD's approved Short-term Contingency Plan, the dried Class A biosolids would be beneficially reused at Hartland Landfill as either Biosolids Growing Medium (BGM), or biocover.

Available space at Hartland Landfill to use BGM was exhausted in 2023 following extended unavailability of the cement kiln in 2022 and early 2023. In March 2023, the CRD land application policy was modified to

allow for some types of land application. An alternative contingency option, using biosolids in a quarry reclamation project in Cassidy BC, was operationalized in June 2023. The province has directed the CRD not to landfill biosolids, however landfilling has been necessary when no beneficial use options are available.

In June 2024, the CRD Board approved a Long-term Biosolids Management Strategy. The preferred long-term approach under the strategy is the development of an advanced thermal facility to beneficially use biosolids for the production of renewable gas and biochar. Out of region, non-agricultural options like combustion, forest fertilization and industrial land reclamation will be used to maintain regulatory compliance while the preferred option is being implemented. The CRD’s Long-term Biosolids Management Strategy was acknowledged by the Minister of Environment and Parks in March 2025. The CRD is actively procuring a preferred option and compliance options.

### 3. BIOSOLIDS PRODUCTION AND USE

In 2025, a total of 3,073 dry tonnes (3,273 wet tonnes) of dried Class A biosolids were produced, with an average solids content of 93.9%. Table 1 includes a summary of biosolids end use for 2025. There was no non-class A biosolids production in 2025.

**Table 1 Biosolids Production and Use**

Biosolids Type	Produced	End Use			
		Combustion <sup>b</sup>	Land Reclamation <sup>c</sup>	Non-Agricultural Soil Amendment <sup>d</sup>	Hartland Landfill <sup>e</sup>
<b>Dried <sup>a</sup> Class A Dry Tonnes (Wet Tonne Equivalents)</b>	3,073 (3,273)	234 (249)	2,640 (2,812)	199 (212)	0 (0)
<b>Non-Class A Dry Tonnes (Wet Tonne Equivalents)</b>	0 (0)				0 (0)

**Notes:**

- <sup>a</sup> Greater than 90% solids, approximately 5% moisture.
- <sup>b</sup> Used as an alternative fuel at the Lafarge cement manufacturing facility in Richmond, BC.
- <sup>c</sup> Used for quarry reclamation in Cassidy, BC.
- <sup>d</sup> Used to fabricate growing medium and as a fertilizer at non-agricultural nurseries in the Fraser Valley
- <sup>e</sup> Class A Biosolids are landfilled within leachate containment areas.

Due to operational challenges at the cement kiln throughout 2025, the facility was only able to receive 234 dry tonnes of biosolids. 2,839 dry tonnes of biosolids were managed via non-agricultural land application. During 2025, no Class A biosolids were landfilled at Hartland Landfill. Biosolids were last landfilled on March 28, 2024. In June 2024, the CRD submitted a Long-Term Biosolids Management Strategy to ENV. ENV acknowledged receipt in March 2025. The CRD is continuing to procure additional out-of-region, non-agricultural land application options.

### 4. TREATMENT WORKS PERFORMANCE

#### 4.1 Introduction

The facility was commissioned in March 2021. Commissioning was conducted in accordance with the ENV approved “*Hartland Resource Management Group: Start-up and Commissioning Plan*” to which there were no unapproved changes. The ENV was notified of service commencement in 2021. A temporary strain press was installed in 2023 to address operational challenges caused by hair and debris. There have been no alterations made to the RTF that have impacted authorized discharge controls.

All equipment outlined in the Operational Certificate was installed according to design and manufacturers' specifications, and registered with Technical Safety BC. Equipment commissioning activities were focused on optimizing the performance of the odour control system and demonstrating functional completion for all other equipment outlined in the Operational Certificate. Based on the completed commissioning and successful operation and maintenance of all equipment (excluding the odour control system), the facility operated within the authorized discharge limits designated in the Operational Certificate throughout 2025.

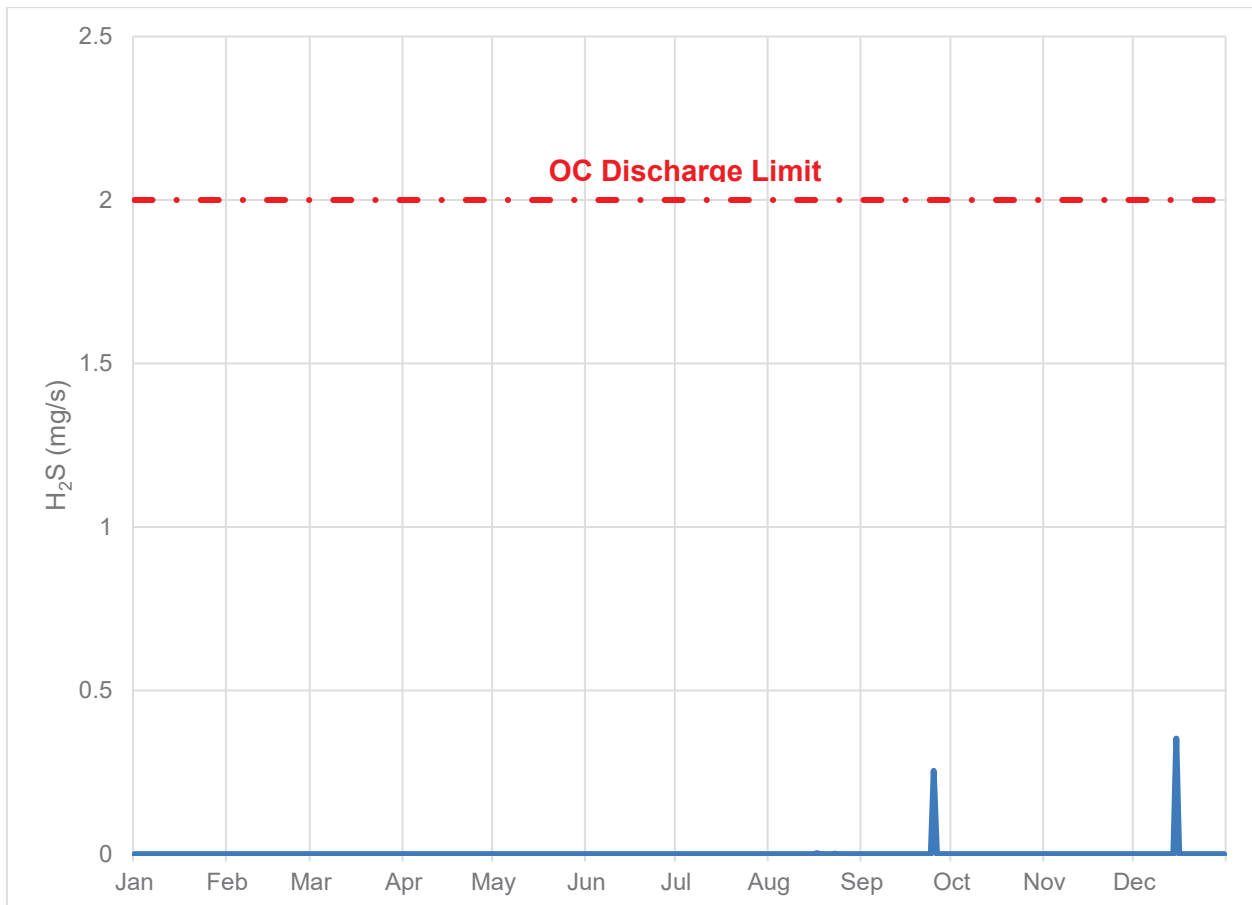
#### 4.2 Odour Control System (Site Reference Number: E319474)

The odour treatment stack (19 m height and 900 mm diameter exhaust cone), exhausts treated air from the odour control works. These works consist of an impingement pre-filter (AMACS mesh mist eliminator), bio-trickling filters (Evoqua model BTF-1236), and a three stage chemical scrubber (Evoqua model LP-7000-HN). The average daily odour treatment stack discharge rate was in compliance with the authorized discharge limit of 660 m<sup>3</sup>/min.

Figure 1 displays the daily average stack hydrogen sulfide (H<sub>2</sub>S) values for the 2025 reporting period. There were no days or instances when the RTF was operating outside the Operational Certificate H<sub>2</sub>S limit of 2 mg/s.

No odour non-compliance events occurred in 2025.

In addition, two impingement pre-filters (AMACS mesh mist eliminator) installed in parallel (duty/standby) ensure particulate matter from the treatment stack is below the designated limits outlined in the Operational Certificate. The filter is replaced and cleaned as required and the pressure differential is monitored to ensure optimal performance.



## Figure 1 Daily Average Odour Treatment H<sub>2</sub>S Discharge Data

### 4.3 Biogas Flare (Site Reference Number: E319472)

Biogas is harvested from the digesters and digested solids storage tank. From there, it is either pressurized by the blower or flared off. The Varec 244E series enclosed waste gas burner system was installed according to design and manufacturer specifications. The flare operated successfully throughout 2025, flaring an estimated 3,268,487 m<sup>3</sup> of biogas, or approximately 62% of the 5,318,720 m<sup>3</sup> of biogas produced. The Operational Certificate nitrogen oxides (NO<sub>x</sub>) limit of 105 mg/s and sulphur oxides (SO<sub>x</sub>) limit of 35 mg/s are based on modelled estimates of flaring the peak biogas generation scenario of 12,775,000 m<sup>3</sup>. As only 5,318,720 m<sup>3</sup> of biogas were produced, and much of the biogas produced was used in the boilers and thermal oil heater, it is unlikely limits were exceeded, however emissions are not monitored.

### 4.4 Boilers (Site Reference Number: E319473)

Two boilers provide heat to the digesters and RTF operations, as required. The boilers are dual fuel, running off either digester biogas or propane. The installed boilers are a 100 boiler horsepower (BHP) boiler (Superior Boilers model 6-X-500-FMCF-W30-LP/DG) and a 250 BHP boiler (Superior Boilers model 6-X-1250-FMCF-W30-LP/DG). The boilers were installed according to design and manufacturer specifications. The boilers maintained successful and consistent operation throughout 2025. In 2025, 2,050,233 m<sup>3</sup> of biogas was used as fuel in the boilers or the thermal oil heater for beneficial use within the plant. Approximately 15-20% of the biogas is directed to the boilers and the remaining 80-85% is used by the thermal oil heater. The Operational Certificate NO<sub>x</sub> limit of 41 mg/s and SO<sub>x</sub> limit of 12 mg/s per boiler stack are based on modelled estimates of burning 100 % of the peak biogas generation scenario of 12,775,000 m<sup>3</sup> in the boilers. As these gas volumes were not produced, it is unlikely limits were exceeded, however, emissions are not monitored.

### 4.5 Thermal Oil Heater (Site Reference Number: E319475)

Biogas, supplemented by propane as required, is used as the primary fuel in a dedicated thermal oil heater. Thermal oil is pumped to the in-bed heat exchanger to maintain the fluidized bed dryer at 85°C. The Ascentec S/TH-50-BE Thermal Oil Heater was installed according to design and manufacturer specifications. The thermal oil heater operated successfully in 2025. The thermal oil heater operated primarily on biogas during 2025, with the exception of brief periods during start-up. The Operational Certificate NO<sub>x</sub> limit of 134 mg/s and SO<sub>x</sub> limit of 8 mg/s per boiler stack are based on modelled estimates of burning 100% of the peak biogas generation scenario of 12,775,000 m<sup>3</sup> in the thermal oiler heater.. As these gas volumes were not produced, it is unlikely limits were exceeded, however, emissions are not monitored.

### 4.6 Diesel Pump and Generators

The Operational Certificate has authorized discharge of air emissions from miscellaneous sources, which include the following:

- Two (2) 1,000 kW diesel power generators (Mitsubishi model MDI000), for back-up power.
- One (1) 160 Hp diesel pump (Clarke/John Deere model JU6H-UF34), to operate RTF fire suppression systems.

During the reporting period, the usage of these miscellaneous sources was limited to weekly tests. All operation was done in accordance with Part 2, Section 6 of the *Environmental Management Act*; and the RTF Emergency Response Plan.

## 5. IMPLEMENTATION SCHEDULE FOR ALTERATIONS TO TREATMENT WORKS

There are three projects currently underway at the Residuals Treatment Facility that will alter treatment works.

## **5.1 Side-Stream Treatment**

A project to add further effluent treatment, a moving bed biofilm reactor (MBBR) and a dissolved air flotation (DAF), is currently in the design phase, with detailed engineering and procurement planning underway. Installation is forecasted to begin in November 2026 and commissioning in Spring 2027. The purpose of this project is to further treat Biological Oxygen Demand and improve the quality of effluent returned to McLoughlin Point Wastewater Treatment plant. This project is not expected to impact the discharges authorized under this Operational Certificate.

## **5.2 Strain Press**

The addition of a strain press at the facility is planned to mitigate impacts of hair and debris on operations, and will replace a temporary unit currently in operation. Design, procurement, and site preparation activities are underway, with installation planned for late 2026. Once operational, the project will improve removal of hair and debris from incoming residuals, protecting downstream pumps and equipment, reducing maintenance requirements, and improving overall plant reliability at the RTF. Solids removed from the influent will be disposed of at Hartland Landfill. This project is not expected to impact the discharges authorized under this Operational Certificate.

## **5.3 Biogas Connection**

A project to connect the RTF to the biogas upgrading facility at Hartland Landfill is currently in the planning and design phase. Detailed design and procurement are anticipated to proceed through 2026, followed by construction of the pipeline connection and control systems expected to occur in late 2026, with integration targeted for early 2027. Once complete, the project will enable biogas produced in the anaerobic digesters to be directed to Biogas Upgrading Facility for upgrade into renewable natural gas, reducing the volume of gas sent to flare and decreasing associated greenhouse gas emissions. This project will significantly reduce the discharge at the Biogas Flare (Site Reference Number: E319472) authorized under this Operational Certificate.

## **6. ODOUR CONTROL & RESPONSE**

As part of RTF commissioning and operation, the main focus around odour was to establish successful performance of the odour control system and limit the release of H<sub>2</sub>S from the odour treatment stack (see Section 4.2 for discussion). As outlined in the Odour Control and Response Plan, RTF staff completed routine perimeter odour checks to monitor for odour generated by the RTF. There were two odour complaints received from the public in 2025 (Appendix A). RTF Operators and CRD staff continue to monitor the RTF and conveyance lines for sources of nuisance odour.

## **7. CONCLUSION**

The RTF operated successfully throughout 2025. In total, 3,073 dry tonnes of Class A biosolids were produced. Of those tonnes, 234 were sent to the Amrize (formerly Lafarge) cement manufacturing facility for use as an alternative fuel, 2,640 were provided to a gravel quarry for use in reclamation and 199 tonnes were used at non-agricultural nurseries in the Fraser Valley.

During the reporting period the odour control system performed as expected and readings at the discharge stack did not exceed the H<sub>2</sub>S limit of 2 mg/s.

The biogas flare, boilers, thermal oil heater, diesel pump and generators were all operated and maintained, as per design and manufacturer specifications. The applicable discharge limits are based on the peak biogas generation scenario. As 2025 volumes were only 41% of the peak biogas generation scenario, emissions are expected to have remained below the applicable limits.

**8. REPORT SIGN-OFF**

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## **APPENDIX A**

### **SUMMARY OF COMPLAINTS RECEIVED**

**Appendix A – Summary of Complaints Received**

Date of Complaint	Nature of Complaint	Details	Response
August 29, 2025	Odour	Via phone - Complaint of odour near RTF.	An odour survey was conducted around the RTF and monitoring data from the odour control unit was assessed. Based on the investigation and prevailing wind conditions at the time, it was determined that the odour likely originated from the nearby landfill.
December 2, 2025	Odour	Via email - Complaint of sewage odour at residence north of the RTF.	Two odour surveys were conducted around the RTF and along Willis Point Road, on December 3, and December 30 but no odour was observed, and the RTF as a source could not be confirmed.