Making a difference...together

Environmental Resource Management

2020 Progress Report

ORGANIZATIONAL OVERVIEW

The Capital Regional District (CRD) delivers regional, sub-regional and local services to 13 municipalities and three electoral areas on southern Vancouver Island and the Gulf Islands.

Governed by a 24-member Board of Directors, the CRD works collaboratively with First Nations and all levels of government to enable sustainable growth, foster community well-being, and develop cost-effective infrastructure while continuing to provide core services to residents throughout the region.

COVID-19 IMPACT

2020 activities were greatly impacted by the COVID-19 global pandemic. As a local government, the CRD takes direction from the Provincial Health Officer and Minister of Public Safety and Solicitor General. We activated a corporate emergency operations centre in March 2020 to respond to the various Ministerial orders, policies, recommendations and guidelines. The CRD continues to maintain critical services and infrastructure, as well as provide reliable and essential services that play a significant role in economic recovery for the region.

Note: some images in this report were taken before COVID-19 health orders came into effect, therefore social distancing and safety measures may not be pictured.

TERMS & ABBREVIATIONS

3Rs – reduce, reuse, recycle
5Rs – reduce, reuse, recycle, recovery, residual management
CEC – Compost Education Centre
CRD – Capital Regional District
EPR – extended producer responsibility
ERM - Environmental Resource Management
ENV – Ministry of Environment or Ministry of Environment and Climate Change Strategy
GHG – greenhouse gas
PPP – packaging and printed paper
SWMP – Solid Waste Management Plan

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Overview and Governance

SOLID WASTE DISPOSAL

The CRD became responsible for solid waste disposal for the region in 1973 when, at the request of the CRD Board, the Province of British Columbia established solid waste disposal as a regional function of the CRD.

In 1975, the CRD acquired Hartland Landfill, which had been operating as a private facility since the 1950s. The facility continued to be managed by a private contractor until 1985, when the CRD assumed direct operation of the site.

In 2008, the privately owned and operated Highwest Landfill was added to the CRD's SWMP. The facility is located in the District of Highlands and primarily manages construction and demolition material.

SOLID WASTE MANAGEMENT PLAN

All regional districts must have a SWMP approved by the ENV. The original plan for the CRD was approved by the Minister of Environment in 1989. There have been two subsequent revisions to the original plan plus eight amendments.

Building on the strategies and actions for a new SWMP endorsed by the Board in 2019, a draft SWMP was developed and engagement on the plan took place in the late fall 2020 and winter of 2021. It is expected that plan approval by the Board and submission to the Province will take place in the spring of 2021.

SOLID WASTE COLLECTION

Collection of residential and commercial garbage and kitchen scraps is conducted by the private sector, with the exception of single family dwelling service offered by six of the region's municipalities.

The private sector also collects recycling from multi-family buildings and commercial buildings.

The CRD provides region-wide residential recycling service through a combination of single family home curbside collection and depot collection programs under contract to Recycle BC.

ENVIRONMENTAL RESOURCE MANAGEMENT

With a mission to efficiently and effectively manage the region's solid waste resources in an environmentally, socially and economically responsible manner, the ERM division is responsible for municipal solid waste management in the capital region, including waste reduction, recycling programs and operation of Hartland Landfill.

As part of the Parks & Environmental Services Department, the division reports to the Environmental Services Committee, which also acts as the steering committee for the development of the new SWMP.

Communications, Outreach and Education Programs

A number of communications, education and outreach programs are used to support the 5R hierarchy and promote resident awareness and participation in waste reduction and disposal services, including:

- Information phone line and email, as well as robust website resources.
- Curriculum-linked educational workshops and tours for students from Kindergarten to Grade 12.
- Seasonal, research-based public education campaigns and instructive materials.
- Active media relations to support public awareness of solid waste programs and opportunities.
- Timely and educational social media content.

INFOLINE

The Infoline is an essential part of education and outreach programs. This service responds to waste reduction, waste management, recycling and general Hartland Landfill inquiries.

An automated voice messaging service (250.360.3030) is available 24 hours a day and inquiries are responded to within 24 hours on weekdays. Waste and recycling information can also be found at www.crd.bc.ca/waste or by emailing infoline@crd.bc.ca. **In 2020, the Infoline received 25,165 calls and 3,500 emails.**

MYRECYCLOPEDIA.CA

Myrecyclopedia.ca contains a comprehensive online listing of items — from aerosol containers to zinc — and includes the environmental story behind each item, local recycling listings and tips on how to reduce and reuse in our daily lives. This tool was developed to encourage sustainable practices and to reinforce the 3Rs. **In 2020, Myrecyclopedia.ca listings received 246,440 visits.**

READY, SET, SORT!

Ready, Set, Sort! is an online waste sorting game where residents can test their knowledge about local recycling opportunities. The game includes 72 items, six bins and five levels of play and can be accessed through Myrecyclopedia.ca.

In 2020, there were 6,636 game plays, with the most common misunderstood depot items being plastic shopping bags and foam packaging.

EDUCATIONAL WORKSHOPS AND TOURS

Environmental education is of paramount importance to the CRD's waste reduction strategies.

Programs taking place at Hartland Landfill and the Hartland Learning Centre allow for place-based learning, providing participants with an interactive experience to create awareness, impart knowledge and inspire behavioural change in our region. An outreach and community presence, as well as the Infoline, increase educational and informational opportunities and allow for interactions with a wider variety of audiences. Education and outreach occurs through many programs and initiatives.

3Rs School Programs

The 3Rs school programs are free interpretive programs and tours offered to Kindergarten to Grade 12 students in the region.

Program topics such as That's Not Garbage!, 3Rs Unwrapped and Digging Deeper challenge students to explore our habits and behaviours surrounding waste and discuss ways to generate less waste by practicing the first of the 5Rs (reduce, reuse and recycle). Classes that visit the Hartland Learning Centre for their programs are also offered the opportunity for a behind-the-scenes tour of the landfill to see where their garbage goes and what is involved in operating a landfill.

In 2020, we delivered 26 school programs to 643 participants:

- **21 programs at Hartland (519 participants)**
- **5 in-school programs (124 participants)**

As in-person programming was paused in March 2020, efforts were placed on creating and updating online activities, resources and lesson plans for teachers and parents. The webpage where resources are retrieved was redesigned for easy access and more visibility. Activities and resources such as; Make Your Own Recycled Paper, Make Your Own Beeswax Wraps and a Home Garbage Habits Survey were created and made accessible on the website.

3Rs Community Programs

In-person programming was paused for the majority of the year, however in the first quarter of the year a few community programs were delivered. In 2020, community programming involved tours and presentations at Hartland as well as piloting a live streamed tour of the landfill. These programs are an opportunity for community groups and organizations to learn more about waste management in the region. Groups come to the Hartland Learning Centre for interactive presentations and a landfill tour or request a CRD speaker to come to them. **In 2020, we delivered 4 community programs to 83 participants and a live-streamed tour of the landfill was piloted.**

Technical Tours

Technical tours of Hartland Landfill are offered to groups from industry associations, colleges, universities and government staff.

In 2020, we delivered 3 technical tours of Hartland to 104 participants.

Public 3Rs Programs

Public 3Rs programs were not offered in 2020 as in-person programming was paused due to COVID-19. Typically public 3Rs programs are offered for residents not associated with a school or organized group, opening up the opportunities for individuals to tour Hartland Landfill.

In previous years, programs have been designed and offered for both adults and families in the spring, summer and fall. Adult programs included a presentation at the Hartland Learning Centre and a behind-the-scenes tour of the landfill to give residents the opportunity to learn how Hartland operates, how waste is managed in the region and what diversion opportunities are available. The family orientated version included a presentation and discussion surrounding food waste, a workshop where participants made their own beeswax food wraps and a behind the scenes tour of the landfill.

PUBLIC EDUCATION CAMPAIGNS

In 2020, the CRD developed and implemented a number of seasonal public education campaigns to promote and provide information in the following areas:

END MARKETS FOR RECYCLABLE MATERIALS

ILLEGAL DUMPING PREVENTION

HOUSEHOLD HAZARDOUS WASTE DISPOSAL

HOLIDAY SEASON WASTE REDUCTION

COMPOST EDUCATION CENTRE

The CEC encourages environmental stewardship and provides residents with climate resiliency tools and skills needed to compost, reduce waste, grow their own food and conserve soil, local ecosystems and water.

The CEC supports the CRD yard and garden material and kitchen scraps landfill bans through programming that emphasizes accessible education around organics diversion, both on and off-site. Through a contract with the CRD, the centre offers presentations, workshops, and educational demonstrations at on-site gardens and throughout the community.

Due to community concerns regarding pandemic effects upon supply chains in 2020, the CEC received an increased demand in food security related information on soil contamination, home scale solar, native ecology conservation, composting, to numerous local food security workshops such as Grow Your Own Food 101, Planning Your Year Round Veggie Garden, Canning the Abundance and Food Preservation Basics. The CEC was also an instrumental partner in Growing Together; a coalition of organizations responding to the surge in interest in topics of composting and gardening that resulted from the pandemic.

In addition, the CEC began to develop tools and resources for further addressing soil degradation in the CRD via the Healing City Soils program, and initiated the Neighborhood Composting Pilot Program, which aims to divert food scraps from landfills and reduce usage of resource intensive collection programs.

In 2020 the CEC communicated with 536,276 residents, ran 67 community workshops/learning events with 8,672 residents participating.

The CEC also delivered 63 school programs to 1,125 preschool to Grade 12 students and their guardians or teachers.

In 2020, the Infoline received 25,165 calls and 3.500 emails

You can contact us at:

automated voice messaging (250.360.3030)

www.crd.bc.ca/waste

infoline@crd.bc.ca

In 2020, the Compost Education Centre ran 67 learning events for 8,672 residents

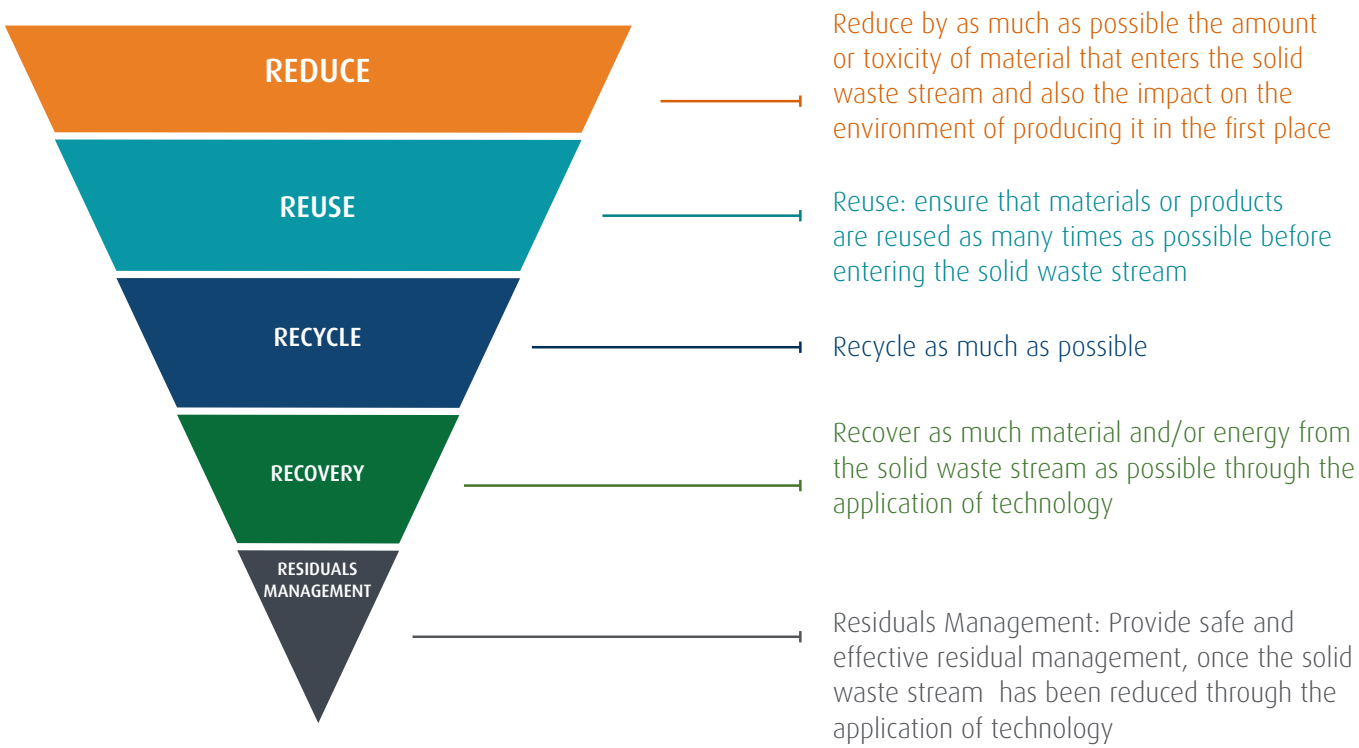
1,125 students participated in Compost Education Centre school programs in 2020

The 5R Hierarchy

The CRD views waste as a commodity and seeks the highest and best use for these resources by applying the 5R hierarchy of reduce, reuse, recycle, resource recovery and residual management.

Services range from planning and policy development, bylaw and contract administration to landfill operations. The goal is to extend the life of Hartland Landfill by minimizing waste disposal and maximizing diversion opportunities.

5R Pollution Prevention Hierarchy



Reduce and Reuse

WASTE REDUCTION

In 2020, the CRD website was expanded to provide focused content on how residents could reduce their consumption of products and maximize reuse opportunities in the community. Information available at crd.bc.ca/reduce includes tips for avoiding single use items, resources for finding repair services and suggestions on how to donate items responsibly.

DIVERSION FUNDING FOR NON PROFIT ORGANIZATIONS

Since 1992, the CRD has provided funding to non-profit organizations involved in the reuse of clothing, household goods, building supplies and food recovery. The funding assists with costs related to recycling and waste disposal, in recognition that some of the donations received are not suitable for reuse. Ten organizations participated in the program in 2020.

HARTLAND REUSABLE MATERIALS PROGRAM

The CRD partners with five organizations for the management of donated items received at Hartland depot. Goods such as textiles, bicycles and appliances are redistributed through a variety of networks operated by these non-profit associations.

Recycle

CURBSIDE RECYCLING

Under agreement with Recycle BC, the CRD provided 128,830 single family dwellings with curbside recycling service for PPP in 2020. The CRD curbside program is a successful three-stream recycling model, which ensures the highest quality and value for marketing of the material.

Residents are able to download the RecycleCRD app or sign up for collection reminders and service alerts via email, voicemail or Twitter. To date, 77,098 reminders have been created.

Since the program's inception in 1989, over 505,967 tonnes of recyclables have been collected.

HARTLAND DEPOT

The public drop-off depot at Hartland receives garbage, recyclables and household hazardous waste. Over 80 items from 28 product categories are accepted for recycling. This area is intended for residential quantities and limits vehicle size to 5,500 kg gross vehicle weight.

2020 depot fees:

- Extended Producer Responsibility products: no charge
- Household hazardous waste: no charge
- Rimmed tires: $6 per drop-off, maximum five tires
- Business recycling: $26/visit
- Yard and garden material: $59/tonne
- Mattresses and box springs: $110/tonne plus a $10 bin fee
- Garbage: $110/tonne plus a $10 bin fee

GULF ISLANDS DEPOTS

Residents on Salt Spring Island and the Southern Gulf Islands are provided recycling services through drop-off programs set up at depots in their communities.

The CRD, under agreement with Recycle BC, partners with local on-island non-profit associations for recycling services for PPP at these depots.

In addition to receiving PPP, most depots offer additional services such as scrap metal and electronics recycling.

PORT RENFREW TRANSFER STATION

Under a local service funded by the community of Port Renfrew, residents and businesses have access to a transfer station for drop off of general refuse, kitchen scraps and recyclables.

128,830 single family dwellings with curbside recycling service

77,098 curbside collection reminders have been created

Over 500,000 tonnes of recyclables have been collected since 1989

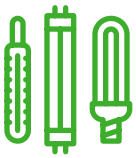
80 items from 28 product categories are accepted for recycling

EXTENDED PRODUCER RESPONSIBILITY

British Columbia's industry-led product stewardship programs require producers of designated products to take extended producer responsibility for the life-cycle management of their products, including collection and recycling. The BC Recycling Regulation, under authority of the *Environmental Management Act*, sets out the requirements for product stewardship in BC. The CRD supports industry-led product stewardship with participation in the following provincial programs:

Beverage Containers (Refundable)

Refundable glass, plastic, aluminum, metal and polycoated beverage containers are accepted at the Hartland depot and electoral area recycling depots. Beverage bags and pouches are not included in CRD programs. Refundable beverage containers are also accepted at participating retail stores and private depots.



Electronics, Electrical Products, Batteries and Lighting Products

Since 2014, the CRD has partnered with seven stewardship agencies for the collection of a wide range of electrical items at the Hartland depot:

- Encorp Pacific (computers, monitors, printers, TVs, audio visual equipment, CDs, VHS tapes)
- ElectroRecycle (small appliances, power tools, sewing machines, exercise equipment)
- Call2Recycle (batteries and mobile phones)
- LightRecycle (residential fluorescent lamps, compact fluorescent bulbs and lighting fixtures)
- Switch the 'Stat (thermostats)
- AlarmRecycle (smoke detectors)
- Outdoor Power Equipment (mowers, blowers, clippers, chainsaws)

Lead-Acid Batteries

Lead-acid batteries have been accepted for recycling at the Hartland depot since 1992, shortly after the BC Lead Acid Battery Collection program was introduced. This first generation program transitioned in 2012 to being managed under the BC Recycling Regulation. Batteries are broken down at smelters into lead, plastic and acid.

Paints, Solvents, Flammable Liquids, Gasoline and Pesticides

In 1994, the CRD began working with the Product Care Association to provide the region with waste paint collection at the Hartland depot. Since then, the program has expanded to include solvents, flammable liquids, gasoline and pesticides (paint plus) and a paint exchange.

Product Care Association depots in the region:

- 1 paint plus with paint exchange (Hartland depot)
- 3 paint plus
- 2 paint only with paint exchange
- 5 paint only

See myrecyclopedia.ca for a full list of locations.

Pharmaceuticals

The Medications Return Program, is promoted regionally through the CRD Infoline, website and regional source control program. The CRD works in partnership with the Medications Return Program and Island Health to raise awareness about safe and proper disposal of medications. Through 2020, the CRD continues to have one of the highest medication return rates per capita amongst regional districts in the province.

Packaging and Paper Products

In 2011, the BC Recycling Regulation was amended to add PPP from residential generators. The amendment shifted the financial responsibility for managing these materials to producers starting in 2014. PPP are managed through a combination of residential curbside collection and depot drop off, which are provided locally by both the CRD and the private sector.

In 2020, 19,459 tonnes of PPP were collected through these CRD programs:

- Curbside Blue Box Program
- Gulf Island Recycling Depots
- Hartland Depot
- Port Renfrew Transfer Station

Tires

Tires have been accepted at the Hartland depot since it opened in 1992, in conjunction with the province's Financial Incentives to Recycle Scrap Tires program. In 2007, this provincial initiative was replaced with a product stewardship program under the BC Recycling Regulation managed by Tire Stewardship BC (TSBC). TSBC, in partnership with the Bicycle Trade Association of Canada and the local biking community, also offer a voluntary program for the recycling of tires and tubes through bike retailers. Collection of bicycle tires and tubes at the Hartland depot began in 2011.

Used Lubricating Oil, Filters and Containers

The BC Used Oil Management Association manages the product stewardship program that provides for the collection and recycling of used oil, oil filters, antifreeze and containers. The program strives to ensure every drop of used oil and antifreeze, as well as all filters and containers, are brought to a collection facility to be properly recycled.

ORGANICS MANAGEMENT

Regional Kitchen Scraps Strategy

In January 2015, a landfill ban on kitchen scraps was implemented, saving a valuable resource, conserving landfill space and reducing GHG emissions.

Kitchen scraps are typically managed in one of two ways: onsite digestion or collection for transportation to composting facilities in the Cowichan Valley Regional District and on the lower mainland. Establishment of in-region kitchen scraps processing capacity is being explored.

Compost Facilities Bylaw

The CRD Board adopted the regional composting bylaw in December 2005. The bylaw regulates the operation of composting facilities to protect public health and the environment. In 2020, there were no licensed facilities under the bylaw.

Yard and Garden Material Landfill Restriction

In 2006, a yard and garden material landfill ban came into effect. A number of private facilities in the area accept the region's yard and garden material.

In 2020, a total of 907 tonnes of source-separated yard and garden material was received at Hartland where it was ground and beneficially used on-site. The landfill ban excludes invasive, infectious and noxious plants which are managed at Hartland as garbage through a rate of $59/tonne in an effort to reduce their proliferation.

HOUSEHOLD HAZARDOUS WASTE

The Hartland depot offers residents a one-stop drop-off service for virtually all types of household hazardous waste and is a leading program of its kind in British Columbia. The material is accepted in residential quantities only at no charge for recycling (where feasible) or disposal at a hazardous waste management facility.

Hartland Public Drop-off Depot

Materials collected at Hartland Landfill's recycling depot.

MATERIAL TYPE (TONNES)	
Antifreeze	9.150
Appliances	329.170
Batteries	51.580
Books	0
Containers (metal, plastic, paper)	20.530
Cooking oil	6.910
Electronics and electrical items	377.100
Fibres (paper, cardboard)	220.090
Foam packaging	11.730
Fire extinguishers	2.800
Food waste	13,354.570
Glass (bottles, jars)	17.800
Household hazardous waste	52.440
Light bulbs, tubes and ballasts	11.780
Mattresses	325.990
Metals	1,215.400
Motor oil, filters and containers	87.550
Paint, solvents and pesticides	228.330
Plastic (bags, overwrap)	6.460
Plastic (other flexible plastics)	18.510
Propane tanks	20.910
Refundable containers	17.060
Reusable goods	20.850
Tires	100.890
Yard and garden waste	906.710
TOTAL FOR 2020	17,414.310

Recovery

HARTLAND LANDFILL GAS CAPTURE AND UTILIZATION

Landfill gas is produced from decomposing garbage. This gas is mainly made up of carbon dioxide and methane. Methane is an energy source, but is also a GHG. It is flammable and explosive in certain concentrations, which is why it needs to be controlled.

Landfill gas is collected at Hartland using a network of wells and pipes installed in the early 1990s. Between 1991 and 2003, the gas collected was burned using a flare to reduce GHGs. In 2003, a landfill gas-to-electricity plant was built next to the flare station to utilize the methane in the landfill gas to produce electricity. The electricity produced is fed into the existing BC Hydro distribution system on site. The facility produces close to 1.6 megawatts of green power — enough electricity to supply about 1,600 homes.

In 2012, a site-specific Landfill Gas Management Plan was approved, which detailed a strategy for capturing landfill gas and meeting collection targets set by the ENV and regulated under the Landfill Gas Management Regulation. The plan includes installation, operation and maintenance of collection infrastructure and routine reporting. Collection infrastructure continues to be installed in accordance with the plan and GHGs have been reduced by approximately 50% since 2011.

In 2020, to better assess overall performance of the landfill gas collection system, a field-level landfill gas quantification study was completed. Results of the study indicate that fugitive (uncaptured) emissions from the landfill are significantly lower than what is calculated through modelling. As a result, the existing landfill gas collection system is capturing a higher proportion of total landfill gas: approximately 76% - 81% over the last three years, compared to the 64% - 67% for the same period using the model required by ENV.

The report also identified additional strategies that can be taken by the CRD to further increase collection efficiency and biological oxidization, including enhancements to the existing landfill gas collection system and application of an engineered biocover system. These recommendations will be studied and implemented throughout 2021 and 2022.

FUTURE OF GAS UTILIZATION

The volume of landfill gas collected at Hartland has exceeded the capacity of the current landfill gas utilization plant, which produces clean electricity. The equipment is also reaching its end of life. As a result, the CRD has evaluated two enhanced alternatives: upgrading landfill gas to renewable natural gas (a carbon neutral form of biogas) for sale to FortisBC or expanding the capacity of the current plant to produce more electricity. Maximizing landfill gas management can have both environmental and financial benefit for the community. It can also foster a greater circular economy, using waste to generate energy.

In April 2020, the CRD announced approval in principle of an agreement to sell renewable natural gas (RNG) to FortisBC for beneficial use. Blending seamlessly with conventional natural gas, RNG is a carbon-neutral energy made from capturing and upgrading the biogas released from decomposing organic waste in the landfill. Converting the biogas generated at Hartland Landfill to RNG will reduce our region's emissions by approximately 264,000 tonnes of carbon dioxide over the life of the project—the equivalent to removing 2,240 cars from the road. A lifecycle GHG assessment found that decommissioning the electricity plant, a facility nearing the end of its life, and building a new RNG facility at Hartland Landfill is a more effective beneficial use of this resource from a climate change perspective.

The CRD and FortisBC have executed a supply contract that will be submitted to the British Columbia Utilities Commission for approval in spring, 2021. If approved by the commission, the CRD will continue to be responsible for the ownership and operation of Hartland Landfill, the landfill gas collection system and the upgrade facility. FortisBC will pay a fixed price per gigajoule for the renewable natural gas and will be responsible for the costs associated with injecting it in to the natural gas distribution system. The CRD expects the RNG facility to be operational in 2023.

Residuals Management

Hartland is a multi-purpose site which, in addition to landfill services for general refuse and controlled waste, provides drop off for recycling, stewardship items, compostables and household hazardous waste.

Hartland has received the Silver Landfill Management Excellence Award from the Solid Waste Association of North America, as well as awards for leadership and innovation in gas utilization and best practices for household hazardous waste collection.

The CRD has also received awards for safety initiatives, including the prestigious National Award for Best Safety Week Program in Canada, in which Hartland Landfill played a major role.

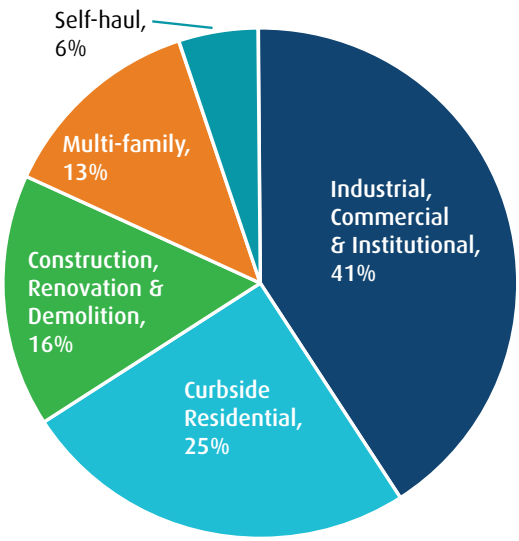
LANDFILLING

The site operates under a Design, Operations and Closure Plan, in accordance with an Operational Certificate issued by ENV, as well as the BC Landfill Criteria for Municipal Solid Waste, and the CRD's SWMP. There is also a provincial authorization in place for asbestos management. Municipal solid waste is typically landfilled using the advanced terracing method. This technique enables the management of surface runoff and leachate flow, as well as control of long-term settlement. It consists of advancing the filling area with vehicular access provided atop the preceding day's refuse.

A landfill compactor is used to grade and compress refuse while maintaining a desired slope at a constant width. Hartland's compaction rate exceeds 950 kg/m^3 and all refuse is covered daily with synthetic tarps and aggregate quarried on-site to cover the side slopes and vehicle access areas.

Controlled waste, such as sewage sludge, condemned food and animal carcasses is landfilled in trenches dug in completed waste lifts and covered daily with chipped wood waste, aggregate or clay to reduce odours. Asbestos is landfilled in segregated areas of the site and is covered daily with aggregate or soil.

SECTORS CONTRIBUTING TO WASTE DISPOSAL



TOTAL REFUSE BY TYPE (tonnes)

TYPE OF WASTE	2019	2020	% CHANGE
General refuse	145,402	149,538	3%
Controlled waste	11,512	13,207	15%
Asbestos containing material	3,813	3,093	-19%
TOTAL	160,727	165,838	3%

LANDFILL DISPOSAL RATES

Landfill tipping fees provide a financial incentive to reduce the quantity of solid waste being brought to the landfill for disposal. The tipping fee structure for 2020 included:

- $110/tonne for general refuse
- $157 to $500/tonne for controlled waste
- $254/tonne for bulky waste

LANDFILL MATERIAL RESTRICTIONS

Landfill restrictions have been part of the CRD waste diversion strategy since 1991 and are only implemented when viable and sustainable recycling alternatives exist.

Recyclable materials banned from disposal include:

1991: drywall
1993: corrugated cardboard, white goods, tires, directories
1995: scrap metal, aggregate, concrete, asphalt, rubble, clean soil
1998: paper fibres
2006: yard and garden material
2011: EPR products
2015: kitchen scraps

INTERNATIONAL WASTE

In Canada, solid waste from foreign sources is managed according to the International Waste Directive under the authority of the Canada Border Service Agency and the Canadian Food Inspection Agency.

At Hartland Landfill, international waste is managed as a controlled waste at a fee of $157 per tonne.

Hartland Landfill typically receives approximately 2,000 tonnes of international waste each year. In 2020, this amount was reduced to 18 tonnes primarily due to the reduction in foreign air and ferry travel and elimination of the cruise ship season.

CONTROLLED AND DEMOLITION WASTES

Landfilling of certain types of wastes creates a potential nuisance, health and safety concerns for staff, or environmental concerns beyond those expected from regular household refuse. Wastes such as asbestos, demolition wastes, animal fecal wastes, or deceased animals require special handling to protect the health and safety of employees and to minimize nuisance, odours, and scavenging by birds.

There are four regulated waste types at Hartland:

ASBESTOS WASTE

CONTROLLED WASTE

CLEAN DEMOLITION WASTE (commercial)

RENOVATION WASTE (residential)

The risks associated with these regulated wastes vary and each type is managed differently. These wastes require permits and usually an appointment for disposal. The number of permits issued annually has been increasing since 2013. This is attributed to population growth, a strong economy, and recent permitting requirements for demolition wastes.

BYLAW ENFORCEMENT

CRD Bylaw 3881 (Hartland Landfill Tipping Fee and Regulation Bylaw) regulates activities at the Hartland site. CRD bylaw enforcement officers and landfill staff ensure Hartland customers adhere to site regulations.

In 2020, 40 written warnings and 307 enforcement tickets were issued. The majority of enforcement tickets were in relation to the deposit of recyclable material (52%), EPR products (16%), kitchen scraps (13%), prohibited waste (13%) and management of construction material (6%).

SAFETY AND LANDFILL FIRES

Landfill fires happen periodically at Hartland. Typically this occurs as a result of improper disposal of household hazardous waste, such as chemicals and product stewardship items like electronics with lithium-ion batteries. Staff and local emergency services personnel respond to fire incidents at the active face following an established fire safety plan.

LANDFILL CAPITAL WORKS

Each year, the CRD invests approximately $3 million in capital works that cover rock excavation and crushing, leachate and gas management infrastructure, environmental controls, roads and site improvements. . In 1997, Phase 1 of the landfill site was closed and the filling of Phase 2 (Heal Basin) was initiated. It is expected that Phase 2 will continue to receive landfill materials until about 2047, at which time it will have reached its current design capacity.

In 2019 a new landfill master filling plan was finalized that optimizes site capacity; maximizes gas and leachate collection and other environmental management systems.

2020 achievements include:

- continued project management for the landfill's heavy equipment services.
- annual installation of new combined gas/leachate collection infrastructure
- paving for dust control and better storm water management
- completion of the design and tender for a new scale building at Hartland North
- preparation of a new landfilling cell to receive garbage in the future
- Construction of a new water main and reservoir on the landfill property

SITE RECLAMATION

Since the Phase 1 closure, significant efforts have been made towards site rehabilitation at the landfill.

A long-standing vision for Hartland Landfill is to restore the land to a condition that will blend in naturally with the surrounding forest. Planting of native species began in 2004 and includes Douglas Fir, Big Leaf Maple and Red Alder, as well as ocean spray, Indian plum and mock orange.

Cell 1 final closure design was completed in 2010 and included a final cover, complete with a new wetland sedimentation pond, in addition to gas, leachate and road upgrades.

Over 25,400 trees and bushes have now been planted in Phase 1 and 2 on closed areas at Hartland Landfill. These areas are maintained with annual invasive species removal to encourage growth of new plant species and protect those already established. In 2020, 3,400 new poplar and fir trees were planted on two hectares of closed landfilling areas on the North and South side slopes. New plants were protected with deer fencing and areas equipped with temporary irrigation after invasive species removal.

LEACHATE MANAGEMENT

Leachate is a liquid that is produced when precipitation comes into contact with decomposing refuse. To minimize the amount of leachate generated on site, impermeable covers are installed over completed landfill areas to divert clean surface water away from becoming leachate.

In the fall of 2018, the primary landfill leachate underdrain (micro tunnel), located in the bottom of Heal Basin, was inspected and cleaned to ensure its continued safe operation. While doing this work, it was found that changes to the pipe system would also be necessary in order to make emergency use and pumping possible, in the event that a major seismic event damaged the micro tunnel and made repairs necessary. This pipe system work was completed in the fall of 2020.

ENVIRONMENTAL MONITORING

Environmental Science Officers at Hartland Landfill employ a number of control measures to prevent or reduce potential effects on groundwater, surface water and air. Through over 40 years of engineered controls, groundwater and surface water quality at Hartland Landfill has continually improved. An environmental monitoring, assessment and management program is conducted in accordance with ENV requirements. The monitoring program measures water quality at and near the landfill and assesses the effectiveness of control measures.

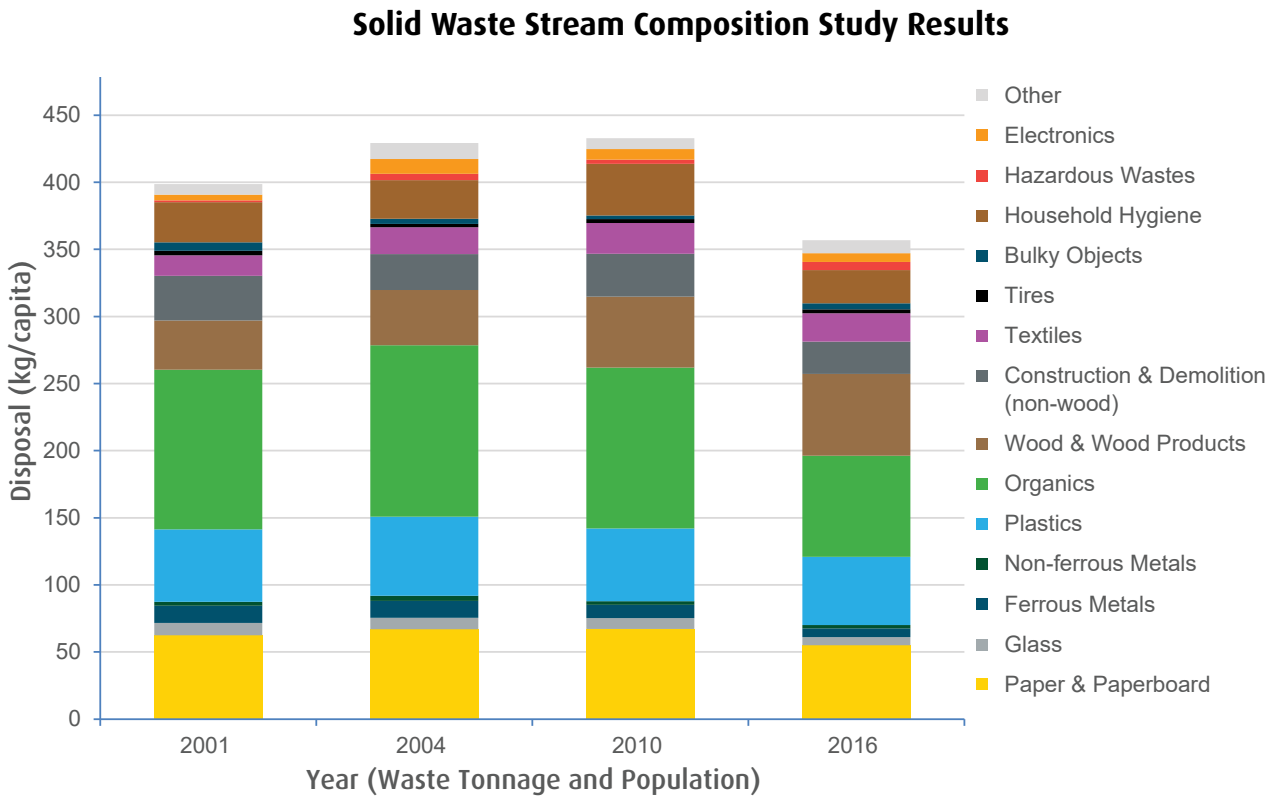
Groundwater quality monitoring data obtained in 2020 was similar to previous years and indicated that landfill leachate continues to be effectively contained and controlled on site. Leachate quality monitoring confirmed that leachate discharged from the site was in compliance with CRD Bylaw 2922 (Sewer Use Bylaw), which regulates discharges to the sanitary sewer. Surface water monitoring in 2020 indicated that nearby surface water bodies, Tod Creek, Durrance Creek, Durrance Lake, and Killarney Lake are not impacted by leachate.

Landfill gas monitoring confirmed that the landfill gas collection system worked effectively to control emissions. Landfill gas infrastructure continues to be installed as part of a long-term gas management plan.

WASTE STREAM ANALYSIS

Since 1990, the CRD has commissioned six studies to assess the composition of waste being landfilled at Hartland. These studies provide valuable benchmark data and analysis for evaluating the success of existing solid waste programs and planning future initiatives. The most recent analysis took place in 2016. The results indicate a broad regional trend towards decreased per capita waste generation.

Per capita organic waste generation dropped by 37.5%, confirming the successful launch of the 2015 kitchen scraps ban. Per capita paper disposal decreased by 18% and plastics by 5%, while wood and wood products increased by 15%, likely due to more construction activities in the region. All other materials remained relatively consistent compared to the previous study in 2010.



Community Support Programs

COMMUNITY CLEAN-UP FUNDING

Since 1997, the CRD's Community Clean-up Program has been supporting non-profit groups that make visible environmental improvements to their community through organized clean-ups

Funding provided supports:

- Collection, processing and marketing of recyclables recovered during clean-up.
- Container rental for transportation and disposal of non-recyclable material.
- Supplies, such as rubber gloves and collection bags.

In 2020, the CRD provided funding to five community groups.

ABANDONED BOAT PROGRAM

In 2017, staff were directed to submit funding applications for the assessment and removal of derelict boats through Transport Canada's Abandoned Boat Program. In 2018, the CRD established a Letter of Agreement with the Dead Boats Disposal Society (DBDS) and the Salish Sea Industrial Services (SSIS)—a subsidiary of Ralmax that employs local First Nations in the marine industry—to identify, assess and remove abandoned boats in the capital region. Under the agreement, the CRD provided the 25% grant funding required for the DBDS and SSIS to apply for removal funding through Transport Canada's Abandoned Boat Program grants (up to 75% of expenditures).

Many municipalities participated in the program by identifying boats in their region, assisting with placing notices on boats and informing their communities about this work. All abandoned boats reported to the Infoline through the "See Something, Say Something" awareness campaign were provided to the DBDS who worked with SSIS to submit the required paperwork and funding applications, coordinate equipment and trained the crews in removal of these vessels. As a result, more than 70 abandoned vessels were removed from the bays and harbours in the region and 10 local First Nations received training and experience on vessel removal techniques through SSIS.

There is currently a joint application to the provincial Clean Coast Clean Water Initiative Fund to remove marine debris and derelict vessels from our region wherein Songhees Nation will lead a consortium of local First Nations to work with the DBDS and SSIS to coordinate and conduct the removal of derelict vessels and marine debris from the Salish Sea, including the capital region. This fund covers 100% of the costs to coordinate and conduct vessel removals and shoreline clean-ups. To date DBDS has identified 178 floating and submerged derelict vessels in bays and harbours of the capital region.

Financial Management

All costs associated with solid waste disposal and diversion programs in the capital region are funded through tipping and user fee revenues at Hartland Landfill, collection contract revenues, sale of electricity and sale of recyclables.

A sustainable financial business model is essential for the provision of solid waste services.

This form of financing has practical limits as diversion increases and landfill volumes decline.

Long-term financial sustainability of the CRD solid waste function will form a critical part of the new solid waste management plan.

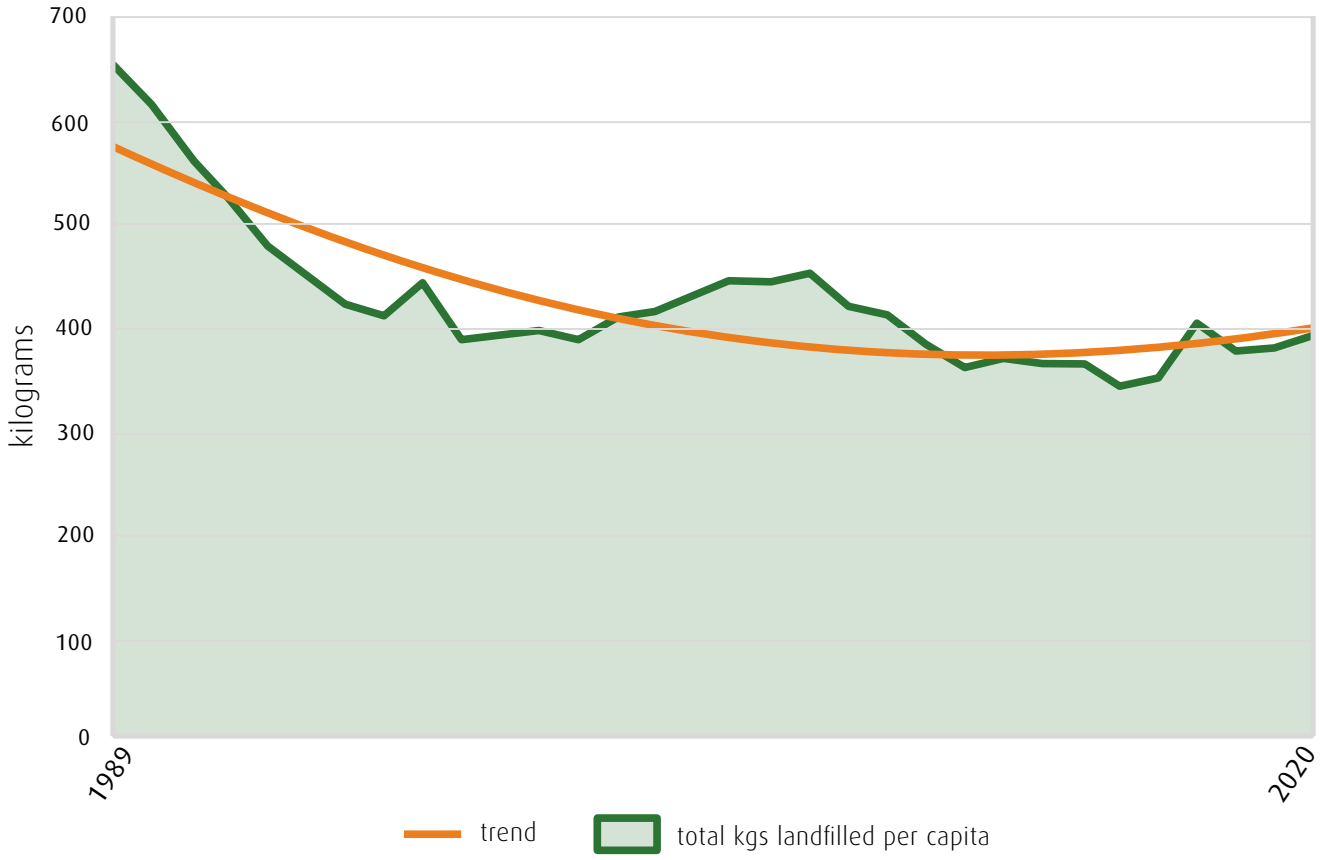
REVENUES	
Tipping fees	$19,874,916
Extended producer responsibility programs	$6,239,142
Recycling program revenues	$1,785,045
Power plant	$536,519
Permits, fines and miscellaneous	$91,772
TOTAL REVENUE FOR 2020	**$28,527,393**
EXPENSES	
Landfill operations	$6,552,639
Curbside recycling	$6,121,854
Hartland diversion programs	$4,341,853
Power plant costs	$863,642
Electoral Area recycling programs	$676,596
Planning	$889,918
Leachate	$522,320
Debt charges	$1,383,043
Community support programs	$432,197
TOTAL EXPENSES FOR 2020	**$21,784,062**

NET REVENUE (EXPENSES)	**$6,743,331**
TRANSFER TO OWN FUNDS	
Capital Reserve Fund	$1,668,074
Millstream Capital Fund	$320,000
Equipment and Vehicle Fund	$283,000
Sustainability Reserve Fund	$4,407,430
TOTAL TRANSFER TO OWN FUNDS	**$6,678,504**

ANNUAL SURPLUS (DEFICIT)	**$64,827**
Accumulated surplus, beginning of year	$943,419
Accumulated surplus, end of year	$1,008,246

Waste Disposal Data

CRD Disposal Rate (Kg/Capita)
(From 1989 - 2020)



Year	Population	Hartland Landfill			Highwest Landfill	Disposal Rate (kg/ person)
		Received	Beneficial Use	Landfilled		
2012	368,935	129,279	n/a	129,279	7,880	372
2013	371,265	123,210	n/a	123,210	13,025	367
2014	372,463	120,942	-1,636	119,306	18,000	369
2015	377,810	114,476	-2,034	112,442	18,000	345
2016	382,645	134,167	-971	133,196	2,056	353
2017	392,046	145,285	-917	144,368	15,000	407
2018	413,406	148,551	-2,120	146,431	10,500	380
2019	418,511	146,544	-1,142	145,402	14,625	382
2020	425,503	155,014	-5,476	149,538	18,506	395

PER CAPITA DISPOSAL

In 2012, the Province of British Columbia began using per capita disposal rates as the standard solid waste metric and is targeting 350 kg/capita by 2020.

Based on the provincial government's calculation method, the disposal rate for the capital region was 395 kg/capita in 2020.

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Making a difference...together

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