

**REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, JULY 24, 2013**

SUBJECT ENVIRONMENTAL RESOURCE MANAGEMENT – 2012 ANNUAL REPORT

ISSUE

To provide the Environmental Services Committee with the 2012 annual report from Environmental Resource Management.

BACKGROUND

The Environmental Resource Management annual report has been produced since 1992, in response to requests for information and statistics regarding the Capital Regional District's (CRD) solid waste programs. The annual report is used by residents, students, businesses, other government agencies and CRD staff and is available to the public at all outreach events.

Environmental resource management in the CRD is based on the 5R hierarchy of Reduction, Reuse, Recycling, Resource Recovery and Residual Management. This strategy is used to optimize the capacity of Hartland landfill by minimizing waste disposal and maximizing diversion opportunities. The 2012 report (attached) is formatted to align programs with the 5R hierarchy.

Highlights include:

- CRD Board approval of the Regional Kitchen Scraps Strategy
- Polycoated cartons added to all CRD recycling programs
- Integrated Solid Waste and Resource Management Plan - Stage 1 completed
- Electronics recycling at Hartland expanded to include power tools, sewing and hobby equipment, musical instruments, exercise machines, outdoor power equipment, electronic toys, lighting fixtures and all types of bulbs
- Pilot programs for asphalt shingles and mattress recycling transitioned into permanent programs
- Bicycles previously accepted at Hartland as scrap metal are now being refurbished for reuse
- Hartland Learning Centre hosted more than 100 workshops and landfill tours for 3,000+ participants and held the semi-annual Hartland Open House
- Capital Works projects included expanding surface water diversion, installing additional gas wells, site rehabilitation and completion of the Landfill Gas Management Plan
- Worked with industry and consultants on packaging and printed paper stewardship plan development
- Partnered in "Tap into Sustainability" campaign to raise awareness about the consumption of bottled water
- Diversion rate up to 48% (46% in 2011) with the annual disposal rate reduced to 346 kgs/per capita

SOLID WASTE ADVISORY COMMITTEE

The Solid Waste Advisory Committee received this report for information at its June 13, 2013 meeting.

RECOMMENDATION

That the Environmental Services Committee receive the Environmental Resource Management – 2012 Annual Report for information.

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Attachment: 1

Environmental Resource Management Annual Report

Capital Regional District | 2012



Table of Contents

Overview of CRD Solid Waste Management

- 5 Background
- 6 Solid Waste Management Plan
- 7 Environmental Resource Management Division
- 8 Waste Stream Analysis
- 10 Solid Waste Diversion Strategy

Reduce & Reuse

- 11 Education & Outreach Programs
- 16 Greater Victoria Compost Education Centre
- 16 Community Clean-Up Funding
- 16 Diversion Funding for Non-Profits

Recycle

- 17 Recycling Programs
- 19 Extended Producer Responsibility Programs
- 22 Organics Management
- 24 Household Hazardous Waste (HHW)

Recovery

- 25 Hartland Gas Utilization Facility

Residual

- 26 Landfill Disposal Rates
- 26 Landfill Material Restrictions
- 26 Capital Works
- 27 Site Reclamation
- 28 Leachate Management
- 29 Environmental Monitoring

29 2012 Summary

Tables, Charts and Figures

- 9 2009-2010 Solid Waste Stream Composition
- 10 5R CRD Solid Waste and Resource Management Strategies
- 15-16 Diversion by Program (Tonnes)
- 21 2011 Solid Waste Disposal and Diversion Costs
- 30 Total Refuse by Type
- 31 Diversion Rates (1989-2011)

Overview of CRD Solid Waste Management

Background

The Capital Regional District (CRD) is the regional government for the 13 municipalities and three electoral areas located on the southern tip of Vancouver Island. The urban centre of the Capital Region is the City of Victoria, and the regional district also includes many of the Gulf Islands, a number of rural municipalities and a vast tract of wilderness that lies along the south-western coast of Vancouver Island. The CRD is generally recognized by the services it provides to the Capital Region.

The CRD provides regional governance and services for the entire Capital Region, including regional parks, regional planning and solid waste management. The CRD creates partnerships between any combination of municipalities and electoral areas for services or projects that are specific to only part of the region.

The CRD became responsible for solid waste disposal for the region in 1973 when the Province of British Columbia directed all regional districts to take control of solid waste disposal within their borders. Hartland landfill, which had been operated as a private facility since the early 1950s, was acquired by the CRD in 1975. The facility continued to be operated by a private contractor until January 1985, when the CRD assumed direct operation of the site.

Aerial of Hartland landfill and recycling facility.





Tarp installation on phase 2 at Hartland landfill.

Hartland landfill and recycling facility is owned and operated by the CRD and is located about 14 km northwest of Victoria. It is a multi-employer site and is the only sanitary landfill in the Capital Region, serving just over 373,700 people. The operation is a multi-purpose facility providing: recycling, household hazardous waste (HHW) collection, a salvage area, yard and garden waste collection and processing, controlled waste disposal and landfill services to commercial and residential customers.

Residential garbage collection services in the region are provided by municipal crews or contractors in six municipalities. Residents in the remaining seven municipalities and three electoral areas, as well as all commercial businesses are serviced by private haulers.

All solid waste programs are funded with revenue generated from fees collected at Hartland landfill and from the sale of recyclable materials. No funding is drawn from the municipal tax system.

Solid Waste Management Plan

The Solid Waste Management Plan is a legally binding document mandated by the Province of British Columbia. The original CRD Solid Waste Management Plan (SWMP) was approved by the Minister of Environment in 1989. There have been two subsequent revisions to the original plan plus seven amendments. In 2012, the CRD started the development of a new Integrated Solid Waste and Resource Management Plan and appointed a Public and Technical Advisory Committee.



The development of the new plan involves three stages:

Stage 1: Analysis of Existing Systems and Identification of Issues

Stage 2: Development and Evaluation of Options and Strategies

Stage 3: Plan Consultation and Adoption

Stage 1 was completed in 2012, including a report on existing programs, a public survey and a list of issues for consideration during the development of the new plan.

Environmental Resource Management Division

With a mandate of focusing on the environmental future, Environmental Resource Management is responsible for planning, developing, and applying systems that will best ensure an integrated and beneficial use and reuse of our resources, some of which may now be seen as waste. For example, rather than looking at waste to be disposed, the CRD is focused on looking at waste as a commodity for beneficial reuse. This includes a focus towards zero waste in our landfill, landfill gas and use capture, utilization of other energy from waste initiatives, compost and organics processing initiatives, and other emerging opportunities.

The Environmental Resource Management division is part of the CRD Environmental Sustainability Department and consists of:

- Landfilling Operations
- Landfill Gas Utilization
- Recycling Programs
- Hartland Public Drop-off Area
- Household Hazardous Waste Collection
- New Waste Reduction Initiatives
- Regulatory and Financial Management
- Planning and Policy Development



Water quality sampling near Hartland landfill.

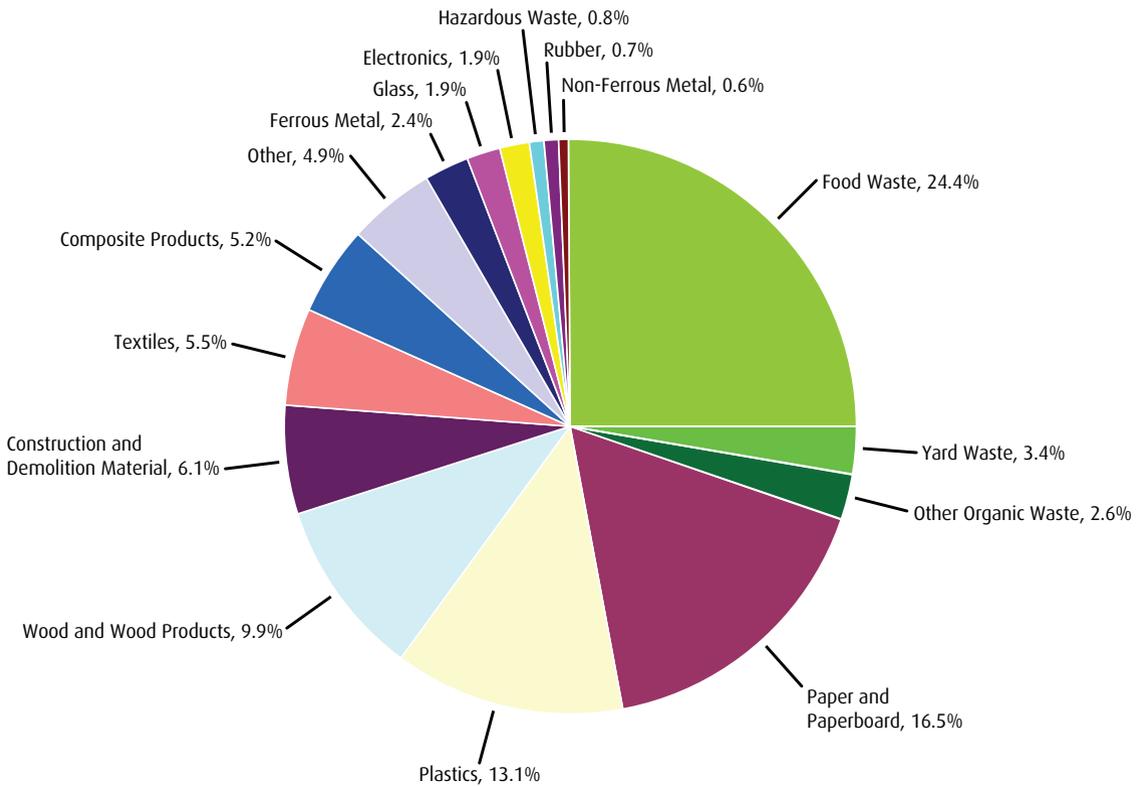
The solid waste function of the CRD reports to the Environmental Sustainability (ESC) Committee. The ESC is supported by two advisory committees. The Solid Waste Advisory Committee (SWAC) provides feedback to ESC on solid waste operational issues. SWAC also acts as the Plan Monitoring Advisory Committee to monitor the implementation of the CRD Solid Waste Management Plan, as required by the BC Ministry of Environment. The Salt Spring Island Solid Waste Advisory Committee (SSISWAC) provides a community based forum for discussion of solid waste and resource management issues on Salt Spring Island. The Environmental Sustainability Committee also acts as the steering committee for the development of the new Integrated Solid Waste and Resource Management Plan.

Waste Stream Analysis

Since 1990, the CRD has commissioned five studies to assess the composition of waste being landfilled at Hartland. These studies provide valuable benchmark data and analysis for evaluating the success of solid waste management programs. The studies also provide information on waste types to target, for example, household hazardous waste in 2001 and, most recently, organic materials such as yard and garden waste and kitchen scraps.

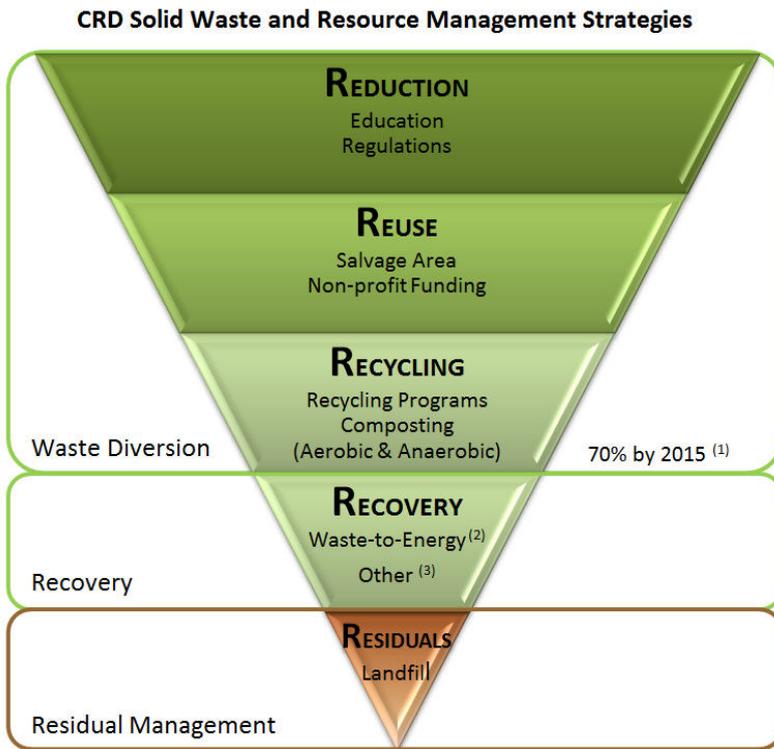
The latest waste stream analysis took place in 2009/2010, with one phase conducted in the fall of 2009 and the second phase conducted in the spring of 2010. The study is conducted in two phases to allow for seasonal variance. A detailed statistical evaluation was completed as part of the final report that was published in 2010. Objectives of the study included determining the overall waste composition by material type, characterizing the waste by source sector (residential, industrial/commercial/institutional and demolition/land clearing), and reviewing trends from different areas of the Capital Region.

2009-2010 Solid Waste Stream Composition Study



Solid Waste Diversion Strategy

Environmental resource management in the Capital Regional District is based on the 5R hierarchy of Reduction, Reuse, Recycling, Resource Recovery and Residual Management. The plan is to extend the life of Hartland landfill by minimizing waste disposal and maximizing diversion opportunities. The current waste diversion goal is 70% by 2015. The key strategies to divert waste from Hartland landfill are outlined in the 5R graphic.



⁽¹⁾ The BC Ministry of Environment expects local government to have a minimum target of 70% waste reduction before utilizing a waste-to-energy facility as a waste management option.

⁽²⁾ A waste-to-energy facility has to achieve 60% energy efficiency to be considered resource recovery; otherwise, it will be classified as residual management.

⁽³⁾ "Others" may include resource recovery from anaerobic digestion and landfill gas recovery.

Reduce & Reuse

Education & Outreach Programs

The Environmental Resource Management division, with support from Environmental Partnerships and Corporate Communications, has a number of education programs that support all solid waste diversion services in addition to promoting behaviour changes based on the 3Rs in general. These behaviour changes contribute significantly to the “unmeasurable diversion” of waste from landfill. Education services include:

- Education and outreach for all solid waste programs
- Communication planning and research
- Advertising, promotional and educational materials
- Media relations (print, radio and television)
- Presentations, tours and outreach displays
- Hartland bi-annual open house

CRD Hotline

The CRD Hotline (250.360.3030) is an essential part of education and outreach programs. Callers can access an automated voice messaging service 24 hours a day or speak with a Hotline clerk during office hours of 8:30 am to 4:30 pm (closed 12 noon to 1 pm). The CRD Hotline can be reached by e-mail at Hotline@crd.bc.ca. Information can also be obtained on the CRD website at www.crd.bc.ca.

Myrecyclopedia.ca

Myrecyclopedia.ca contains a comprehensive online listing of household products and items—from aluminum to zinc—and includes the environmental story behind each item, recycling facility listings and tips on how to reduce and reuse in daily living. Myrecyclopedia was developed to encourage sustainable practices and to reinforce the 3Rs of Reduce, Reuse and Recycle.



The Hartland Learning Centre



Environmental education is of paramount importance to the CRD, and the Hartland Learning Centre allows for place-based learning, which gives our youth and our communities a chance for experiential, interactive involvement in education. Place-based learning links a learner to the space around them, creating awareness of natural and social history and the relation of our community with the rest of the world. The Learning Centre hosted over 100 school workshops and landfill tours in 2012 for over 3,000 participants.

Hartland Happening: Open House

The 2012 Hartland open house was held Sunday, June 24, 2012, for the purpose of promoting both public awareness and understanding of the landfill operation and activities, as well as to help maintain and foster good relations with the local community surrounding the facility.

Many residents are not aware that Hartland landfill is owned and operated by the CRD and that it is the only sanitary landfill in the Capital Region, serving 373,700 people. By showcasing the multi-purpose facility and its operations, such as the residential recycling facility, the household hazardous waste drop-off area, and landfill services to both commercial and residential customers, we can promote the landfill and educate residents. Special attention was given to recent developments such as the Hartland Learning Centre.

The open house offered a variety of environmental activities that were intended to be both informative for adults while also being interesting and entertaining for children. These activities included:

- interpretive bus tours of the site with staff members, which highlighted recycling, environmental monitoring and waste management programs;
- environmental educational displays regarding Hartland landfill, CRD recycling programs and solid waste management in general; and
- other related educational displays, including an integrated CRD display, the Compost Education Centre and BC Hydro.

Activities at the open house included a free shuttle to the event from Camosun College, guided tours, interactive exhibits, a giant sandbox, face painting, colouring station, puppet shows and an arts and crafts tent. The Central Saanich Lion's Club, a volunteer organization, was on site to barbeque hot dogs, hamburgers and veggie burgers that were free to participants. Donations were also collected for the United Way.



Holiday Campaign

Every holiday season, we launch the “Remember the 3Rs this Holiday Season” campaign to remind residents to make the 3Rs part of their holiday season. In 2011 and 2012, in partnership with Metro Vancouver, the “creating memories, not garbage” campaign was delivered to capital region residents. The purpose of the campaign was to engage and inspire residents to celebrate the holidays without creating unnecessary waste that will end up at Hartland landfill.

Tap Into Sustainability Campaign



Greater Victoria enjoys some of the best quality drinking water in the world at a reasonable cost, but maintaining this critical resource requires each of us to use water with care. The CRD encourages the wise and efficient use of water through education, water saving technologies, policy measures and research. The consumption of bottled water contributes to unnecessary waste, as many plastic bottles are not recycled, despite them being restricted from the landfill.

As part of the “Tap Into Sustainability” campaign, an initiative created to raise awareness around our local drinking water and promote the use of tap water over bottled water, the CRD conducted a high school challenge competition. Secondary school students were encouraged to go online to our website, watch a two minute video on tap water in the region and then take a short five question online quiz.

Diversion by Program (TONNES)

Program	Newspaper	Mixed Paper	Cardboard	Mixed Fibres ¹	Glass Containers	Metal Containers	Plastic Containers	Mixed Containers ²	Asphalt Shingles	Batteries	Books	Drywall	Electronics	Food Waste
Blue Box & Bag Curbside Recycling/Organics Diversion														
Saanich				4,774				1,757						36
Victoria				1,956				765						
Oak Bay				858				312						189
Esquimalt				676				274						
Central Saanich				1,028				379						
Langford				1,066				388						
North Saanich				684				263						
Colwood				722				263						
Sidney				411				158						
Sooke				453				165						
View Royal				322				129						265
Metchosin				247				90						
Highlands				112				40						
Juan de Fuca EA				347				126						
Total				13,656				5,109						490
Other Recycling														
Apartment Containers								278						
Oak Bay Recycling Depot		156	107				26							
Total		156	107				26	278						
Hartland Recycling Operations														
Recycling Depot		151	145					39	816		57	170	278	
HHW										43				
Total		151	145					39	816	43	57	170	278	
Electoral Area Recycling Depots														
Salt Spring Island		246	138		136	41	57			3				58
Pender Island	48		40		12					6				3
Mayne Island		41	21		31		13			1				2
Galiano Island	6	12	21		39	5	13							2
Saturna Island	1	8	12		4	3	3							
Port Renfrew				19				6						
Total	55	307	232	19	222	49	86	6		10				65
GRAND TOTAL	55	614	484	13,675	222	49	112	5,432	816	53	57	170	343	490

¹ Includes newspaper, cardboard and mixed paper

² Includes metal cans, glass bottles and jars and plastic containers and packaging

³ Product Care includes paint at all depots, pesticides/solvents and fluorescents/CFLs at Hartland and Salt Spring island depots.

⁴ Includes: cooking oil, Styrofoam and reusable goods at Hartland, milk cartons and Styrofoam on Salt Spring Island; deposit containers on Pender and Mayne Islands

HHW Orphans	Mattresses	Metals	Metal Appliances	Motor Oil, Filters, Containers & AF	Plastic (large rigid)	Plastic Film	Product Care ³	Propane Tanks & Fire Exting.	Styrofoam	Tires	Toilets	Wood Waste	Yard Waste	Miscellaneous ⁴	Total
															6,567
															2,721
															1,359
															950
															1,407
															1,454
															947
															985
															569
															618
															716
															337
															152
															473
															19,255
															278
						6									295
						6									573
	163	644	138		139	6			6	52	84	1,270	580	11	4,749
51				35			155	18							302
51	163	644	138	35	139	6	155	18	6	52	84	1,270	580	11	5,051
		85				7	34		8	8				8	829
		48			16	5	5			1				38	222
		16					1							26	152
															98
						3									34
		30													55
		179			16	15	40		8	9				72	1390
51	163	823	138	35	155	27	195	18	14	61	84	1,270	580	83	26,269

Greater Victoria Compost Education Centre



The Greater Victoria Compost Education Centre (GVCEC) was established in 1992 to educate local residents about composting and conservation. Under contract to the CRD the GVCEC annually offers presentations, workshops, educational compost demonstrations, volunteer training, quarterly newsletter and maintains the GVCEC Hotline and website.

In 2012, the GVCEC celebrated its 20th Anniversary! They gave 84 presentations to school and community groups and delivered 54 on site workshops with 3,106 participants. Over 14,000 residents visited the GVCEC demonstration site or participated in one of its 37 educational community events and compost demonstrations. The GVCEC hosted three major events: the Spring Organic Plant Sale, the Fall Organic Plant Sale and 20th Anniversary Celebration and the Pumpkin Smash, where over 15 tonnes of pumpkins were diverted from the landfill – collecting over 111 tonnes of pumpkins over the ten years the GVCEC has been hosting the event. Staff answered 4,014 enquiries from the public and had over 49,568 visitors to the website. The GVCEC reached a total of 73,193 residents in 2012, an increase of 114% from 2010! Since 1992, the GVCEC has made over 457,049 contacts with CRD residents.

Community Clean-Up Funding

The CRD Community Clean-up program financially supports non-profit groups that make visible environmental improvements to their community through organized clean-ups. In 2012, the CRD provided funding to eight non-profit groups.

This funding provided support in the areas of:

- 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

Diversion Funding for Non Profits

Since 1992, the CRD has provided funding to non-profit organizations involved in recycling clothing and used household goods. The funding assists with their garbage disposal costs at Hartland, in recognition that some donated used goods are unusable and destined for the landfill. Seven organizations received funding in 2012.



CRD blue bag, CRD blue box, and cardboard bundle.

Recycle

Recycling Programs

Curbside/Depot/Apartment Recycling

CRD residential recycling programs consist of the blue box curbside collection program, a funding program for recyclables collection from multi-family dwellings (apartment program), and funding for depots in areas not serviced by the curbside program.

In 2012:

- 119,657 households were serviced in the blue box curbside program
- 11,423 households on Salt Spring Island and the other Southern Gulf Islands were serviced through the depot program
- 1,067 apartment buildings participated in the funding program
- 11,462 blue boxes and 28,910 blue bags were distributed to residents
- 39,271 apartment recycling tote bags distributed since 2006

Expansion of the curbside recycling program was investigated in 2010 and a decision was made to add polycoated cartons (milk cartons and aseptic boxes) to the program beginning May 2012.

2012 Achievements

- Conducted 46 Hartland school tours
- Delivered 70 school program presentations and workshops
- Delivered 15 community presentations and 23 community tours
- Provided waste reduction messaging at 37 community displays
- Provided event recycling bins at 42 community events
- Received 55,000 Hotline enquiries



Front end section of Hartland landfill and recycling facility.

Hartland Public Drop-Off Area

The public drop-off area at Hartland receives garbage, recyclables and household hazardous waste. Over 80 items from 25 product categories are accepted for recycling. This area is intended for residential quantities only for vehicles with a maximum GVW of 5,500 kg.

New stewardship programs added in 2012 included outdoor power equipment, exercise equipment, power tools, light fixtures, video gaming equipment, musical instruments and medical devices. Other new initiatives included permanent collection and recycling programs for mattresses and box springs, asphalt shingles, and polycoated cartons following successful pilot programs for these items. Film plastic, Styrofoam and electronic toys continue to be collected as pilot studies.

Recycling Rates:

- \$202/tonne for drywall (drywall recycling services were discontinued September 2012)
- \$107/tonne for wood waste and mattresses
- \$57/tonne for yard and garden material
- \$6 gate fee for recycling area (residents)
- \$26 gate fee for recycling area (small commercial loads)
- No charge for product stewardship materials
- No charge for household hazardous waste

Additional charges included a \$10 fee for general refuse deposited in the transfer bin and \$20 for appliances containing refrigerants.

Telephone Books

In 2012, 15 participating local non-profit organizations collected 29,152 telephone books for recycling. That's over 30 tonnes of phone books diverted from the landfill. In addition to diverting materials from the landfill, this program provides a fundraising opportunity for local non-profit organizations. This program was discontinued as of September 2012 because phone books may instead be recycled through the blue box program and recycling depots.

Extended Producer Responsibility Programs

British Columbia's industry-led product stewardship programs require producers of designated products to take Extended Producer Responsibility (EPR) 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

Glass, plastic, aluminum, tin and metal beverage containers are accepted in the curbside blue box recycling and apartment recycling programs, as well as at the Hartland recycling facility and Southern Gulf Island recycling depots. Polycoated cartons (soup and milk cartons, drinking boxes, gable top containers) were added to these programs in 2012. Beverage bags and pouches are not included in CRD programs.

Electronics, Electrical Products, Batteries and Lighting Products

In 2012, the CRD partnered with seven stewardship agencies for the collection of electrical items at the Hartland recycling facility:

- Encorp Pacific (computers, monitors, printers, TVs, audio visual)
- ElectroRecycle (small appliances, power tools, sewing machines, exercise equipment)
- Call2Recycle (batteries and mobile phones)
- LightRecycle (residential fluorescent lamps and CFL bulbs and lighting fixtures)
- Switch the 'Stat (thermostats)
- Product Care Association (smoke detectors)
- Outdoor Power Equipment (processed through metal recycler)

Lead-Acid Batteries

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

Paints, Solvents and Flammable Liquids, Gasoline and Pesticides

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

PCA depots in the region:

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

Pharmaceuticals

The pharmaceutical EPR, Medications Return Program, is promoted regionally through the CRD Hotline, CRD website and myrecyclopedia.ca, as well as in CRD Source Control messaging. In 2012, the CRD partnered with the Medications Return Program and the Vancouver Island Health Authority to raise awareness about safe and proper disposal of medications, specifically working with home care providers.

Packaging and Printed Paper

In May 2011, the BC Recycling Regulation was amended to add packaging and printed paper (PPP). This means that producers of these materials in BC will be required to assume responsibility for managing this material after they are used, beginning in May 2014. PPP includes all materials currently collected in the blue box recycling program, plus additional materials, such as Styrofoam and plastic bags.

CRD staff have been working with industry and their consultants as they develop and implement a stewardship plan to manage PPP materials. Staff have been consulting on program design options, transition options and opportunities for CRD involvement and continued service delivery.



Product stewardship materials being collected at Hartland landfill.

Tires

Tires have been accepted at Hartland recycling since the depot opened in 1992, in conjunction with the province’s Financial Incentives to Recycle Scrap Tires (“FIRST”) program. In 2007, this provincial initiative was replaced with an EPR program under the BC Recycling Regulation and is 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 bicycle tires and tubes through bike retailers. Collection of bicycle tires and tubes at Hartland began in 2011.

Used Lubricating Oil, Filters and Containers

The BC Used Oil Management Association (BCUOMA) 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, every filter and container, is brought to a collection facility to be properly recycled.

Organics Management

Regional Kitchen Scraps Strategy



Since 2007 over 4,000 residents in the District of Oak Bay and Town of View Royal have been separating their kitchen scraps from their garbage. This program, which originally began as a CRD pilot, involves curbside collection of kitchen scraps which, together with curbside recycling and yard and garden material programs, has these residents diverting upwards of 75% of their household waste from the landfill.



Students collecting recycling, food waste and litter as part of the Community Clean-up Program.

Options for diversion of kitchen scraps from the residential sector were explored in 2010. Extensive consultation with the business sector was conducted in 2011.

In April 2012 the CRD Board voted to implement a region-wide kitchen scraps strategy starting in 2013. Kitchen scraps include meat, bones, grains, dairy products, eggs, vegetables, fruits and soiled paper products.

The initial phase of the strategy includes a \$20/tonne incentive, in 2013 and 2014, for waste haulers who deliver separate kitchen scraps loads to CRD-approved transfer stations and composting facilities. In addition, in 2014 there will be a 20% surcharge at Hartland landfill on garbage loads containing kitchen scraps to discourage their disposal as garbage. In the final phase of the strategy the CRD will implement a ban on kitchen scraps from Hartland landfill starting January 1, 2015.

Compost Facilities Bylaw

The CRD Board adopted the regional composting bylaw in December 2005. The bylaw came into effect immediately for new facilities and 12 months thereafter for existing facilities. The bylaw regulates the operation of composting facilities to protect public health and the environment.

2012 Solid Waste Disposal and Diversion Costs

Solid Waste Disposal Costs¹		
Program	Tonnage	Cost
Landfilling of Standard Refuse	129,279	\$6,068,030
Landfilling of Controlled Waste	7,484	
Waste Diversion Costs²		
Program	Tonnage	Cost
Curbside Collection		
Blue Box/Bag Recycling	18,765	\$4,019,016
Apartment Containers	278	
Household Organics (Food Waste)	490	\$60,614
Other Recycling		
Oak Bay Recycling Depot	295	
Hartland Recycling Operations		
Recycling	4,749	\$245,807
Household Hazardous Waste	302	\$355,099
Electoral Area Recycling Depots		
Salt Spring Island ³	829	\$233,913
Southern Gulf Islands ³	506	\$283,841
Port Renfrew	55	\$42,045
Total Quantitative Diversion	26,269	\$5,240,694
¹ Landfilling costs include operating, administration, overhead and debt amortization		
² Net of revenues received from the sale of recyclables and includes some administration and overhead costs		
³ Funding is provided to local recycling depots in lieu of blue box recycling collection service		

Yard & Garden Material Landfill Restriction

A number of private facilities in the region accept yard and garden material. In June 2006, a yard and garden material landfill ban came into effect. The ban excludes invasive, infectious and noxious plants. Source-separated yard and garden material is accepted for a fee at Hartland, where it is ground and used on-site. In 2012, 580 tonnes of material was received.

Household Hazardous Waste (HHW)

In 2005, the number of items collected at the Hartland recycling facility was expanded to include non-stewardship household hazardous wastes (HHW). This expansion provided the region's residents with a 'one-stop' drop for virtually all of their HHW and is the only program of its kind in British Columbia. The material is accepted in residential quantities only at no charge for recycling (where feasible), recovery or disposal at a special waste management facility.

Salt Spring and the Southern Gulf islands are serviced by means of mobile HHW collection events held on the islands. Initial events were conducted on these five islands during 2006/2007 with subsequent events scheduled for every two years. In 2012, HHW events were held on Pender Island and Salt Spring Island.

HHW mobile collection event on Salt Spring Island.





Hartland gas utilization facility.

Recovery

Hartland Gas Utilization Facility

The gas utilization facility currently produces about 1.6 megawatts of “green” electricity, which is enough to supply power to approximately 1,600 homes.

In addition to landfill gas recovery, staff are continually investigating other resource recovery opportunities. Part of this effort includes:

- Completion of Landfill Gas Management Plan
- Optimize landfill gas collection - 75% capture rate target by 2016

Residual

Hartland landfill is a state-of-the-art, award-winning facility receiving the Silver Landfill Management Excellence Award from the Solid Waste Association of North America in 2005, as well as other awards for leadership and innovation in gas utilization and best practices for household hazardous waste collection. The CRD received four awards in 2010 for its safety initiatives, including the prestigious National Award for Best Safety Week Program in Canada, in which Hartland landfill played a major role. In 2011, Hartland was recognized with the Leader in Sustainability, Top 100 Participants in Canada Award from Call2Recycle. Eleven tonnes of household batteries and cell phones were collected at Hartland and sent off for recycling.

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 landfill tipping fee structure for 2012 included:

- \$107/tonne for general refuse
- \$152/tonne for controlled waste
- \$247/tonne for bulky waste

Residential User Pay Garbage Collection

The six municipalities in the region that offer residential garbage collection utilize a user pay system. This system limits the amount of refuse each household may place out for collection to the equivalent of one can/bag per week. Additional cans or bags are only collected if residents purchase and attach garbage tags. Households using private garbage collection services are on a full user pay system.

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 drywall (1991); corrugated cardboard, white goods, tires, directories (1993); scrap metal, aggregate, concrete, asphalt, rubble, clean soil (1995); paper fibers (1998); yard and garden waste (2006) and product stewardship materials (2011).

Capital Works

Each year on average \$2 million is spent on capital works towards installation of environmental controls and general site improvements. Typical works include building site access roads, installing leachate and gas collection systems, stormwater management system and interim and final covers.

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 2040, at which time it will have reached its current design capacity. All capital works are planned with the overarching aim of maximizing landfill life.



Horizontal gas wells being installed at Hartland landfill.

Following are achievements for 2012:

- Installation of more tarps over interim landfill slopes to divert surface water away from the leachate collection system
- Installation of new horizontal gas wells and leachate collectors in the most recent landfilling lift and commissioning of six horizontal wells to increase gas collection efficiency
- Installation of a gas header to complete the loop around the perimeter of the landfill
- Completion of southeast face rehabilitation/planting
- Completion of northwest sedimentation pond rehabilitation/planting
- Aggregate production for internal construction needs of the landfill
- Completion of administration building renovations to utilize existing space more efficiently

Site Reclamation

Since the Phase 1 closure, significant efforts have gone towards site rehabilitation. 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 began in 2004 and includes Douglas fir, Bigleaf maple and Red Alder, as well as Ocean Spray, Indian Plum and Mock Orange (all of which are native to the area). Cell 1 Final Closure design was completed in 2010 which included a final cover complete with a new wetland sedimentation pond in addition to gas, leachate and road upgrades.

In 2008, Hartland landfill received a \$50,000 Trees for Tomorrow grant to plant thousands of native trees, seedlings and bushes over top of the first phase of the landfill, which was filled to capacity in 1997 and closed. Phase 1 of the landfill has been capped and sealed with a plastic liner and layer of soil, allowing vegetation to grow as a top cover. Since landfill areas can settle and shift over time, a green space or a park is an ideal end use for a closed landfill. Over ten thousand trees and bushes have been planted over Phase 1 of Hartland landfill.

Trees for Tomorrow is a provincial program funded by the Ministry of Community Development and designed to support urban and rural communities in the planting of over four million trees by 2012, which has been met. The goal of the program is to reduce greenhouse gases in the atmosphere by at least 33% below current levels by 2020. New trees will clean the air and lock away carbon dioxide that would otherwise contribute to global warming.

Leachate Management

In 2009, Golder Associates (consultant) completed a comprehensive review of Hartland's current leachate management infrastructure and its ability to manage leachate, particularly during peak winter storm events. Their findings concluded that the active landfilling area should be reduced to less than 20.5 hectares to minimize the amount of leachate being generated so that it will not exceed the existing storage and conveyance capacity.

Consequently, covers have been installed on the southwest and northwest faces of the landfill and perimeter ditches have been lined to divert more surface water away from the landfill. In 2011, the Cell 1 Final Closure was completed and the 3.5 hectare final (impermeable) cover was installed. This has reduced the total leachate generation area to around 17.5 hectares.

Environmental Monitoring

Landfilling can result in potential environmental effects and pose health and safety issues, specifically to surface water and groundwater, and the production of landfill leachate and landfill gas. Hartland landfill uses a number of control measures to prevent or reduce effects on groundwater, surface water and air. An environmental monitoring, assessment and management program is in place to measure the effectiveness of these control measures, and to identify potential impacts of landfill operations and solutions.



Environmental monitoring near Hartland landfill.

In 2012, landfill gas monitoring confirmed that the landfill gas collection system worked effectively to control emissions from Phase 1. Additionally, new gas wells installed in Phase 2, as part of a long-term gas management plan, resulted in increased gas collection efficiency. Water quality monitoring indicated that landfill leachate is effectively contained and controlled on site. Leachate quality monitoring confirmed that leachate discharged from the site was generally in compliance with the CRD's Sewer Use Bylaw, which regulates discharges to the sanitary sewer. Surface water issues associated with runoff from aggregate stockpiled on the Hartland North site are being mitigated by a cover installed on the stockpile and reducing stockpile size. Recent monitoring has shown improvements in water quality as a result of this cover.

2012 Summary

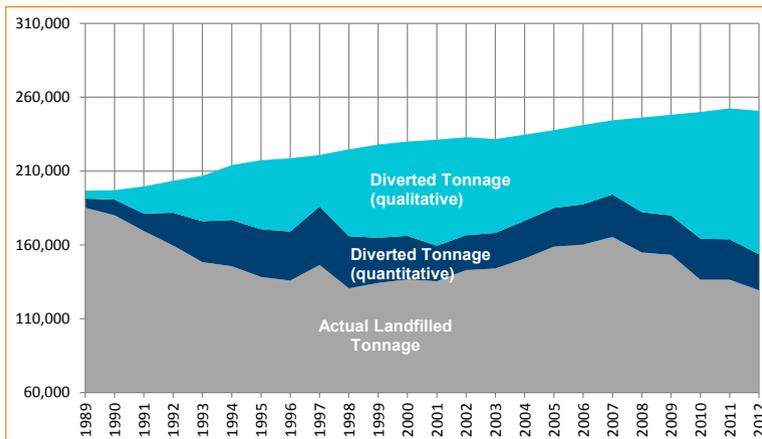
Environmental resource management in the Capital Region consists of a complex and mature materials management system that is constantly evolving. The Environmental Resource Management division uses its mandate to educate, facilitate and regulate to help minimize waste and maximize resources. A number of successful programs have been implemented over the years that have resulted in a diversion rate of 48%.

Total Refuse by Type

Type of Waste Declared	2011 Annual Total (tonnes)	2012 Annual Total (tonnes)	% Change from 2011
General Refuse	136,414	129,279	-5%
<u>Controlled Waste</u>			
Miscellaneous	711	678	-5%
Liquid Waste	614	721	17%
Asbestos	1,012	1,417	40%
Screenings	5,337	4,668	-13%
Contaminated Soils	91	0	-100%
Sub-Total	7,765	7,484	-4%
Total	144,179	136,763	-5%

- Miscellaneous includes food processing, surface coating and health hazard wastes, fibre optic cable, spoiled food, animal feces, dead animals, contaminated drywall and soot
- Liquid waste includes pumpings from catch basins, car wash sumps and other sumps containing non-hazardous waste
- Asbestos also includes material from outside of region

Solid Waste Diversion



Qualitative diversion is a result of unmeasurable CRD programs as well as private sector activities.

Diversion Rates (1989-2012)

Year	CRD Population ¹	Projected Tonnage ²	Actual Landfilled Tonnage	Diverted Tonnage ³ (quantitative)	Diverted Tonnage ⁴ (qualitative)	Diversion Per Capita (tonnes)	Diversion Rate
1989	284,730	196,763	185,128	6,243	5,392	0.041	6%
1990	291,880	197,076	180,118	10,549	6,409	0.058	9%
1991	299,133	199,608	169,419	11,809	18,380	0.101	15%
1992	304,200	203,416	159,634	22,134	21,648	0.144	22%
1993	308,720	206,826	148,341	27,700	30,785	0.189	28%
1994	321,585	214,017	145,585	31,263	37,169	0.213	32%
1995	326,010	217,310	138,303	32,342	46,665	0.242	36%
1996	328,880	218,643	135,869	33,190	49,584	0.252	38%
1997	329,135	220,850	146,442	39,634	34,774	0.226	34%
1998	334,871	224,698	130,604	35,310	58,784	0.281	42%
1999	339,643	227,900	134,257	30,643	63,000	0.276	41%
2000	342,718	229,964	136,654	29,537	63,773	0.272	41%
2001	344,567	231,204	135,425	24,010	71,769	0.278	41%
2002	347,095	232,901	142,940	23,636	66,325	0.259	39%
2003	345,223	231,645	144,043	24,116	63,486	0.254	38%
2004	349,638	234,607	150,787	25,580	58,240	0.240	36%
2005	354,206	237,672	158,848	26,132	52,692	0.223	33%
2006	359,439	241,184	160,260	27,261	53,663	0.225	34%
2007	364,121	244,325	165,381	28,802	50,142	0.217	32%
2008	366,934	246,213	154,881	27,315	64,017	0.249	37%
2009	369,791	248,130	153,263	26,674	68,193	0.257	38%
2010	372,565	249,991	143,669	27,874	78,448	0.285	43%
2011	376,222	252,445	136,414	27,388	88,643	0.308	46%
2012	373,709	250,759	129,279	26,269	95,211	0.325	48%

¹ Population data provided by CRD Regional Planning Services

² Projected annual waste based upon the 1989 waste generation rate of 0.671 tonnes per capita

³ Diversion tonnage as per Table 2

⁴ Qualitative tonnage diverted = actual material landfilled at Hartland - quantitative tonnage diverted

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