

Comox Strathcona Waste Management

2012 Solid Waste Management Plan

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Executive Summary

The 2012 Solid Waste Management Plan is a long term vision for solid waste management in the Comox Strathcona waste management (CSWM) area and is an update to the previous plan that was approved in 2003. This plan presents the programs, services, infrastructure and policies that will serve to guide the design and implementation of solid waste services and disposal over the next several years.

The contents of this Plan reflect the input received from the Solid Waste Management Plan Advisory Committee over the past two years, and input received during the community consultation phase held in March and April of 2012. A special thanks to the contribution of all of the members of the Advisory Committee is extended on behalf of CSWM services.

Implementation of the waste minimization components of the Plan presented herein is designed to achieve a waste diversion rate of over 70%, primarily through:

- Increasing access to recycling at multi-family buildings;
- Increasing the amount of waste recycled by industrial, commercial and institutional activities; and
- Increasing diversion of organic waste, with a focus on diversion of food waste.

The waste that cannot be reduced, reused or recycled is referred to as “residual waste”. The proposed long-range plan is to pursue energy recovery from the residual waste through Waste to Energy technologies. In addition, two regional engineered sanitary landfills are planned, one in each regional district, located adjacent to the existing regional landfill sites.

Closure of the current landfills is planned for all CSWM landfills. Updated operating and closure plans will be developed for the landfills in Tahsis, Zeballos and Gold River. The closure of the Tahsis and Zeballos landfills is planned to begin in 2017, to meet BC Ministry of Environment requirements. Upon full closure, each of these sites may be replaced with a transfer station. Closure of the current landfills at the Comox Valley waste management centre and Campbell River waste management centre is scheduled to commence in 2012 and 2013 respectively.

The actions in this plan will be implemented through Solid Waste Board authorization over the next ten years. During this period, the funding of CSWM operations and capital projects is anticipated to be done through revenues received from tipping fees and financial reserves (a portion of previously collected tipping fees).

As part of plan implementation, CSWM will be considering opportunities for integrated resource recovery. In particular, integrated resource recovery will be considered as part of assessing organics processing and waste-to-energy options.

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1. Background

In British Columbia, each regional district is mandated by the Provincial Environmental Management Act to develop a Solid Waste Management Plan that provides a long term vision for solid waste management, including waste diversion and disposal activities. Plans are updated on a regular basis to ensure that the plan reflects the current needs of the regional district, as well as current market conditions, technologies and regulations.

The Comox Valley Regional District (CVRD) is responsible for solid waste management planning in both the CVRD and the Strathcona Regional District (SRD) geographic areas. The service is governed by a board of directors that includes elected officials from member municipalities and electoral areas of both regional districts and is branded “Comox Strathcona waste management” (CSWM).

Over the past two years, CSWM has engaged in a process to update the 2003 Comox Strathcona Solid Waste Management Plan (SWMP or Plan) to reflect current and future waste management needs. The process to update the Plan was conducted in three stages. The first stage was a review of the current system and a report on the implementation status of the 2003 Plan. This stage created the baseline for development of the new Plan. The second stage was a review of options to address the region’s future solid waste management needs and the selection of preferred options through the Solid Waste Management Plan Advisory Committee. The third stage involved community consultation to obtain input on the selected options.

The planning process and the development of this Plan were completed in accordance with the BC Ministry of Environment (MoE) document entitled “Guide to the Preparation of Regional Solid Waste Management Plans for Regional Districts” (BC MoE, 1994).

1.1 Plan Objectives

There are three main objectives associated with this new solid waste management plan:

1. The initiatives outlined in the plan work towards a goal of zero waste¹ and aim to minimize the amount of waste buried in landfills.
2. Improvements to the solid waste management system will reduce greenhouse gases emissions from solid waste management activities.
3. All CSWM landfills will be designed and operated to minimize impact on the environment and the surrounding community and to satisfy the BC Landfill Criteria for Municipal Solid Waste.

1.2 Guiding Principles

The following guiding principles were developed by the Ministry of Environment and adopted by the Solid Waste Management Plan Advisory Committee and the CSWM board to help direct the selection of Plan options:

- Solid waste is a resource.

¹ As defined by the Recycling Council of BC, zero waste is a philosophy that views solid wastes as resources, and recognizes the importance of “closing the loop”(putting waste materials back into the production cycle). Zero waste requires that products and processes be designed so that their components can be dismantled, repaired and recycled. It means linking communities, businesses and industries so that one’s waste becomes another’s feedstock. It means preventing pollution at its source. It means new local jobs in communities throughout British Columbia.

- The consumption of material and energy resources should be set at a level which is ecologically sustainable.
- The regional solid waste stream should be reduced to the greatest extent possible, in accordance with the hierarchy of reduce, reuse, recycle, recovery and residual waste management and consistent with local resources and the nature of the regional solid waste stream.
- The goal of environmental policy is to strive towards zero pollution and the strategies for achieving that goal are in accordance with the precautionary principle.
- Individuals and firms will be enabled to make environmentally sound choices about consumption of resources and generation of waste through provision of appropriate information, including user-pay and market-based incentives wherever possible.
- Reduction policies and strategies will be developed through public consultation and are socially acceptable and cost-effective, based on full accounting of costs and benefits, both monetary and non-monetary.

1.3 Participants in the Planning Process

The planning process involved a number of stakeholders and the general public through a variety of different activities.

The CVRD hired AECOM as their technical consultant for the duration of the process to update the plan. AECOM, with the assistance of Maura Walker and Associates and Jan Enns Communications, guided the process, provided technical input on the options, prepared the planning documents, and assisted with the consultation process.

A Solid Waste Management Plan Advisory Committee was formed at the beginning of the planning process to provide community-based and technical input into the planning process and to provide recommendations to the solid waste Board. The advisory committee participants included representatives from member municipalities, the private waste management sector, an environmental group from a local high school, BC Ministry of Environment (MoE), CVRD staff, SRD staff, and the solid waste Board.

Stage three of the planning process involved an extensive community consultation process that included:

- Public open houses and presentations held in 14 locations throughout the CSWM area;
- Feedback forms completed at the open houses and on-line (700 received);
- A telephone survey of 600 randomly selected homes covering all communities in the CSWM area to achieve an accuracy of $\pm 4.0\%$, with a 95% confidence interval; and
- Presentations to all municipal councils and the electoral area sub-committees of the CVRD and SRD.

Additionally, a separate consultation process was undertaken with First Nation communities in the CSWM area. Details on the consultation processes are provided in two separate reports entitled "Public Consultation Report" (AECOM, 2012) and "First Nations Consultation Report" (TRI, 2012).

2. Plan Area

The CVRD and SRD were established on February 15, 2008, as part of the provincial restructuring of the Comox Strathcona Regional District. Regional solid waste services are provided to the combined CVRD and SRD geographic areas by the CVRD. The service is branded as Comox Strathcona waste management (CSWM).

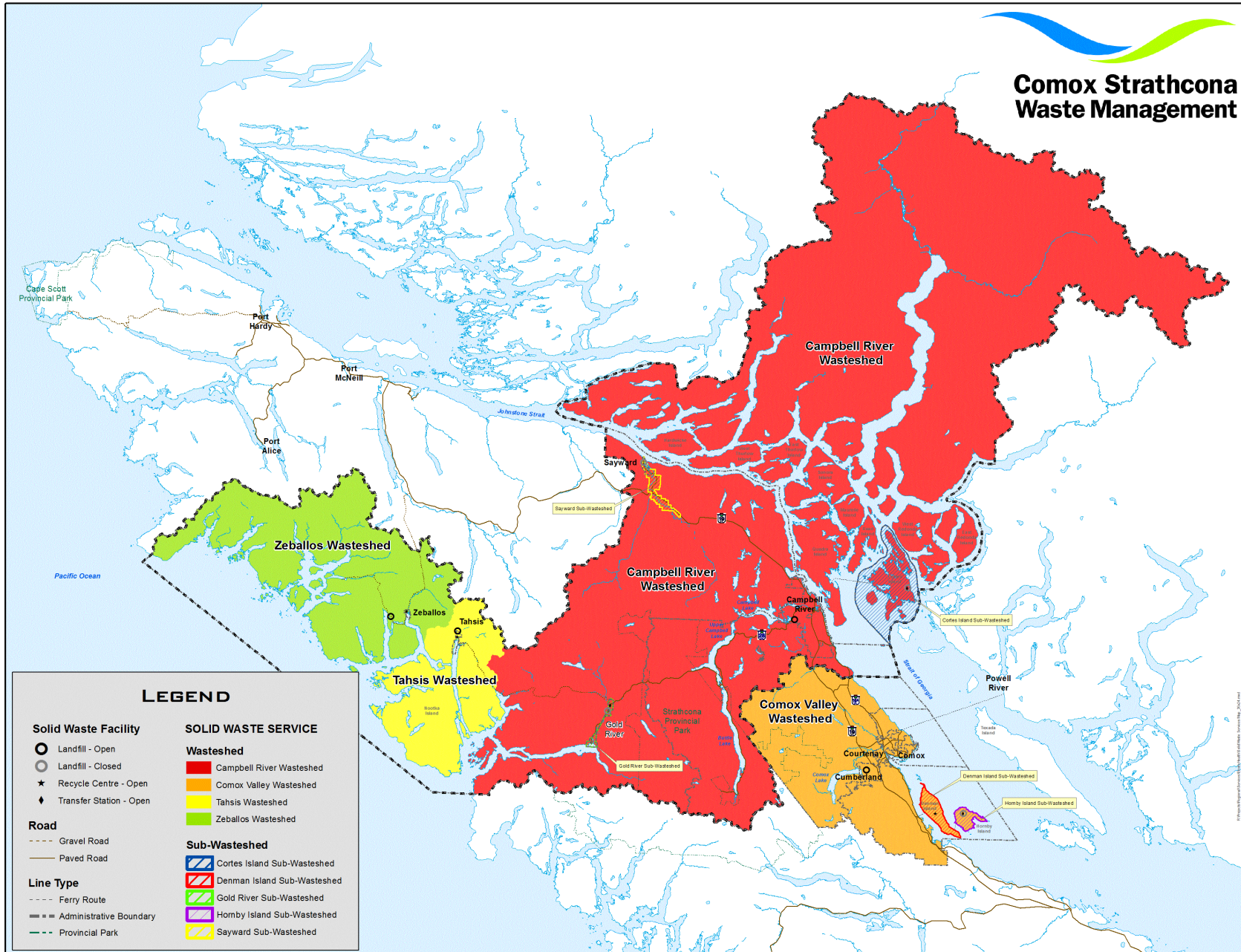
The CVRD covers approximately 1,725 km² and the electoral boundaries include the Town of Comox, the City of Courtenay, the Village of Cumberland, Electoral Area 'A' (Baynes Sound – Denman / Hornby Islands), Electoral Area 'B' (Lazo North), and Electoral Area 'C' (Puntledge-Black Creek). The SRD covers approximately 20,000 km². The electoral boundaries of the SRD include the City of Campbell River, the Village of Gold River, the Village of Sayward, the Village of Tahsis, the Village of Zeballos, Electoral Area 'A' (Sayward – Kyuquot / Nootka), Electoral Area 'B' (Cortes Island), Electoral Area 'C' (Discovery Islands – Mainland Inlets), and Electoral Area 'D' (Oyster Bay – Buttle Lake).

In addition, there are 14 First Nations with reserve lands located in the Plan area.²

Figure 2-1 shows the CSWM wastesheds. Each wasteshed indicates the geographical areas served by each of the CSWM Waste Management Centres.

² TRI. *First Nation Consultation Final Report. 2012*

Figure 2-1. CSWM Wasteshed Area



2.1 Physical Description and Constraints

The CSWM area extends from Kyuquot-Nootka on the west coast of Vancouver Island, across the islands of Cortes, Quadra, Denman, Hornby and the Discovery Islands, into a portion of the British Columbia mainland north of Powell River. The terrain includes rugged coastline, remote inlets, populous valleys, and the highest peaks of the Vancouver Island Ranges. Constraints that were considered during the planning process relate to the terrain and waterways, and their impact on access to communities and transportation distances.

The region's climate is one of the mildest in Canada due to moderation by the Pacific Ocean, which also contributes heavy precipitation to the western coast of Vancouver Island. The eastern portion of the CSWM area receives some relief due the rain shadow effect of the Vancouver Island Ranges. As the climates in the western and eastern coastal areas are unique, the precipitation patterns vary greatly across the planning region.

The planning region lies predominantly in the temperate rainforest biome, home to large conifers like the western hemlock, western red cedar, pacific silver fir, yellow cedar, Douglas fir, grand fir, Sitka spruce, and western white pine. The fauna is similar to that of the mainland coast, and the rivers, lakes and coastal regions are renowned for trout, salmon, and steelhead.

2.2 Population

The population in the CSWM in 2011 was 104,950, based on 2011 census data. Table 2-1 provides the permanent population in 2011 by area.

Table 2-1. CSWM Estimated 2011 Population

Southern Wasteshed Area	Population
Comox	13,627
Courtenay	24,099
Cumberland	3,398
Baynes Sound-Denman/Hornby Islands (Electoral Area A)	6,899
Lazo North (Electoral Area B)	6,939
Puntledge-Black Creek (Electoral Area C)	8,325
Sub Total	63,287
Northern Wasteshed Area	
Campbell River	31,186
Gold River	1,267
Sayward	317
Tahsis	316
Zeballos	125
Kyuquot/Nootka-Sayward (Electoral Area A)	807
Cortes (Electoral Area B)	1,007
Discovery Islands-Mainland Inlets (Electoral Area C)	2,601
Oyster Bay-Buttle Lake (Electoral Area D)	4,037
Sub Total	41,663
Total	104,950

Source: BC Stats

An estimated additional 5,200 people live on First Nation Reserves in the CSWM area.³

2.2.1 Population Projections

Table 2-2 provides the estimated population projections for the CSWM area as provided by BC Stats. The southern watershed population is expected to grow at an average rate of 1.5% per year and the northern watershed population is expected to grow at an average rate of 0.7% per year.

Table 2-2. CSWM Population Projections (2011-2031)

Year	Southern Wasthed Area	Northern Wasthed Area	Total CSWM Area
2011	63,287	41,663	104,950
2012	64,367	41,926	106,293
2013	65,395	42,192	107,587
2014	66,652	42,457	109,108
2015	67,737	42,729	110,466
2016	68,831	43,016	111,847
2017	69,887	43,344	113,232
2018	70,976	43,673	114,648
2019	72,079	44,003	116,082
2020	73,159	44,362	117,521
2021	74,245	44,726	118,970
2022	75,301	45,082	120,383
2023	76,366	45,428	121,794
2024	77,454	45,774	123,227
2025	78,441	46,109	124,549
2026	79,512	46,427	125,940
2027	80,582	46,733	127,316
2028	81,636	47,023	128,659
2029	82,686	47,302	129,988
2030	83,685	47,567	131,252
2031	84,711	47,828	132,539

Source: <http://www.bcstats.gov.bc.ca>

2.3 Economic Data

Based on 2011 census data, there were approximately 46,500 private dwellings in the CSWM area. Based on 2006 census data⁴, housing consists of roughly 69% single households, 1% multi-family dwellings and 30% non-family dwellings. This is consistent with figures for the entire province.

According to the 2006 census data, the main industries (by labour force) for the region are retail trade, health care and social assistance, agriculture / forestry / fishing / hunting, accommodation and food services, and construction.

³ TRI. First Nation Consultation Final Report. 2012

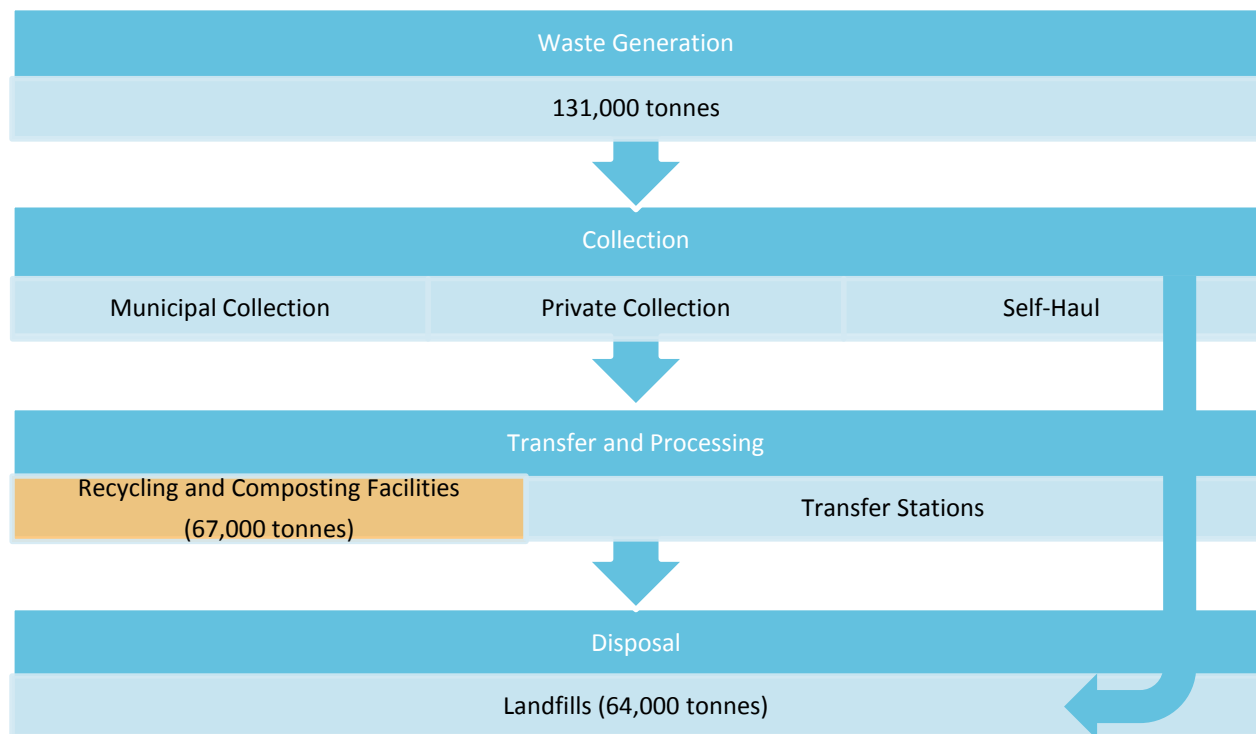
⁴ Detailed 2011 census data on housing and the economy was not available at the time of preparing this report.

The mean age of the population in the CVRD is increasing and associated with this is an increasing number of retired persons. In contrast, the mean age of the SRD is younger than that in the CVRD and there are a greater proportion of people working in the primary resources sector.

3. Existing Solid Waste Management System and Waste Characterization

Figure 3-1 shows the general flow of waste from the point of generation (at homes, work places or at construction / demolition sites), through to waste diversion facilities (recycling processors and composting facilities) or disposal facilities (landfills), based on the waste management system in 2011.

Figure 3-1. Waste Flows



There is a broad range of solid waste management programs and infrastructure in the CSWM area including:

Education and Promotion

- CSWM's "Power of R" program;
- CSWM's Compost Education Centres with contract educators;
- CSWM website with a directory of recycling, composting and local disposal options and additional information on recycling and waste management; and
- Most municipalities and not-for-profit waste management centres maintain web-based information to assist their communities and help visitors understand their options for recycling and reuse.

Reduction and Reuse Programs

- Backyard composting is encouraged through education and supply of low cost backyard composters;
- Municipalities and communities have garbage “can limits” for their curbside collection programs which limit the weekly allotment of waste to one or two containers per week;
- There are reuse centres / free stores at the waste management centres on Hornby, Denman and Cortes Islands, and in Gold River and Tahsis; and
- Several private and not-for-profit entities provide services for the salvage and reuse of goods.

Recycling

- Curbside collection of recyclables is provided to residents of Campbell River, Courtenay, Comox, Cumberland and Royston;
- There are recycling drop-off depots located throughout the CSWM service area;
- There are staffed recycling centres on Hornby, Denman and Cortes Islands, and in Gold River and Tahsis;
- Most CSWM waste management centres offer a broad range of recycling opportunities, including scrap metal, appliances and other items that are not collected at curbside or through drop-off depots;
- Curbside yard waste collection is provided to residents of Campbell River, Courtenay, Comox and Cumberland; and
- There are private collection companies that provide recycling collection services to businesses and multi-family residential buildings.

Composting

- The CVRD owns and operates a biosolids composting facility that uses clean, chipped wood waste in the composting process; and
- There are two private yard waste composting operations.

Garbage Collection

- Residential curbside garbage collection service is provided in the communities of Campbell River, Courtenay, Comox, Cortes Island, Cumberland, Denman Island, Gold River, Royston, Sayward, and Tahsis;
- The Village of Zeballos provides centralized, bear-proof bins located throughout the community for the collection of garbage;
- In Courtenay and Comox, multi-family and ICI buildings receive garbage collection service through the municipality. In all other areas, multi-family and ICI buildings must contract their own garbage collection service; and
- In the following areas, residents must hire their own garbage collection company or “self haul” their garbage to a local waste management centre:
 - Quadra Island
 - Union Bay
 - Merville
 - Black Creek
 - Oyster River
 - Oyster Bay
 - Dove Creek
 - Puntledge
 - Lazo North
 - Hornby Island
 - Fanny Bay
 - Stories Beach
 - Buckley Bay

Transfer Stations

- There are CSWM transfer stations located in Gold River, Campbell River, on Cortes Island and Hornby Island. Waste from these transfer stations is hauled to either the Comox Valley or Campbell River waste management centres.

Landfills and Other Disposal Facilities

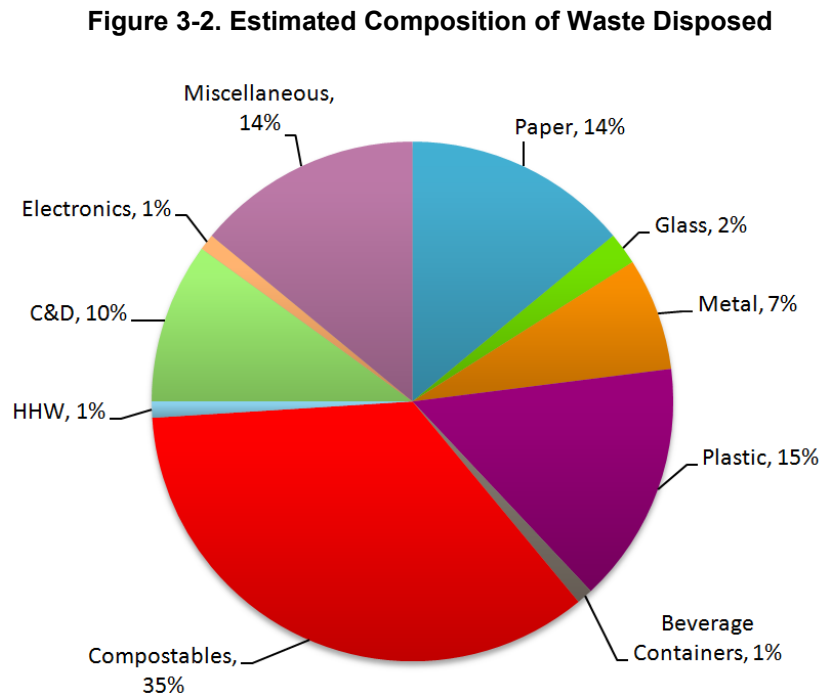
- There are five active CSWM landfills located at or near the following communities: Campbell River, Cumberland, Gold River, Tahsis and Zeballos;
- The Gold River Landfill, which is closed as a municipal solid waste landfill, continues to receive inert construction and demolition waste;
- There are closed landfills in Sayward and on Cortes, Hornby and Denman Islands; and
- There are four active private disposal facilities that receive wood waste and / or inert construction / demolition / land clearing waste.

Household Hazardous Waste

- Household hazardous waste (HHW) disposal is managed, to a large extent, through BC product stewardship programs which have set up collection programs for the majority of household hazardous waste products, such as paint, pesticides, solvents, and used motor oil. To supplement the stewardship activities, CSWM has held collection events.

3.1 Composition of CSWM Waste Disposed

Figure 3-2 shows the estimated weight-based composition of the CSWM waste currently going to disposal. Based on this estimate, roughly one-third of the disposed waste is recyclable (e.g., paper, metal, plastic, beverage containers) and one third is compostable.



3.2 Disposal, Diversion and Waste Generation

Table 3-1 provides a summary of the current estimated waste disposal, waste diversion quantities, the disposal facilities and methods of diversion. In 2011, CSWM disposed of 64,292 tonnes of waste (based on scale house records and an estimate of waste disposal for Tahsis and Zeballos) and diverted from landfilling an estimated 67,126 tonnes of material, resulting in a waste diversion rate of 51%.

Table 3-1. Current Disposal and Diversion Estimates

	Tonnes
Disposal	
Comox Valley Waste Management Centre Landfill	38,445
Campbell River Waste Management Centre Landfill	24,921
Tahsis Landfill (estimated)	300
Zeballos Landfill I (estimated)	300
Gold River Inert Waste Landfill	326
Total landfill disposal	64,292
Diversion	
Curbside blue box	3,205
Recycling depots	4,146
Recycling at landfills	11,975
Municipal yard waste programs	4,690
Private recycling activities (estimated)	38,650
Encorp Return-It (Beverage Containers)	2,253
Product Care(HHW)	70
Tire Stewardship BC	425
BC Used Oil Management	1,220
ESABC (Electronics)	492
Total diversion	67,126
Total waste generation (disposal + diversion)	131,418
Diversion rate (diversion / waste generation)	51%

The disposal rate for the CSWM in 2011 was 0.61 tonnes per person.

3.3 Sources of Waste Disposed

Table 3–2 shows the major sources of landfilled waste at the Comox Valley and Campbell River waste management centres (CVWMC and CRWMC) and the relative quantity from each source. This information is based on 2011 scale data for each site.

Municipal waste collection contributes 39% of the waste landfilled at the CVWMC by weight, 32% is from commercial collection and customers who self-haul, and 29% is from the construction industry. The CRWMC has a different

profile as it receives 18% from municipal collection, 15% from the construction industry and 67% from commercial collection, self-haul customers and waste transferred from the Gold River and Cortes Island transfer stations. Much of this difference can be attributed to the different municipal collection services in Courtenay, Comox and Campbell River. In Courtenay and Comox, the municipal service includes collection from businesses and institutions as well as residences. In Campbell River, the municipal service is provided only to residences.

Table 3-2. Sources of Landfilled Waste (2009)

Waste Source (Generator)	Comox Valley Waste Management Centre	Campbell River Waste Management Centre
Municipal collection	39%	18%
Commercial collection, transfer stations and self-haul customers	32%	67%
Construction	29%	15%
Total	100% of 38,455 tonnes	100% of 24,921 tonnes

4. Future Solid Waste Management System

The future solid waste system builds on the existing framework of services and programs while seeking to improve the delivery of those services to reduce the quantity of waste sent to disposal. The proposed programs, infrastructure and policies for the updated Solid Waste Management Plan are outlined in Section 5 through Section 18 and are presented in accordance with the waste management hierarchy shown in Figure 4-1.

Figure 4-1. Waste Management Hierarchy



The waste management hierarchy presents the various means of managing solid waste, from most desirable at the top, to least desirable at the bottom, as described below:

- “Reduce” is the most important part of waste minimization. Waste reduction avoids the unnecessary use of resources such as materials, energy and water and means there is less waste to manage.

- “Reuse” is the second level in the waste management hierarchy. Reuse is defined as the repeated use of a product in the same form, but not necessarily for the same purpose.
- “Recycle” involves some form of reprocessing of waste materials to produce the same or another product.
- “Recover” is defined as the reclamation of energy or recyclable materials from the remaining waste stream.
- “Residuals” management is the final treatment and / or disposal of a waste that cannot be used in any other way. For CSWM, residual management of solid waste is presently undertaken through landfilling.

The hierarchy has been applied to the development of the Solid Waste Management Plan options with the intent of minimizing the amount of residual waste that must be landfilled. In 2010, the Province developed a policy⁵ related to recovering energy from the waste stream: that regional districts must plan to achieve at least 70% waste diversion through the first 3Rs (reduce, reuse and recycle) prior to considering the 4th R of “recover” (e.g. waste-to-energy facilities). This policy has also been considered in the development of the Plan’s options and it is expected that the actions in this plan can achieve 70% diversion upon full implementation.

4.1 Diversion Estimates

For each plan component described in sections 5 through 16, an estimate of how much diversion can be attributed to the component is included. These estimates are based on the waste composition data (provided in Section 3-1), current waste disposal data, and expected diversion performance. The anticipated diversion associated with each plan component are intended to illustrate how 70% diversion can be achieved and to show the relative impact of each plan component on the overall diversion estimate provided in Section 17.

5. Reduction / Reuse Actions

Reduction and reuse policies, programs and facilities minimize the amount of waste that must be managed by the waste management system. There are several reuse facilities available, including thrift stores operated by the not-for-profit sector and “free stores” operated at some of the local waste management centres. To further encourage reduction and reuse, the following actions are planned:

- **On-Line Reuse:** Incorporate reuse services into the existing CSWM on-line recycling directory.
- **Reduction and Reuse Promotional Campaign:** Develop a campaign focused on “reduce” as a key part of a responsible lifestyle – linking solid waste reduction with other responsible behaviours such as energy use and water use.
- **Professional Salvage in Support of Community Organizations:** Salvageable materials are frequently observed in waste delivered to the landfill, particularly associated with source-separated construction wood waste and metal goods (appliances, bicycles, etc.). Although there are safety and liability concerns that prohibit salvage of materials by the general public at the waste management centres, professional salvage operators have the skills to recover materials for reuse and repair purposes. Recovery from source-separated waste piles at the CSWM-managed waste management

⁵ *Considerations for the Inclusion of Waste-to-Energy Facilities (WTE) in Solid Waste Management Plans, MoE, 2010*

facilities by pre-approved⁶ salvage operators that are associated with not-for-profit community organizations will be supported.

- **Reuse at Regional Waste Management Centres:** Assess the potential of reuse facilities at the regional waste management centres.

These actions have the potential to divert an estimated 300-500 tonnes per year from landfilling.

6. Residential Waste Management

6.1 Curbside Services

In each community that receives curbside garbage, recycling and yard waste collection through their local government, this service will be maintained through local bylaws. Policies that support participation in available recycling and composting programs should also be maintained, including:

- Limiting the amount of garbage set out for weekly collection (in some communities garbage volumes that are “over limit” must be accompanied by a pre-purchased tag).
- Restricting the inclusion of recyclables, yard waste and materials managed under product stewardship programs in garbage containers.

Curbside collection services are local services that are typically funded through local user fees. The cost per household of the curbside services varies slightly between the service areas depending on service variables and contract arrangements.

6.1.1 Food Waste Collection

The curbside collection of food waste (also referred to as kitchen scraps) can significantly reduce the amount of residential waste sent to disposal and is a critical element for achieving waste diversion goals.

Residential food waste collection has the potential in the CSWM to divert roughly 3,250 tonnes of organics from residual waste across the service area. For the purposes of estimating diversion, it is assumed that Courtenay, Campbell River, Comox and Cumberland would participate in a residential food waste collection program. Each jurisdiction should assess the suitability of adding food waste collection to its curbside service.

It is anticipated that food waste collection will result in no (or nominal) increases in curbside collection costs for residents. However, there will likely be a capital cost associated with the provision of food waste collection containers. Most island communities that provide curbside food waste collection have opted to provide each home with a kitchen container and a small green wheeled cart, as shown in Figure 6-1. The estimated cost of these two containers is approximately \$37. These costs are based on recent collection contracts awarded in the Regional District of Nanaimo.

The development of local food waste processing capacity is described in Section 9.

⁶ *Salvage operator has proven that they have the skills and insurance to safely salvage from specific waste streams.*

Figure 6-1. Food Waste Collection Containers

Example of a Countertop Bin to Collect Food Scraps



Example of a Curbside Green Cart for Food Waste Collection

6.2 Multi-Family Waste Management

Multi-family buildings may include apartment buildings, condominiums, townhouse complexes, mobile home parks or any other residential building considered “multi-family” under local bylaws. Due to the variation in building configurations from property to property, collection of waste and recyclables from multi-family buildings is generally not part of the residential curbside collection program but rather, it is undertaken by the same vehicles that service commercial buildings.

The following mandatory multi-family recycling criteria have been effective in other communities:

1. Mandate all multi-family buildings to implement a recycling collection service by a defined date. This approach has been used by the Cities of San Francisco and Portland and requires each building to set up a recycling service with a private contractor.
2. Provide recycling collection services to multi-family buildings as a municipal service. Participation in the program may be mandatory or voluntary for multi-family buildings. This approach has been used by the Cities of Vancouver, Richmond, Burnaby and, is currently being used by the Town of Comox.

With Board authorization, CSWM is planning to provide promotion and education assistance to support the multi-family collection programs to ensure consistency in communications related to multi-family recycling. Promotion and education assistance includes:

- Developing and distributing promotion / education materials targeted to multi-family building managers and residents;
- Providing assistance to building managers with tenant outreach; and
- Developing web-pages related to the program that can be linked to municipal web sites.

The provision of recycling services to multi-family buildings could divert an estimated 740 tonnes of waste per year based on the projected level of participation of the municipalities of Comox, Courtenay and Campbell River.

6.3 Recycling Depots

CSWM provides recycling depots, collection and transportation services for recyclables across the service area. Recycling depots are operated by local communities and through contracts managed by the CSWM. Recycling depots and services will continue to be provided where supported by the community and deemed necessary.

CSWM will monitor progress in the development of an industry-led stewardship plan for packaging and printed paper due to take effect in May 2014 and assess the potential impacts of this plan on the recycling depot service. (See Section 10 for more details on BC stewardship programs.)

6.4 Recycling at the Waste Management Centres

Each of the CSWM waste management centres is intended to provide a variety of waste management services to the local community. These services generally include two or more of the following:

- Garbage disposal;
- Appliance recycling;
- Recycling of household materials (paper, plastic containers, metal cans);
- Scrap metal recycling;
- Tire recycling;
- Reuse Centre / Free Store;
- Clean wood waste disposal;
- Yard waste drop off; and
- Household hazardous waste collection.

These facilities are located throughout the CSWM area to ensure reasonable access to recycling and disposal services. To ensure that the servicing levels at these centres meets the needs of the local community, service reviews are being conducted by CSWM on a regular basis.

7. Industrial, Commercial & Institutional (ICI) Waste Management

The following programs and services can increase recycling and diversion of ICI waste.

7.1 Variable Tipping Fees to Encourage Source Separation

To encourage recycling by the ICI sector, waste loads arriving at the Regional waste management centres that contain recyclable materials such as cardboard, paper and metal are currently charged a tipping fee that is significantly greater than the standard waste tipping fee. In contrast, recyclables are charged only 25% of the regular tipping fee and yard waste and scrap metal are received at no charge. This application of variable tipping fees provides a significant financial incentive to ICI waste generators to source-separate recyclable materials which increases diversion of waste to recycling and away from landfill disposal.

This incentive mechanism will continue to be used and the range of materials defined as “recyclable” may be expanded at CSWM facilities. As new recycling opportunities are established, adding those materials to the list of recyclable materials will be considered. The fee structure will be reviewed by CSWM staff and consultation with the construction industry will occur before changes in tipping fees authorization is sought. Before implementation of tipping fee increases, industry outreach will occur.

7.2 Mandatory Recycling by the ICI Sector

As a means to reinforce disposal policies and further encourage recycling at ICI locations, local government policies to encourage businesses to recycle may be considered by communities where ICI recycling services are readily available. Similar to encouraging recycling in multi-family buildings, it is anticipated that each local government will determine the most effective approach to recycling by the ICI sector based upon the local government’s current waste management protocols. The following are examples of the approaches that are being effectively employed by other local governments:

- Require all ICI buildings to implement a recycling collection service by a defined date. Under this approach, each ICI building would contract recycling services to meet their specific needs.
- Provide recycling collection services to ICI buildings as a local government service.
- A combination of the above two approaches:
 - Small ICI buildings that can be serviced by the same collection vehicle that collect recyclables from the residential sector are included in the curbside program.
 - Larger ICI buildings that cannot be serviced by the curbside program may be required to contract recycling services directly with a collection company.

This service, if operated as a local government service, would be funded through local user fees, as is the case with existing municipal curbside collection services.

CSWM will provide promotion and education assistance to support the ICI collection programs to ensure consistency in communications related to ICI recycling.

Through application of the above methods in the communities of Campbell River, Comox, Courtenay and Cumberland, it is estimated that by improving local ICI recycling, up to 5,000 additional tonnes of waste can be diverted from landfilling per year.

7.3 ICI Technical Assistance Program

To support waste reduction and source-separation of recyclables by the ICI sector, a CSWM technical assistance program specific to the ICI sector may be required. This program may include:

- Web-based recycling directory;
- Zero Waste audit and certification program;
- Zero Waste Awards program (this could be undertaken in association with local Chambers of Commerce);
- Awareness campaigns targeting specific commercial generators (e.g., retailers, restaurants, garages);
- Working with local business associations to provide education and outreach in the commercial sector;
- Working with tourism / hotel associations to develop a program and support materials for tourists; and
- Developing tools and information specific to different types of businesses (office, retail, restaurant, etc.).

7.4 Local Government Leadership

As role models for the ICI sector, CSWM will strive to implement “zero waste” initiatives within their own buildings and operations, and aim to build “zero waste” requirements into all Regional District contracts.

7.5 Mandatory Space Allocation in New Buildings

A common barrier to setting up recycling in multi-family and ICI buildings is the lack of space allocated to store collection containers. It is recommended that in communities where recycling services exist, that all new construction of multi-family and ICI buildings should be designed and constructed to accommodate collection of three material streams including:

- Residual waste or garbage
- Recyclables
- Organics

Mandatory space allocation in multi-family and commercial buildings has been adopted by several municipalities including the City of Surrey (for multi-family buildings) and the City of Seattle (for multi-family and ICI buildings). This space requirement has been applied as part of the process to obtain a development and / or construction permit. CSWM will consult with industry and local governments to develop a model bylaw for space allocation for consideration across the service area.

8. Recyclable Material Processing

Across the CSWM service area, much of the processing of recyclable materials is currently undertaken by the private sector as a part of a managed contract. When possible, a contract requirement for regular reporting by recycling contractors about the market destination of materials collected through local government collection services should be considered for all local government recycling processing contracts.

9. Organics Management

The organic fraction of landfilled waste is estimated to be 35% by weight. Much of this fraction can be diverted to organic waste processing facilities that use composting or anaerobic digestion technologies. By redirecting the recoverable organic fraction from residual landfilling, the following can be achieved:

- Reduction of the amount of waste landfilled (increasing landfill life);
- Reduction of the production of leachate;
- Reduction of the production of landfill gas and reducing greenhouse gas emissions; and
- Development of useful end-products such as compost, gas or energy.

9.1 Develop Organics Processing Capacity

To achieve organics diversion, organic processing capacity that can manage food waste and yard waste will need to be developed. This may be achieved by contracting with the private sector, the public sector building and operating its own facility, or through a public-private partnership. Operating models and technologies will need to be assessed before authorization. Based on a pre-feasibility study for a composting facility prepared for the CVRD in 2010/2011, the following steps are planned by CSWM in support of developing composting capacity:

1. Establish a pilot project to divert organics from the landfill.
2. Assess a location, including Campbell River, for a regional organics processing facility.
3. Assess organics management technologies, including composting and anaerobic digestion.
4. Partner with other local governments where possible.

9.1.1 Feedstock Supply

To be successful, the organics processing facility will need a guaranteed supply of feedstock (food waste and / or yard waste). CSWM and any participating municipalities will need to consider the following steps to support an organics diversion program:

1. Add food waste to the curbside collection program and possibly ban food waste from the curbside garbage collection service.
2. Have commercial generators of food waste participate at an acceptable level.
3. Include food waste in the list of “recyclable materials” that triggers higher tipping fees at the regional disposal sites.
4. Consider providing municipal food waste collection for small and medium size ICI food waste generators that can be serviced through the curbside food waste collection programs.
5. Consider food waste collection from rural areas.

It is estimated that roughly 7,000⁷ tonnes per year of organic waste can be diverted from landfilling in the CSWM through the development of organics processing capacity. At this time, it is estimated that organics diversion costs for the CSWM may be in the range of \$60 to \$90 per tonne, depending on the operation model and technology employed.

⁷ The estimate of 7,000 tonnes is based on 3,250 tonnes of residential food waste and 3,675 tonnes of ICI organic waste, as shown in Table 17-1.

9.2 Yard Waste Collection

Many areas within the CSWM service area have curbside yard waste collection or yard waste drop off depots. Through increased promotion of yard waste collection programs CSWM would be able to:

- Reduce the cost of composting organics by increasing needed bulk material;
- Reduce the quantity of yard waste in the landfill;
- Reduce the amount of “illegal dumping” of yard waste through the availability of alternatives; and
- Improve air quality by reducing the residential burning of yard waste.

CSWM plans to promote the availability of municipal and regional district yard waste collection services to the public.

9.3 Backyard Composting

Backyard composting is one of the most effective methods of reducing the amount of waste that enters the solid waste management system. A recent study by the North Shore Recycling Program indicated that an average home diverts 361 kg of organic waste per year when they use a backyard composter and that the diversion increases to an average of 452 kg when provided with educational support.⁸ Consequently, encouraging backyard composting through our education programs is one of the most cost-effective means of achieving waste diversion. CSWM plans to maintain the existing backyard composting program to encourage residents to compost at home. The program currently includes:

- Backyard composter sales;
- Promotion of backyard composting, grass cycling and xeriscaping through the website, advertising, community events and print materials; and
- Two staffed compost education gardens.

CSWM will seek solid waste Board authorization to enhance the backyard composting program by:

- Linking backyard composting education with Bear Aware information;
- Increasing the time that compost educators are available to the public during the year; and
- Improve composting education sites as necessary.

For estimating costs and diversion potential, it was assumed that CSWM will distribute 300 backyard composters annually for 5 years and that each composter could divert 400 kg per year. This would divert roughly 1,800 tonnes of organic waste over that time and another 1,800 tonnes would continue to be diverted annually for as long as those composters are in use.

⁸ *Backyard Composting Undervalued. North Shore Recycling Program, May 2011.*

10. Product Stewardship Programs

“In British Columbia, Industry-led Product Stewardship is a government strategy to place the responsibility for end of life product management on the producer and consumers of a product and not the general taxpayer or local government.” (MoE Product Stewardship website).

Product Stewardship programs play an integral and increasingly significant role in the management of municipal solid waste in BC. Most existing Product Stewardship programs, also referred to as Extended Producer Responsibility (EPR) programs, have been established by producers and brand owners of products in accordance with requirements set out in the BC Recycling Regulation. Other programs have been set up voluntarily by individual companies and industries (e.g. for milk containers).

In accordance with the BC Recycling Regulation, mandatory waste management programs have been established for the following categories of products (or will be as per regulatory phase-in schedules as indicated below):

1. Beverage Containers
 - All ready-to-drink beverages except milk and milk substitute products
2. Electronic and Electrical Equipment
 - Televisions, computers, monitors, printers and computer peripherals
 - Audio-visual and consumer equipment, thermostats, cell phones, residential fluorescent lamps, batteries used in these products
 - Small appliances, smoke detectors, and batteries used in these products
 - (July 2012) Large appliances, electrical and electronic tools, medical devices, automatic dispensers, lighting equipment, toys, leisure and sports equipment, monitoring and control instruments, information technology (IT) and telecommunications equipment, and batteries used in these products
3. Lead Acid Batteries
4. Used Lubricating Oil, Filters and Containers
 - Oil - any petroleum or synthetic crankcase oil, engine oil, hydraulic fluid, transmission fluid, gear oil, heat transfer fluid or other fluid used for lubricating purposes in machinery or equipment
 - Oil filters, any spin-on or element oil filter used in hydraulic, transmission or internal combustion engine applications - includes diesel fuel filters but does not include gasoline fuel filters
 - Oil containers - any plastic container with a capacity of less than 30 litres that is manufactured to hold oil
5. Pharmaceuticals
 - All unused or expired consumer medications, as defined in the Food and Drugs Act (Canada) except for veterinary drugs and drugs from hospitals, health clinics or doctor's offices. Medications are prescription drugs, non-prescription drugs and natural health products that treat, prevent or alleviate symptoms of illness or disease
6. Paints
 - Household paint such as latex and alkyd paint, coatings, sealers, glazes, primers, shellacs, undercoats, varnishes, paint aerosols and many other paint products

7. Solvents, Flammable Liquids, Gasoline and Pesticides

- Flammable liquids include acetone, BBQ lighter fluid, kerosene, paint thinner and flammable aerosols
- Pesticides are accepted in liquid, solid or aerosol form, however, only domestic pesticides labeled with a poison symbol and a "Pest Control Product" registration number (e.g., PCP Reg. #2464) are accepted. Gasoline products include gasoline leftovers, spoiled gasoline, or old gas contaminated with oil or water

8. Tires

- Pneumatic or solid tires designed for use on a motor vehicle, farm tractor, trailer, or other equipment or machinery

9. Packaging and Printed Paper

- In May 2011, the MoE added packaging and printed paper to the Recycling Regulation. The implementation of this program is expected to take place at the end of 2014; during the term of this Plan. The definitions used regarding packaging and printed paper appear to cover all materials currently collected by municipal and CSWM residential recycling programs.

The collection infrastructure for existing product stewardship programs consists of return-to-retail and / or stand-alone depot systems. Stewardship agencies which have been set up by industry to manage the collection system may directly operate their collection and systems themselves or under contract to service providers including local government. In accordance with the BC Recycling Regulation, the costs of collection and management of Product Stewardship programs are to be borne by producers and consumer, not by local governments or tax payers.

Most stewardship programs charge separate fees at the point of purchase to cover the costs of managing the discarded product, and the fee is shown on the sales receipt as an "eco-fee". These fees are applied by producers / brand owners as part of the price of the product; they are not government-applied taxes. The stewardship agencies are responsible for educating consumers regarding their programs and for providing information about collection options, fees, and handling practices.

In support of current Product Stewardship programs and to encourage the expansion of product stewardship to other waste products and materials the CSWM plans to:

- Incorporate product stewardship education into its "Power of R" education program and promote local options for disposing of products covered by Product Stewardship programs;
- Work directly with stewards and BC MoE to ensure that stewardship agency collection depots meet the needs of the communities;
- Participate on the BC Product Stewardship Council (BCPSC, an association whose membership includes province-wide representation of all Regional Districts) to lobby stewardship agencies to improve services, and for a broader deposit-based return system (deposits provide a financial incentive for generators to return HHW materials to the proper location); and
- Expand solid waste website links to include local locations and information for disposal of stewardship products.

It is estimated that 850 tonnes of additional waste can be diverted away from landfills annually through improved promotion and increased availability of information for product stewardship programs.

11. Household Hazardous Waste (HHW) Management

Household Hazardous Waste (HHW) is not a large volume of the total waste disposed, but because of its toxic nature, its environmental impact can be significant if disposal is not properly managed. To help ensure that these materials are managed appropriately, a combination of promotion and information on product stewardship programs (discussed above), consumer education and HHW collection services will be employed to better collect and manage HHW. Through Board authorization, CSWM plans to:

- Continue to incorporate proper HHW education into its “Power of R” education program and promote local options for properly disposing of HHW;
- Establish and maintain permanent HHW depots at CSWM waste management centers and transfer stations located in Campbell River, Comox Valley, Gold River, Cortes Island and Hornby Island; and
- Hold HHW round up events for smaller communities.

Funding for these services will be shared with the stewardship agencies since they are tasked with funding the collection and disposal of most HHW generated in BC.

12. Construction and Demolition (CD) Waste Management

Waste generated by construction, demolition and renovation projects includes a wide variety of waste materials, including cardboard, plastic, metal and wood. A large portion of the waste is typically reusable, recyclable or can be used for energy recovery in accordance with MoE legislation, regulations and requirements⁹, and therefore this waste stream represents a significant opportunity for waste diversion.

12.1 Construction and Demolition Project Permitting

CSWM will consult with construction / demolition industry and local government Building Permit and Planning Departments to assess the feasibility of policy tools to encourage diversion of CD waste including:

- Variable permit costs (deconstruction vs. demolition) to encourage source-separation, reuse and recycling of CD Waste.
- Solid waste management plans for large construction projects to ensure that waste diversion is considered in the planning for and during construction.
- Recycling of specific waste materials generated during construction and demolition projects.
- Adopting green building standards (e.g., LEED) that will reduce the amount of waste generated during construction and through the life of the building.

It is estimated that diversion of 11,500 tonnes of construction and demolition waste from CSWM landfills can be achieved with increased CD waste separation and diversion.

⁹ E.g. Clean wood waste may be chipped and used as hog fuel at some Vancouver Island pulp mills in accordance with MoE authorizations

12.2 Variable Tipping Fees

CD waste diversion will continue to be supported by variable tipping fees (lower tipping fees on source-separated recyclable / divertable materials). In particular, variable tipping fees may be used as an incentive for generators to source-separate clean and dirty wood waste as well as gypsum drywall.

12.3 CD Waste Recycling Services

At present, the only CD waste recycling opportunities are at publicly-funded landfills and transfer stations. CSWM will encourage the private and non-profit sectors to develop CD waste recycling services locally through:

- Setting appropriate pricing on loads of CD waste that does not compete with private and non-profit recycling efforts; and
- Any project permitting guidelines established through the activities discussed above in Section 12.1.

It is the intention of CSWM to continue to provide areas at the regional waste management centres for source-separated CD waste materials to ensure that there is on-going customer access to CD waste recycling options.

12.4 CD Diversion Promotion and Education

The CD waste diversion initiatives listed above are effective when supported by promotion and education targeting the construction industry. CSWM will work in concert with local industry associations to determine the industry's information needs to provide better promotion and education opportunities. CSWM promotion and education activities may include proven methodologies of increasing diversion such as:

- Developing a construction / demolition industry waste minimization tool kit. Similar tool kits have been developed by Metro Vancouver and Portland, Oregon;
- Providing a CD waste recycling directory on the website and in hard copy; and
- Organizing and holding CD recycling seminars in conjunction with local construction associations.

13. Promotion / Education of Solid Waste Management Programs

The success of waste management programs and policies requires that people know and understand why and how to effectively participate. Promotion and education, therefore, are critical to all components of the solid waste management system.

Promotion and education efforts directly related to municipal waste management services such as garbage collection will continue to be undertaken by the jurisdiction providing the service. However, to reduce costs and to create consistent messaging and branding throughout the service areas, CSWM plans to work with municipalities to develop standardized communications related to new programs such as food waste collection, multi-family recycling, and ICI recycling.

CSWM will continue to provide promotion and education related to their services such as recycling drop-off depots, transfer stations, landfills, as well as promotion and education on waste reduction and reuse, composting, household hazardous waste and product stewardship programs. Promotion and education activities will include the "Power of

R” program and will continue to use a range of promotion and education activities and tools for solid waste management and zero waste education.

14. Wildlife Conflict Management

The CSWM area is home to a large population of bears that are integral to the local ecosystem. Developing and maintaining a solid waste management system that minimizes the potential for human-bear conflict and minimizes bird populations at the waste management centres will continue and be improved.

To minimize potential wildlife conflict, CSWM plans to:

- Work with local Bear Aware groups and the Province to establish an on-going awareness and education opportunities for waste generators that addresses “bear awareness”;
- Encourage local governments to review their waste collection bylaws to consider containerization requirements for garbage and enforced set-out times for curbside collection to minimize wildlife access opportunities;
- Backyard composting education on composting methods that reduce the attraction of wildlife to residential areas and limit access to organic waste near homes;
- Maintain bear fencing around active landfills and all other waste management facilities, including transfer stations and composting facilities, that accept putrescible waste; and
- Maintain and improve bird management at the landfill working face at the Comox Valley waste management center and the Campbell River waste management center. As part of this initiative, a study will be undertaken in 2012 that includes quantitative and qualitative analysis of birds that contact waste at the landfill on adjacent lands and waters.

15. Land Clearing Waste Management

Land clearing waste is the vegetative debris created by the clearing of land, generally undertaken as the first step in a greenfield construction project. Land clearing waste is typically made up of tree stumps, trunks, branches and associated brush. Land clearing waste may be used as firewood, ground / chipped and land applied, composted, or used for energy recovery in accordance with MoE legislation, regulations and requirements. Land clearing waste can also be disposed at a MoE authorized disposal facility or burned on-site in accordance with the *BC Open Burning Smoke Control Regulation* and local requirements.

16. Illegal Dumping Prevention

Illegal dumping of waste is common in the CSWM area and throughout British Columbia. Per board authorization, specific initiatives are proposed to reduce illegal dumping and roadside litter include:

- Continue to waive tipping fees as per the current CSWM solid waste policy for organizations cleaning up illegal dumping sites or conducting community clean-ups;
- Continue to encourage municipalities to provide yard waste collection programs through depots or curbside collection (yard waste is frequently disposed of on back roads and is believed to lead to the dumping of other waste materials over time);

- Provide education to the community on disposal options and to encourage reporting of illegal dumping activities; and
- Require users of the waste management centres to cover their loads in order to prevent litter along transportation routes.

16.1 Enforcement Bylaw

Section 25(3) of BC Environmental Management Act allows BC Regional Districts to make bylaws to regulate the management of municipal solid waste or recyclable material including, bylaws regulating, prohibiting or respecting:

- The discarding or abandonment of municipal solid waste or recyclable material;
- The delivery, deposit, storage or abandonment of municipal solid waste or recyclable material at authorized or unauthorized sites; and
- The requirement of an owner of municipal solid waste or recyclable material, the deposit of which has been prohibited by bylaw, to pay the cost of its disposal in a manner specified in the bylaw.

The Act requires that a regional district indicate in its Plan its intention to undertake consultations with affected stakeholders and to subsequently undertake consultations as outlined in the Act prior to approving a bylaw affording the regional district the powers listed above. Accordingly, the CSWM intends to draft a bylaw to allow for enforcement actions against illegal dumping activities in the CSWM area. In all cases, CSWM will conduct required consultations to satisfy the requirements of the Act.

17. Diversion Estimate

Table 17-1 presents the estimated new waste diversion that can be achieved from each of the proposed plan components upon full implementation.

Table 17-1. Summation of Estimated Increase in Diversion from Plan Components

Plan Component	Estimated Increase in Diversion (tonnes per year)
Reduction and Reuse Actions	400
Residential Recycling	
Food waste collection	3,250
Improved Multi-Family Recycling	740
ICI Recycling	
Improved Recycling by the ICI Sector	5,000
Organic Waste Diversion	
Develop Organic Disposal Capacity	3,675
Backyard composting	1,800
Household Hazardous Waste and Extended Producer Responsibility Programs	2,600
Construction and Demo Waste Management	
CD Project Permitting	11,500
Total Estimated New Plan Diversion	28,615

The current waste diversion rate is estimated to be 51%; with the implementation of the reduction, reuse and recycling components of this plan, the diversion from landfill is expected to reach 70%, as illustrated in Figure 17-1. This would reduce the per capita disposal rate from 0.61 tonnes per year to 0.38 tonnes per year.

Figure 17-1 Current and Targeted Diversion

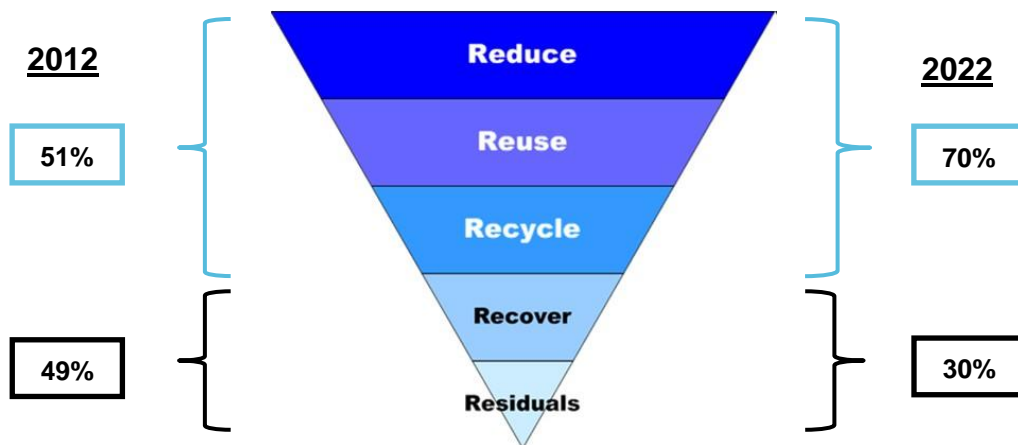


Table 17-2 shows the projected residual waste quantities for the next 30 years based on population projections and the diversion estimates provided in Table 17-1.

Table 17-2. Residual Waste Projections

Year #	Year	Projected Population	Waste Disposed (tonnes)
1	2011	104,950	62,970
2	2012	106,293	63,776
3	2013	107,587	64,552
4	2014	109,108	53,463
5	2015	110,466	54,128
6	2016	111,847	54,805
7	2017	113,232	37,366
8	2018	114,648	37,834
9	2019	116,082	38,307
10	2020	117,521	38,782
11	2021	118,970	39,260
12	2022	120,383	39,726
13	2023	121,794	40,192
14	2024	123,227	40,665
15	2025	124,549	41,101
16	2026	125,940	41,560
17	2027	127,316	42,014
18	2028	128,659	42,457
19	2029	129,988	42,896
20	2030	131,252	43,313
21	2031	132,539	43,738
22	2032	133,865	44,175
23	2033	135,204	44,617
24	2034	136,556	45,063
25	2035	137,921	45,514
26	2036	139,300	45,969
27	2037	140,693	46,429
28	2038	142,100	46,893
29	2039	143,521	47,362
30	2040	144,956	47,836

18. Residual Waste Management

The long-range vision for residual waste management for CSWM services includes two regional landfills and on-going consideration of waste-to-energy (WTE) technologies. Public consultation for this Plan showed strong regional public support (73% in favour) for expanding both the Campbell River and the Comox Valley regional landfills and strong public support (72% in favour) for continuing to assess the feasibility of WTE technologies as an alternative to landfilling residual wastes.

18.1 Two Engineered Regional Landfills

Expansion of the landfills at the Comox Valley waste management centre and the Campbell River waste management centre is planned to provide future disposal capacity. Expansion of the regional landfills will be in accordance with MoE environmental criteria for new landfills including bottom liners, leachate systems, landfill gas systems, groundwater control systems and groundwater monitoring.

The expansion at the Comox Valley waste management centre will be undertaken before expansion at the Campbell River waste management centre. The land adjacent to the existing Campbell River landfill site will undergo additional assessment of technical feasibility and a conceptual design for expansion will be prepared based on the outcome of the assessment work. The expansion at the Campbell River waste management centre will be undertaken in the future when capacity is required.

In consideration of the EBA May 2012 report to the Board that provided a triple bottom line business case for the long-term disposal options), CSWM plans to continue discussions with the Village of Cumberland and the City of Campbell River for mutually beneficial agreements between the host communities and the CVRD, the landfill owner.

18.2 Waste-to-Energy Technologies

Waste-to-energy (WTE), also defined as thermal processing or thermal treatment, involves the conversion of municipal solid waste into gaseous, liquid and solid products and a concurrent or subsequent release of heat energy. The heat energy is then used in many cases to generate electricity.

WTE best technologies and costs will continue to be explored as an alternative to landfilling residual waste and opportunities will continue to be assessed. CSWM services will communicate and cooperate with other regions in developing potential WTE capacity.

The MoE's policy is for local governments to have a minimum target of 70% reduction of waste before utilizing a WTE facility. The 70% target is calculated only from reduce, reuse, and recycle initiatives. The initiatives outlined in this Plan are projected to increase the diversion rate to over 70%, thereby making WTE a viable option for CSWM services.

Based on present conditions, it is anticipated that WTE may become part of the solid waste management system for CSWM in the future and that solid waste planning must consider WTE technologies and include such consideration in reporting to the Board for all related authorizations.

18.3 Proposed Waste-to-Energy Facility in Gold River

Covanta is a private sector waste management company that proposes to develop a WTE facility in the CSWM area through converting the former Gold River Pulp and Paper Mill into a thermal electric power plant that burns refuse

derived fuel (RDF). The RDF is described by Covanta as MSW that is processed to remove the majority of the recyclable components. The primary source of RDF would be Metro Vancouver waste; however the facility would also accept processed waste from other local governments.

The location of the site is the former Gold River Pulp and Paper Mill in Gold River. Covanta proposes to use many of the physical works and structures that were part of the mill. They plan to replace the existing power boiler with two new RDF boilers and associated pollution control equipment, and fuel and ash handling systems. RDF will be the primary fuel for both boilers. Steam produced in the boilers will drive a turbine -generator to produce 97 MW of electricity for delivery to the BC Hydro grid and in-plant use.

RDF storage and processing is expected to be 2,358 tonnes per day, with a total annual capacity of 750,000 tonnes. The WTE plant will employ the Martin system for refuse combustion and conversion of the RDF into energy. Emissions controls include combustion controls to maintain low levels of carbon monoxide and minimize products of incomplete combustion. Post combustion controls include a semi-dry scrubber followed by a baghouse.

As a by-product of the combustion process, the plant design is expected to produce up to 200,000 tonnes of ash annually from which ferrous and non-ferrous metal are to be recovered. Ash will be treated and landfilled in a private ash landfill located 12.8 km from the power plant.

This project has obtained environmental permits from the Province of BC. However, implementation of this project is subject to obtaining a contract with Metro Vancouver to manage its solid waste.

18.4 Existing CSWM System - Active Residual Waste Landfills

CSWM plans to close all five (Campbell River, Comox Valley, Gold River, Tahsis and Zeballos) of the existing MoE non-compliant landfills per the capital schedule (Table 23-1) of this report. The schedule for the closure of the Tahsis and Zeballos Landfills has been adjusted based upon direction from the MoE. For all landfills, planned environmental improvements include management of leachate, stormwater, improved landfill operations, and gas collection / management systems where required.

Closure plan updates and design of partial closure construction to address MoE compliance issues is scheduled for 2012 for landfills near Campbell River, Comox Valley, Gold River, Tahsis and Zeballos. For these facilities, all completed external slopes are planned to be capped, and improvements to stormwater and leachate management systems are to be completed from 2012 to 2015. Based on the improved facilities and operation plans, compliant with MoE permit criteria, new operations agreements will be required for some landfills. Subsequent and final landfill slope closure is planned as permitted capacity is reached.

18.4.1 Comox Valley Waste Management Centre Landfill

Upon authorization by the CSWM board, design will be undertaken to close and cap the existing landfill cell using engineered systems for managing leachate, landfill gas and stormwater. Partial closure construction for the existing landfill cell is planned to begin in 2013.

Between three to five years of permitted capacity remains at the existing landfill. The CVRD owns property available for expanding the CVWMC and a conceptual plan exists for the expansion to the north east and east of the existing landfill. Further investigative work is required to confirm the findings of the preliminary plan and to develop the details and phasing for landfill expansion. Starting in 2013, planning for a lateral expansion using MoE approved engineered landfill facility design and permitting is recommended at the CVWMC. The property authorized for

landfilling under the Operational Certificate is shown on Figure 18-1. Potential expansion properties to the north east and east are shown on Figure 18-2.

SUBDIVISION PLAN OF PARTS OF THE NW & NE 1/4 SECTION 27, PART OF PLAN 21 R/W,
 PART OF THE SE 1/4 SECTION 34 AND PART OF THE NW 1/4 SECTION 26,
 ALL OF TOWNSHIP 10, COMOX DISTRICT, PLAN 552 H.

B.C.G.S. 92F 065

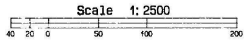
PLAN VIP 55123

DEPOSITED IN THE LAND TITLE OFFICE
 AT VICTORIA, B.C.
 THIS 2nd Sept 1982

Deputy



06-XS-771+R's



S.E. 1/4

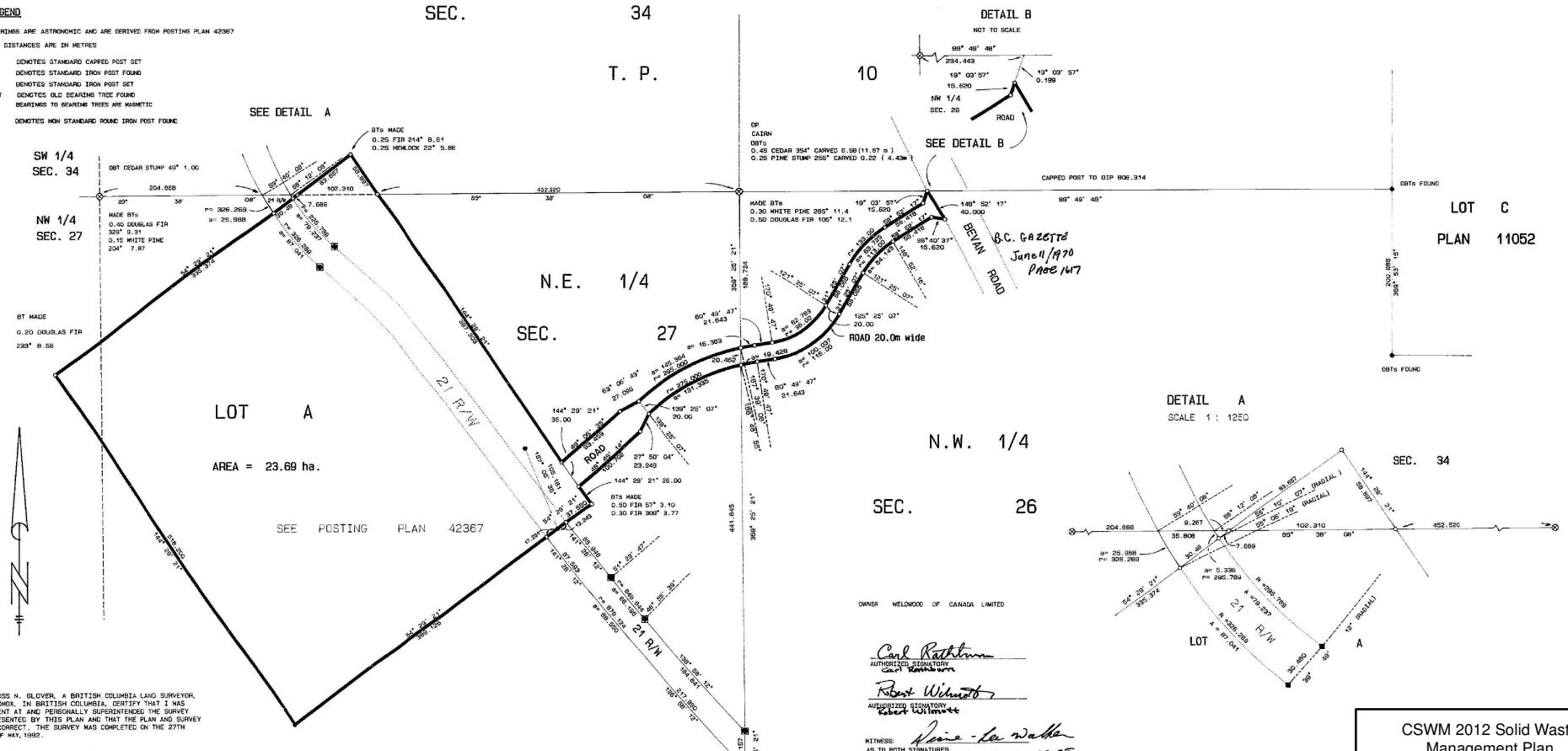
S.W. 1/4

SEC. 35

LEGEND

BEARINGS ARE ASTROMONIC AND ARE DERIVED FROM POSTING PLAN 42367
 ALL DISTANCES ARE IN METRES

- ⊙ DENOTES STANDARD CAPPED POST SET
- DENOTES STANDARD IRON POST FOUND
- DENOTES STANDARD IRON POST SET
- DENOTES OLD BEARING TIE FOUND
- BT DENOTES BEARING TIE FOUND
- BEARINGS TO BEARING TIES ARE MAGNETIC
- DENOTES NON STANDARD ROUND IRON POST FOUND



I, ROSS N. GLOVER, A BRITISH COLUMBIA LAND SURVEYOR,
 OF COMOX, IN BRITISH COLUMBIA, CERTIFY THAT I WAS
 PRESENT AT AND PERSONALLY SUPERINTENDED THE SURVEY
 REPRESENTED BY THIS PLAN AND THAT THE PLAN AND SURVEY
 ARE CORRECT. THE SURVEY WAS COMPLETED ON THE 27TH
 DAY OF MAY, 1982.

Ross N. Glover
 B.C.L.S.

APPROVED UNDER THE LAND TITLE ACT THIS 11 DAY
 OF SEPTEMBER 1982.

[Signature]
 APPROVING OFFICER
 MINISTRY OF TRANSPORTATION AND HIGHWAYS

THIS PLAN LIES WITHIN THE COMOX-STRAATHCONA REGIONAL DISTRICT

OWNER WELWOOD OF CANADA LIMITED

Carl Rothmann
 AUTHORIZED SIGNATORY
 Carl Rothmann

Robert Wilmut
 AUTHORIZED SIGNATORY
 Robert Wilmut

WITNESS: *Debra-Lee Walker*
 AS TO BOTH SIGNATORIES
 1055 WEST HASTINGS ST
 VICTORIA, B.C.

OCCUPATION: SECRETARY

CSWM 2012 Solid Waste
 Management Plan
 Comox Valley Waste Management Centre

**Existing Landfill
 Property**

July 2012
 Project: 60141938

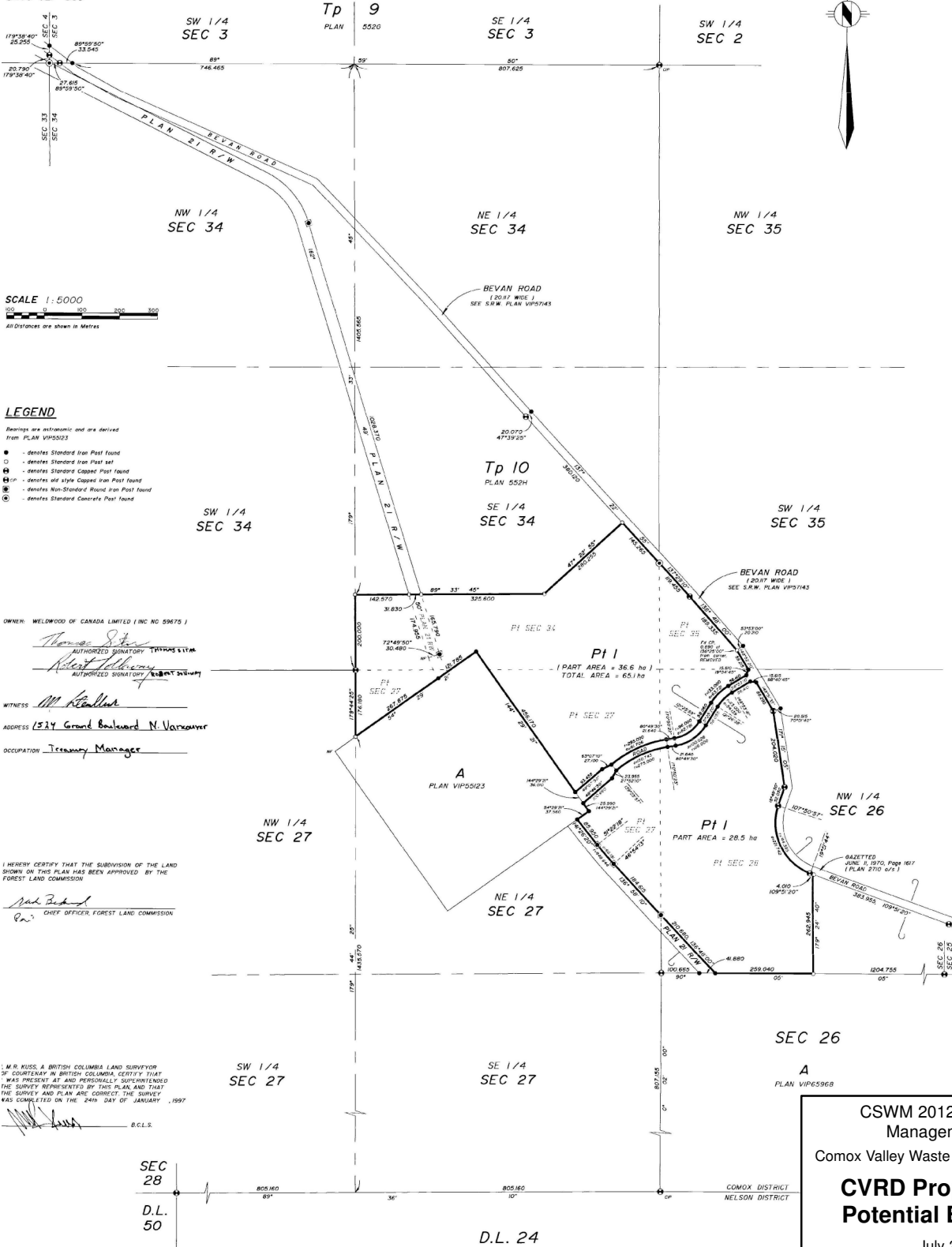
AECOM Figure 18-1

SUBDIVISION PLAN OF PART OF SECTION 26, EXCEPT THAT PART SHOWN OUTLINED IN RED ON PLAN 21RW, AND EXCEPT THOSE PARTS IN PLANS 4222, 11052, 26084, VIP55123 AND VIP65968, AND PART OF SECTION 27, EXCEPT THOSE PARTS SHOWN OUTLINED IN RED ON PLAN 21RW AND EXCEPT THAT PART IN PLAN VIP55123, AND PART OF THAT PART OF SECTION 27, CONTAINING 6.73 ACRES AS SHOWN ON PLAN 21RW EXCEPT THAT PART IN PLAN VIP55123, AND PART OF SECTION 34, EXCEPT THAT PART SHOWN OUTLINED IN RED ON PLAN 21RW AND THAT PART IN PLAN VIP55123, AND PART OF THAT PART OF SECTION 34, INCLUDED IN PLAN 21RW, AND PART OF SECTION 35, EXCEPT THAT PART IN PLAN 11052, ALL OF TOWNSHIP 10, COMOX DISTRICT, PLAN 552H

PLAN VIP 69987

DEPOSITED IN THE LAND TITLE OFFICE
AT VICTORIA, B.C.
THIS 30 DAY OF DEC 1999
McCracken REGISTRAR
EN118007

PURSUANT TO SECTION 99 (1111) L.T.A.
BCGS 92F 065



LEGEND

- Bearings are astronomic and are derived from PLAN VIP5023
- denotes Standard Iron Post found
 - denotes Standard Iron Post set
 - denotes Standard Caped Post found
 - denotes old style Caped Iron Post found
 - denotes Non-Standard Round Iron Post found
 - denotes Standard Concrete Post found

OWNER: WELWOOD OF CANADA LIMITED (INC NO 59475)

Thomas Stone
AUTHORIZED SURVEYOR THOMAS STONE
Robert Hillier
AUTHORIZED SURVEYOR ROBERT HILLIER

WITNESS *M. Keenan*

ADDRESS 1514 Grand Boulevard N. Vancouver
OCCUPATION Inventory Manager

I HEREBY CERTIFY THAT THE SUBDIVISION OF THE LAND SHOWN ON THIS PLAN HAS BEEN APPROVED BY THE FOREST LAND COMMISSION

Paul Beaud
CHIEF OFFICER, FOREST LAND COMMISSION

I, M. R. KISS, A BRITISH COLUMBIA LAND SURVEYOR OF COURTESY IN BRITISH COLUMBIA, CERTIFY THAT I WAS PRESENT AT AND PERSONALLY SUPERVISED THE SURVEY REPRESENTED BY THIS PLAN, AND THAT THE SURVEY AND PLAN ARE CORRECT. THE SURVEY WAS COMPLETED ON THE 24th DAY OF JANUARY, 1997

M. R. Kiss B.C.L.S.

CSWM 2012 Solid Waste Management Plan
Comox Valley Waste Management Centre
CVRD Properties for Potential Expansion
July 2012
Project: 60141938

AECOM Figure 18-2

Path: P:\60141938\500-Progress Submittals & Deliverables\505-Misc Deliverables\Figure 18-2_CVRD_Properties_20120725.mxd Date Saved: 7/25/2012 12:08:20 PM User: MorellatCM

THIS PLAN LIES WITHIN THE REGIONAL DISTRICT OF COMOX STRATHCONA

18.4.2 Campbell River Waste Management Centre Landfill

Due to existing capacity of the landfill being reached in 2012, a transfer station was completed at the CRWMC in 2012. Residual waste will be transferred to the CVWMC until additional capacity in the present cell at the CRWMC becomes available¹⁰. Closure construction for the existing landfill is planned to begin in 2012 through 2013 and will include engineered leachate collection systems, landfill gas systems, and improvements to the stormwater control system as well as capping completed external slopes to address MoE landfill compliance issues.

In order to expand the landfill laterally, a feasibility assessment is required. The assessment will be used to assess the technical feasibility of landfill expansion and determine whether the additional property can be acquired. The assessment will include determination of the geotechnical and hydrogeological conditions beneath the proposed landfill footprint and development of a preliminary plan for expansion. After the assessment, a conceptual plan should be completed which can be followed by landfill expansion design, permitting and construction. The property authorized for the purpose of landfilling under the Operational Certificate is defined as Block C of District Lot 85, Sayward Land District. The property to the north that may be used in the future for landfill purposes is defined as Block J of District Lot 85, Sayward Land District. Both properties are under Crown Land Leases, with titles being transferred from the District of Campbell River to the CVRD.

18.4.3 Tahsis, Zeballos, Gold River and Sayward Residual Waste Management

Residual waste from the Villages of Tahsis and Zeballos is managed at two small landfills, referred to as the Tahsis and Zeballos Waste Management Centres. After closure of these facilities, residual waste will be delivered to a regional landfill site and the construction of transfer stations may be required. Residual waste from Gold River is currently transferred to the CRWMC and the plan is to continue this residual waste disposal practice. Sayward Valley and the Village of Sayward currently send residual waste to the CRWMC and the plan is to continue this residual waste disposal practice.

A detailed transfer station feasibility assessment report to the Board will be completed in 2012 for the Sayward disposal area and includes an assessment of waste haul options for Gold River and Tahsis. All transportation options will be in accordance with the current CSWM Unified Transportation Plan. Resulting CSWM facility disposal of residual waste for these communities is not anticipated to change as a result of this study.

18.4.3.1 Tahsis Waste Management Centre

To improve the operations of the Tahsis Waste Management Centre, CSWM will update the operations and closure plans in 2012. In the short term, facility and operational improvements will be undertaken, as per the updated plans. Closure and capping of completed areas will begin prior to 2017. The landfill will eventually be closed permanently and may be replaced with a transfer station, if required. Waste will be delivered to the nearest permitted CSWM disposal facility.

18.4.3.2 Zeballos Waste Management Centre

To improve the operations of the Zeballos Waste Management Centre, CSWM will update the operations and closure plans in 2012. In the short term, facility and operational improvements and upgrades will be undertaken, as per the updated plans. Closure and capping of completed areas will begin prior to 2017. The landfill will eventually be closed

¹⁰ It is anticipated that the closure design will create additional capacity on the existing footprint.

permanently and may be replaced with a transfer station, if required. Waste will then be delivered to the nearest permitted disposal facility.

18.4.3.3 *Gold River Landfill*

The Gold River Landfill no longer receives municipal solid waste for disposal. This landfill receives inert waste (e.g. concrete, asphalt shingles) and the plan is to continue this residual waste disposal practice. In 2012 an updated operations and closure plan will be developed. Improvements to the stormwater control system, the leachate control system and the closure and capping of slopes that have reached final grade are scheduled to begin in 2013.

18.5 **Cortes Island Waste Management Centre**

Residual waste generated on Cortes Island will continue to be delivered at the Cortes Island Waste Management Centre and subsequently transferred to a CSWM regional landfill.

18.6 **Hornby Island Waste Management Centre**

Residual waste generated on Hornby Island will continue to be delivered at the Hornby Island Waste Management Centre and subsequently transferred to a CSWM regional landfill.

18.7 **Kyuquot Waste Management**

The Village of Kyuquot is accessed by water and residual waste and recyclables are removed from the community by way of a private barge funded by CSWM. Waste is transferred from Gold River to a CSWM Waste Management Centre. This service will be reviewed by CSWM to ensure that the community's waste management needs can be adequately met into the future and to determine if the services could be expanded to the neighbouring First Nations communities.

18.8 **Remote Homes and Businesses**

Other than the services previously listed in this chapter, CSWM does not provide solid waste collection services to remote homes and businesses. It is expected that these properties will self-haul their waste to the nearest waste management centre for proper disposal.

18.9 **Private Demolition, Land Clearing and Construction (DLC) Waste Disposal Facilities**

There are four active private DLC waste disposal facilities authorized by the MoE in the CSWM area:

- Giese Holdings (MoE Authorization 9081), a DLC waste landfill and open burn site near Campbell River;
- Upland Excavating (MoE Authorization 10807), a DLC waste landfill and open burn site near Campbell River;
- Surgenor Landfill (MoE Authorization 8834), a DLC waste landfill near Courtenay; and
- West Shore Aggregates Ltd. (MoE Authorization Permit PR-07730), a DLC waste landfill located across the road from the entrance to the Campbell River Waste Management Centre.

The private DLC waste disposal facilities are expected to satisfy the same standards as publicly-owned facilities in the CSWM. It is expected that each private DLC waste disposal facility will prepare a proposed action plan and schedule to upgrade the facility to satisfy MoE standards or to phase-out and close the facility, and that the MoE will replace / update / amend the existing authorizations with updated permits or operational certificates that reflect the action plans and requirements.

The next Solid Waste Management Plan review / update is expected to include the private DLC waste disposal facilities action plans, schedules, updated authorizations and requirements.

18.10 Disaster Debris Management

A regional disaster debris response plan was prepared in 2010 and provides detailed direction on the removal, sorting, recycling and disposal of disaster debris, including the identification of temporary storage facilities.

In March 2010, the CVRD Board passed a recommendation that the regional disaster debris response plan be adopted as a schedule of the Comox Valley and Strathcona emergency plans.

18.11 Closed Landfills

CSWM is currently undergoing a process to identify and clarify the responsible public entity of former public landfills and dumps that were permitted by the Province (see section 18.12 for more information). Known closed public landfills are located in Sayward and on Cortes Island. In 2013, CSWM plans to prepare closure plans for the Cortes and Sayward landfills. CSWM anticipates that any appropriate closure and post-closure maintenance work will be defined by a qualified professional and that a request to abandon the permits will be sent to the MoE once closure is complete. The schedule for closure will be defined based on the information presented in the closure plan.

18.12 Ownership and Authorization of Public Landfill Sites

The publicly owned landfills discussed in this chapter, either currently operational or closed, are owned by the CVRD, however the legal entity on the landfill authorizing document (permit or operational certificate) and the land title/lease varies from site to site depending on the name of the public body that initiated the original authorizations and agreements. CSWM is currently undergoing the process of having the Comox Valley Regional District named on all public landfill related documentation to provide clarity and consistency regarding their responsibility for the landfills. Table 18-1 lists all of the public landfill sites and the documentation that is being reviewed and revised. All revisions are expected to be completed by the end of 2013.

Table 18-1. Administrative Revisions

Lease/Licence Assignments				
Facility	Crown Lands File Number	Tenure Document Number	Tenure Type	Current Lessee / Licensee
<i>Tahsis</i>	1401702	112889	Licence	Village of Tahsis
<i>Zeballos</i>	1403252	112829	Licence	Village of Zeballos
<i>Gold River</i>	1401708	104678	Lease	Village of Gold River
<i>Campbell River (Landfill)</i>	307020	101210	Lease	District of Campbell River
<i>Campbell River (Block 'J')</i>	1405218	103555	Lease	District of Campbell River
<i>Campbell River (GW Monitoring)</i>	1408983	114345	Licence	Strathcona Regional District
<i>Sayward</i>	1405725	112024	Licence	Strathcona Regional District
MoE Authorization Amendments				
Facility	MoE Authorization#	MoE Authorization Type		Current MoE Permittee
<i>Tahsis</i>	PR-04278	Permit		Village of Tahsis
<i>Zeballos</i>	PR-07496	Permit		Village of Zeballos
<i>Gold River</i>	PR-03825	Permit		Village of Gold River
<i>Campbell River</i>	MR-02401	Operational Certificate		Regional District of Comox – Strathcona
<i>Sayward</i>	PR-04917	Permit		Regional District of Comox – Strathcona
<i>Cortes Island</i>	PR-01696	Permit		Regional District of Comox – Strathcona
<i>Comox Valley</i>	MR-05050	Operation Certificate		Regional District of Comox-Strathcona
<i>Comox Valley</i>	PR-04865	Permit		Fields Sawmill Limited Partnership
Land Title Amendments				
Facility	Parcel ID (PID)	Registered Owner on Title		Status
<i>Comox Valley</i>	017-941-709	Regional District of Comox-Strathcona		Transferred to CVRD Jan/12
<i>Comox Valley</i>	024-670-545	Regional District of Comox-Strathcona		Transferred to CVRD Jan/12

19. Linkages

19.1 Integrated Resource Recovery

As part of plan implementation, CSWM will be considering opportunities for integrated resource recovery (IRR), linking solid waste management options with liquid waste and other biomass management options. In particular, IRR will be considered as part of assessing organics processing and waste-to-energy options.

The CVRD has commissioned a report entitled Integrated Resource Recovery Options for the Comox Valley Regional District (Farallon Consultants Limited, 2012). IRR is based on the view that waste is a resource that can be used to provide economic, social and environmental benefit. The IRR study objectives are to determine viable resource recovery options with the potential to generate revenue and provide other benefits such as greenhouse gas emissions reductions and reductions in the lifecycle costs of waste management.

19.2 Land Use Planning

Waste management facilities, including recycling, composting and disposal facilities are essential elements of a sustainable waste management system. The siting and operation of these facilities should be undertaken in conjunction with long-range community planning at the local government level to protect the environment and minimize the potential for future land use conflicts.

19.3 First Nations

To ensure proper and cost-effective management of municipal solid waste generated in First Nations communities within the CSWM area, it is recommended that CSWM continually liaise with local First Nations to:

- Identify future disposal requirements at CSWM facilities;
- Identify opportunities to work cooperatively for waste management servicing (e.g., garbage and recycling collection);
- Provide opportunities to participate in all programs; and
- Develop service agreements to ensure that First Nations communities are included in the infrastructure services provided, or to be provided, by CSWM or the municipalities.

19.4 Other Regional Districts

To minimize the likelihood of unapproved inter-regional movement of residual waste, it is proposed that CSWM aim for consistency in waste management policies with Vancouver Island regional districts. CSWM will liaise with other Vancouver Island regional districts on a regular basis to share information and, as appropriate, conduct collaborative studies (e.g. WTE studies).

20. Solid Waste Management Facility Review

To ensure that any proposed solid waste management facility is aligned with Solid Waste Management Plan and to ensure that any decisions related to facility approvals are fully informed, all applications or notifications submitted to the MoE or a local government in the CSWM area related to the development of a municipal solid waste management facility should be forwarded to the CSWM board for comment.

21. Provincial Legislation

Solid waste management is subject to provincial Acts and Regulations. The following is a list of BC legislation that influences how solid waste (residual waste, recyclables and compostable waste) is managed by the public, private and non-profit sectors and will need to be considered and adhered to in the on-going operation of CSWM facilities:

- Municipal Government Act;
- Environmental Management Act;
- Contaminated Sites Regulation;
- Hazardous Waste Regulation;
- Landfill Gas Management Regulation;

- Organic Matter Recycling Regulation;
- Ozone Depleting Substances and Other Halocarbons Regulation;
- Recycling Regulation;
- Storage of Recyclable Material Regulation;
- Local Government Act;
- Community Charter; and
- Regional Districts Liabilities Regulation

22. Implementation Schedule

Table 22-1 outlines the planned implementation schedule for the Solid Waste Management Plan from 2012 to 2022. Board authorization is required for all diversion and education programs or plan changes as well as for capital improvements per existing financial policy. For new or significant changes to programs, one year is suggested for program development and start-up (shown in orange on the table). For new infrastructure and other capital projects, one or more years may be required for additional research and / or design.

Table 22-1. Proposed Implementation Schedule

PLAN COMPONENT	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General Policies											
3 Stream Waste Management											
Disposal Bans on Recyclable and EPR Wastes											
Financial Incentives To Encourage Source Separation											
Long-Range Planning for Waste Management Infrastructure											
Reduction and Reuse											
On-Line Recycling/Reuse Directory											
Reduction and Reuse Promotional Campaign											
Encourage Professional Salvage											
Residential Recycling											
Maintain current curbside services											
Food waste collection											
Mandatory Multi-Family Recycling											
Recycling Depots											
Recycling at Waste Management Centres											
ICI Recycling											
Variable Tipping Fees											
Recycling by the ICI Sector											
ICI Technical Assistance Program											
Local Government Leadership											
Mandatory Space Allocation											
Organic Waste Diversion											
Develop Composting Capacity											
Yard waste collection											
Backyard composting											
Household Hazardous Waste and EPR											
Construction & Demo Waste Management											
CD Project Permitting											
CD Waste Recycling Services											
Promotion and education											
Promotion & Education											
Bear Human Conflict Management											
Illegal Dumping Prevention Plan and Bylaw											
Residual Waste Management											
Comox Valley WMC											
Closure of filled area											
Landfill Expansion (Lined Cell 1)											
Campbell River WMC											
Closure of filled area											
Transfer station											
Tahsis Waste Management Centre											
Closure of filled area											
Zeballos Waste Management Centre											
Closure of filled area											
Gold River Waste Management Centre											
Closure of filled area											
Regional Transfer Stations											
Closure of Cortes and Sayward Landfills											
Waste to Energy											
Administrative Revisions for Public Landfills											
First Nations Linkages											
Waste Composition Study											
SWMP Update											

Legend:

Program development or infrastructure planning

On-going program/activity



23. Budget

23.1 Estimated Expenditures

The estimated operating costs of the solid waste management system are not expected to change significantly as a result of the actions listed in this Plan.

Table 23-1 shows the estimated capital expenditures from 2012 to 2022 for the recommended solid waste management options. These costs were developed by CSWM staff. The most significant capital expenditures are associated with the closure of the completed slopes at the two regional landfills and the development of new regional landfill space that meets BC Landfill Criteria.

23.2 Funding Mechanisms

MoE guidelines for solid waste management plans indicate that major municipal and regional district funding sources for solid waste management services be included in the plan. The funding mechanisms that will be utilized to fund the Plan's implementation include:

- User fees;
- Landfill tipping fees;
- Sales (e.g., backyard composters, compost, recyclables);
- Reserve funds generated by tipping fees; and
- Grants (if available).

Table 23-2 shows the anticipated funding mechanisms for each proposed Plan component. The funding of CSWM services is primarily through user fees and tipping fees (as per CVRD Bylaw 170). Opportunities for sponsorship and grants will be explored to assist in funding.

23.3 Authority to Borrow Funds

It is anticipated that existing reserves will not be adequate to fund all of the capital projects listed in this plan and consequently, borrowing of funds will be required. The *Environmental Management Act* (Section 24(7)) states that once the Plan is approved by the Minister of Environment, funds that have been identified in the plan for its implementation do not require any additional public approvals, such as a referendum, to borrow funds to implement the plan. However, as with all borrowing for capital projects by local governments, the borrowing of funds to implement a solid waste management plan requires preparation of a bylaw that must be approved of the inspector of the municipalities.

Table 23-1: Estimated Capital Expenditures (based on 2012 \$)

Plan Component	Local or Regional Service	Estimated Future Capital Expenditures (2012 \$)										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Residential Recycling												
Food waste collection containers	Local				\$ 962,000							
Mandatory Multi-Family Recycling	Local	Depends on local services offered (Services are intended to be full user pay)										
ICI Recycling												
Mandatory Recycling by the ICI Sector	Local	Depends on local services offered (Services are intended to be full user pay)										
Organic Waste Diversion												
Develop Composting Capacity	Regional			\$ 300,000	\$ 200,000							
Residual Waste Management												
Comox Valley WMC												
Closure of filled area	Regional	\$ 205,000	\$ 2,591,000	\$ 1,195,000					\$ 353,000			
Landfill Expansion - Lined Cell 1	Regional		\$ 215,000	\$ 72,000	\$ 72,000	\$ 357,000	\$ 4,779,000	\$ 4,779,000				
Campbell River WMC												
Closure of filled area	Regional	\$ 2,830,000	\$ 4,467,000					\$ 365,000			\$ 944,000	\$ 920,000
Transfer station	Regional	\$ 1,500,000										
Tahsis Waste Management Centre												
Closure of filled area	Regional	\$ 44,000	\$ 143,000				\$ 100,000	\$ 226,000	\$ 120,000			
Zeballos Waste Management Centre												
Closure of filled area	Regional	\$ 44,000	\$ 177,000				\$ 100,000	\$ 200,000	\$ 120,000			
Gold River Waste Management Centre												
Closure of filled area	Regional	\$ 51,000	\$ 108,000	\$ 225,000					\$ 266,000			
Regional Transfer Stations	Regional			\$ 50,000	\$ 200,000			\$ 100,000	\$ 100,000			
Closure of Cortes and Sayward Landfills	Regional		\$ 16,000	\$ 184,000								
Total Estimated Expenditure		\$ 4,674,000	\$ 7,717,000	\$ 2,026,000	\$ 1,434,000	\$ 357,000	\$ 4,979,000	\$ 5,670,000	\$ 959,000	\$ -	\$ 944,000	\$ 920,000

Note: Debt is anticipated to be incurred for some capital projects.

Table 23-2. Anticipated Funding Mechanisms

Plan Component	Local or Regional Service	Proposed Cost Recovery Mechanisms				
		User Fees	Tipping Fee Revenue	Tipping Fee Reserves	Sales	Grants (Potential)
Reduction and Reuse Activities	Regional		✓			
Residential Recycling						
Curbside Services	Local	✓				
Food Waste Collection	Local	✓				✓
Mandatory Multi-Family Recycling	Local	✓				
Multi-Family Recycling Education Program	Regional		✓			
Recycling Depots	Regional		✓			
Recycling at Waste Management Centres	Regional		✓			
ICI Recycling						
Mandatory Recycling by the ICI Sector	Local	✓				
ICI Technical Assistance Program	Regional		✓			
Organic Waste Diversion						
Regional Composting Facility	Regional		✓		✓	✓
Yard Waste Collection	Local	✓				
Backyard composting	Regional		✓			
Construction & Demo Waste Management						
CD Waste Recycling Services	Regional		✓			
Promotion and Education	Regional		✓			
Promotion & Education	Regional		✓			
Bear Human Conflict Management	Regional		✓			
Illegal Dumping Prevention	Regional		✓			
Residual Waste Management						
Comox Valley WMC	Regional					
Operation			✓			
Closure of Filled Area	Regional			✓		
Expansion	Regional			✓		
Campbell River WMC	Regional					
Operation			✓			
Closure of Filled Area	Regional			✓		
Tahsis Waste Management Centre	Regional					
Operation			✓			
Closure of Filled Area	Regional			✓		
Construction of Transfer Station	Regional					
Zeballos Waste Management Centre	Regional					
Operation			✓			
Closure of Filled Area	Regional			✓		
Construction of Transfer Station	Regional					
Gold River Waste Management Centre	Regional					
Operation			✓			
Closure of Filled Area	Regional			✓		
Kyuquot	Local		✓			
Closure of Cortes and Sayward Landfills	Regional			✓		
Waste Composition Study	Regional		✓			
SWMP Update	Regional		✓			

24. Plan Target

Based on the schedule provided in Table 22-1 and the estimated diversion listed in Table 17-1, this plan targets an increase of the diversion rate from 51% to 70%, as represented in Figure 23-1. Achieving this target will be based on reducing the per capita waste sent for disposal in CSWM landfills from 0.61 tonnes per capita (2011) to 0.38 tonnes per capita by 2022.

25. Plan Monitoring and Measurement

25.1 Plan Monitoring

The Regional Solid Waste Management Advisory Committee will be responsible for monitoring the implementation of the Plan. The objective of this committee is to aid in the management of the regional solid waste management services at the administrative level and to provide a forum for review of all recommendations to the Solid Waste Board. This committee typically meets four or five times per year.

Meeting minutes, as well as the year-end summary report on the progress of the Solid Waste Management Plan will be provided on an annual basis to the Solid Waste Board and the MoE. The terms of reference for the committee will be included in the first annual report submitted to the Ministry.

25.2 Plan Measurement

Measurement of progress towards the plan's target of "0.38 tonnes of waste disposed per capita per year in CSWM landfills" will be done through an annual review of scale data from the waste management centres.

Progress will also be measured through waste composition studies (described below) that will provide an indication of how successful the plan's programs and policies are at affecting diversion of specific waste streams (e.g. wood, organics, cardboard) and from specific sectors (e.g. single-family residential, multi-family residential, ICI). Waste composition studies will also indicate where enhancements can be made to improve diversion program performance.

25.2.1 Waste Composition Studies

In 2013, a multi-location waste composition study on the residual waste disposed in CSWM landfills is planned to establish a current baseline specific to CSWM. A follow-up composition study is planned for 2017, in advance of the next SWMP update, to assist in assessing the success of this plan in achieving specific diversion measures, as well as to identify future opportunities for additional diversion. Each composition analysis will be a "moment in time" look at the waste stream, and as such, should be conducted during the summer so that the prevalence of yard waste in the waste stream can also be estimated.

25.3 Annual Operating and Monitoring Reports

Annual operating and monitoring reports will be prepared for CSWM landfills in accordance with the specific Operational Certificate/Permit requirements for each site. Each landfill report will be for the preceding 12 months from January 1 to December 31st of each year and will include:

- An executive summary;
- A review of the preceding year of operation, plans for the next year and any new information or proposed changes relating to the facility;

- A summary of the landfill operation equipment;
- The tonnage of each type of waste discharged into the landfill;
- The remaining site life and capacity update;
- An updated estimate of the MSW disposal per capita;
- A waste area population table including adjusted projected population for the estimated facility life;
- A certified aerial survey including volume changes, on required frequency; and
- Certified updates to the landfill financial assurance report (part of Landfill Operational Plan) as required per the Public Sector Accounting, Section PS 3270 and related to the most current Landfill Closure Plan.

25.4 Plan Updates

The provincial *Guide to the Preparation of Regional Solid Waste Management Plans by Regional Districts* recommends that a review and update of the Solid Waste Management Plan be undertaken every five years to ensure that the Plan reflects the current needs of the CSWM area. The next plan review is anticipated to begin in 2017 and any necessary plan amendments and updates will be done as part of the review.

25.5 Plan Flexibility

Costs provided in this plan are estimates in 2012 dollars and may not reflect actual costs at the time of implementation. As a result, programs and infrastructure may undergo further assessment, including an assessment of costs and continued community support, by the Solid Waste Management Advisory Committee prior to implementation.

The Plan implementation schedule is intended to be flexible to allow for changes in priorities and available funding for CSWM services. Notwithstanding, the contents of this Plan are subject to legal requirements and, as a result, guidance and the direction from the MoE will be sought in regards to the level of flexibility, as appropriate.

25.6 Dispute Resolution

It is recognized that disputes may arise among stakeholders during Plan implementation. Disputes will first be presented to the Regional Solid Waste Management Advisory Committee for review, consideration and for recommendations to the Solid Waste board. Parties involved in the dispute will be given the opportunity to speak to the Regional Solid Waste Management Advisory Committee and to the Solid Waste board to present their viewpoints. Disputes may be settled by the Solid Waste board. The dispute resolution is limited to the following types of disputes:

- Administrative decisions made by CSWM staff.
- Interpretation of a statement or provision in the Plan.
- Any other matter not related to a proposed change to the actual wording of the Plan or an Operational Certificate.

Disputes that cannot be resolved at the Solid Waste board level or that are beyond the scope of the disputes described above may be referred to the Regional Manager of the Ministry of Environment or an independent arbitrator, who will make a final, binding decision.

Disputes between CSWM and member municipalities or First Nations in relation to implementation or interpretation of this Plan will be referred to the Regional Manager of the Ministry of Environment to assist in resolving the dispute. Disputes that cannot be resolved by the Regional Manager will be referred to an independent arbitrator, who will make a final, binding decision. The costs for this arbitration will be split between the parties in dispute.

26. Board Resolution

On September 13, 2012 the Comox Strathcona waste management board adopted a resolution to:

- Approve the 2012 Comox Strathcona solid waste management plan (SWMP);
- Forward the 2012 SWMP to all participating local government jurisdictions requesting a letter of support per Ministry of Environment requirements;
- Forward the 2012 SWMP to all First Nation communities requesting a letter identifying any comments or concerns; and
- Forward the 2012 SWMP to the Minister of Environment requesting SWMP approval.

December 7, 2012

Thomas A. Boatman, PE, Manager of Solid Waste
Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Dear Mr. Boatman:

Project No: 60141938-10
Regarding: 2012 Solid Waste Management Plan

AECOM, in association with Maura Walker and Associates and Jan Enns Communications, are pleased to submit the 2012 Solid Waste Management Plan for the Comox Valley Regional District. This report describes the programs, policies and infrastructure for managing the solid waste generated in the Comox Valley Regional District and Strathcona Regional District geographic areas and is designed to achieve 70% waste diversion upon implementation. In addition, recommendations are made concerning development of future waste disposal facilities that will be needed for the Comox Strathcona waste management services to continue to dispose of residual waste in the future.

Sincerely,

AECOM Canada Ltd.



Todd Baker, P.Eng.
Senior Environmental Engineer
Todd.Baker@aecom.com

MW:cap
Encl.

Signatures

**Report Prepared
By:**



Todd Baker, P.Eng.
Senior Environmental Engineer
AECOM



Maura Walker
Senior Environmental Planner
Maura Walker and Associates

Glossary / Acronym List

Term	Definition / Description
Aseptic containers	Juice boxes, dairy and dairy substitute containers, soup boxes, etc.
Board	Comox Strathcona waste board
CD waste	Construction and demolition (CD) materials consist of the waste generated during the construction, renovation, and demolition of buildings, roads, and bridges. C&D materials often contain bulky, heavy materials, such as concrete, wood, metals, glass, and salvaged building components.
Carpet	Carpet, rugs
Clean wood waste	<p>Uncontaminated wood or wood products, from which hardware, fittings and attachments, unless they are predominantly wood or cellulose, have been removed (e.g., clean wooden shakes and shingles, lumber, wooden siding, posts, beams or logs from log home construction, fence posts and rails, wooden decking, mill work and cabinetry). Clean wood waste excludes:</p> <ul style="list-style-type: none"> ▪ Any engineered or chemically treated wood products, such as products with added glues or those treated for insect or rot control (oriented strand board, plywood, medium density fiberboard, wood laminates or wood treated with chromate copper arsenate, ammoniacal copper arsenate, pentachlorophenol or creosote); ▪ Upholstered articles; ▪ Painted or varnished wood articles or wood with physical contaminants, such as plaster, metal, or plastic; and ▪ Any wood articles to which a rigid surface treatment is affixed or adhered. <p>Clean wood waste also excludes other materials found in the construction and demolition waste stream such as gypsum or drywall, fiberglass, asphalt or fiberglass roofing shingles, metals or plastics.</p>
Composite materials	<ul style="list-style-type: none"> ▪ Packaging (dog food bags, food packaging such as cylindrical cardboard and metal tubes). ▪ Household goods (children's toys). ▪ Diapers, sanitary products ▪ Bulky items (luggage, sporting goods)
Compostable paper products	Compostable packaging, coffee cups, paper bags, tissues, paper towel
CSWM	Comox Strathcona waste management
CVRD	Comox Valley Regional District
Dirty wood waste	Treated wood, painted wood
Disposal	Waste that is sent to landfill
DLC waste	Demolition, land clearing and construction waste.
Diversion	Waste that is generated and managed through recycling or reuse instead of being disposed.
E-waste	Electronic waste. All products operating by AC or DC current.
Extended Producer Responsibility (EPR)	An environmental policy approach in which a producer's responsibility (physical and/or financial) for a product is extended to the post-consumer stage of a product's lifecycle. There are two key features of EPR policy: (1) the shifting of responsibility (physically and/or economically, fully or partially) upstream to the producer and away from local governments, and (2) to provide incentives to producers to take environmental considerations into the design of the product.
Glass	<p>Includes:</p> <ul style="list-style-type: none"> ▪ Beverage containers (deposit and non-deposit bearing containers) ▪ Glass food containers (jars) ▪ Non-container glass (broken glass, picture frames, etc.)
Gypsum	Drywall
Household Hazardous Waste (HHW)	Toxic waste products generated by residential premises which include items covered by stewardship programs (such as paint, solvents, pesticides, used oil and containers, and batteries) and similar items not covered by stewardship programs.
ICI waste	Waste generated by institutions (such as schools), commercial establishments (such as stores, restaurants) and industrial establishments (light manufacturing)
Inert waste	Waste that does not biodegrade, including dirt, rocks, ash, concrete, stone

Term	Definition / Description
Land Clearing Waste	Debris created by the clearing of land, typically done as the first step in a construction or development project. Land clearing waste is typically made up of tree stumps, trunks, branches and associated brush.
Metal	Includes: <ul style="list-style-type: none"> ▪ Beverage containers (deposit and non-deposit bearing containers) ▪ Metal food containers (cans) ▪ Household metal (keys, nails, hangers etc.) ▪ Non-household metal (siding, pipes)
MoE	BC Ministry of Environment
MSW	Municipal solid waste. Includes predominantly household and commercial waste. MSW generally excludes hazardous wastes.
Organics	Includes: <ul style="list-style-type: none"> ▪ Food waste ▪ Yard waste (grass clippings, yard trimmings) ▪ Organic matter as defined by the Organic Matter Recycling Regulation
(The) Plan	Comox Strathcona Solid Waste Management Plan
Plastics #1-7	<p>#1 PET: soda bottles and water bottles</p> <p>#2 HDPE: milk bottles, detergent bottles and grocery/trash/retail bags</p> <p>#3 PVC: loose-leaf binders and plastic pipes</p> <p>#4 LDPE: dry-cleaning bags, produce bags and squeezable bottles</p> <p>#5 PP: medicine bottles, aerosol caps, drinking straws and food containers (such as yogurt, ketchup bottles and yogurt tubs)</p> <p>#6 PS: compact disc jackets, packaging Styrofoam peanuts and plastic tableware</p> <p>#7 Other: reusable water bottles, certain kinds of food containers, plastic consumer goods</p>
Product Stewardship	A term used in British Columbia to describe a government strategy to place the responsibility for end of life product management on the producer and consumers of a product and not the general tax payer or local government.
Reduction	Waste that is prevented from being generated. This may be achieved through changes in consumption habits or changes in the way products are sold.
Residential waste	Waste generated by households.
Residual waste	The waste that has not been captured through reuse, recycling or composting programs and requires disposal.
SRD	Strathcona Regional District
SWMP	Comox Strathcona Solid Waste Management Plan
Textiles	Clothing, rags, cloth material.
Waste management hierarchy	A concept that refers to the 5Rs of waste management: reduce, reuse, recycle, recover, residuals management. The hierarchy places greater emphasis on up-stream waste management activities, such as reduce and reuse.
Waste-to-energy (WTE)	Waste-to-energy (WTE) is the process of generating energy in the form of electricity or heat from the incineration of waste source. WTE also refers to a range of processes) where the waste is burned, gasified or digested at a high temperature. Most WTE processes generate electricity directly through combustion, or produce a combustible fuel commodity, such as methane, methanol, ethanol or synthetic fuels.

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("Consultant") for the benefit of the client ("Client") in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to Consultant which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

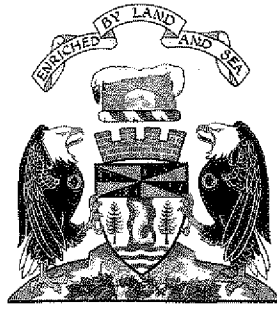
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Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any injury, loss or damages arising from improper use of the Report shall be borne by the party making such use.



City of Campbell River
From the Office of the Mayor

Comox Valley Regional District

RECEIVED

File:



DEC 03 2012

To:

cc:

30 November, 2012

Mr. Tom Boatman
Manager of Solid Waste
Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N3P6

RE: Regional Solid Waste Management Plan Update

Dear Mr. Boatman:

This letter is to acknowledge the City of Campbell River's support of the Regional Solid Waste Management Plan completed in the fall of 2012. This letter is intended for inclusion in the submission of the regional plan to the Ministry of Environment.

The plan aligns with the City of Campbell River's community goals set forth in the Sustainable Official Community Plan (2012), which support efforts to move toward a long-term objective of zero waste, and a shorter term objective of achieving a 70% waste diversion rate.

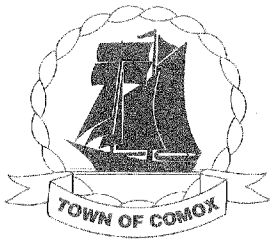
The plan sets forth key recommendations around waste reduction, as well as guidance for addressing landfill capacity issues, the increasing demand for organics diversion, and enhanced recycling facilities. As indicated in our Sustainable Official Community Plan, Campbell River is especially interested in upcoming opportunities to encourage organics diversion across residential and commercial sectors, and the expansion of recycling services to include multifamily residential units.

The City of Campbell River appreciates the Comox Strathcona Waste Management staff's efforts to ensure the inclusion of the City throughout the plan development. The City appreciated the opportunity to have Council and staff participation on the plan steering committee, as well as the presentations and public engagement efforts made by Comox Strathcona Waste Management in our community.

We look forward to continuing to work with Comox Strathcona Waste Management on the implementation of the plan.

Sincerely,

Walter Jakeway
MAYOR



TOWN OF COMOX

OFFICE OF THE MAYOR

File No: 12-344 / 5360-02

October 10, 2012

Mr. Edwin Grieve, Chair
Comox Valley Regional District
600 Comox Road
Courtenay BC V9N 3J6

Dear Mr. Grieve:

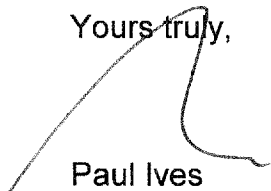
Thank you for your September 20, 2012 letter requesting that Council review the final Solid Waste Management Plan, and provide support by way of a resolution. Please be advised that Council passed the following at its Regular Meeting of October 3, 2012:

That the September 20, 2012 letter from Edwin Grieve, Chair of the Comox Valley Regional District, requesting Council's review and support of the Solid Waste Management Plan, be received; and further,

That Council support the Solid Waste Management Plan.

If you require anything further, please do not hesitate to contact Town staff or me at 250 339-2202.

Yours truly,


Paul Ives
Mayor

Comox Valley Regional District
RECEIVED

File: 5360-02

OCT 12 2012

To: WEG

cc: J. WARREN, DEACON, T. BEATMAN,
I. SMITH

THE CORPORATION OF THE CITY OF COURTENAY

*Corporate Services Department
830 Cliffe Avenue
Courtenay BC V9N 2J7*



*phone: (250) 334-4441
fax: (250) 334-4241
jward@courtenay.ca*

December 11, 2012

Comox Valley Regional District
600 Comox Road
Courtenay, B.C.
V9N 3P6

Re: Approval of the Solid Waste Management Plan

This is in reply to your letter of September 20, 2012. Please be advised at its regular Council meeting held December 10, 2012 passed the following resolution:

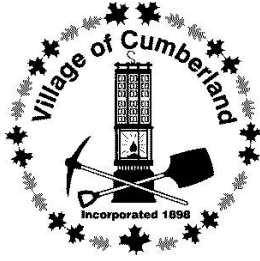
“That Council review and provide a letter of support to the Comox Valley Regional District for the Comox Strathcona Solid Waste Management Plan.”

I hereby certify that the above resolution was adopted by the Council of the City of Courtenay on December 10, 2012.

Dated this 11th day of December, 2012 at Courtenay, B.C.

A handwritten signature in black ink, consisting of several loops and a horizontal line, positioned above the typed name.

T. Manthey, BA, CGA
Director of Financial Services/Deputy CAO



Corporation of the Village of Cumberland

2673 Dunsmuir Avenue
P.O. Box 340
Cumberland, BC V0R 1S0
Telephone: 250-336-2291
Fax: 250-336-2321
cumberland.ca

February 26, 2013

Chair Edwin Grieve
Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

5360-30/SWMP

Web

DOakman

JWarren

ISmith

TBoatman

Dear Edwin,

**Re: Comox Strathcona Waste Management - 2012 Solid Waste Management Plan
Village of Cumberland Letter of Support**

The Village of Cumberland Council adopted the following resolution at its February 25, 2013 meeting:

THAT the Village of Cumberland provide a letter of support for the Comox Strathcona Waste Management – 2012 Solid Waste Management plan as per Ministry of Environment requirements.

The Village of Cumberland is happy to provide this letter of support, with the acknowledgement that the contents of the 2012 Solid Waste Management Plan, in conjunction with the accompanying host community benefit agreement, offers the possibility for the Village of Cumberland and Comox Strathcona Waste Management to work together in a progressive and positive manner for years to come.

The Village looks forward to moving through the approval process for the execution of the agreement and once again we thank you for your help in helping to create a positive working relationship.

Sincerely,

Leslie Baird
Mayor
Village of Cumberland

cc: Honourable Terry Lake, Minister of Environment
Sundance Topham, Chief Administrative Officer, Village of Cumberland
Debra Oakman, Chief Administrative Officer, Comox Valley Regional District