Appendix B – Stage 2 SWMP Report

Regional District of Nanaimo Solid Waste Management Plan

Stage 2 Report

Evaluation of Options Report

Revised April 2017

Executive Summary

The Regional District of Nanaimo (RDN) is updating the Solid Waste Management Plan (referred here after as the "Plan") which sets out strategies for managing municipal solid waste within the Region. This will be the third update since the original Plan was developed in 1988.

The original Plan, and its subsequent updates, has been highly successful in guiding the RDN to achieve some of the highest waste diversion and lowest per capita disposal rates in the world. The RDN's 2014 per capita disposal rate was 347 kg/person/year. Comparatively, the BC average for the same period was 520 kg/person/ year and the 2012 California average was 712 kg/person/year. The proposed target for the next plan amendment is 90% waste diversion with an unprecedented per capita disposal rate of 109kg/person/year.

The purpose of this report is to explain proposed future solid waste management strategies and seek community input. The community input will be used in further refining or modifying these strategies. Subsequently, the Solid Waste Management Plan will be updated to include the new strategies and presented to the Regional Board of Directors for adoption and the BC Minister of Environment for approval.

This document serves to present the strategies that are proposed to be adopted in the updated Plan to promote increased waste diversion and to manage the residual waste stream. A Regional Solid Waste Advisory Committee (RSWAC) was established to guide the identification and selection of preferred options presented in this report. The RSWAC was made of a cross section of community representatives from agencies, businesses and the public. Area First Nation representatives were encouraged to participate in the process. The proposed 90% diversion target reflects the strong waste diversion commitment being advocated by the RSWAC. Furthermore, the Committee also strongly supported strengthening the RDN's long term vision of Zero Waste.

Strategies outlined in this report include:

1. Zero Waste
2. Multi-Family Diversion
3. Industrial, Commercial, Institutional Waste
4. Regulatory Authorities
5. Construction/Demolition Waste
6. Household Hazardous Waste
7. New and Emerging Technologies

Any comments or questions regarding the Plan or the contents of this report should be directed by email to zerowaste@rdn.bc.ca or phone (250) 390-6560.

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1. Introduction

In British Columbia, regional districts are mandated by the Provincial *Environmental Management Act* to develop a Plan that is a long term vision of how each regional district would like to manage their solid waste, including waste diversion and disposal activities. The RDN prepared their first Plan in 1988 and amended that plan in 1996 and 2004. The Plan is again being updated with a 10-year planning horizon.

The process to update the Plan is being conducted in three stages. The first stage involved a review of the current system and preparation of a report on the implementation status of the 2004 Plan. The second stage involved a review of options to address the region's future solid waste management needs and the selection of preferred management options. This document is the conclusion of the Stage 2 process and presents the recommended options for solid waste management. The third stage will set out the implementation schedule for the preferred options and will form the revised Plan.

This document serves to present the preferred options for public review and input. Following consultation, the preferred options will be modified or adopted and, Stage 3, the amended Plan will be prepared for adoption by the Regional Board and approval by the Minister of the Environment.

Once the Plan is approved by the Province (along with any approval conditions), it becomes a regulatory document for solid waste management and serves to guide solid waste management related activities and policy development in the RDN. In conjunction with regulations and operational certificates that may apply, the Plan regulates the operation of storage and disposal facilities that make up the region's waste management system (see Section 2.2).

1.1 Guiding Principles

In line with BC Ministry of Environment's provincial standards, the principles guiding the development and implementation of the Plan are:

1. Promote the Zero Waste Hierarchy of highest and best uses and support a circular economy.
2. Maximize use of waste materials and manage residuals appropriately.
3. Support polluter and user-pay approaches and manage incentives to maximize behavior outcomes.
4. Prevent organics and recyclables from going in the garbage.
5. Collaborate with other regional districts wherever practical.
6. Develop collaborative partnerships with interested parties to achieve regional targets set in plans.
7. Level playing field within regions for both private and public solid waste management facilities.

1.2 Pollution Prevention Hierarchy

The future solid waste system will build on the existing framework of services and programs while seeking to improve the delivery of those services and continue to reduce the quantity of waste sent to disposal. The proposed programs, infrastructure and policies for the updated Plan are outlined in Sections 4 through 5 of this report and are presented in accordance with waste management hierarchy as shown in Figure 1.

Figure 1 Waste Management Hierarchy adopted from the Zero Waste International Alliance

1.3 Targets and Key Programs

There are two targets proposed for the updated plan:

1. The ultimate goal of Zero Waste. Zero Waste as defined by Zero Waste International Alliance defined as:

   "Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

   Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

   Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."[1]
2. Introduce programs/strategies to move the Region towards 90% diversion by 2027 and a per capita disposal of 109 kg/year.

2. Background

2.1 Plan Area

The RDN covers an area of approximately 207,000 hectares on the southeast coast of Vancouver Island. The RDN includes four incorporated municipalities and eight unincorporated electoral areas. A map of the RDN is provided as Figure 2.

[1] Adopted from the Zero Waste International Alliance

Figure 2 Electoral Areas in the RDN

BC Stats reports the 2011 population for the RDN as 146,574. Of this number, 26% (37,550) lived in electoral areas and the remaining 74% (108,075) lived in municipalities. The four municipalities in the region are the City of Nanaimo, the District of Lantzville, the City of Parksville, and the Town of Qualicum Beach. The eight electoral areas in the region are:

A: Cassidy, Cedar, Yellowpoint, South Wellington;
B: Gabriola, Decourcy and Mudge Islands;
C: Extension, Arrowsmith-Benson, East Wellington, Pleasant Valley;
E: Nanoose Bay;
F: Coombs, Hilliers, Errington;
G: French Creek, Dashwood, Englishman River; and
H: Shaw Hill, Qualicum Bay, Deep Bay, Bowser.

Four First Nations Indian Reserves are also located within the region:

- Nanaimo Town 1 & Nanaimo River (Snuneymuxw First Nation);
- Nanoose (Nanoose First Nation); and
- Qualicum (Qualicum First Nation).

Table 1 Population By Area

Area	Population 2016
Electoral Area A	7,058
Electoral Area B	4,045
Electoral Area C	2,808
Electoral Area E	6,125

Electoral Area F	7,724
Electoral Area G	7,465
Electoral Area H	3,884
Sub-Total	**39,109**
City of Nanaimo	90,504
District of Lantzville	3,605
City of Parksville	12,514
Town of Qualicum Beach	8,943
Sub-Total	**115,566**
Nanaimo Town 1 Indian Reserve	360
Nanaimo River Indian Reserve	371
Nanoose Indian Reserve	230
Qualicum Indian Reserve	74
Sub-Total	**1,035**
Total Population (RDN)	**155,710**

Population Growth

The population of the region increased from 84,819 in 1986 to 146,574 in 2011. As of 2016 Census data the population of the region was 155,710. Forecasts predict the population will increase to 207,646 by 2026 and 231,184 by 2036. [2]

2.2 Waste generation and management

The base line figure for waste generation in the RDN is 1,084 kg/capita per year from 1980's disposal estimates. Over the past 36 years, the RDN waste disposal rate has been reduced by approximately 50% to 550kg/capita/year in 1990 and, by 68% to 347 kg/capita/year in 2014. The target for the amended Plan is to further drive diversion to 90% and a per capita disposal rate of 109 kg/year by 2027. Appendix A has more information regarding projected waste generation in the region based on the Solid Waste Generation in British Columbia: 2010-2025 Forecast report. Table 2 provides some comparable waste disposal rates for reference regarding the RDN disposal target.

[2] Regional District of Nanaimo, Regional Growth Strategy, November 22, 2011

Table 2 Jurisdictional Scan on Per Capita Disposal Rates[3]

Location	Reporting Year	Per Capita Disposal kg/year	Comment
RDN	2027	109	Based on a 90% diversion target
RDN	2014	347	Based on 68% diversion achievement
BC Average	2014	520	Municipal Solid Waste Disposal in B.C. (1990-2014), Environmental Reporting BC
California Average	2012	712	California's per capita disposal rates may not capture all waste and per capita disposal may be higher.
San Francisco	2012	482	Claimed to have the highest waste diversion rate in the US
Germany	2012	220	Highest reported diversion rate of European countries. Accounts for municipal waste only. The European Environmental Agency notes that municipal waste only accounts for around 10% of the waste stream.
Capannori, Italy	2012	146	Accounts for household waste only.

The jurisdictional scan of North American and Europe carried out by RDN staff has shown that there are two potential paths being taken by communities striving for high levels of diversion:

1. Lower priority on source separation with the emphasis on energy recovery of the waste. The City of Edmonton provides an example of this strategy and they are targeting a 90% diversion rate.

2. Maximizing source separation by moving beyond voluntary waste diversion and introducing regulatory instruments (e.g. mandatory waste separation and fines) or monetary incentives (e.g. "pay as you throw".) San Francisco and Capannori, Italy provide examples of communities using these strategies.

The RDN favors the second strategy, maximizing source separation. It is recognized that to achieve high levels of diversion it is necessary to move beyond the largely voluntary programs that currently exist in the RDN. For the RDN to introduce further economic or regulatory provisions to promote source separation, additional authorities are required from the province. Strategies involving additional authorities are discussed further in Section 4.7.

[3] RDN Staff Report: *Jurisdictional Scan Regarding Waste Diversion Program,* Sharon Horsburgh January 5, 2016

2.3 Waste Characterization

The most recent waste characterization study completed for the region in 2012 showed 17% of the volume is attributed to residential, 63% of the volume is attributed to the institutional, commercial, construction, renovation and demolition (including multi-family) and 20% of the volume attributed to self-haul customers

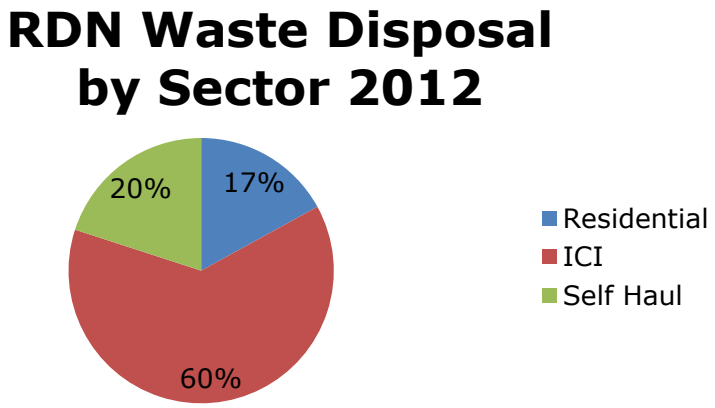

Figure 3 RDN Waste Disposal at Regional Landfill By Sector, 2012

It is estimated that approximately 8% or 4,300 tonnes of waste was moved out of the region in 2014 and can be attributed to the following three circumstances which includes both demolition and municipal solid waste.

1. It is believed a nominal amount of waste is transported in and out of region in areas near the regional boundaries as people look for the most convenient disposal location. For example, there are a few known occasions where Ladysmith residences have brought waste to the Regional Landfill in Cedar because of the close proximity. Similarly, anecdotal comments suggest that RDN residents in the Qualicum area on occasion hauled waste to the Comox Strathcona Regional District for disposal. Again, the amount of waste is considered minor.

2. It is known that there have been large demolition projects in recent years where waste has been hauled out of region for disposal. Two examples are: 1) 2015 City of Nanaimo Ferry Dock Demolition - 476 tonnes disposed of at a private landfill in the Capital Regional District; and, 2) 2015 Wellington School Demolition - approximately 250 tonnes disposed of at a private landfill in Chilliwack. The contractor advised that disposal cost waste less than half of the cost of RDN disposal and they were not required to source separate recyclables. It is impossible to predict to what extent similar circumstances will exist in the future. However, the examples do demonstrate the propensity to seek out the lowest cost option which is often contrary to waste diversion.

3. In 2013, there was a sudden reduction of approximately 25% of the commercial waste that had previously been shipped to the RDN landfill with the waste being shipped to the USA for disposal. The average reduction for 2013 and 2014, excluding the large demolition projects noted above, is estimated at 3,600 tonnes each year[4]. In 2015, there was a reduction in the amount of waste being exported for USA disposal. This was likely a consequence for the lower

[4] RDN Waste Export Analysis, Prepared by Carey McIver & Associates Ltd., February 10, 2015

value of the Canadian dollar as compared to the USA dollar. No doubt future trends for export will fluctuate and will be influenced by the value of the Canadian/US dollar, transportation costs and business decisions.

2.4 Roles in Waste Management

In the RDN, the following organizations contribute to municipal solid waste management.

Who	Roles in Solid Waste Management
Federal Government	• Regulates waste management facilities under federal jurisdiction • Regulates the safety, labelling and sale of consumer products
Provincial Government	• Various ministries have regulatory authority related to waste management • Regulates product stewardship/extended producer responsibility in BC
Regional District (Board and Staff)	• Develops plan to provide big picture oversight of waste management in the region • Through plans and plan implementation (including bylaws), works to meet waste disposal goals and targets and ensures that community has access to waste management services that are environmentally sound and cost effective • Ensures that legislative and policy requirements are followed, including monitoring and reporting • Chairs committees/ coordinates with municipalities in service delivery • Operates the Regional Landfill and Church Road Transfer Station (CRTS) • Provides residential curbside collection of food waste, garbage and recycling in all Electoral Areas, District of Lantzville, City of Parksville and food waste and recycling in the Town of Qualicum Beach • Supports Extended Producer Responsibility (EPR) programs in jurisdiction • Incorporates the Zero Waste Hierarchy within operations and those of member municipalities • Develops policies which promotes a level playing field within the waste management sector
Municipalities (council and staff)	• May provide/ coordinate waste management service, or own/operate facilities • May make bylaws dealing with waste collection • Municipal enforcement officers part of enforcement team
First Nations	• May provide waste management services or may participate in regional waste management system

Product Stewards	• Collect/ process stewarded products • Coordinate local government delivery of service where applicable • Provide and/or fund education and marketing • Provide deposit refunds to consumers (where applicable) • Monitor/ report on recovery rates
Private sector involved in waste management (e.g. haulers, facility operators)	• May provide recycling and waste management services and own/operate facilities • Generally, services multi-family residential buildings, commercial and institutional sources, and construction, demolition and land clearing sectors • Regulated by local government through Waste Stream Licensing Bylaw
Neighbouring jurisdictions	• May send waste to Regional Landfill or accept waste from RDN • Synergies, consistencies in waste management with neighbouring jurisdictions
Residents and businesses	• Responsible for carrying out proper waste reduction, recycling and disposal activities

3. Existing Solid Waste Management System and Waste Characterization

This section provides an overview of the solid waste management system. A detailed description of the Existing Solid Waste Management System can be found in Stage 1: Existing System Report in Appendix B.

3.1 Waste Flows

There are many participants within the system providing a wide array of services. Figure 4 is a schematic diagram showing the breadth of activities and participants engaged with the current solid waste management system. There are a wide range of waste management activities underway that reflect both a relatively mature waste management system and significant economic activity based on secondary resources.

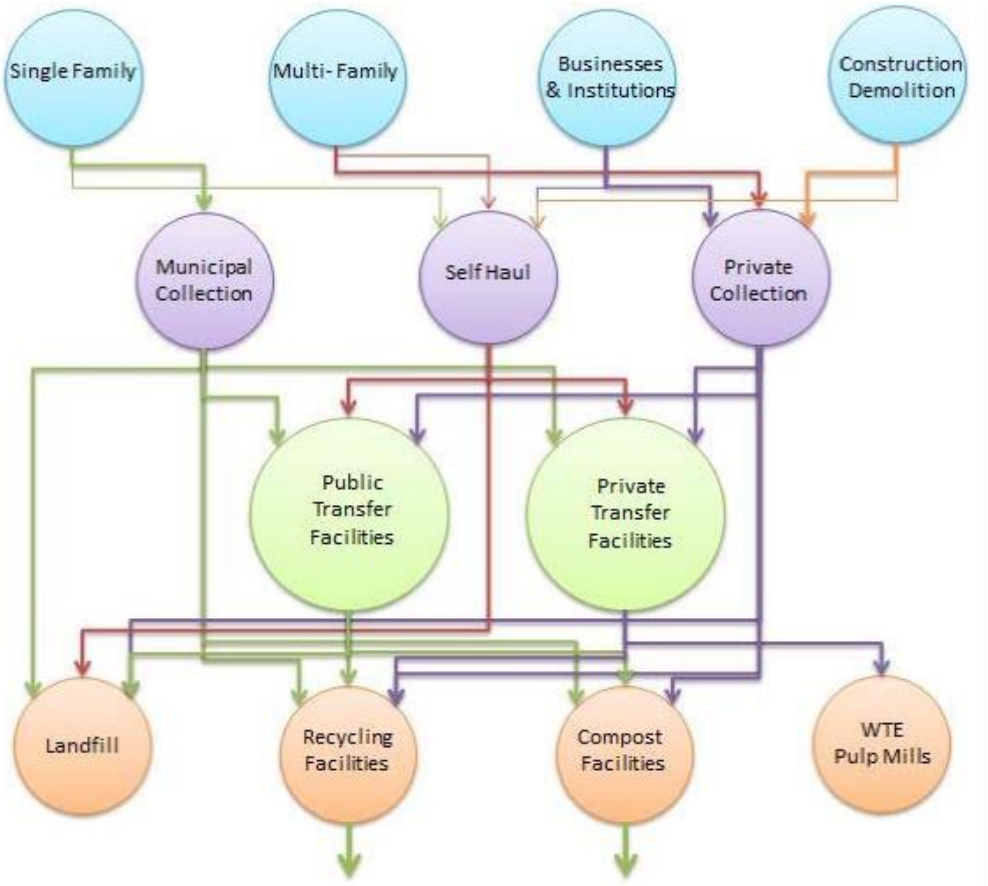

Figure 4 Components of the Waste Management System in the RDN

3.2 Overview of the Solid Waste Management System

The RDN has a broad range of solid waste management programs and infrastructure. This section describes the major infrastructure, services, programs and policies.

The 2004 Plan introduced the Zero Waste strategy and expanded on policies and programs to increase diversion. This strategy has effectively increased recyclable commodities and transferred the management of those items to the private sector. Examples of this cross the waste stream spectrum and include wood waste, commercial/demolition waste, yard waste, food waste and EPR products.

This movement of waste to the private sector has resulted in reduced cost of government and growth in the waste management business sector. With the growth in business, the whole community benefits from this sector's increased employment opportunities and their contribution of taxes. These policies have created a robust waste management industry in the region and has resulted in world class waste diversion levels.

This model of transferring the waste management activities to the private sector ensures "user pay" where the full cost of waste management is born by the generator. Conversely, many other communities rely much more on taxation in providing waste management services and the true cost of waste management is hidden.

In May 2013, the report *"Zero Waste Business Case, Draft for Expert* Review*",* Innes Hood Consulting Inc., was prepared for the Ministry of the Environment.[5] The report concluded that there is a positive business case for implementing a Zero Waste Strategy for BC. Depending on how aggressively it is implemented (i.e., 62% vs 81% diversion), by 2025 a Zero Waste Strategy will produce between $56 million and $126 million of annual net economic benefit; will create between $27 million and $89 million in new annual GDP and generate between $755,000 and $2.5 million in new annual income tax revenue for BC. The report also states that the business case for Zero Waste is strengthened if supporting policies are developed that encourage the creation and retention of remanufacturing facilities within BC, and prevent leakage to other jurisdictions. The RDN's current policies which move waste to the private sector are in harmony with the findings of this study. The preferred options for the amended Plan set out in Section 4 further strengthen this model. As a result, the RDN is expected to continue to see increased diversion coupled with further economic growth in the waste management sector.

3.2.1 Education and Outreach

Both the RDN and the City of Nanaimo undertake promotion and education related to solid waste management.

The RDN:

- Has information related to the solid waste management planning, bylaws and Zero Waste programs on the Solid Waste and Recycling pages of the RDN's website (http://www.rdn.bc.ca/)
- Distributes a "Zero Waste" Newsletter to all homes two to three times per year.
- Has a searchable on-line recycling directory for users to find out where they can bring their reusable, recyclable and compostable items.
- Has a Zero Waste school education program which provides free classroom workshops to schools throughout the RDN.

The City of Nanaimo:

- Distributes their "Waste Lines" newsletter to all City addresses in the spring and fall of each year.
- Has a dedicated web pages on the City's website (www.nanaimo.ca) that includes information related to the City's residential collection services, a link to the RDN recycling directory, and a list of reuse and recycling organizations operating in the City.

In the RDN, the current collection infrastructure for existing EPR programs consists of return-to-retail and take-back depots. The RDN's Recycling Directory can be used by residents to find the most convenient take back location for EPR products. The Recycling Council of BC (which the RDN is a member of) operates a similar service through their toll-fee Recycling Hotline (1-800-667-4321) and their on-line searchable database and app "Recyclopedia". BC Stewards also recently rebranded their website which provides an online look up feature at www.bcrecycles.ca.

[5] http://www2.gov.bc.ca/assets/gov/environment/waste-management/zero-waste/zero-waste/zero_waste_business_case_draft.pdf

3.2.2 Reduction and Reuse Activities

Both the RDN and the City of Nanaimo encourage residents to “reduce and reuse”.

Both organizations promote backyard composting through providing information on their websites on how to backyard compost and grasscycle. The City of Nanaimo holds a reuse-focused event each spring called “Reuse Rendezvous”. This event promotes reuse through a weekend long curbside swap meet for residents to put out items that they no longer want and that may be useful to others.

In addition to the RDN’s and City’s reduction and reuse activities, there are several other organizations involved in reuse in the RDN, including several private and non-profit retailers and many on-line classified services such as Craigslist and UsedNanaimo.com that are actively involved in the sale and purchase of used goods. The Repair Café Nanaimo holds repair workshops where residents can bring in their broken items and receive help from local repair experts.

3.2.3 Recycling

Curbside collection of recyclables is provided to single family homes to residents of all electoral areas, City of Nanaimo, City of Parksville, District of Lantzville and Town of Qualicum Beach.

Both regional facilities (Regional Landfill and CRTS) accept limited recyclable material including scrap metal, paper, cardboard, household plastic containers, metal food and beverage containers, vehicle batteries, oil filters, wood waste, and gypsum.

There are 3 material recycling facilities (referred to as MRFs) that are owned and operated by private waste management companies in the RDN: Progressive Waste, Emterra and Cascades. All 3 MRFs are located in Nanaimo.

Figure 5 shows the locations of both the private and not-for-profit recycling depots throughout the region which accept EPR material and other recyclables from private businesses and residents.

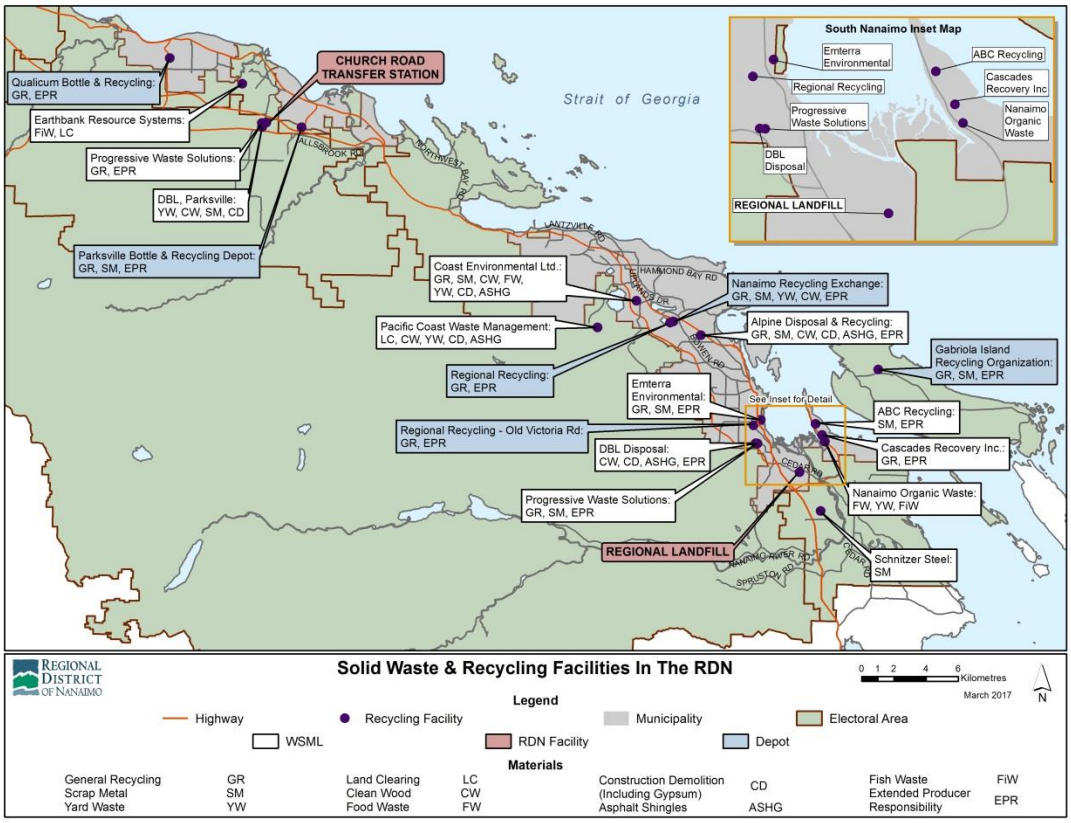

Figure 5 Solid Waste & Recycling Facilities in the RDN

3.2.4 Organics Management

In the RDN there is reuse of leftover and excess food through food banks and other food redistribution services. Additionally some food scraps are picked up by area farmers for use as animal feed. However, the majority of organics are sent to centralized composting facilities. There are two licensed composting facilities in the RDN: Nanaimo Organic Waste (formerly International Composting Corporation) and Earthbank Resource Systems. The following table lists the types of materials each of these facilities manages:

Nanaimo Organic Waste	• Residential "green bin" kitchen scraps and soiled paper • Commercial food waste • Yard waste • Fish waste • Clean wood
Earthbank	• Farmed and wild fish offal • Farmed salmon mortalities • Ground up bark from the forestry industry • Ground up land clearing debris (exclusively local forest materials)

Nanaimo Organic Waste is the only facility processing food waste in the RDN. This facility opened in Nanaimo in 2004 with a drum-style in-vessel composting system. The compost product is sold as a bulk product for blending into soil mixes.

In 2005, the RDN introduced a commercial organics ban. Based on waste characterization studies carried out in before and after the ban, 2004 and 2012 respectively, the per capita tonnage of compostable organics in the waste stream only dropped from 95.5kg/capita to 91.2 kg/capita. These finding indicate that the current organics ban has only had modest success and there is significant opportunity for further diversion with organic waste.

In 2011, more than 52,000 single family homes in Nanaimo, Lantzville, Parksville, Qualicum Beach and the RDN Electoral Areas received weekly curbside food waste collection service.

3.2.5 Yard Waste Collection

Yard waste such as leaves and grass clippings are not collected as part of residential waste collection services in the RDN. Residents and businesses are encouraged to manage their yard waste in one of the following manners:

- Reduce the amount of yard waste through practices such as grasscycling and xeriscaping.
- Backyard or on-site composting.
- Self-hauling to one of several yard waste depots in the RDN. Currently, depots are located at:
    - Church Road Transfer Station
    - DBL Disposal
    - Nanaimo Recycling Exchange
    - Pacific Coast Waste Management
    - Regional Landfill
- Hiring a yard waste removal service.
- Include yard waste removal in landscaping contracts.

Use of these yard waste management practices and service is encouraged by a variety of policies including:

- A ban on yard waste disposed as garbage at the landfill site and transfer station.
- A ban on the inclusion of yard waste in the City of Nanaimo's[6] and RDN's residential garbage collection service.
- Not providing yard waste collection as part of the single-family residential curbside service.
- Promoting the yard waste management alternatives.

[6] The City of Nanaimo is currently changing over their residential curbside collection program to an automated system and may include yard waste as part of their curbside collection service.

This approach to yard waste management has been successful at minimizing the amount of yard waste being landfilled. The 2012 waste composition study indicated that yard waste is roughly 2.5% of the residential waste sent to landfill and 5% of overall waste landfilled.

3.2.6 Waste Collection

Residential curbside garbage, recycling and food waste collection service is provided to single family homes in all Electoral Areas of the RDN, City of Parksville and District of Lantzville by a private collection contractor. Town of Qualicum Beach staff provide garbage collection to some ICI buildings and all single family homes, while recycling and food waste collection is provided by the RDN through a contracted waste hauler for single family homes. City of Nanaimo staff provide garbage and food waste collection to single family homes while recycling is provided by a contracted waste hauler.

Throughout the RDN, for those in the multi-family and ICI sectors that desire a waste collection, there are a number of private waste haulers that provide this service.

3.2.7 Transfer Stations

The CRTS is located on Church Road, in Electoral Area F, about four kilometres southwest of downtown Parksville. The facility opened in 1991, and is approximately two hectares in size. CRTS receives garbage, yard waste, wood waste, construction/demolition waste, and limited recyclables from communities in northern portion of the RDN: Parksville, Qualicum Beach, and Electoral Areas E, F, G, and H. In recent years, with the growth of Nanaimo, this facility has also started to receive waste generated in parts of Nanaimo. In 2012, approximately 30% of the region's garbage was delivered to CRTS.

Garbage brought to the CRTS is transferred to the Regional Landfill in Nanaimo. The limited recyclables such as cardboard and metal are transferred to various recycling processors, and food waste, kitchen waste, and yard waste are transferred to the Nanaimo Organic Waste Facility in South Nanaimo.

In 2010, the site was re-designed to accommodate population growth to 2030, include a food waste transfer area and to segregate large commercial-sized waste vehicles from small passenger-sized vehicles and trucks. The new transfer station was built in accordance with the RDN Green Building Policy, and has received LEED Gold® accreditation, the first in Canada for a transfer station.

3.2.8 Landfills and Other Disposal Facilities

The Regional Landfill is located approximately 5 kilometres south of downtown Nanaimo and is owned and operated by the RDN. The landfill operates on a 21-hectare section of a 38-hectare property, approximately 2.7 hectares of which have been permanently closed. In accordance with Ministry of Environment-approved Design and Operations Plan, a North Berm Lateral Expansion currently underway and will add approximately 10 years of capacity to the site. One final expansion in the south east area of the site is planned when the North Berm area is filled. The site has been receiving municipal solid waste from the RDN since 1971 and given the current tonnages of wastes received, the operation life of the landfill is expected to continue until 2040.

There are two closed landfills in the RDN: the Parksville Landfill and the Qualicum Beach Landfill. These sites are the responsibility of their respective municipality.

Waste disposal facilities on First Nations' land are regulated by the federal Indian Reserve Waste Disposal Regulations. Currently, there are no federally authorized waste management facilities on First Nations land within the RDN. The RDN's Waste Stream Management Licensing Bylaw does not apply to activities on First Nations' land.

3.2.9 Policies and Regulations

Five main policies influence the RDN solid waste management system: the user-pay system; variable tipping fees; disposal and collection bans; private sector waste management and open burning restrictions. The first four policies fall within the scope of the Plan while burning restrictions are applied through a combination of provincial regulation (e.g. Open Burning Smoke Control Regulation) and augmented by RDN and municipal bylaws.

Provincial product stewardship programs that significantly influence the management of specific waste materials generated in the RDN. Each of these local and provincial policies is discussed below:

User Pay

Both the RDN and the City of Nanaimo have user pay curbside garbage collection programs. All households have a one can per week limit on waste volume. Separate tags that presently cost $3.00 each are required to set out additional cans. The vast majority of homes set out one can of waste or less per week. The RDN curbside program is fully funded by user fees and is not augmented by taxation.

The RDN solid waste program, other than curbside waste collection discussed in the previous paragraph, is primarily funded by landfill tipping fees augmented by a small tax requisition. In 2016 the split was approximately 93% tipping fee revenue and 7% taxation. These revenues are applied to solid waste program costs including operation of the landfill and transfer station, organics waste management, illegal dumping mitigation, education, policy and regulatory work. Other revenues such as grants, sale of asbestos bags and licensing fees associated with the Waste Stream Licensing program are insignificant relative to the overall budget.

Variable Tipping Fees

The RDN tipping fees vary depending upon the materials. The 2016 base tipping fee for municipal solid waste is $125 per tonne. Fees for other materials are varied on the basis of cost to handle the material and/or to motivate diversion. For example, the 2016 tip fee for asbestos waste is $500/tonne and is based on the landfill airspace consumption and the direct handling costs for management of the material. In the case of construction and demolition material containing recyclables, the 2016 tip fee is $360/tonne and potential of imposition of a fine. The intention with this latter example is to provide an incentive to source separate and divert waste.

Material Disposal Bans

The first material ban was introduced by the RDN in 1991 to encourage the recycling of drywall. Since that time, a number of other materials have been banned. A full list of banned material and the implementation date of the ban is provided in Section 3.2.10. Enforcement of the bans to date at the Regional Landfill and at the CRTS has been applied to the most egregious cases of contamination. Minor amounts of banned materials such as paper, food waste or recyclable plastic is not uncommon.

Private Sector Waste Management

As the RDN waste management system has matured, the trend has been away from government provided service to an increase in services provided by the private sector. The three policies described above, aided by burning bans and provincial initiatives discussed in the following section, have created a positive business climate for this trend.

Many communities have developed government run eco-depots that accept a wide range of recyclable items. For those residents located in close proximity, these facilities typically provide a high level of convenience as a "one-stop" drop off. Commonly, the cost of operating these facilities is augmented by taxation. As a result, there is typically a loss of private sector enterprise given the challenge to complete with a government subsidized facility.

In the case of the RDN, government services have been reduced where the private sector is providing the service. RDN facilities typically do not accept products covered under the provincial stewardship programs. Where materials are accepted, there is a drop off fee. In this way, consumers/generators are encouraged to use the private facilities. The net result has been robust private sector waste management in the region, high waste diversion and reduced cost of government to directly provide services.

Burning Bans

Most developed areas of the RDN have burning restrictions for landclearing waste, construction/demolition debris and yard waste. In most developed areas, burning of these wastes is prohibited year-round, but in some areas yard waste can be burned only during a limited time frame annually (usually a small window of time is given in the spring and fall). In undeveloped areas, burning of landclearing waste and yard waste is generally allowed, provided any local fire restrictions and the BC Open Burning Smoke Control regulation are being met. With restrictions in place, generators of these materials must find alternative disposal options and are encouraged to select options such as composting, re-use (of construction/demolition materials) or recycling.

Provincial Initiatives

BC has implemented several product stewardship programs over the past decade. Product stewardship is defined as a management system based on industry and consumers taking life-cycle responsibility for the products they produce and use. As a result, the materials coved under a stewardship program are less likely to enter the RDN's waste management system. There are province-wide stewardship programs currently in place for:

- Lead-acid batteries
- Used motor oil
- Paint
- Pesticides
- Solvents
- Tires
- Medications
- Fuel
- Cell Phones
- Outdoor Power Equipment
- Lighting Products
- Household Batteries
- Gasoline
- Antifreeze
- Thermostats
- Small Appliances
- Electronic Toys
- Beverage Containers
- Printed Paper and Packaging
- Electronics
- Large Appliances
- Smoke alarms
- Carbon monoxide alarms
- Beer Containers
- Power Tools

The RDN has actively encouraged the Province and product manufacturers to undertake stewardship initiatives and continues to promote the expansion of stewardship initiatives.

3.2.10 Waste Stream Management Licensing Bylaw

RDN Bylaw No. 1386 requires most solid waste management facilities operating in the RDN to maintain a Waste Stream Management License (WSML). The authority to license and regulate solid waste facilities is given to regional districts through BC's Environmental Management Act and the RDN's licensing bylaw was enacted under the 2004 Plan.

The RDN's licensing bylaw (Bylaw No. 1386) was established to fulfill the following objectives:

1. Create a high standard of operation for waste management facilities located in the RDN.
2. Encourage and protect legitimate waste management operations within the RDN.
3. Establish a reporting system for the flow of waste materials within the RDN to assist in tracking our waste reduction rate.
4. Protect and enhance the waste reduction rate achieved in both regional districts.
5. To provide a level playing field in the two regional districts.

All facilities that handle municipal solid waste (MSW) in whole or part are included in the licensing system: with the exception of those facilities noted under "exclusions" below. This means that transfer stations, recycling depots, composting facilities, material recovery facilities and brokers are subject to the licensing system. Facilities that are excluded from obtaining a license are:

- Disposal facilities such as landfill and incinerators (these facilities will remain under the regulatory jurisdiction of the Province).
- Soil manufacturing facilities (unless they are composting MSW-based materials on-site).
- private on-site depots (such as the centralized recycling areas used by office buildings and mall tenants).
- Stewardship program depots.
- Reuse businesses.
- Concrete and asphalt recycling operations and auto wreckers since the material handled by these operations has not traditionally been handled as MSW.
- Municipally owned facilities including the CRTS.

The updated plan should reconsider the wording of these exemptions to provide further clarity. For instance, the intent of not regulating disposal facilities under the regulatory jurisdiction of the Province is intended to avoid duplication of regulation. Consideration should be given to clarifying this exemption to apply to facilities operating under a Ministry of Environment Permit or Operational Certificate.

Currently there are 13 waste stream management licenses in place in the RDN and 2 applications under review. A list of currently licensed facilities and facilities currently undergoing application review is provided in Table 3.

Table 3 RDN Waste Stream Management License Holders

Waste Stream Management License Holders (as of September 2016)
1. Schnitzer Steel Pacific
2. Parksville Bottle & Recycling Depot
3. International Composting Corporation
4. BFI Nanaimo Recycling Facility
5. Emterra Environmental
6. Earthbank Resource Systems
7. Alpine Disposal & Recycling
8. Pacific Coast Waste Management
9. DBL Disposal Service Ltd. – Church Road
10. DBL Disposal Service Ltd.
11. BFI Canada, Springhill
12. Cascades Recovery Inc.
13. Coast Environmental Ltd.
Waste Stream Management Applications Under Review (as of September 2016)
13. Nanaimo Recycling Exchange
14. ABC Recycling

3.2.11 Disposal Bans

The practice of banning the disposal of specific wastes from the landfill, when viable recycling alternatives are in place, has been used by the RDN since 1991. Current landfill bans on recyclable/compostable materials include drywall (implemented in 1991), cardboard (1992), paper, metal and tires (1998), commercial food waste (2005), yard and garden waste (2007) wood waste (2007) and EPR materials designated under BC's recycling regulation (2007), household plastic containers (2009) and metal food and beverage containers (2009). Disposal bans are considered to be a critical policy mechanism to drive diversion activities, particularly in the ICI and construction/demolition sectors.

3.2.12 Illegal Dumping

Illegal dumping on private and public lands has been a long-standing concern in the RDN. In 2016, approximately 35 tonnes of illegally dumped material was removed through clean-up initiatives and disposed of appropriately.

Although it represents less than 1% of the total solid waste generated in the region, illegally dumped material can have serious effects on the environment, wildlife habitats and the ability of others to use and enjoy outdoor recreational areas.

The RDN has implemented an Anti-Illegal Dumping program that includes:

- Prevention of illegal dumping through education;
- Funding the clean-up of illegal dump sites; and
- Illegal dumping surveillance and enforcement activities.

The RDN spends approximately $60,000 annually combating illegal dumping. Pursuant to RDN Bylaw No. 1386, those who generate (own), deliver or abandon waste illegally can be subject to a fine of up to $200,000.

4. Future Solid Waste Management System

The future solid waste system will build on the existing framework of services and programs while seeking to improve the delivery of those services and continue 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 Sections 4.1 through 4.7.

4.1 General Strategies

As part of the Stage 2 process of the Solid Waste Management Plan review, the Regional Solid Waste Management Advisory Committee (RSWAC) short listed a number of options for inclusion in the updated plan. The full list of short listed options reviewed can be found in Appendix C. Through this process six key focus areas emerged:

1. Zero Waste
2. Multi-Family Diversion
3. ICI Waste
4. Regulatory Authorities
5. Construction/Demolition Waste
6. Household Hazardous Waste
7. New and Emerging Technologies

4.2 Zero Waste

In 2002, the RDN committed to “Zero Waste” as its long-term waste reduction and diversion target.

Zero Waste focuses on reducing the region’s environmental footprint by minimizing the amount of waste that must be landfilled through reduction, reuse, recycling, redesign, composting, and other actions. The RDN was the first jurisdiction on Vancouver Island and one of several forward looking local governments in Canada and around the world to move beyond recycling and adopt a Zero Waste approach to eliminating waste.

The RDN and its member municipalities, residents and businesses have led the way in innovative approaches to reducing the amount of garbage that must be landfilled. In 1991, the RDN introduced Canada's first user pay residential garbage collection system. Since then, the RDN and its partners have expanded curbside recycling programs, banned paper, metal, commercial food waste, clean wood waste and other recyclable materials from the landfill, and successfully promoted composting throughout the region.

As part of the RDN's commitment to Zero Waste as an integral part of the region's Plan, the Zero Waste International Alliance (ZWIA) definition of Zero Waste has been adopted. See Section 1.3 Targets and Key Programs.

4.2.1 Education

The RDN and the City of Nanaimo produce most of the solid waste management promotion and education materials provided in the Regional District.
The objectives of the RDN program are to:

- Increase waste diversion;
- Educate all generators about the solid waste management priorities of the Regional District;
- Promote participation in waste diversion programs;
- Promote the "Zero Waste" concept;
- Encourage proper participation in garbage and recycling collection programs; and
- Encourage compliance with Regional District material bans.

Education activities include: staffing at public events and speaking engagements; mall displays; articles in the Regional newsletter "Regional Perspectives"; the region-wide "Zero Waste" newsletter; a Zero Waste school education program; garbage and recycling program brochure (for RDN contract areas); brochures for various waste diversion programs (backyard composting, grasscycling, disposal bans, etc.); and a web site featuring a recycling database, Zero Waste tool kit and program information.

A greater emphasis is proposed to be targeted at adult audiences through traditional and social media, as well as being more active in a variety of public events.

In addition to existing solid waste education programs, enhancing public education regarding solid waste management in the region will cost in the range of $20,000-$40,000 in administrative and delivery costs.

4.2.2 Advocacy

The RDN continues to advocate for greater waste diversion in the region by engaging with federal, provincial and local government agencies as well as BC stewardship groups such as Multi-Material British Columbia. The costs and responsibilities of waste management have historically been borne by local governments and taxpayers. The responsibility for the costs and risk to manage end-of-life products should progressively transfer to the manufacturers of goods and the consumers that use them to provide the appropriate market mechanism to encourage more sustainable manufacturing and consumer choices.

Costs associated with the RDN's current activities regarding advocacy are difficult to determine given the broad range of activities carried out by political and staff representatives. These range from support for organizations such as the Recycling Council BC, active participation in organizations such as the Coast Waste Management Association, to engaging with the Province on policy and regulation development. The continued role of advocacy will remain variable depending on level of participation and costs related to the engagement opportunities (e.g. association dues, travel expenses).

Advocacy role may include:

- Petition Provincial/Federal Government to act on matters outside local jurisdiction in an effort to minimize waste
    - Petition senior governments on an on-going basis, and in a variety of ways, including: writing letters, arranging meetings at a senior staff and political level and alerting the media.
    - Consider partnerships with other organizations for joint advocacy initiatives.
- Encourage, demonstrate and advocate for consumers and producers to move towards a closed loop (cradle to cradle) system.
    - Educate the public on the Zero Waste Hierarchy.
    - Demonstrate how to build a closed loop system.
    - Advocate for producers to ensure their products and their products packaging end of life is consistent with the Zero Waste Hierarchy.
- Petition Provincial/Federal Government for the expansion/addition of EPR programs
    - Petition senior governments and other related influential organizations, including the Union of BC Municipalities, Federation of Canadian Municipalities and the Local Government Management Association, on an on-going basis, and in a variety of ways, including: writing letters, arranging meetings at a senior staff and political level and alerting the media.
    - Insist that new EPR programs must meet or exceed current recycling collection programs and offer consistency of services.
    - Collaborate with the BC Product Stewardship Council, EPR Stewards, the Canadian Council of Ministers of the Environment and the Recycling Council of BC.
    - Partner with neighbouring regional districts and other organizations to ensure a broader, more unified message is expressed when shared concerns are brought forward.

4.2.3 RDN Purchasing Policy

Using existing municipal models, develop an internal Purchasing Policy to ensure that the environmental impact of RDN purchasing and operations of the RDN is minimized. Environmental purchasing policies developed by other municipalities, such as the City of Richmond, will be used as a template.

The development and implementation of an RDN Purchasing Policy will require staff time to write and present the new policy to the Regional Board. The 2004 Plan budgeted $4,000 for this task however; it was not completed during the term of the plan.

An RDN Purchasing Policy will have a minimal waste diversion impact however; it demonstrates leadership and is consistent with the RDN Boards strategic goals.

4.3 Multi-Family Diversion

There are approximately 13,430 multi-family residential units in the RDN, with approximately 12,000 of these units located in the City of Nanaimo.[7] Collection services to multi-family buildings are privately managed throughout the RDN including the City of Nanaimo. Each building is responsible for hiring their own collection services for garbage and recycling.

Since 2008, the RDN has had a Multi-Family Diversion Strategy aimed at increasing the level of recycling activities available to multi-family residents living in townhouses, mobile homes, apartments and condominiums. In 2008, RDN staff estimated that 75% of multi-family buildings had recycling services on-site, but that those services were primarily for cardboard and paper collection. In 2012, the service levels were found to have significantly improved since 2008, with 94% of multi-family buildings reporting that they had recycling services for cardboard, paper and plastic and containers. The primary mechanism by which the RDN encourages recycling in Multi-Family buildings is through landfill bans that prohibit the landfilling of residential recyclables such as household plastic containers, recyclable paper, cardboard and metal.

Because garbage and recyclables generated at multi-family buildings are generally collected by trucks servicing businesses and institutions, no data is available on the specific quantities disposed or recycled by the multi-family building sector. Research done in other jurisdictions indicates that recycling rates in multi-family buildings are typically much lower than those associated with single-family recycling programs. For example, Metro Vancouver reports that only 16% of waste from multi-family homes is recycled and the City of Toronto reports and 18% recycling rate. [8] Comparatively, single-family homes in the RDN recycle 30% of their discards through the curbside recycling program (not including kitchen scraps collection).

During the RDN's 2012 waste composition study, a load of garbage from multi-family buildings was sampled to provide a rough estimate of the composition of the waste being discarded by multi-family buildings. The composition data suggests that the majority of waste disposed as garbage in multi-family buildings is recyclable (26%) or compostable (44%).

Challenges to achieving a high degree of source separation in the multi-family sector include inconvenience, cost, available space for separation and often a lack of a site champion to promote diversion.

RDN Multi-Family residencies are serviced by private haulers. The service is typically provided in conjunction with, and using the same equipment as used to serve the industrial, commercial and

[7] Multi-Family Housing Diversion Strategy Progress Report; RDN staff memorandum by S. Horsburgh to C. McIver; February 2, 2012.
[8] http://www.metrovancouver.org/region/dialogues/Reports%20and%20Issue%20Summary%20Notes/Multi-FamilyWaste-NS-Summary20110419.pdf and http://www.toronto.ca/garbage/pdf/2010-graph.pdf

institutional sector (ICI). As a result future diversion strategies for multi-family are the same as the ICI sector and are discussed in Section 4.4. Additionally, Section 4.5.2 discusses the introduction of Waste Source Regulation as an additional authority under the SWMP which would drive the requirement for all multi-family buildings to have full diversion programs in place for recyclables and organics.

4.4 Industrial, Commercial and Institutional (ICI) Waste Management

The RDN encourages recycling by the ICI sector through variable tipping fees and landfill bans which prohibit the landfilling of recyclables, food waste and yard waste. An assessment of the garbage disposed by the ICI sector was done as part of the RDN's 2012 waste composition study. The data estimates that approximately 42% of the garbage disposed is compostable, including food scraps (28%), yard waste (8%) and compostable paper products (6%). An estimated 16% is considered recyclable and consists primarily of paper and cardboard (12%) with metal, pallet wrap and drywall making up the remainder of the recyclable portion of the ICI garbage.

To increase diversion from the ICI and Multi-family sectors there are essentially two distinct paths available to the RDN. The first is to continue with, and increase education and awareness and/or increased enforcement of current disposal bans at the landfill and transfer station. Increased enforcement and education of existing disposal bans and a relaunch of Commercial Organics Diversion Strategy and Multi-Family Diversion Strategy are predicted to achieve up to 3.1% diversion.

The second path is to target maximizing source separation and introduce further economic or regulatory provisions to promote the desired behavior. To do this, additional authorities are required from the province and may be gained through Ministerial approval of the Solid Waste Management Plan. The diversion potential of invoking such authorities is predicted to be up to 11%. The RDN proposes to include such strategies in the Solid Waste Management Plan which are discussed in Section 4.7.

If the RDN continues to work within the current regulatory authorities under the existing Plan to improve ICI organics and recycling diversion which may include increased education and awareness and/or increased enforcement of current landfill bans at the landfill and transfer station would require 1 new FTE or equivalent at $80,000/year including benefits to oversee the new ICI diversion strategy plus $20,000/year in administrative costs to run the program and $100,000/year for increased enforcement.

4.5 Regulatory Authorities

The requirement and authority for a Plan is set out in the Provincial statute, *Environmental Management Act*. On Ministerial approval of a Plan, regional districts are given additional tools that they do not otherwise have to assist with the management of solid waste within their boundaries. The *Environmental Management Act* also provides a number of optional authorities for regional districts to manage solid waste that may granted through plan approval.

The RDN proposes to request that the province grant additional authorities, as discussed in the following section, for managing solid waste. Should the Province grant such an authority at the concept level, further review and consultation is necessary to develop the program, determine costs and harmonize

the strategy with potentially affected stakeholders. Furthermore, it is recognized that any associated Bylaw would require approval of the Minister of the Environment before adoption.

4.5.1 Waste Stream Management Licensing

The RDN currently has authority under the existing 2004 Plan for waste stream licensing. Private facilities that manage municipal solid waste in the region are required to hold a license issued by the RDN. Further details of this program are presented in Section 3.2.10

4.5.2 Waste Source Regulation

Waste Source Regulation provides the ability to impose requirements on waste generators. Two examples of this concept are:

1. the City of Vancouver's Green Demolition bylaw which requires 75% recycling of materials on demolition of pre-1940 homes and 90% on pre-1940 character homes.

2. Comox Strathcona Waste Management proposes to require mandatory recycling of the ICI sector such as by requiring all ICI buildings to implement a recycling collection service by a defined date. They also propose the development of a model bylaw for space allocation for the placement for waste and recycling containers. These intentions are set out in Comox Strathcona's Solid Waste Management Plan approved by the Minster of Environment in 2013.

Depending on the level of enforcement, waste source regulation has the potential to result in high waste diversion. Substantial program cost increases are commensurate with increased enforcement.

Should the Province grant such an authority at the concept level, further work is necessary to develop the program, determine costs and harmonize the strategy with potentially affected stakeholders.

4.5.3 Waste Haulers as Agents

The RDN proposes to request authority to establish a licensing process for waste haulers to act as waste collection agents of the RDN. The intention is to promote industry innovation to achieve the lowest cost with highest diversion. Under an agents model it would be possible to require waste haulers to collect and remit a fee to the RDN where a customer's waste is not separated or where a recycling or organics collection service is not provided. Such a system provides an economic driver to encourage waste diversion efforts and removes the enticement of low cost disposal.

Under an agents model, other economic strategies could be pursued to further promote diversion such as a "waste collection fee" applied to licensed haulers (agents) coupled with a reduced tipping rate for licensed haulers (agents) at the landfill. This would provide incentive for waste to flow through the private sector, and increase the diversion of waste through reduction, recycling or recovery through private sector enterprise.

RDN administration costs of such a strategy are expected to be moderate with and a minor enforcement burden. Waste haulers would have some increased administration through the collection and remittance of fees as well as reporting. There would be a minor level of enforcement to ensure haulers are complying but very little enforcement activity at the waste source.

Should the Province grant such an authority at the concept level, further work is necessary to develop the program, determine costs and harmonize the strategy with potentially affected stakeholders.

4.6 Construction and Demolition (CD) Waste Management

Construction and demolition and renovation projects (CD) generate a wide range of materials most of which are reusable or recyclable. These include concrete, asphalt, wood, gypsum wallboard, metal, cardboard, asphalt roofing and plastic.

The RDN promotes diversion of these materials through disposal bans on cardboard, gypsum (drywall), metal and wood, and high tipping fees on loads of CD waste arriving at the Regional Landfill (loads of CD waste cannot be delivered to the CRTS. However, there are examples of where the high tipping fees have failed to result in diversion with the material hauled out of region for disposal. Examples of this are the 2015 City of Nanaimo Ferry Dock Demolition where 476 tonnes of wood waste was disposed of at a private landfill in the Capital Regional District and the 2015 Wellington School Demolition where approximately 250 tonnes of demolition waste was disposed of at a private landfill in Chilliwack. In the latter example, the contractor advised that disposal costs was less than half of the cost of RDN disposal at the Regional Landfill and they were not required to source separate recyclables. The introduction of further economic or regulatory provisions (see Section 4.7) has the potential to minimize this type of occurrences in the future.

There are several facilities in the RDN that accept source-separated discarded CD materials for recycling, as listed in Table 4.

Table 4 Construction/Demolition Waste Management Operations in the RDN

Material	Facility Name
Asphalt	• Haylock Bros. Paving • Hub City Paving
Asphalt Shingles	• Pacific Coast Waste Management
Concrete	• DBL Dispoal • Hub City Paving • Haylock Bros. Paving • Mayco Mix • Pacific Coast Waste Management • Parksville Heavy Equipment
Metal	• Alpine Disposal & Recycling • Annex Auto • Bull Dog Auto Parts • Carl's Metal Salvage • DBL Dispoal • Nanaimo Recycling Exchange • Regional Recycling • Schnitzer Steel

Wood (lumber)	• Alpine Disposal & Recycling • DBL • Gabriola Island Recycling Organization	• Nanaimo Recycling Exchange • Pacific Coast Waste Management

It is believed that a significant portion of CD waste is recycled or used as a fuel substitute, including:

- Wood waste is chipped and used as hog fuel at pulp mills on Vancouver Island and Washington State;
- Drywall (gypsum) is recycled;
- Metal is recycled;
- Concrete and asphalt are recycled; and
- Asphalt shingles are recycled on a limited basis.

There is also significant reuse of building materials and fixtures through salvage operations and retail stores such as Demxx and Habitat for Humanity's ReStore.

If the RDN improves and reintroduces education and communication regarding CD waste in the region it is estimated to cost $20,000/year. If enhanced regulation within the existing authorities were to be carried out in conjunction with increased education it is estimated to cost an additional $20,000/year.

4.7 Household Hazardous Waste

Household hazardous waste (HHW) 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. The RDN will explore options for further expanding collection of non-stewarded residential household hazardous waste.

The RDN will continue to promote the use of existing Provincial and private stewardship programs for the disposal of household hazardous wastes. Additionally, the RDN will encourage new stewardship programs for other hazardous components of the municipal solid waste stream, such as electronic goods, dry cell batteries and rechargeable batteries.

For the RDN to sponsor and/or run residential non-stewarded HHW drop off events it is estimated to cost in the range of $80,000-$100,000 per year.

4.8 New and Emerging Waste Management Technologies

In assessing future waste management options the RDN has considered new and emerging waste management technologies including mixed waste processing, refuse derived fuel, anaerobic digestion, and gasification. All of these technologies are directed at residuals management in contrast to targeting source separation. It is the RDN's intention to continue to drive reduction and recycling through continued emphasis on source separation.

With the exception of mixed waste processing, the technologies listed focus on energy recovery. Again, it is the RDN's intention to exhaust reduction and recycling efforts, and a mixed waste processing facility is consistent with this goal. Of the new and emerging technologies reviewed, mixed waste processing is the technology that holds the most promise for future consideration. It is envisioned that such a facility would be developed through private sector investment. A public sector facility may be considered after fully implementing source reduction efforts if a private sector facility does not materialize.

4.9 Solid Waste Emergency/Disaster Response Plan

The RDN proposes to develop a Solid Waste Emergency Disaster Response Plan to facilitate solid waste management during and following a large scale emergency or disaster. The purpose it to aid response, minimize damage and costs, maintain high environmental protection standards and support waste diversion.

4.10 Collaboration with Social Enterprise

The RDN will seek opportunities to collaborate with social enterprise to maximize social benefit and advancement of Zero Waste in areas that are not viable or supported by the business sector.

5. Long Term Residual Management

The Regional Landfill has capacity until 2040 based on current landfilling rates. Depending on the speed and success of further diversion initiatives, the life of the landfill could be extended for an additional 10 to 15 years. The long term goal of the RDN is Zero Waste. Nevertheless, the RDN recognizes that there will be some necessary landfilling capacity for the foreseeable future.During the time frame of this Plan, technologies will be advanced and the economic viability of residual waste processing and disposal may change. The RDN will continue to review and consider alternative technologies that are consistent with the Zero Waste Hierarchy and Zero Waste commitment.

Discussions with adjacent regional districts to identify potential cooperative strategies for waste management system improvements have been on-going for a number of years and will continue. The RDN is currently a partner in the Association of Vancouver Island Coastal Communities (AVICC) that are actively looking into cooperative strategies for managing solid waste across regional district boundaries. Future options for residual management could include such as collaboration with other local governments, siting a landfill and/or considering export on or off the island.

6. Plan Implementation

6.1 Implementation schedule

Once the updated Plan has been presented and approved as part of the Public Consultation process in Stage 3 an implementation schedule will be developed and presented as part of the final Plan submitted to the Minister of Environment for approval.

It is anticipated that the Plan will be submitted to the Minister of Environment in the spring of 2017.

6.2 Bylaws

Any new bylaws or amendments required as a result of the implementation of the updated Plan the RDN will work with community stakeholders and seek ministry approval if required.

6.3 Projected Cost of Future Strategies

Table 5 below presents the approved 2016 RDN Solid Waste Services Consolidated Budget. Projected costs for future strategies outlined in Section 4 are presented in Table 6 and Table 7.

Table 5 RDN 2016 Approved Solid Waste Budget Consolidated

Program		Revenue*	Expense*
Solid Waste	Landfill Tip Fee	7,200,000	
	Tax Requisition	578,000	
	Prior Year Surplus	1,122,000	
	Other	691,000	
	Administration, Wages, Benefits		1,253,000
Sub Total		**9,591,000**	**1,953,000**
Zero Waste/3Rs	Wages, Benefits		114,000
	Programs		161,000
	Other		10,000
Sub Total			**285,000**
Scale and Transfer	Recycling		1,445,000
	Hauling		431,000
	Not for Profit		73,000
	Vehicles		62,000
	Wages, Benefits		1,574,000
	Other		294,000
Sub Total			**3,879,000**
Disposal Operations	Loan Proceeds	2,000,000	
	Reserve	4,765,000	
	Contract Services		207,000
	Monitoring		110,000
	Closure		95,000
	Repairs, Maintenance		90,000
	Professional Fees		139,000
	Leachate/LFG		160,000
	Vehicles		649,000
	Wages, Benefits		994,000
	Debt		127,000
	Capital		6,841,000
	Other		123,000
Sub Total			**9,535,000**
Curbside Collection	User Fee	3,551,000	
	MMBC	1,046,000	
	Garbage Tags	40,000	
	Prior Year Surplus	318,000	
	Other	20,000	
	Discounts		314,000
	Administration, Wages, Benefits		631,000
	Contracted Services		2,714,000
	Publications		70,000
	Landfill Tipping Fees		843,000
	Other		152,000
Sub Total		**4,975,000**	**4,894,000**
Total**		**$21,331,000**	**$20,546,000**

*Rounded to nearest $10,000 **Variance in revenue and expense due to rounding

Table 6 Projected Cost of Future Strategies

Service Area	Brief Description	Annual Proposed Budget
Zero Waste Education	Enhanced public education regarding solid waste management in the region in addition to existing education programs	$40,000
Household Hazardous Waste	RDN to fund collection of non-stewarded residential household hazardous waste.	$100,000
Multi-Family Diversion	See ICI Waste Management	
ICI Waste Management	Increased enforcement and education of existing landfill bans and a relaunch of Commercial Organics Diversion and Multi-Family Diversion Strategy	Increased Education $100,000 Increased Enforcement $100,000
CD Waste Management	Enhanced education and communication	$20,000
	Enhanced regulation within existing authorities	$20,000
	Additional Regulatory Authority	See Regulatory Authority
Regulatory Authorities	Waste Source Regulation	TBD
	Waste Haulers as Agents	TBD

7. Conclusion

This Plan Stage 2 Report collates the evaluation of options and sets out the preferred options for municipal solid waste management within the RDN over the next ten year period. This document serves to present the preferred options for public review and input.

The key strategies of the updated Solid Waste Management Plan in addition to exisiting programs are:

- Zero Waste
- Multi-Family Diversion
- ICI Waste
- Additional Regulatory Authorities
- Construction/Demolition Waste
- Household Hazardous Waste

The preferred options include the intention to request the province grant the RDN additional authorities, namely assigning waste haulers as agents or the licencing of waste haulers as well as the authority to regulate source separation of waste and recyclables. Should such authorites be granted from the Province, it is understood that further consultation with affected parties would be necessary prior to any implementation. Further, it is understood that any associated Bylaws would also require approval by the Minister of the Environement.

It is proposed that the updated Plan set an ambitious target of 90% waste diversion by 2027 and a per capita disposal of 109 kg/year.

Following public consultation of this Stage 2 report, the preferred options will be modified or adopted and, Stage 3, the amended Plan will be prepared for adoption by the Regional Board and approval by the Minister of the Environment.

Appendices

- Appendix A: RDN Waste Generation Projections, RDN Staff Memorandum by M. Larson to L. Gardner, March 3, 2015.

- Appendix B: Stage 1: Existing System Report, Prepared for RDN by Maura Walker & Associates, December, 2013.
- Appendix C: Level of Service Matrix