



REPORT

# 2018 SOLID WASTE MANAGEMENT PLAN

PREPARED FOR  
REGIONAL DISTRICT OF BULKLEY-NECHAKO

APRIL 2018  
ISSUED FOR REVIEW

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## APPENDIX SECTIONS

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### APPENDICES

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- Appendix B SWMP Technical Memoranda
- Appendix C Regional Solid Waste Plan Monitoring Working Group Draft Terms of Reference
- Appendix D Plan Dispute Resolution Procedures

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## ACRONYMS & ABBREVIATIONS

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Acronyms/Abbreviations	Definition
BC	British Columbia
C&D	Construction and Demolition
CBSM	Community-based Social Marketing
EPR	Extended Producer Responsibility
FTE	Full Time Equivalent
HHW	Household Hazardous Waste
ICI	Industrial Commercial Institutional
OCC	Old Corrugated Cardboard
RDBN	Regional District of Bulkley-Nechako
RSWAC	Regional Solid Waste Advisory Committee
SWMP	Solid Waste Management Plan

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## LIMITATIONS OF REPORT

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## 1.0 INTRODUCTION

In British Columbia (BC), regional districts develop solid waste management plans (SWMPs) under the provincial Environmental Management Act. SWMPs are long term visions of how each regional district would like to manage its solid waste in accordance with the pollution prevention hierarchy. These plans are renewed on a 10-year cycle to ensure that they reflect the current needs of the regional district as well as current market conditions, technologies and regulations.

In 2017, the Regional District of Bulkley-Nechako (RDBN) initiated a renewal of its 1996 SWMP to set waste management principles, targets and strategies for the next ten years. The SWMP review process considered existing solid waste management policies and programs; identified and evaluated options for reduction, diversion and residual management; and addressed financial implications including staff requirements and cost recovery.

This draft document represents an update of the RDBN’s 1996 SWMP and once approved by the Province (along with any approval conditions), becomes a regulatory document for solid waste management and serves to guide the solid waste management related activities and policy development in the RDBN. In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of sites and facilities that make up the region’s waste management system.

### 1.1 Guiding Principles

A SWMP provides regional districts – and their residents and businesses – clear direction on how they will achieve their solid waste goals. The province has provided guiding principles to follow in the development of SWMP as presented in Table 1-1.

**Table 1-1: Provincial Guiding Principles**

No.	Provincial Guiding Principles
1	Promote zero waste approaches and support a circular economy.
2	Promote the first 3 Rs (reduce, reuse and recycle).
3	Maximize beneficial use of waste materials and manage residuals appropriately.
4	Support polluter and user-pay approaches and manage incentives to maximize behaviour outcomes.
5	Prevent organics and recyclables from going into the garbage wherever practical.
6	Collaborate with other regional districts wherever practical.
7	Develop collaborative partnerships with interested parties to achieve regional targets set in plans.
8	Level the playing field within regions for private and public solid waste management facilities.

The Regional Solid Waste Advisory Committee (RSWAC), was established by the RDBN Board to review the existing SWMP and provide input from a stakeholder and community perspective, reviewed these guiding principles and modified them as described below based on priority.



## **1. Promote the first 3 Rs (reduce, reuse and recycle).**

Elevate the importance of waste prevention by prioritizing programming and provision of services for the first 3 Rs in the 5 R pollution prevention hierarchy. Implement programs and services that consider provincial and regional targets for waste reduction and environmental protection. Encourage investments in technology and infrastructure, and ensure they occur as high up on the hierarchy as possible.

## **2. Prevent organics and recyclables from going into the garbage wherever practical.**

Maintaining a system to prevent organics and recyclables from going into the garbage will provide clean feedstock of greater economic value as well as a potential end product use to the recycling industry, while reinforcing behaviour to reduce, reuse and recycle. Innovation in separation solutions, establishment and enforcement of disposal restrictions or other creative means will influence this approach.

## **3. Level the playing field within and between regions to support equitable access to waste management and diversion opportunities throughout the province.**

Solid waste management facilities within a region should offer a similar level of service wherever practical. A consistent set of criteria should be used to evaluate the programs available at regional facilities. The region should advocate for equitable access to provincially mandated programs to ensure that rural and northern communities are receiving equivalent benefit from available programs.

## **4. Promote zero waste approaches and support a circular economy.**

Encourage a shift in thinking from waste as a residual requiring disposal, to waste as a resource that can be utilized in closed-loop systems. Zero waste approaches aim to minimize waste generation and enable the sustainable use and reuse of products and materials. At the local level, look to remove barriers or encourage opportunities that will contribute to towards the establishment of a circular economy.

## **5. Develop collaborative partnerships with interested parties to achieve regional targets set in plans.**

Strengthen partnerships with interested parties to achieve regional targets. All waste and recycling sector service providers, associations, and environmental organizations, product stewardship producers and agencies, and waste generators are key interested parties in achieving these targets. Cooperative efforts will optimize successful outcomes. Encourage a marketplace that will complement stewardship programs and drive private sector innovation and investment towards achievement of targets.

## **6. Collaborate with other regional districts wherever practical.**

Collaboration on many aspects of solid waste management (e.g., to access facilities and markets, share campaigns and programs) will support the most efficient and effective overall municipal solid waste system. Partner with neighbouring regions to advocate to senior levels of on common issues.

## **7. Maximize beneficial use of waste materials and manage residuals appropriately.**

Technology, best practices and infrastructure investments should continue to develop to recover any remaining materials and energy from the waste stream, and to manage residuals for disposal.

**8. Support polluter and user-pay approaches and manage incentives to maximize behaviour outcomes wherever practical.**

Producer and user responsibility for the management of products can be supported through the provision of market-based incentives, disposal restrictions on industry-stewarded products, zoning to support collection facilities, and support for reuse and remanufacturing businesses. Education and behavior change strategies aimed at consumers and businesses will help foster further waste reduction, reuse and recycling. For example, user fees can be managed as incentives to increase waste reduction and diversion.

**1.2 Pollution Prevention Hierarchy and Targets**

This plan adopts the 5 R pollution prevention hierarchy as illustrated on Figure 1-1.



**Figure 1-1: The Pollution Prevention Hierarchy**

Source: (BC Ministry of Environment and Climate Change Strategy<sup>1</sup>)

The SWMP’s proposed goals, strategies and actions are laid out in Section 4.0 and are presented in the order of the hierarchy: reduce, reuse, recycle, and residual waste management. Section 5.0 provides information on plan monitoring while Section 6.0 addresses financing and cost recovery and Section 7.0 provides the anticipated implementation schedule.

The implementation of the proposed strategies and actions over a 10-year timeframe is expected to reduce the annual per person disposal rate from 600 kg per capita in 2016 to 500 kg per capita over the next 10 years, by 2028, through a phased approach. Phasing implementation will optimize existing and implement new waste reduction and diversion programs with the capacity to reduce disposal per capita. This disposal rate target will contribute to meeting the BC Ministry of Environment and Climate Change Strategy’s (Ministry) target provincial average disposal rate of 350 kg per capita per year by 2020.

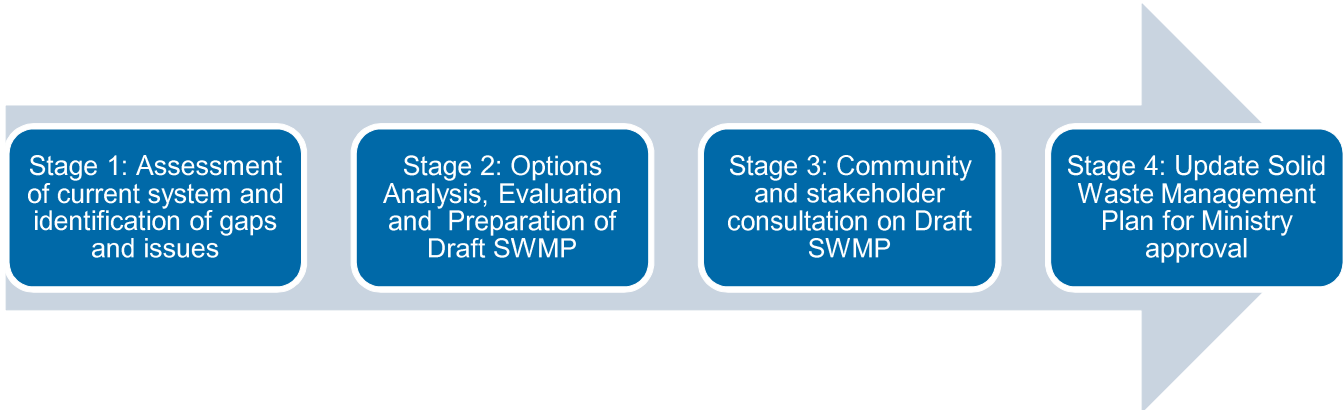
<sup>1</sup> Ministry of Environment Zero Waste & the Circular Economy (2017) <http://www2.gov.bc.ca/gov/content/environment/waste-management/zero-waste>

### 1.3 Plan Update Process

The process to review and update the SWMP was conducted in four stages as illustrated on Figure 1-2. During Stage One, the current system for managing municipal solid waste in the RDBN was assessed to identify potential gaps and opportunities. The findings of Stage One were presented in the Current Solid Waste Management System Report. Stage One also included establishment of the RSWAC which has provided input throughout the planning process.

Stage Two comprised analysis, evaluation and the development of a Draft SWMP. The options related to additional reduction and diversion as well as residual management were presented to the RSWAC in meetings and in two technical memoranda. A series of options were selected by the RSWAC for further analysis to determine costs, financial implications, and policy requirements. The RSWAC provided input on the ultimate inclusion of items within the Draft SWMP, which was approved for consultation by the RDBN Board of Directors.

In Stage Three the RDBN is consulting the public, municipal and First Nations partners, and key stakeholders to collect feedback on all elements of the Draft SWMP. Stage Four is the final update of the SWMP for submission to the Ministry for final approval.



**Figure 1-2: Plan Update Process**

Several reports, as listed below, were prepared by the consultants to assist the RWSAC with their deliberations. These documents are available on the solid waste management page of the RDBN’s website<sup>2</sup>. These reports, as seen in Appendix B, include:

- Current Solid Waste System Report;
- Technical Memorandum 1: Disposal Options;
- Technical Memorandum 2: Diversion Options; and
- Technical Memorandum 3: Options Costing and Financial Implications.

<sup>2</sup> Regional District of Bulkley-Nechako SWMP Site 2017  
<https://www.rdbn.bc.ca/environmentalservices/solid-waste-management/waste-watchers>

## 2.0 PLAN AREA

The SWMP applies to the entire RDBN region and includes the Town of Smithers, the Districts of Vanderhoof, Fort St. James and Houston, the Villages of Fraser Lake, Burns Lake, Granisle, Telkwa, the unincorporated community of Fort Fraser, and Electoral Areas A (Smithers Rural), B (Burns Lake Rural), C (Fort St. James Rural), D (Fraser Lake Rural), E (Francois/Ootsa Rural), F (Vanderhoof Rural) and G (Houston Rural), as shown on Figure 2-1.

The RDBN is located in central BC. It is bounded by the Regional District of Fraser-Fort George to the east, the Cariboo Regional District to the south, the Regional District of Kitimat-Stikine to the west and Stikine and Peace River Regional Districts to the north.

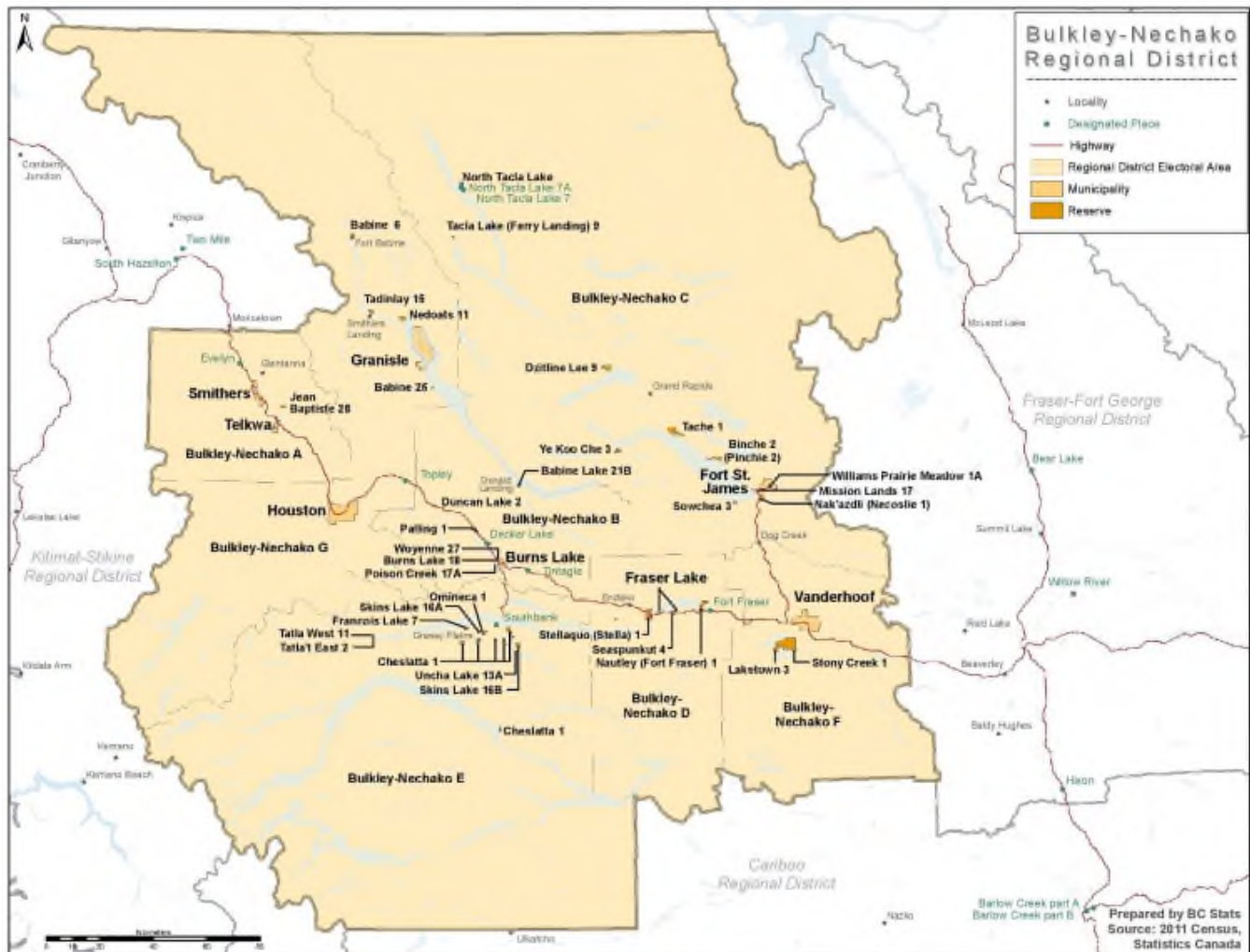


Figure 2-1: RDBN Plan Area<sup>3</sup>

<sup>3</sup> BC Statistics Census Boundary Maps 2017

<https://www2.gov.bc.ca/gov/content/data/geographic-data-services/land-use/administrative-boundaries/census-boundaries>

## 2.1 Population and Employment

The RDBN has seen an overall decrease in population since the 1996 SWMP was developed, as presented in Table 2-1. Data from Statistics Canada indicates that the Region's population has decreased slightly from 41,642 in 1996 to 37,896 in 2016, an average decrease of approximately 0.45% per year. This population decrease was most significant in rural areas.

**Table 2-1: Regional Demographic Information**

Demographic Measure	Reported by Statistics Canada <sup>4</sup>
Population, 2016	37,896
Population, 2011	39,208
Population, 2006	38,243
Population Change, 2011 to 2016	-3.3%
Population Change, 2006 to 2016	0.9%
Total private dwellings, 2016	17,564
Private dwellings occupied by usual residents, 2016	15,101

The population of RDBN is spread over the region's 73,000 km<sup>2</sup>, with the majority of the population clustered along the Highway 16 corridor. The region's largest population centres are the Town of Smithers in the West and District of Vanderhoof in the East.

The Statistics Canada data does not include the First Nations population which was estimated at 2,826 based on service agreements in the 2016 census. Table 2-2 summarizes community and electoral area populations based on 2016 census data from Statistics Canada and 2017 First Nations populations living on reserve based on RDBN service agreements which estimate First Nations population.

**Table 2-2: Populations of Regional Electoral Areas and Municipalities**

Community	Population 2016 <sup>5</sup>	Estimated First Nations Population <sup>6</sup>
Town of Smithers	5,401	-
District of Vanderhoof	4,439	-
District of Houston	2,993	-
Village of Burns Lake	1,779	-
District of Fort St. James	1,598	-
Village of Telkwa	1,327	-
Village of Fraser Lake	988	-
Village of Granisle	303	-
Unincorporated Community of Fort Fraser	275	-
Electoral Area A (Smithers Rural)	5,256	-
Electoral Area B (Burns Lake Rural)	1,938	509
Electoral Area C (Fort St. James Rural)	1,415	1,435
Electoral Area D (Fraser Lake Rural)	1,472	409
Electoral Area E (Francois/Ootsa Rural)	1,593	142
Electoral Area F (Vanderhoof Rural)	3,665	331
Electoral Area G (Houston Rural)	903	-
Subtotal	35,345	2,826
<b>Total</b>		<b>38,171</b>

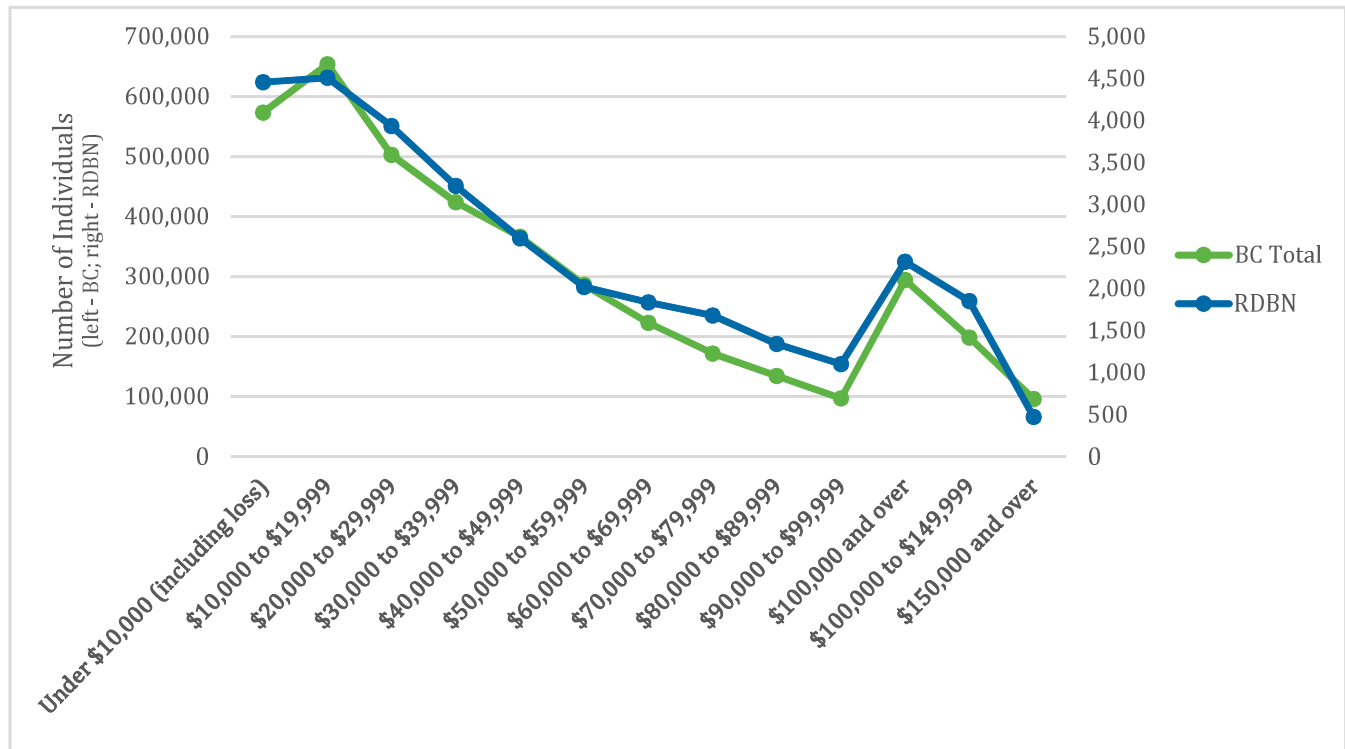
<sup>4</sup> Statistics Canada 2016 Census Profile – RDBN <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E>

<sup>5</sup> Population estimates based on Statistics Canada 2016 Census Profiles <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E&TABID=1>

<sup>6</sup> First Nations populations estimated based on existing service agreements with the RDBN.

## 2.2 Economic and Housing Data

RDBN has a varied economy located within 8 unique municipalities, 7 electoral areas, and 13 First Nations. Income distribution in the region is similar to the province as a whole with proportionally more middle and higher income individuals than average. Manufacturing and resource management (e.g, agriculture/forestry/fishing/hunting) were the leading sources of employment in 2011; both of these industries employed a greater proportion of the labour force than anywhere else in Northern BC.



**Figure 2-2: Individual Income (Before Tax) in 2015 (Statistics Canada 2016)**

The most recent census data indicates that in 2016, there were 15,105 occupied private dwellings in the RDBN. For the purposes of the solid waste management planning, over 95% of the region’s housing stock is considered to be single-family with only 6% of dwellings considered to be multi-family (apartments). This distinction is important with respect to access to curbside collection services, which is discussed in Section 3.2.1.

**Table 2-3: Occupied Dwelling Types in the RDBN (Statistics Canada 2016)**

Occupied Dwelling Type	Number	Proportion
Single Detached House	11,745	78%
Semi-Detached, Row House, Duplex	935	6%
Apartments	935	6%
Movable Dwelling (mobile homes and other movable dwellings)	1,490	10%
<b>Total</b>	<b>15,105</b>	<b>100%</b>

\* Based on Statistics Canada 2016 Census Profiles, which exclude First Nations populations.

## 3.0 SOLID WASTE MANAGEMENT SYSTEM IN THE RDBN

This section provides a summary of the implementation status of the 1996 SWMP as well as an overview of the current solid waste management system, including data on the quantity and composition of solid waste disposed. This information was used to determine the options available to the RDBN to improve the existing system and is the baseline from which the 2018 SWMP was developed.

### 3.1 Plan History and Implementation Status

The RDBN's original 1996 SWMP transformed solid waste management in RDBN from many small disposal sites to two sub-regional landfills and one small modified landfill supported by a series of local transfer stations. In 2008, the RDBN commissioned a Stage 1 report to assess the solid waste management system. At that time they decided to continue work on implementing the original SWMP instead of completing Stage 2 and Stage 3 of a full SWMP update. The completion of key items from the 1996 SWMP were in progress and no additional options could be accommodated by available resources.

The overall goal of the 1996 SWMP is to provide for the most environmentally safe and economically feasible method of managing solid waste in the region. The 1996 SWMP developed the following objectives to meet this goal:

- That the weight of solid waste per capita requiring disposal be reduced (using the volumes in 1990 as our standard) by using the most environmentally and economically efficient methods acceptable to the taxpayer and that the suggested reduction of 30% by 1998 and 50% by the year 2000 be used as a method of judging our efforts.
- That this reduction be achieved through sequential strategies of reduction, reuse, recycling and composting.
- That the SWMP identify problems with the present disposal system and supply possible solutions.
- That the SWMP be funded through an appropriate mix of user-pay and taxation mechanisms.

A number of the strategies and policies identified in the 1996 SWMP have been completed or are currently being carried out. Table 3-1 summarizes the strategies and policies identified in the 1996 SWMP and implementation progress at the time of writing.

**Table 3-1: Summary of 1996 SWMP Completion Status**

Strategy	Status	Notes
<b>Reduction and Reuse Programs – 12.5% Diversion Anticipated</b>		
<i>Objective: To reduce and reuse the amount of waste generated as much as is practically possible.</i>		
Education/media campaign.	Partially complete	Some education and outreach programs are in place. All major solid waste facilities are listed on the RDBN website and regional recycling brochures.
Tipping fees and variable rate charges.	Cancelled	Tipping fee changes have been considered but not changed. RDBN staff completed studies in 1999 and 2004 to assess options for tipping fees. Implementation of tipping fees was discussed in Inter-Municipal, RDBN Board, and APC meetings in 1998 and 1999. The RDBN Board has deferred implementation of tipping fees for municipal solid waste but has approved fees for specific materials.  Materials with tipping fees include special materials (construction and demolition), specified materials (specified risk materials, asbestos, appliances containing ozone depleting substances), and contaminated soils.
Tag-bag charges.	Cancelled	RDBN does not charge for residential waste dropped-off at regional facilities. Bag tagging was considered as an option in the 1999 User-Pay Implementation System study completed by RDBN staff.  Some municipalities (Burns Lake, Telkwa, and Smithers) have instituted variable rates for garbage collection and limits on disposal where cart-based collection is in place.
Waste reduction plans/waste audit manuals.	Not complete	No audit guides have been provided by RDBN to institutions or businesses to support diversion.
Reuse facilities at landfills and transfer stations.	Complete	Reuse sheds have been developed at all public landfills and transfer stations.
Political initiatives.	Complete	RDBN has contributed to lobbying and communication with senior levels of government.
Community group initiatives.	Complete	RDBN has provided information and grants to non-profit groups to promote waste reduction.
<b>Recycling – 8% to 14% Diversion Anticipated</b>		
<i>Objective: To support recycling as a viable method of reducing solid waste going to landfills provided that it is economically viable.</i>		
Residential recycling (sub-regional or region-wide).	Complete	Limited recyclable materials are accepted at RDBN-operated public solid waste facilities (landfill and transfer stations) including metals, propane tanks, and limited household recycling (mixed paper, mixed containers). The compactor units envisioned for drop-off depots have not been installed.  Curbside recycling for the residential sector is available in Smithers, Telkwa, and Fort St. James.  Private depots exist in most communities supported by extended producer responsibility (EPR) organizations (Encorp, Product Care, Recycle BC, etc.).
Commercial recycling.	Complete	Cardboard recycling was stimulated through the 2016 cardboard ban from landfills and transfer station tipping floors. RDBN provides commercial recycling bins at a number of locations in the region.
Ferrous metals and white goods recycling.	Complete	RDBN stockpiles these materials separately from the garbage stream for future recycling at all solid waste facilities it operates.
<b>Composting – 1% Diversion Anticipated</b>		
<i>Objective: To encourage composting as a method for waste reduction.</i>		
Backyard composting.	Complete	RDBN sells subsidized backyard composters to the community.
Centralized yard waste composting.	Complete	RDBN is working with local community gardens to support composting.  Yard waste is collected for composting at all transfer stations. Food waste is not targeted as key material stream within this program.

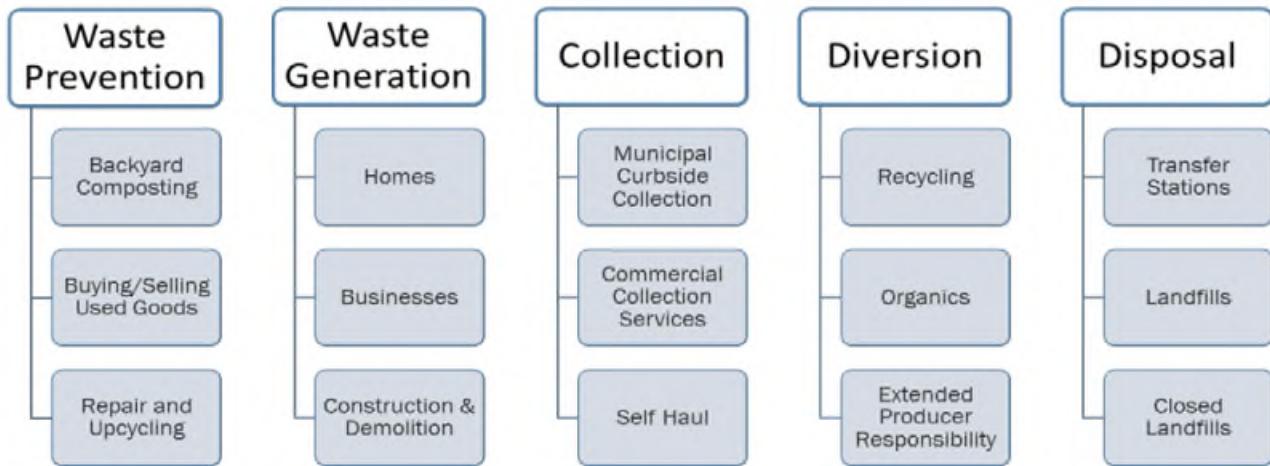


Strategy	Status	Notes
<b>Residuals Management</b>		
<i>Objective: To operate all regional landfills in accordance with BC Environment's Landfill Criteria for Municipal Solid Waste, June 1993.</i>		
Closure of landfills** and replacement with transfer stations.	Partially complete	Closure operations have been completed but must be reviewed by the Ministry of Environment and Climate Change Strategy (Ministry). The RDBN will work with the Ministry to assess abandonment of historical disposal site permits.
Operation of two sub-regional engineered landfills and Manson Creek Landfill to meet Landfill Criteria.	Complete	Operations are underway at the RDBN's three remaining landfills.
Development of a transfer station network to replace closed landfills.	Complete	Transfer stations have been developed on many historical landfill locations.
<b>Problem Wastes</b>		
<i>Objective: To manage all problem wastes in an environmentally safe yet economic manner.</i>		
Household hazardous waste (HHW) program support and lobbying.	Partially Complete	Regeneration (Product Care Association) currently manages most typical HHW products and supports several depots in the region.
Investigate alternative methods for managing wood waste.	Deferred	RDBN has considered alternative methods but has not identified any long-term economically feasibility management technique.
Accept animal carcasses at landfill sites.	Complete	Procedures are in place to manage landfill disposal of specified risk material from local slaughter houses and hunting. A fee is in place for disposing of animal carcasses from outside of the region.
Ban tires for landfill sites and transfer stations.	Complete	Tires are not disposed in the landfill or accepted at transfer stations. Local tire shops are responsible for collecting and recycling tires.
<b>Financing</b>		
Financing the system through user-pay (70%) and taxation (30%).	Cancelled	Currently the majority of the system is financed through taxation.
<b>Administration</b>		
<i>Objective: To coordinate policies of this plan with other interested stakeholders.</i>		
RDBN is responsible for reduction, reuse, recycling, and composting, waste transfer and disposal.	N/A	RDBN manages solid waste in the region and provides oversight of recycling, which is offered by a mixture of public and private entities.
A permanent Plan Monitoring Advisory Committee should ensure that the plan is implemented.	Partially Complete	The board's solid waste committee monitored progress on the plan initially but the committee was not maintained long term.
The plan should be subject to annual reviews and a major review every five years.	Partially Complete	Internal annual reviews of the plan have occurred but only one addendum was officially completed. A major review has not occurred since plan creation in 1996.
RDBN will encourage communication among all stakeholders affected by the plans.	Partially Complete	Some amount of communication occurs between RDBN and stakeholders but no consistent forum has been created to foster regular stakeholder communication.
Staffing may include a waste management coordinator/planner and a field services supervisor.	Complete	Historically staffing levels in the Environmental Services department have included sufficient resources to support ongoing operations.

\*\* Inactive landfills closed following the 1996 SWMP include Vanderhoof Landfill, Fort St. James Landfill (Photo 2-1 and Photo 2-2), Fraser Lake Landfill, Fort Fraser Landfill, Ootsa Lake Landfill, Burns Lake Landfill, Granisle Landfill, Smithers Landing Landfill, Old Smithers Landfill, Smithers/Telkwa Landfill, Endako Landfill, Cluculz Lake Landfill, Francois Lake, Grassy Plains Landfill, Southbank Landfill, Tatalrose Landfill, Topley Landing Landfill, Topley Landfill, Perow Landfill, Palling Landfill and Houston Landfill.

## 3.2 Current Solid Waste Management System

Figure 3-1 outlines the key components of the RDBN current system for managing municipal solid waste, from those initiatives that prevent the creation of waste to collection to diversion, and then finally disposal. Waste generators are also included in this figure as a key component of the system since these are the sources of the solid waste that must be managed through collection, diversion and disposal.



**Figure 3-1: Components of the Current Solid Waste Management System**

### 3.2.1 Collection Services

As indicated on Figure 3-1, residential, business and construction demolition waste is collected by municipalities, private commercial collection haulers or self-hauled to public and private diversion and disposal facilities in the RDBN. Due to the distance between communities, waste management collection services and facilities can be divided into distinct waste sheds. These waste sheds can be delineated by the waste generating area, such as the Town of Smithers and the adjacent rural community such as Electoral A (Smithers Rural) as well as the facility to which waste is delivered such as the Smithers Telkwa Transfer Station.

Table 3-2 presents the availability of curbside collection programs in each municipality and electoral area in RDBN as well as the adjacent transfer station or disposal facility. Most municipalities in the region provide curbside collection of garbage with some providing curbside recycling through Recycle BC. Private haulers offer curbside collection by subscription in many areas where it is not offered by municipal governments however the majority of rural electoral area residents do not have curbside collection of garbage or recyclables and must self-haul their waste to the nearest transfer station or private recycling facility if available.

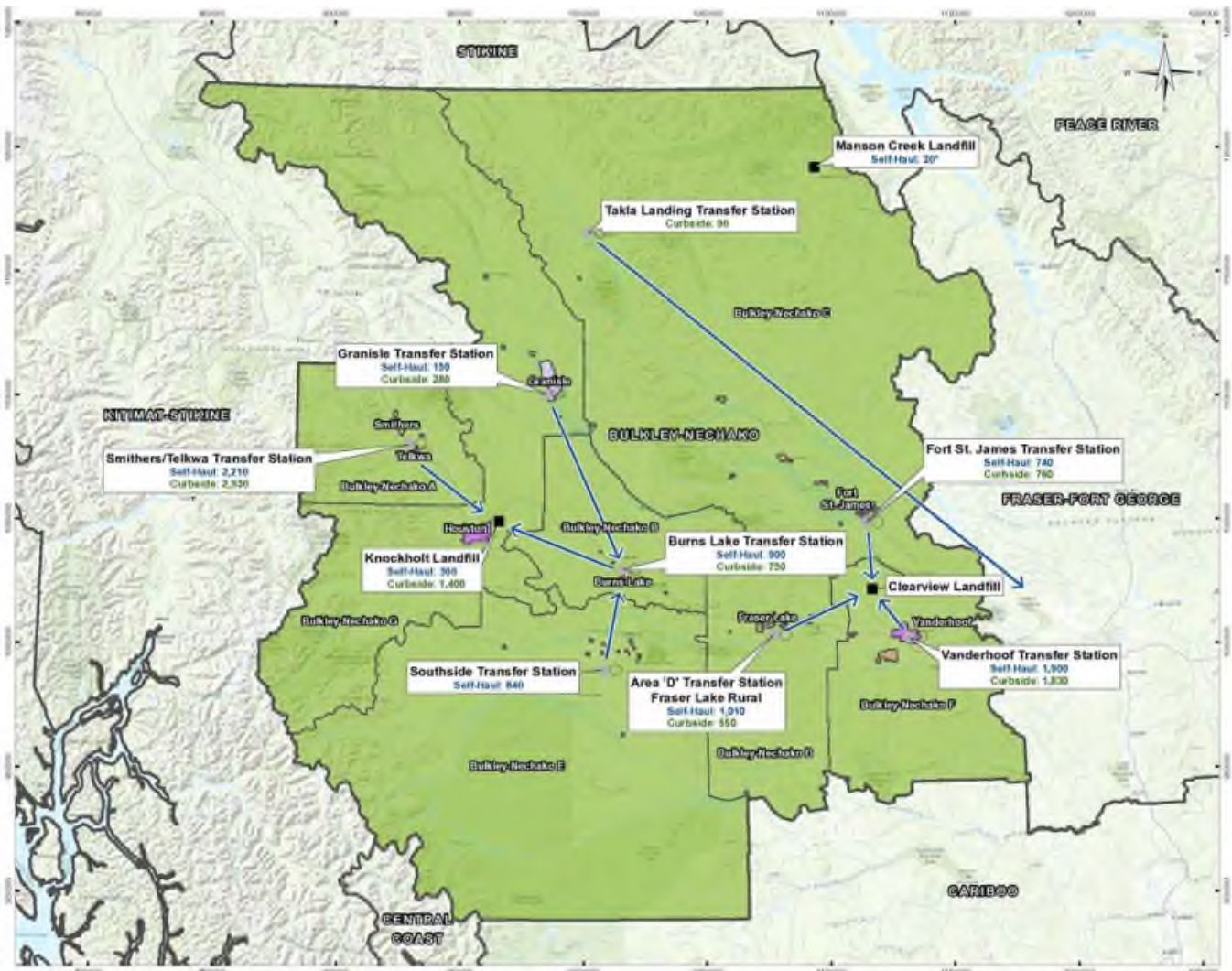
Municipally and privately collected garbage is unloaded at the local landfill or transfer station for no fee. Material collected curbside is taken to transfer stations where it is consolidated into trailers with the garbage dropped off by residents, and hauled to one of the RDBN's sub-regional landfill facilities: Knockholt and Clearview Landfills.

**Table 3-2: Collection Services Available by Municipality and Electoral Area**

Community Waste Shed	Total Households (StatsCan 2016)	Residential Curbside Collection Availability	
		Garbage	Recycling
<b>Smithers-Telkwa Waste Shed</b>			
Town of Smithers	2,389	Curbside	Curbside
Electoral Area A (Smithers Rural)	2,213	Self-Haul	Self-Haul
Village of Telkwa	539	Curbside	Curbside
Smithers/Telkwa Transfer Station			
<b>Knockholt Waste Shed</b>			
District of Houston	1,402	Curbside	Self-Haul
Electoral Area G (Houston Rural)	450	Self-Haul	Self-Haul
Knockholt Landfill			
<b>Granisle Waste Shed</b>			
Village of Granisle	284	Curbside	Self-Haul
Granisle Transfer Station			
<b>Takla Landing Waste Shed</b>			
Takla Landing	93	Curbside	Self-Haul
Takla Landfill Transfer Station			
<b>Burns Lake Waste Shed</b>			
Village of Burns Lake	748	Curbside	Self-Haul
Electoral Area B (Burns Lake Rural)	896	Self-Haul	Self-Haul
Burns Lake Transfer Station			
<b>Southside Waste Shed</b>			
Electoral Area E (Francois/Ootsa Rural)	840	Self-Haul	Self-Haul
Southside Transfer Station			
<b>Fraser Lake Waste Shed</b>			
Village of Fraser Lake	551	Curbside	Self-Haul
Fort Fraser	158	Self-Haul	Self-Haul
Electoral Area D (Fraser Lake Rural)	854	Self-Haul	Self-Haul
Area D Transfer Station			
<b>Fort St. James Waste Shed</b>			
District of Fort St. James	761	Curbside	Curbside
Electoral Area C (Fort St. James Rural)	854	Self-Haul	Self-Haul
Fort St. James Transfer Station			
<b>Vanderhoof Waste Shed</b>			
District of Vanderhoof	1,831	Curbside	Self-Haul
Electoral Area F (Vanderhoof Rural)	1,902	Self-Haul	Self-Haul
Vanderhoof Transfer Station			

### 3.2.2 Facilities

The solid waste management system in RDBN includes a number of public and private facilities. Figure 3-2 shows all facilities managed by RDBN. RDBN operates the majority of solid waste transfer and disposal facilities in the region. Many of the RDBN facilities include diversion and reuse services, including yard waste composting, scrap metals recycling, reuse sheds, and some household recyclable collections. The Takla First Nation also operates a small transfer station in the community of Takla Landing that currently only accepts garbage for transfer to landfill. A number of private recycling facilities are operating in the region with varying levels of financial support from RDBN and EPR organizations. With the exception of the Manson Creek Landfill, all solid waste transfer and disposal facilities are staffed during operating hours.



**Figure 3-2: Summary of Solid Waste Facilities and Waste Sheds**

The RDBN operates seven transfer stations in the region that are used by both residents and private haulers. Garbage is consolidated and transported for disposal at Knockholt or Clearview Landfill. In most instances, garbage is hauled directly from the transfer station to one of the region's two sub-regional landfills (Knockholt and Clearview sub-regional landfills). However, in order to increase transfer efficiency, garbage from small transfer stations is hauled to larger transfer facilities for consolidation and long-haul transfer to landfill (e.g., garbage from Southside

Transfer Station and Granisle Transfer Station is hauled to Burns Lake Transfer Station and subsequently to Knockholt Landfill).

The Region operates two engineered sub-regional landfills. A third small landfill (Manson Creek) exists in the northwest corner of Area C to serve local populations. RDBN conducts regular environmental monitoring of active and closed landfills to confirm that no contaminants are migrating off site onto adjacent properties.

### 3.3 System Participants

Table 3-3 provides a list of the various organizations that contribute to municipal solid waste management in the RDBN.

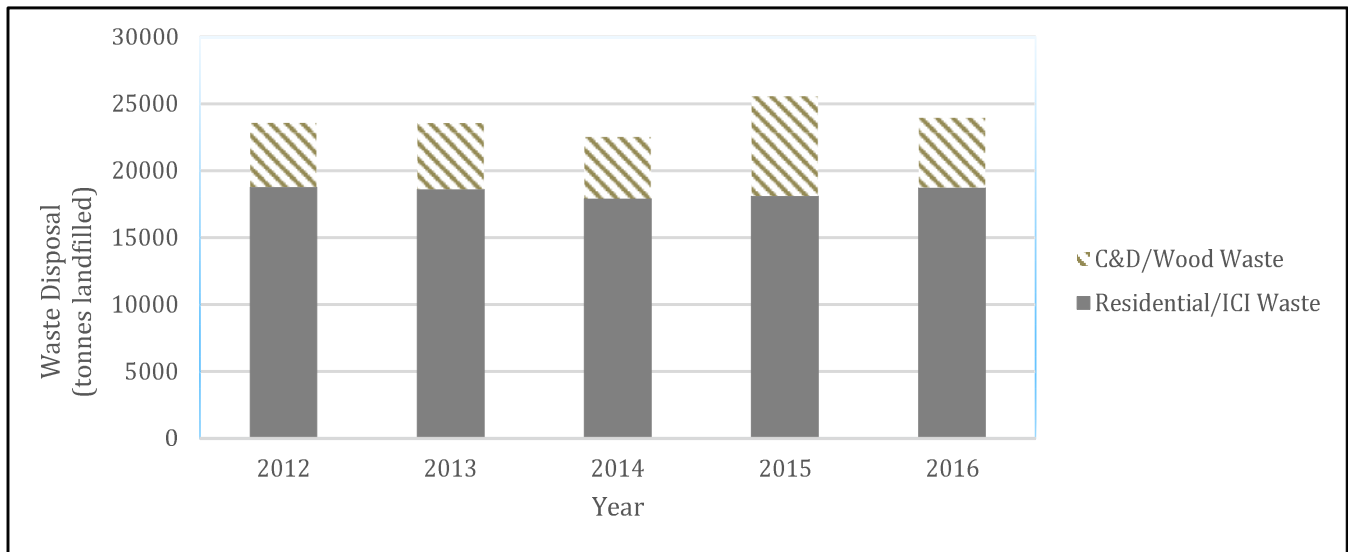
**Table 3-3: Municipal Solid Waste Management Participants**

Who	Roles in Solid Waste Management
Federal Government	<ul style="list-style-type: none"> <li>▪ Regulates waste management facilities under federal jurisdiction.</li> </ul>
Provincial Government	<ul style="list-style-type: none"> <li>▪ Approves SWMPs as regulated through the Environment Management Act.</li> <li>▪ Regulates Product Stewardship programs through the Recycling Regulation.</li> <li>▪ Authorizes discharges to the environment through permits and operational certificates.</li> <li>▪ Responsible for enforcement of Provincial regulations and the conditions set out in discharge permits and operational certificates.</li> <li>▪ Various Ministries have several other regulatory authorities related to waste management.</li> </ul>
RDBN	<ul style="list-style-type: none"> <li>▪ Develops plans to provide big picture oversight of waste management in the region.</li> <li>▪ Owns and operates waste management facilities.</li> <li>▪ Through regional plans and plan implementation (including bylaws), works to meet regional waste disposal goals and targets and ensures that the communities have access to RDBN facilities and services.</li> <li>▪ Collaborates and cooperates with local organizations, businesses and agencies to implement plans and new programs.</li> <li>▪ Ensures that legislative and policy requirements are followed, including monitoring and reporting.</li> <li>▪ Supports the provision of Product Stewardship programs in the RDBN.</li> <li>▪ Provides waste management related education and promotion of programs.</li> </ul>
Product Stewardship Producers and Agencies	<ul style="list-style-type: none"> <li>▪ Ensures reasonable and free consumer access to collection facilities.</li> <li>▪ Collects and processes stewarded products.</li> <li>▪ Coordinates local government delivery as a service provider where applicable.</li> <li>▪ Provides and/or funds education and marketing.</li> <li>▪ Provides deposit refunds to consumers (where applicable).</li> <li>▪ Monitors and reports on key performance indicators such as recovery rates to the Province on a regional district basis (when possible).</li> </ul>
First Nations Communities	<ul style="list-style-type: none"> <li>▪ Provides waste management services to residents and businesses.</li> </ul>
Non-Profit Sector	<ul style="list-style-type: none"> <li>▪ Applies for waste reduction funding through available grants and government support.</li> <li>▪ Engages in and promotes upcycling, reuse, and recycling.</li> </ul>
Residents and Businesses	<ul style="list-style-type: none"> <li>▪ Responsible for carrying out proper waste reduction, recycling and disposal activities.</li> <li>▪ Collaborates and cooperates with local government initiatives.</li> </ul>

## 3.4 System Performance

### 3.4.1 Waste Disposal

Figure 3-3 presents the total annual municipal solid waste disposed in RDBN landfills. Municipal solid waste is made up of refuse from residential and industrial, commercial and institutional (ICI) sources, as well as construction and demolition (C&D)/wood waste generated from construction, demolition, and land clearing projects.<sup>7</sup> The overall quantity of waste disposed over the past five years has been fairly consistent. The most significant variations are the quantities of C&D waste, as shown on Figure 3-3. It is common for C&D waste quantities to vary annually due to varying levels of construction or demolition activities.



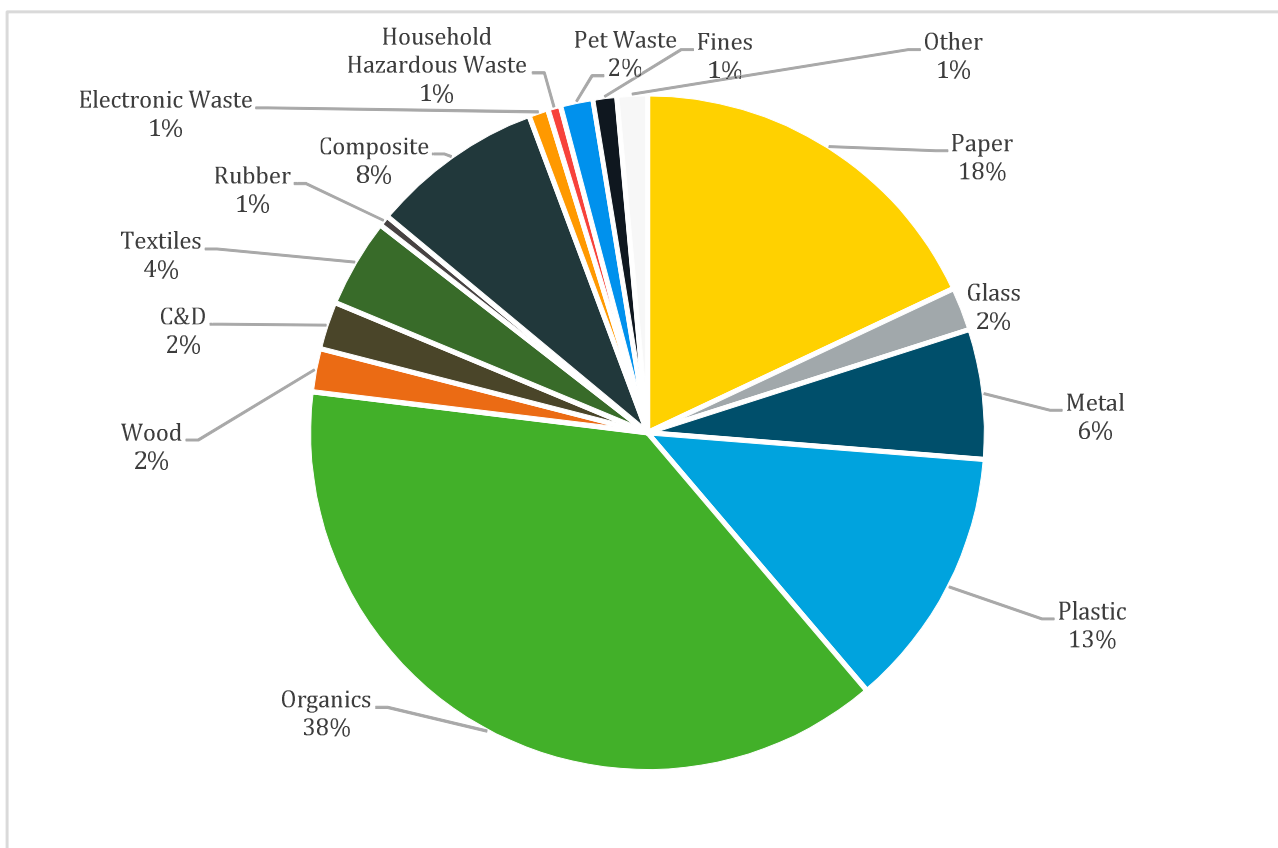
**Figure 3-3: RDBN Waste Disposal (tonnes landfilled) 2012-2016**

In 2016, a total of just over 23,100 tonnes of municipal solid waste was disposed in the region’s three landfills including 8,400 tonnes at the Clearview Sub-regional Landfill, 15,800 tonnes at the Knockholt Sub-regional Landfill, and an estimated 40 tonnes at the Manson Creek Landfill. Based on the Ministry’s municipal solid waste disposal calculator, the 2016 per capita disposal rate in the RDBN was 600 kg per capita. This is higher than the 2016 provincial average disposal rate of roughly 472 kg per capita and above the provincial average target disposal rate of 350 kg per capita per year by 2020.

### 3.4.2 Waste Composition

Figure 3-4 shows the waste composition from a study in 2008 that was adjusted for 2016. The largest (by weight) component of what is landfilled is organic waste (37%), which includes food waste, yard waste and compostable paper products like paper toweling and tissues. The next largest component is paper (20%) such as cardboard, newspaper, office paper and magazines. The third largest is plastic (13%), including plastic containers, film plastic (e.g., bags) and rigid plastic items (chairs, toys, etc.).

<sup>7</sup> RDBN landfills also receive a small volume of Specified Risk Material from deceased cattle (roughly 150 tonnes per year). This type of waste is not considered municipal solid waste and has not been included in the annual solid waste disposal data.



**Figure 3-4: Adjusted 2016 Waste Composition**

### 3.5 Key Issues

Establishing sustainable waste diversion and disposal systems is challenging for regional districts located in northern BC. Harsh climates, low population density, long distance to recycling markets and low cost and abundant disposal capacity often hinder effective waste diversion efforts.

Within this context, the planning process identified the following key issues to be addressed in the updated SWMP.

1. Although the RDBN supports a range of reduction and reuse initiatives, there are currently no programs aimed at reducing the generation of food waste.
2. Only 50% of households in the RDBN receive curbside garbage collection and even less have access to curbside recycling. This limited access to packaging and paper recycling programs (Recycle BC) should be expanded to maximize the financial and logistical support offered under this provincial EPR program.
3. Recycle BC only deals with residential packaging and paper recycling programs. The ICI sector also produces these materials and diversion needs to be supported in this sector.
4. Roughly 38% of the current waste stream is compostable organics. Although organics diversion is currently occurring on a small scale at all of the region's public access facilities, opportunities exist to expand the amount and type of materials processed through small composting sites.

5. Wood waste is collected separately at all facilities and there is an opportunity to divert this and other construction demolition waste materials if markets are available.
6. EPR requirements have expanded since the original SWMP. The Ministry is likely to continue to add materials to the EPR system. As products are added, services in the region could expand to take advantage of additional support available. However, there is currently no framework for making decisions regarding participation in EPR programs.
7. There is currently limited public education and communication on proper handling and collection locations for HHW.
8. Although agricultural plastics are not considered to be municipal solid waste under the Environmental Management Act and therefore outside the scope of the SWMP, diversion and disposal of this material is a significant issue in the RDBN due to the additional handling costs and lack of alternatives to disposal.
9. No staff resources are currently focused on supporting and implementing residential and ICI waste reduction programs as well as programing and behavior change resources to support the first levels of the pollution prevention hierarchy including rethink, reduce and reuse initiatives.
10. The solid waste management system in the RDBN is primarily funded through taxation versus tipping fees which minimizes financial incentive for residents, business, and most municipalities to dispose of materials rather than recycle them. Implementing the options and actions identified in the SWMP will result in increases to operating costs which will need to be recovered through increases in taxation or tipping fees. Reassessing the feasibility of implementing tipping fees at all facilities may better support the solid waste management system, diversify revenue sources, and support the RDBN's strategic priorities.
11. The region's disposal facilities operate based on Operational Certificates issued prior to the most recent landfill guidelines. Future updates to Operational Certificates and the increasing size of landfills may require additions and improvements to environmental controls and protection.
12. Expansion of oil and gas and mining industries create an influx of workers all of whom generate a disproportionate amount of waste compared to their relative tax contribution in the region. The industries and camps that support them are not paying their "fair share" of the RDBN's costs for solid waste management under current financial policies.

## 4.0 GOALS AND STRATEGIES

The following goals, strategies and actions are recommended to address the region's key issues and work toward the disposal rate target of 500 kg per person. The strategies are divided into two sections: reduce, reuse and recycle which were addressed in detail in Technical Memorandum No. 2 Diversion Options and Technical Memorandum No. 3 Options Costing and Financial Implications; and residual management which were addressed in detail in Technical Memorandum No. 1 Disposal Options and Technical Memorandum No. 3.

For each strategy, a table is included that describes the costs associated with the proposed program. While the RDBN is ultimately responsible for these costs, they may be recovered through implementation of tipping fees, or increased taxation as further addressed in Section 4.3 and Section 6.0.



## 4.1 Reduce, Reuse, and Recycle Strategies

### 4.1.1 Strategy 1: Increase Reduction and Reuse

Issue: Although the RDBN supports a range of reduction and reuse initiatives, there are currently no programs aimed at reducing the generation of food waste.

- A. Promote ideas from “Love Food Hate Waste”-style campaigns in regional promotion and education.
- B. Encourage and promote food donation for businesses and restaurants to food banks and farms.
- C. Continue to promote existing programs at public access facilities and operated by private sector and non-profit organizations in the region.

Actions	Estimated Capital Cost	Estimated Operating Cost
Promote ideas from “Love Food Hate Waste”-style campaigns in regional promotion and education. Encourage and promote food donation for businesses and restaurants to food banks and farms.	-	0.1 FTE <sup>1</sup> (New)

<sup>1</sup> Full time equivalent (FTE)

### 4.1.2 Strategy 2: Expand Access to Residential Recycling

Issue: Only 50% of households in the RDBN receive curbside garbage collection and even fewer have access to curbside recycling. Access to packaging and paper recycling programs (through Recycle BC) should be expanded to maximize the financial and logistical support offered under this provincial EPR program by increasing the access to services where it is not being provided by existing operators.

- A. Lobby the Province to reduce or eliminate the proposed Recycle BC population cut-off for curbside service.
- B. Host Recycle BC depots at all RDBN public drop-off facilities (where practical). Provide infrastructure and staff as necessary to meet the standards set out in agreements with Recycle BC.
- C. Assess the need for consolidation capacity in the region and provide infrastructure if required based on the tonnage of materials collected, capacity of existing consolidation services, and business analysis for operations.
- D. Support the expansion of multi-family recycling by encouraging expansion and communication by collection providers (where practical).
- E. Where in line with the region’s goals, provide a standard level of support for local non-profit recycling organizations to deliver public education, public communication, recycling coordination and local reduction, reuse, and recycling initiatives at a rate of \$2.50 per serviced population.

Actions	Estimated Capital Cost	Estimated Operating Cost
Lobby the Province to reduce the proposed Recycle BC population cut-off for curbside service.	-	Current Staff
Host Recycle BC depots at all RDBN public drop-off facilities (where practical).	System (at full depot implementation – year three)	Subsidy to local organizations for communications and education: ▪ -\$212,200/year
	Smithers-Telkwa Transfer Station: ▪ \$30,000 (previously purchased) (year one)	Full-time staff for re-use shed and Recycle BC depot: ▪ \$51,250/year (additional)
	Granisle Transfer Station: ▪ \$15,000 (year three)	Recycling Coordinator to support education and resident engagement: ▪ \$15,000/year
	Burns Lake Transfer Station: ▪ \$30,000 (year two)	Full-time staff for re-use shed and Recycle BC depot: ▪ \$51,250/year (additional)
	Fort St. James Transfer Station: ▪ \$15,000 (year two)	Part-time staff to supervise depot: ▪ \$30,000/year (additional)
	Area D Transfer Station – Fraser Lake Rural: ▪ \$15,000 (year two)	Part-time staff to supervise depot: ▪ \$30,000/year (additional)
	Southside Transfer Station: ▪ \$15,000 (year three)	Recycling Coordinator to support education and resident engagement: ▪ \$15,000/year
	Vanderhoof Transfer Station: ▪ \$25,000 (previously purchased) (year one)	Full-time staff for re-use shed and Recycle BC depot: ▪ \$51,250/year (additional)
	Public Drop-Off at Knockholt Landfill*: ▪ \$15,000 (year two)	Part-time staff to supervise depot: ▪ \$30,000/year (additional)
Assess the need to consolidation capacity in the region and provide infrastructure for the eastern portion or western portion of the region if required.	Consolidation Centre: ▪ \$500,000 (eastern sub-region year four, western sub-region year five if required)	Part-time staff to operate Consolidation Centre: ▪ \$30,000/year/center (additional) Consolidation Center operating and maintenance costs: ▪ \$50,000/year/center (additional)
Support the expansion of multi-family recycling by collection providers (where practical).		Current Staff (in partnership with municipal and private collection providers)

### 4.1.3 Strategy 3: Increase Industrial Commercial Institution (ICI) Sector Recycling

Issue: Recycle BC only deals with residential packaging and paper recycling programs. The ICI sector, estimated to generate approximately 40% of total materials in the region, also generates these materials and diversion needs to be supported in this sector.

- A. Develop, support, and collaborate with existing private and non-profit service providers to educate businesses on recycling options. Build on existing relationships to encourage consistent signage and messaging throughout the region. Work with private and non-profit service providers to promote the use of existing services.
- B. Implement disposal restrictions on other readily divertible materials. Expand disposal restrictions to additional materials as access to recycling expands throughout the region.
- C. Advocate for ICI packaging and printed paper (PPP) to be included in EPR legislation in the north.
- D. Increase access to recycling for small load ICI old corrugated cardboard (OCC). Support or facilitate access to recycling services by promoting use of shared bins or hosting bins on a cost-recovery basis at regional solid waste facilities (as required).

Actions	Estimated Capital Cost	Estimated Operating Cost
Collaborate with the private and non-profit sector to educate businesses on recycling options. Implement disposal restrictions on readily divertible materials. Advocate ICI to be included in EPR legislation in the north. Increase access to recycling for small load ICI OCC.	-	0.25 FTE (New)

### 4.1.4 Strategy 4: Increase Organics Diversion

Issue: Approximately 38% of the current waste stream is compostable organics (i.e., food scraps, food-soiled paper, yard and garden debris). Although organics diversion for yard and garden debris is currently occurring on a small scale at all of the region’s public access facilities, opportunities exist to expand the amount and type of materials processed through small composting sites.

- A. Improve the backyard composting program to actively support source reduction. Expand the program to provide greater access to composter subsidies.
- B. Develop an organics diversion strategy to provide clear direction with respect to policy, collection, processing, and transfer operations to provide cost-effective diversion.
  - a. Collaborate with municipalities to identify options to collect organics (i.e., food scraps, food-soiled paper, yard and garden debris) and implementation schedule.
  - b. Consider the quantity of specified risk materials from animal slaughter fatalities that could be processed in place of being disposed in the landfill.
  - c. Develop the approach to implement processing infrastructure.
- C. Implement the processing infrastructure necessary to process all organics collected in the region.

Actions	Estimated Capital Cost	Estimated Operating Cost
Improve backyard composting program.	-	Increase program budget by 20%: <ul style="list-style-type: none"> <li>\$2,500/year (additional) beginning in year one</li> </ul>
Develop an organics diversion strategy.		<ul style="list-style-type: none"> <li>\$25,000 to create a strategy (in year six)</li> </ul>
Develop regional composting facilities.	Vanderhoof Transfer Station: <ul style="list-style-type: none"> <li>\$476,000 (year nine)</li> </ul>	Vanderhoof Transfer Station: <ul style="list-style-type: none"> <li>\$95,692</li> </ul>
	Smithers-Telkwa Transfer Station: <ul style="list-style-type: none"> <li>\$515,200 (year seven)</li> </ul>	Smithers-Telkwa Transfer Station: <ul style="list-style-type: none"> <li>\$111,200</li> </ul>
	Regional Compost Facility: <ul style="list-style-type: none"> <li>\$621,400 (as required in future)</li> </ul>	Regional Compost Facility: <ul style="list-style-type: none"> <li>\$165,000</li> </ul>

#### 4.1.5 Strategy 5: Increase Construction and Demolition (C&D) Waste Diversion

Issue: Wood waste is collected separately at all facilities and there may be an opportunity to divert this and other construction demolition waste materials if markets are available.

- A. Work with local partners to identify potential processors and markets for higher value materials that could be managed by methods other than disposal in landfills or burn pads (for wood waste). Make materials available to the private sector for processing if financially neutral or positive for the RDBN.
- B. Lobby the Province to include C&D materials into BC's EPR system.
- C. Provide opportunities at transfer and disposal facilities for sorting and salvaging of C&D materials by customers where safe, practical and economical.

Actions	Estimated Capital Cost	Estimated Operating Cost
Work with local partners to identify potential processors and markets for high value materials. Lobby the Province to include C&D materials into BC's EPR system. Provide opportunities for reuse where safe, practical, and economical.	-	0.1 FTE (New)

#### 4.1.6 Strategy 6: Support Expansion of Extended Producer Responsibility Programs

Issue: There is currently no framework for making decisions regarding participation in EPR programs.

- A. Establish a policy framework for making decisions regarding participation in current and future EPR programs and partnerships with local organizations to provide collection services.

Actions	Estimated Capital Cost	Estimated Operating Cost
Establish a policy framework for making decisions regarding participation in current and future EPR programs.	-	Current Staff

#### 4.1.7 Strategy 7: Support Household Hazardous Waste (HHW) Diversion

Issue: There is currently limited public promotion and education on proper handling and collection locations for HHW.

- A. Increase public education and communication on proper handling and collection locations for HHW to improve use of existing programs.

Actions	Estimated Capital Cost	Estimated Operating Cost
Increase public education and communication on proper handling and collection locations for HHW.	-	Current Staff

#### 4.1.8 Strategy 8: Support Recycling and Diversion of Agricultural Plastics

Issue: Diversion and disposal of Agricultural Plastics is a significant issue in the RDBN due to the additional handling costs and lack of alternatives to disposal.

- A. Work with local partners to encourage alternative management of agricultural plastics. Provide information as requested to support and participate in pilot programs to manage these materials.
- B. Lobby the Ministry to create an EPR program for agricultural plastics.

Actions	Estimated Capital Cost	Estimated Operating Cost
Work with local partners to encourage alternative management of agricultural plastics. Lobby the Ministry to create an EPR program for agricultural plastics.	-	Current Staff

#### 4.1.9 Strategy 9: Expand Regional Education and Behaviour Change Programs

Issue: No staff resources are currently focused on supporting and implementing residential and ICI waste reduction programs as well as programing and behavior change resources to support the first levels of the pollution prevention hierarchy including rethink, reduce, reuse, and recycling/composting initiatives.

- A. Apply community based social marketing (CBSM) as an approach to develop new – and build on – existing waste reduction and diversion programs and campaigns.
- B. If available, use Recycle BC education and administration top-ups to support regional recycling education and promotions.
- C. Expand regional coordination of diversion, education, and behaviour change programs. Increase staff allocation to planning, program, and policy development.

Actions	Estimated Capital Cost	Estimated Operating Cost
Apply CBSM as a method to develop new and/or build on existing waste reduction and diversion programs and campaigns.	-	Current Staff
If available, use Recycle BC education and administration top-ups to support regional recycling education and promotions.		When all facilities are in operation: <ul style="list-style-type: none"> <li>▪ -\$42,000 (i.e., net revenue by year three)</li> </ul>

## 4.2 Residual Waste Management Strategies

Issue: The region’s disposal facilities operate based on Operational Certificates issued prior to the most recent landfill guidelines. Future updates to Operational Certificates and the increasing size of landfills may require additions and improvements to environmental controls and protection.

### 4.2.1 Strategy 1: Continue to Operate the Clearview Sub-Regional Landfill

- A. The landfill’s Operational Certificate was issued in 2005, prior to the release of the updated landfill guidelines (2016). Therefore the landfill’s operation is not required to meet the 2016 guidelines; however, future Operational Certificate updates may adjust requirements to the 2016 guidelines.
  - Complete a study to confirm compliance and conformance with the 2016 landfill guidelines.
- B. Leachate break-outs have been identified in Phase 1 and Phase 2 and stormwater runoff has not been diverted from contact water.
  - Complete a leachate management plan.
  - Installation of leachate treatment pond if required.
- C. Landfill gas generation assessments are required based on the municipal solid waste landfilled at the site.
  - LFG generation assessment studies every five years as required by the Ministry.
  - Consider alternative cover systems such as biocovers to minimize greenhouse gas production.

### 4.2.2 Strategy 2: Continue to Operate the Knockholt Sub-Regional Landfill

- A. The landfill’s Operational Certificate was issued in 2003, prior to the release of the updated landfill guidelines (2016). Therefore the landfill’s operation is not required to meet the 2016 guidelines; however, future Operational Certificate updates may adjust requirements to the 2016 guidelines.
  - Complete a study to confirm compliance and conformance with the 2016 landfill guidelines.
  - Budget additional funds to support landfill design and planning.
- B. The performance and capacity of the leachate treatment ponds has not been assessed and compared to projected leachate generation as the landfilling area expands.
  - Study to assess the performance and capacity of existing leachate treatment ponds.
  - Leachate treatment pond improvements (if required).

- C. Landfill gas generation assessments are required based on the municipal solid waste landfilled at the site.
- Landfill gas generation assessment studies every five years as required by the Ministry.
  - Consider alternative cover systems such as biocovers to minimize greenhouse gas production.

#### 4.2.3 Strategy 3: Continue to Operate the Manson Creek Landfill:

- A. There is no design and operations plan for this facility and the lifespan of this site is unknown.
- Budget additional funds to periodically assess landfill operation and management.
  - Budget additional funds for site maintenance (if required).

#### 4.2.4 Strategy 4: Finalize Closure of Historical Landfills/Dumps

- A. The RDBN has completed closure works including clean-up and cover as needed at each site. However, the region has not received approval of closure works from the ministry.
- The RDBN is currently engaging Ministry staff to confirm closure of the facilities and assess the potential to abandon previous permits for these historical facilities.

**Table 4-1: Anticipated Costs of Residual Waste Management Strategies**

Actions	Estimated Capital Cost	Estimated Operating Cost
Continue operating disposal sites according to Ministry requirements. (Clearview Sub-Regional Landfill)	Leachate management improvements: <ul style="list-style-type: none"> <li>▪ \$100,000 (year six)</li> </ul>	Landfill compliance and conformance review: <ul style="list-style-type: none"> <li>▪ \$6,000 (year two)</li> </ul> Leachate management plan: <ul style="list-style-type: none"> <li>▪ \$25,000 (year three)</li> </ul>
Continue operating disposal sites according to Ministry requirements. (Knockholt Sub-Regional Landfill)	Development of Phase 3B: <ul style="list-style-type: none"> <li>▪ \$382,000 (year six)</li> </ul> Development of Phase 3C: <ul style="list-style-type: none"> <li>▪ \$704,000 (year 10)</li> </ul> Leachate treatment pond improvements: <ul style="list-style-type: none"> <li>▪ \$250,000 (year seven)</li> </ul>	Additional landfill design and planning: <ul style="list-style-type: none"> <li>▪ \$5,000 per year (beginning year two)</li> </ul> Landfill gas generation assessment study: <ul style="list-style-type: none"> <li>▪ \$5,000 (year three)</li> </ul> Landfill compliance and conformance review: <ul style="list-style-type: none"> <li>▪ \$6,000 (year four)</li> </ul> Leachate pond performance and capacity study: <ul style="list-style-type: none"> <li>▪ \$15,000 (year five)</li> </ul>
Continue operating disposal sites according to Ministry requirements. (Manson Creek Landfill)	-	Landfill operation and management review: <ul style="list-style-type: none"> <li>▪ \$5,000 (year five)</li> </ul> Additional landfill site maintenance: <ul style="list-style-type: none"> <li>▪ \$10,000 (year five)</li> </ul>

### 4.3 Supporting Policies and Bylaws

#### 4.3.1 Assess Cost Recovery Through User Fees

Issue: The solid waste management system in the RDBN is primarily funded through taxation versus tipping fees which minimizes financial incentive for residents, business, and most municipalities to dispose of materials rather than recycle them. As the cost of sustainable solid waste management increases, most northern regional districts have adopted bylaws to apply user fees in varying degrees to increase this funding source and balance the ratio of

taxation versus tipping fees. Implementing the options and actions identified in the SWMP will result in increases to operating costs which will need to be recovered through increases in taxation or tipping fees. Reassessing the feasibility of implementing tipping fees at all facilities may better support the solid waste management system, diversify revenue sources, and support the RDBN’s strategic priorities.

- A. Develop a strategy to increase cost recovery from municipal solid waste and other materials in the RDBN.
  - a. Update previous studies on cost recovery through user fees with particular emphasis on the successful cost recovery policies and systems implemented in neighbouring regional districts.
  - b. Conduct consultation to confirm public and stakeholder support for implementation of user fees.
  - c. Implement user fees to fund a portion of the RDBN’s operational costs.

Actions	Estimated Capital Cost	Estimated Operating Cost
Develop a strategy to increase cost recovery from municipal solid waste and other materials in the RDBN.	-	Cost recovery strategy: <ul style="list-style-type: none"> <li>▪ \$20,000 (in year one)</li> </ul>

### 4.3.2 Update Current Facility Regulation and User Fee Bylaw

Issue: If the Board approves a cost recovery strategy that includes tipping fees, the current solid waste management facility regulation and user fee bylaw will need to be amended to reflect additional fees and charges as well as achieve the targets laid out in this plan.

- A. Based on the cost recovery strategy approved by the Board, update the bylaw to implement additional user fees at all facilities.
- B. Expand the current list of regulated recyclable materials to include residential paper and packaging collected by Recycle BC at RDBN transfer stations.

Actions	Estimated Capital Cost	Estimated Operating Cost
Update the current Facility Regulation and User Fee Bylaw as required.	-	Current Staff

### 4.3.3 Implement Disposal Charges for Camp Waste and Other Industries

Issue: Camps and other industries that support them are not paying their “fair share” of the RDBN’s costs for solid waste management under current financial policies.

- A. Develop a policy to require that all materials from specified industries are delivered to scaled facilities and charge a weight-based tipping fee for all landfilled waste or set an annual per head or per bed cost for all facilities being constructed in the region and assess this as a solid waste disposal fee with other regional fees and taxes.

Actions	Estimated Capital Cost	Estimated Operating Cost
Implement disposal charges for camp waste and other industries not already paying into the system.	-	Current Staff No revenues have been projected.



### 4.3.4 Mitigate Illegal Dumping

Issue: As cost-recovery and user fees are implemented, the issue of illegal dumping may arise short-term during transitions.

- A. Collaborate with local governments, First Nations, and private sector stakeholders to identify and address illegal dumping issues.
  - a. Assess the nature and extent of illegal dumping in the RDBN including mapping common problem sites.
  - b. Conduct a regional education campaign to discourage illegal dumping and encourage public reporting of illegal dumping.
  - c. Develop an “observe, record, report” program.
  - d. Following implementation of tipping fees, provide funding to waive tipping fees for clean-up events.

Actions	Estimated Capital Cost	Estimated Operating Cost
Collaborate with local governments, First nations, and private sector stakeholders to identify and address illegal dumping issues.	-	0.5 FTE (New) No funding to waive tipping fees have been assumed as tipping fees for municipal solid waste are not in place.

## 4.4 Resulting Diversion Potential

The recommended actions have the potential to reduce the amount of solid waste disposed in the RDBN by approximately 100 kg per capita per year, as shown in Table 4-2. This means the disposal rate would be 500 kg per capita per year, meeting the Provincial and RDBN’s disposal rate target.

**Table 4-2: Diversion Potential with Programs Implemented**

	Sector Contribution to Landfill	Material Contribution to Landfill	Diversion Potential out of Landfill (%)	Diversion Potential out of Landfill (kg/capita)
<b>Residential</b>	<b>60%</b>			
PPP		38.8%	12%	16
HHW and Electronics		1.6%	5%	0
Other Recyclable		4.2%	5%	1
Compostable		38.2%	34%	47
Building Material		4.3%	30%	5
<b>Residential Diversion Potential</b>				<b>68</b>
<b>ICI</b>	<b>40%</b>			
PPP		38.8%	10%	9
HHW and Electronics		1.6%	5%	0
Other Recyclable		4.2%	5%	1
Compostable		38.2%	20%	18
Building Material		4.3%	30%	3
<b>ICI Diversion Potential</b>				<b>31</b>
Potential Additional Diversion from Landfill				100
<b>Estimated Annual Disposal (assuming 600 kg/capita)</b>				<b>500 kg</b>

Table 4-3 provides a list of items that are included in the material groupings listed above.

**Table 4-3: Category Items**

Category	Included Items
EPR-PPP (SF RES)	Packaging and Printed Paper Materials (Residential Managed by Recyclable BC)
PPP (ICI)	Packaging and Printed Paper Materials
HHW and Electronic	Electronics, Batteries, Used Oil, and Containers, Etc.
Other Recyclable	Textiles and Plastic Film
Compostable	Compostable Food and Compostable Paper
Building Materials	Drywall, Masonry, Clean Wood, and Metals

## 5.0 PLAN MONITORING AND MEASUREMENT

The long-term achievement of the goals identified in the SWMP is ultimately dependent on plan implementation. Progress will be supported through regular monitoring and measurement of success. The following sections identify the monitoring and measurement programs to be enacted to support implementation of the SWMP.

### 5.1 Regional Solid Waste Advisory Committee

The RSWAC will monitor the implementation of the SWMP and make recommendations to increase its effectiveness. A description of the RSWAC tasks and make up are included in the preliminary terms of reference which can be found in Appendix C.

### 5.2 Annual Reporting

RDBN will compile data from RDBN sites on all residual disposal activities in the regional district and provide annual information to the Ministry's online disposal calculator.

### 5.3 Five-Year Effectiveness Review

Five years into the implementation of this Plan, RDBN will carry out a review of the SWMP's implementation and effectiveness, as prescribed by the Ministry. This review should result in a report that is made publicly available but does not need to be submitted to the Ministry for approval. This review may include:

- Overview of all programs or actions undertaken in the first five years to support the SWMP goals and targets, including status and implementation costs for each.
- Description and forecasted budget for programs or actions not yet started and status, including explanations for delays or cancellations of plan components.
- Five-year trend information for waste disposal per person.
- Five-year trend of greenhouse gases emitted and avoided, if available.
- Any significant changes that might impact the solid waste management system over the next five years.

Actions	Estimated Capital Cost	Estimated Operating Cost
Effectiveness Review Implementation	-	\$10,000 to be allocated in year five

## 5.4 Waste Composition Studies

In advance of the five-year review noted, a multi-season waste composition study on the residual waste management stream is proposed for year four, and – if appropriate – in advance of the next SWMP update to assess the success of current waste diversion programs and policies and identify opportunities for additional diversion.

Actions	Estimated Capital Cost	Estimated Operating Cost
Waste Composition Studies	-	\$25,000 to be allocated in year four

## 5.5 Plan Flexibility and Risk

The SWMP lays out the high level goals, costs, and timelines for solid waste program implementation in the RDBN. A number of factors may affect the cost and timeline to implement each strategy including external changes to priorities, partner programs, and regulations and internal variations in priorities and availability of budget and staff time to implement programs. The SWMP is intended to be flexible when warranted to implement plan components, directly or through private firms and/or non-profit organizations. While the SWMP provides flexibility in implementation depending on internal and external factors the following risks should be considered:

- Achieving the identified disposal target is dependent on successful implementation of all strategies identified in Section 4.
- Costs provided are conceptual level estimates and may differ from the actual costs to implement programs depending on the details of program or infrastructure design and timing of implementation. As a result, major programs and infrastructure may undergo further assessment prior to implementation.
- The success of most items is dependent on allocation of staff to adequately design, implement, and assess programs.
- The success of reduce, reuse, and recycle strategies will be affected by the effectiveness education and behaviour change programs.
- Several items are dependent on partnerships with local, regional, or provincial organizations which may experience changes in priority throughout the SWMP timeframe.
  - Implementation of organics diversion depends on municipalities to collect materials from residents.
  - Increasing access to ICI recycling depends on private sector and other collection providers to continue and expand services available in the future.
  - Increasing C&D waste diversion depends on the private sector to provide alternatives to disposal for these materials.
- The Ministry may require changes to the operation of regional disposal facilities through orders and updates to Permits and Operational Certificates which would impact the timelines and priorities for investment at disposal facilities.

As the preparation of this SWMP was completed to meet requirements from the Ministry, the RDBN will seek guidance and the direction Ministry officials to assess the appropriate level of flexibility in plan implementation as needed.

## 6.0 FINANCE AND ADMINISTRATION

The strategies, actions and costs associated with improving the solid waste management system have been discussed in previous sections. This section of the Draft SWMP presents a summation of the estimated staffing needs (in FTEs) and costs (in 2018 dollars) to the RDBN for the proposed solid waste management system and addresses options for how the implementation of the SWMP will be financed.

### 6.1 Staffing

A total of five senior management, management, and office staff are budgeted for the Environmental Services department in the region. Due to staff changes, the department has four of its five budgeted positions currently filled.

Based on existing needs and proposed programs for residual waste management, one FTE is required to fill the vacant position to support ongoing facility operations and management. Additional focus is required to plan and implement the reduce, reuse, and recycle strategies, regional education and behaviour change programs, policy changes, and illegal dumping mitigation identified in the Draft SWMP. Implementation of the contemplated programs will require an additional one FTE as the region takes on a greater role in waste diversion, education, and behaviour change.

Role	FTEs Required	Estimated Budget Implication
Facility Operations and Management Support	1	To be updated with staff input.
Coordination and Implementation of Reduction, Reuse, and Recycling Strategies and Supporting Programs and Policies	1	To be updated with staff input.

### 6.2 Expenditures

Table 6-1 provides the costs associated with the strategies and actions identified in the previous sections with respect to their implications to the Board's approved Financial Plan for 2018-2022. As shown, implementing the strategies and actions identified in the Draft SWMP result in increased expenditures from year two through year five. Proposed capital costs (estimated to range from \$45,000 in year two to a high of \$515,000 in year four) will be recovered through grant funding and borrowing. Proposed operating costs (estimated to range from \$160,000 in year two to a high of \$740,000 in year four) will be recovered through increases in taxation or user fees. As discussed in Section 4.3.1, a cost recovery strategy will be developed in year one to assess the potential for increasing the portion of the system funded through user fees. Additionally, the RDBN's auditors have instructed that the annual contribution to capital and closure reserves for the region's landfills be increased to approximately \$600,000 per year to allow sufficient funds to cover the existing liability. The additional reserve funding requirements identified since the Board's approval of the Financial Plan for 2018-2022 is itemized at the bottom of Table 6-1.

Table 6-2 provides the ten-year capital plan reflecting the infrastructure development and equipment costs needed to implement the strategies and actions identified in the Draft SWMP. The Draft SWMP assumes that capital costs will be paid primarily through grants and borrowing. Therefore the borrowing limit under the Draft SWMP will be \$1 Million CAD (in 2018 dollars) as required to fund the anticipated costs summarized in Table 6-2.

**Table 6-1: Five-Year Financial Plan**

	2018	2019	2020	2021	2022
<b>REVENUE</b>					
Taxation	\$ 3,144,752	\$ 3,383,962	\$ 3,428,064	\$ 3,008,737	\$ 3,011,903
Recycling	\$ 240,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000
Tipping Fees	\$ 206,000	\$ 206,000	\$ 206,000	\$ 206,000	\$ 206,000
Transfer from Reserves	\$ 1,043,700	\$ -	\$ 148,000	\$ 60,000	\$ -
Prior Year's Surplus	\$ 1,171,798	\$ -	\$ -	\$ -	\$ -
Grants (in lieu of taxes)	\$ 390,395	\$ 390,395	\$ 390,395	\$ 390,395	\$ 390,395
Other	\$ 95,000	\$ 5,000	\$ 220,000	\$ 5,000	\$ 5,000
<b>TOTAL OPERATING REVENUE</b>	<b>\$ 6,291,644</b>	<b>\$ 4,125,357</b>	<b>\$ 4,532,459</b>	<b>\$ 3,810,132</b>	<b>\$ 3,753,298</b>
<b>EXPENDITURES</b>					
<b>Existing Operating Expenditures</b>					
Administration	\$ 2,249,988	\$ 1,764,351	\$ 1,776,830	\$ 1,382,498	\$ 1,393,608
Transfer Station Ops	\$ 1,683,821	\$ 1,658,334	\$ 1,681,933	\$ 1,704,256	\$ 1,726,842
Landfill Ops	\$ 663,943	\$ 651,618	\$ 664,645	\$ 667,328	\$ 680,668
Recycling	\$ 525,959	\$ 417,944	\$ 417,944	\$ 417,944	\$ 417,944
Contribution to Reserves	\$ 239,233	\$ 234,233	\$ 529,233	\$ 594,233	\$ 969,233
Post-Closure	\$ 93,700	\$ 93,700	\$ 43,700	\$ 43,700	\$ 43,700
Closure	\$ 30,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Total Annual Existing Operating Expenditures	\$ 5,486,644	\$ 4,835,180	\$ 5,129,285	\$ 4,824,959	\$ 5,246,995
<b>Existing Capital Expenditures</b>					
Capital Expenditures	\$ 805,000	\$ 105,000	\$ 323,000	\$ -	\$ -
Total Annual Existing Capital Expenditures	\$ 805,000	\$ 105,000	\$ 323,000	\$ -	\$ -
<b>Total Annual Existing Expenditures</b>	<b>\$ 6,291,644</b>	<b>\$ 4,940,180</b>	<b>\$ 5,452,285</b>	<b>\$ 4,824,959</b>	<b>\$ 5,246,995</b>
<b>PROPOSED Operating Expenditures</b>					
<b>REDUCE/REUSE/RECYCLE</b>					
Increase Reduction and Reuse	\$ -	\$ -	\$ -	\$ -	\$ -
Expand Access to Residential Recycling	\$ (16,300)	\$ 6,100	\$ (3,800)	\$ 75,700	\$ 75,700
Increase ICI Sector Recycling	\$ 3,000	\$ 8,500	\$ 8,500	\$ 8,500	\$ 8,500
Increase Organics Diversion	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500
Expand Regional Education and Behaviour Change Programs	\$ (19,300)	\$ (27,100)	\$ (41,800)	\$ (41,800)	\$ (41,800)
<b>RESIDUAL MANAGEMENT</b>					
Continue facility operation and upgrades as needed.	\$ -	\$ 11,000	\$ 35,000	\$ 11,000	\$ 35,000
<b>POLICIES AND BYLAWS</b>					
Assess Cost Recovery Through User Fees	\$ 20,000				
<b>STAFF</b>					
Additional Staffing Costs (2 FTE)	\$ 10,100	\$ 130,000	\$ 130,000	\$ 130,000	\$ 130,000
<b>PLAN MONITORING</b>					
Waste Composition Study	\$ -	\$ -	\$ -	\$ 25,000	\$ -
5-year Effectiveness Review	\$ -	\$ -	\$ -	\$ -	\$ 10,000
<b>Total Annual Proposed Operating Expenditures</b>	<b>\$ -</b>	<b>\$ 131,000</b>	<b>\$ 130,400</b>	<b>\$ 210,900</b>	<b>\$ 219,900</b>
<b>PROPOSED Capital Expenditures</b>					
<b>DIVERSION</b>					
Expand Access to Residential Recycling (Capital)	\$ -	\$ 45,000	\$ 60,000	\$ 500,000	\$ 500,000
Increase Organics Diversion (Capital)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>DISPOSAL</b>					
Continue Facility Operation and Upgrades (Capital)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Annual Proposed Capital Expenditures</b>	<b>\$ -</b>	<b>\$ 45,000</b>	<b>\$ 60,000</b>	<b>\$ 500,000</b>	<b>\$ 500,000</b>
<b>Total Annual Proposed Expenditures</b>	<b>\$ -</b>	<b>\$ 176,000</b>	<b>\$ 190,400</b>	<b>\$ 710,900</b>	<b>\$ 719,900</b>
<b>TOTAL OPERATING EXPENDITURES</b>	<b>\$ 5,486,644</b>	<b>\$ 4,966,180</b>	<b>\$ 5,259,685</b>	<b>\$ 5,035,859</b>	<b>\$ 5,466,895</b>
<b>TOTAL CAPITAL EXPENDITURES</b>	<b>\$ 805,000</b>	<b>\$ 150,000</b>	<b>\$ 383,000</b>	<b>\$ 500,000</b>	<b>\$ 500,000</b>
<b>TOTAL ANNUAL EXPENDITURES</b>	<b>\$ 6,291,644</b>	<b>\$ 5,116,180</b>	<b>\$ 5,642,685</b>	<b>\$ 5,535,859</b>	<b>\$ 5,966,895</b>
<b>Operating Funding Required</b>	<b>\$ -</b>	<b>\$ 131,000</b>	<b>\$ 130,400</b>	<b>\$ 210,900</b>	<b>\$ 219,900</b>
<b>Capital Funding Required</b>	<b>\$ -</b>	<b>\$ 45,000</b>	<b>\$ 60,000</b>	<b>\$ 500,000</b>	<b>\$ 500,000</b>
<b>Reserve Funding Required</b>	<b>\$ -</b>	<b>\$ 75,000</b>	<b>\$ 370,000</b>	<b>\$ 425,000</b>	<b>\$ 800,000</b>

**Note:** This table assumes only costs to RDBN. Costs for individual jurisdictions will depend on how the SWMP is implemented.

**Table 6-2: Ten-Year Capital Plan**

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>PROPOSED Capital Expenditures</b>										
<b>DIVERSION</b>										
Expand Access to Residential Recycling (Capital)	\$ -	\$ 45,000	\$ 60,000	\$ 500,000	\$ 500,000	\$ -	\$ -	\$ -	\$ -	\$ -
Increase Organics Diversion (Capital)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 515,000	\$ -	\$ 476,000	\$ -
<b>DISPOSAL</b>										
Continue Facility Operation and Upgrades (Capital)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 482,000	\$ 250,000	\$ -	\$ -	\$ -
<b>Total Annual Proposed Capital Expenditures</b>	\$ -	\$ 45,000	\$ 60,000	\$ 500,000	\$ 500,000	\$ 482,000	\$ 765,000	\$ -	\$ 476,000	\$ -

## 7.0 PLAN SCHEDULE

### 7.1 Plan Implementation Schedule

Table 7-1 provides the planned implementation schedule for the SWMP from 2018 to 2027.

**Table 7-1: Implementation Schedule**

	2018 – Year 1	2019 – Year 2	2020 – Year 3	2021 – Year 4	2022 – Year 5	2023 – Year 6	2024 – Year 7	2025 – Year 8	2026 – Year 9	2027 – Year 10
<b>Proposed Implementation Schedule</b>										
<b>REDUCE/REUSE/RECYCLE</b>										
Increase Reduction and Reuse										
Expand Access to Residential Recycling										
Increase ICI Sector Recycling										
Increase Organics Diversion										
Increase C&D Waste Diversion										
Support Expansion of EPR Programs										
Support HHW Diversion										
Support Recycling and Diversion of Agricultural Plastics										
Expand Regional Education and Behaviour Change Programs										
<b>RESIDUAL MANAGEMENT</b>										
Continue to Operate the Clearview Sub-Regional Landfill										
Continue to Operate the Knockholt Sub-Regional Landfill										
Continue to Operate the Manson Creek Landfill										
Work to Finalize Closure of Historical Landfills/Dumps										
<b>POLICIES AND BYLAWS</b>										
Assess Cost Recovery										
Update Facility Regulation and User Fee Bylaw										
Implement Disposal Charges for Camp Waste and Others										
Mitigate Illegal Dumping										
<b>STAFF</b>										
Additional Staff – Operations Assistant/Foreman (1 FTE)										
Additional Staff – Diversion Coordinator (1 FTE)										
<b>PLAN MONITORING AND EFFECTIVENESS</b>										
RSWAC										
Annual Reporting										
Five Year Effectiveness Review										
Waste Composition Study										

## 8.0 PLAN APPROVAL

To be added following approval by the RDBN Board of Directors.



## 9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,  
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