

Solid Waste Management Plan Update 2016-2026



October 2015



SWMP 2016-2026

In numbers...

100%

increase (in tonnes) of waste predicted over the next 25 years

202,611

tonnes of waste disposed in FVRD landfills in 2012



58%

organic material in Abbotsford-Mission curbside garbage (2011)



0.68

FVRD per capita annual waste disposal (tonnes)



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1. AN INTRODUCTION TO OUR REGION

With a population of approximately 290,000 residents, the Fraser Valley Regional District (FVRD) encompasses over 14,000 hectares of diverse landscape including lush agricultural land, rugged river canyon and abundant forested watersheds. Its boundaries extend from the United States border to Boston Bar and from Abbotsford to Allison Pass in Manning Park. This beautiful region is home to many vibrant and unique communities.

The FVRD functions as a partnership of its six member municipalities (City of Abbotsford, City of Chilliwack, Village of Harrison Hot Springs, District of Hope, District of Kent, and District of Mission) and seven electoral areas (A to G). As a form of local government, the FVRD is active in providing a range of services from utility projects in unincorporated areas, to broader programs of shared concern to the entire region. Please refer to Figure 1 for a map of the FVRD and to Table 1 for population statistics.

To ensure that its residents continue to enjoy a high quality of life, the FVRD created the “Choices for our Future Regional Growth Strategy” (RGS), built upon sustainable planning principles, to guide growth in the municipalities and unincorporated areas of the region. The RGS offers a regional framework for managing growth in order to ensure that this region continues to be a desirable place to live, work, and play.

The FVRD’s draft Air Quality Management Plan falls under the guidance of the RGS. Air quality issues remain at the forefront of the public agenda in the FVRD, due to this region’s unique nature and geography. The upper parts of the lower Fraser Valley are bound by the Coast and Cascade Mountains, resulting in a confined airshed that is particularly susceptible to the build-up of contaminants and pollutants that can have a serious negative impact on human health and the environment.

For many years, residents and agencies in the Fraser Valley have worked to adopt strategies geared towards reducing pollution-contributing emissions. Management plans need to highlight the importance of air quality and address ways to further reduce our emissions, with the goal of a cleaner and healthier airshed for FVRD communities. Responsible solid waste management is, therefore, a priority.

MISSION

The Solid Waste Management Plan will guide the region to reduce its waste generation by furthering progressive solid waste management programs and providing effective education to ensure a healthy environment and combat climate change.



Figure 1: Map of the Fraser Valley Regional District

Table 1: 2012 FVRD Population Estimates (Demographic Analysis Section, BC Stats, Ministry of Citizen’s Services and Open Government, Gov. of BC, December 2012). Estimates do not include those living on First Nation Reserves.

Municipality	Population
City of Abbotsford	140,235
City of Chilliwack	79,617
District of Mission	37,614
District of Hope	6,136
District of Kent	5,564
Village of Harrison Hot Springs	1,606
Electoral Areas	18,047

2. SCOPE OF THE PLAN

The enduring question of what to do with our municipal solid waste is an issue of shared concern across our region. All regional districts are mandated by the Provincial Government to have a Solid Waste Management Plan (SWMP) outlining the region's unified effort to reduce the amount of municipal solid waste requiring disposal. The FVRD's first Plan, adopted in 1996, required updating. The purpose of this updated Plan is to guide the FVRD and its member municipalities in their efforts to reduce and manage the region's solid waste over the next 10 years.

The FVRD Solid Waste Management Plan covers the management of municipal solid waste as defined in the *Environmental Management Act*. The Act defines municipal solid waste as "refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or refuse specified by a director to be included." The target and strategies outlined in this Plan are aimed at reducing waste and increasing diversion of municipal solid waste.

The SWMP does not cover all forms of waste management, nor is that the intent. The management of other forms of waste including, but not limited to, hazardous, agricultural, biomedical, and liquid waste, lies outside the purview of this Plan in accordance with the *Environmental Management Act*. That said, the FVRD acknowledges the importance of comprehensive planning for all waste categories, and actively supports responsible waste management initiatives that benefit the region as a whole.

The FVRD also recognizes that facilities located on First Nation Reserves do not fall within the purview of this Plan. However, because many First Nation Bands use facilities within the region and have facilities of their own, which influence the way solid waste is managed, there is a clear need to partner with First Nation Bands as we work to improve solid waste management. We also acknowledge efforts on the part of First Nation Bands to provide, develop, and improve sound solid waste practices within their communities. We fully support their efforts and believe there are many opportunities for our communities to work together to improve solid waste management for the benefit of the region as a whole. We are, therefore, committed to working with First Nations on common objectives.

3. VISION

VISION

A comprehensive solid waste management system, accessible to every member of the community and delivered through a full partnership among all levels of government and industry, where residents feel a sense of ownership and responsibility for the waste they create, bringing our region closer to Zero Waste.

Despite our current efforts, the amount of solid waste requiring disposal continues to rise due to rapid population growth and society's tendency to produce more, consume more, and discard more. Many

are still unaware of, or unconcerned with, the future financial and environmental consequences that will inevitably occur if we continue down our current path. Both the population growth and the increase in the amount of solid waste we generate put further strain on our existing solid waste management system. However, despite these challenges, our region has seen encouraging improvements over the past decade, including an increase in residential recycling rates, and a growing trend of individuals taking personal responsibility for the solid waste they generate.

While recycling has proven to be a successful tool to divert some waste from landfills, it is only a small component of our solid waste challenge. Over the years, the underlying vision of the Plan has evolved to include reducing not only our waste generation, but also our carbon footprint. The solid waste stream must be reduced to the greatest extent possible in accordance with the sequential hierarchy of the 6R's of waste management (***Rethink, Reduce, Reuse, Recycle, Recover, and Residual Management***), where waste production is minimized and residuals are considered a valuable resource.

Three significant components of the FVRD's Vision are detailed below:

3.1 Zero Waste

The term Zero Waste is prominent in the media. It is a concept that promotes a future where landfills are no longer needed. The term is intended to encourage people to think more holistically about their waste and to view it as a resource instead of garbage destined for burial. Zero Waste is a mindset meant to propel change in the existing solid waste management system and to promote the adoption of more aggressive waste reduction policies aimed towards stopping waste before it is created and maximizing reuse and recycling programs.

The FVRD follows the ***definition of Zero Waste*** provided by Zero Waste International Alliance, which is supported and promoted by Zero Waste Canada, the Recycling Council of BC and Zero Waste BC:

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, waste or air that are a threat to planetary, human, animal or plant health.

3.2 Mixed Waste Materials Recovery

An integral component of this Plan includes the establishment of Mixed Waste Materials Recovery (MWMR). MWMR facilities employ a sophisticated combination of manual, mechanical and optical sorting to remove recyclable or compostable material not removed through source separation, and that would otherwise be disposed of. In other words, MWMR facilities sort through the contents of garbage

bags, or dumpster trash, to recover a greater amount of divertible material. MWMR facilities allow communities to focus in on waste streams that are left untapped by existing and expanding recycling options, such as waste from multi-family units and the ICI sector.

The FVRD will ensure that MWMR serves to complement continued growth in traditional source separation efforts in our region as we must encourage the transition to a culture that habitually source separates. Correspondingly, optimal operation of a MWMR facility is obtained when wet organics have already been substantially removed before arriving at the facility. The relatively low cost of MWMR facilities compared to landfills and incineration facilities, high job creation, higher diversion, and their environmentally benign nature make them a necessary and strategic part of our integrated solid waste system.

The FVRD will establish policy and regulations to support a level playing field and will work to encourage private sector investment, innovation and competition and will set required and enforced diversion targets for the disposal industry.

The FVRD is open to partnerships with other regional districts and municipalities outside our region that may be looking to maximize material recovery from waste before disposal as they progress toward Zero Waste and are looking for alternatives to incineration of recyclables and waste. By working together with the private sector, and taking advantage of economies-of-scale, we could demonstrate a true Zero Waste management system in this province.

3.3 Extended Producer Responsibility

The implementation of Extended Producer Responsibility (EPR) in BC is a significant step in the direction of achieving Zero Waste. EPR is an environmental policy approach in which a producer's responsibility for a product extends to the post-consumer stage of a product's life cycle. This policy is intended to provide incentive to producers to take environmental considerations into account when designing their products and to shift the cost and physical responsibility for the product away from local governments and general taxpayers to producers and consumers. B.C.'s Recycling Regulation provides a local framework for EPR, whereby a producer (or Steward) of designated products must submit a Product Stewardship Plan to the Ministry of Environment for approval. Visit the [Ministry of Environment's Product Stewardship](#) web page for more information about EPR programs.

The FVRD supports the concept of EPR whereby industry is responsible for all products listed in the BC Recycling Regulation and where a municipality, if asked to assist, is reimbursed based on full cost accounting principles for its involvement in what would otherwise have been carried out by the Stewards. Partnerships may be formed in the spirit of a shared Zero Waste vision and in acknowledgement of the special expertise and authority of both Stewards and local governments. The FVRD will join forces with neighbouring regional districts and the Union of BC Municipalities on important EPR issues of shared concern as collaboration can demonstrate the importance of an issue and bring attention to the matter.

As the provincial government adds more Product Stewardship Programs to the Recycling Regulation, local government in our region will work toward fully supporting these programs, provided that service levels are not decreased, local governments are respected as partners, and the programs meet local environmental and air quality objectives. The FVRD will attempt to monitor and understand the impact of EPR on this Solid Waste Management Plan.

The movement toward full EPR, which is hopefully on the foreseeable horizon, may alter local government's responsibility under some aspects of a Solid Waste Management Plan which have traditionally been their responsibility. Many concerns have been raised regarding the integration of EPR and existing local government programs, particularly as they pertain to the possibility of Stewards assuming the current waste management role of local governments. This is especially true given the impending Packaging and Printed Paper Stewardship Program. Some of these concerns involve:

- Curbside collection (contractual obligations, union issues, service standards).
- Municipal recycling depots (existing capital investments, compensation, utilization).
- Solid Waste Management Plan commitments (how will these be affected by EPR?).

4. CURRENT CHALLENGES

4.1 Disposal Trends

Everyone generates waste that requires disposal. The region's per capita waste generation rate, or the amount of waste each person produces, continues to climb. Therefore, even with the current popularity of recycling and reuse options, there is an ever increasing quantity of solid waste that requires disposal. Waste generation is related to:

- Increased urbanization, which may lead to heightened commercial and industrial development, creating more waste.
- Consumption patterns and preferences (such as a preference for disposable and convenience items, or the fact that it is sometimes cheaper to buy new rather than repair the old).
- Lifestyles (such as fewer people per household and all households consuming certain goods like appliances and newspapers).
- Household revenue and disposable income.

4.2 Product Design and Composition

Most manufacturers have not been made responsible for the end-life of their products and hence, these products may be difficult to disassemble, made of unrecyclable components and involve an unnecessary volume of packaging. Regional districts have the responsibility to manage this waste; however, they lack the authority to regulate these aspects of the waste system. The authority to regulate importation and packaging lies with the federal government. Regional districts have lobbied for action on these matters, but have yet to be successful. Certain plastics imported into Canada are not recyclable and inevitably end up in the landfill. Some examples of specific issues include:

- Uncoded plastics of unknown chemical composition cannot be sorted for recycling.
- Plastics carrying a code #7 may contain several different types of plastics, or they may be of a compostable type of plastic, rendering them unsuitable for recycling.
- Plastics with low market value tend to be destined for disposal.
- Expanded polystyrene (code #6), often referred to as Styrofoam™, present storage and shipping challenges that prevent it from being recycled in most circumstances, yet it is a common and popular packaging material that continues to take up landfill space.
- Plastic that is not coded or of too low a market value to be recycled is often inadvertently placed into curbside collection systems by residents. It is then transported to recycling facilities, where it is separated from recyclable plastics on costly sorting lines, causing unnecessary double-handling before it is sent to the landfill.

4.3 Waste Migration

The fact that waste flows freely in and out of our region presents both challenges and opportunities. Waste that is sent for disposal at municipal or private facilities within our region is subject to regional waste reduction initiatives. However, a portion of waste from our region also flows to facilities located on First Nation Reserves which fall outside of the jurisdiction of this Plan, posing a challenge to implementing waste reduction strategies prior to disposal. Conversely, waste that is primarily managed by the private sector is being imported into our region and consequently exported to out-of-region disposal facilities, currently without restrictions on diversion requirements and is impacting the viability of in-region disposal facilities. If this extra waste were to be handled within the FVRD, it could allow for the economies of scale necessary for greater diversion or materials recovery efforts and could bring added jobs to our communities.

The quantity of waste received at facilities located on First Nation Reserves is unknown. It is difficult to build accurate predictions on waste generation in this region, particularly in the industrial, commercial and institutional (ICI) sector and demolition and land clearing (DLC) sectors of the waste stream, without access to more information regarding the volume of waste flow to on-Reserve facilities. Undocumented waste flow is a challenge to reporting true regional disposal statistics. The migration issue, combined with the lack of a universal waste reporting template to ensure that all regional districts are compared fairly, makes it difficult to set a meaningful target. It is imperative that the Regional District attempt to work more closely with First Nation Bands operating solid waste facilities in effective and collaborative partnerships to gain a more accurate understanding of waste flow in the Region.

4.4 Global Market Conditions

Fluctuating demand for recyclables and dependence on foreign markets makes it difficult for smaller recycling facilities to survive. During economic downturns, recycling facilities are forced to stockpile until market conditions improve, landfill the material, or, in some cases, close down. The current shortage of local end-markets amplifies the on-going concern over recyclable material being shipped to developing

countries, which are becoming dumping grounds with little concern given to the resulting environmental and social implications.

As the largest end-market for recyclables, China's new restrictive policy on the acceptance of other nation's dirty plastics is of particular concern. This "Green Fence" policy has resulted in China rejecting and sending back entire cargo loads of recyclables if they are deemed to be contaminated with lower-grade plastics or materials with food residue. This has created increased costs and a backlog for many recycling exporters in North America. It is important to recognize that the problem does not lie with China, which is reasonably enforcing contamination limits, but with ourselves. It highlights the need to identify domestic solutions, and multiple markets, for our recyclable products to ensure stability in our solid waste management systems.

4.5 Organics Removal

Establishing a system that can remove organic materials from the waste stream in a cost effective manner in both rural and urban areas is a challenge. It will require educating residents on the importance of composting and the development of composting facilities to manage organic waste. However, doing so represents an incredible opportunity to substantially increase diversion rates and decrease the amount of waste disposed in landfills. Organics removal will contribute to a more sustainable waste management system by reducing amounts of leachate, methane, and other volatile organic compounds created when organics are disposed in landfills. It will also open up valuable disposal space, increasing the longevity of our current waste facilities. Some municipalities have already made progressive steps towards removing organics from curbside garbage.

4.6 Illegal Dumping

Illegal dumping is a serious and growing problem in the FVRD. We all share the responsibility to dispose of our waste legally and in a manner that is respectful of our neighbours. Although illegal dumping represents only a small percentage of the total amount of solid waste generated in our region, it threatens the health of humans, wildlife and the environment and is a significant cost to taxpayers.

Much of the illegal dumping that takes place in our region occurs on crown land, where cleanup becomes the responsibility of the Province. Once an illegal dump site has been "established", it tends to attract additional materials from illegal dumpers. Unless the provincial government allocates the necessary funds toward prevention and clean-up, illegal dumping sites will continue to grow and multiply.

4.7 Incineration and Waste-to-Energy Facilities

The FVRD is supportive of the sequential waste management hierarchy (***Rethink, Reduce, Reuse, Recycle, Recover, and Residual Management***), but does not support the use or inclusion of incineration as a method of "recovery". There are other technologies, such as wet or dry anaerobic digestion, that

also allow for recovery of energy from waste, but which are environmentally preferable, because they also serve to protect our airshed. The FVRD is also supportive of landfill gas recovery which can be used to produce heat or electricity.

To provide clarity to our residents and to those who may have been misguided in their pursuit of Zero Waste: **Incineration¹ is not a component of a Zero Waste** strategy for a number of compelling reasons, including:

1. **Incineration still involves landfilling.** 20% of material by weight (10% by volume) remains as fly and bottom ash, destined for disposal as a toxic by-product of the process. This toxic material must then be carefully stored or landfilled. Every atom that enters the incinerator must leave in some form as residual solid waste, hazardous waste or air emissions.
2. **Incineration produces toxic residuals and air emissions.** Even the most technologically advanced incinerators produce hundreds of distinct, known hazardous by-products including dioxins, heavy metals, halogenated organic compounds, and nanoparticles. These toxins occur both in air emissions and in ash residuals. Coupling MWMR with source separation of organic material and recyclables, and then landfilling the residuals, results in significantly fewer environmental impacts compared to the incineration-to-landfill option.
3. **Incineration produces greenhouse gases.** Incinerators produce more global warming pollution (mainly carbon dioxide) per unit electricity generated than most other kinds of power including coal, gas and hydroelectric. In thermal incineration technologies, nearly all of the carbon content in the waste is emitted as carbon dioxide to the atmosphere.
4. **Incinerators waste energy and natural resources.** Incineration irreversibly destroys materials that would have greater value as reusable/recyclable products and/or refined materials than they have as fuel. Incineration is very inefficient² at generating energy and it generates less energy than could be saved by reuse, reduce and recycling initiatives.
5. **Incineration creates a demand for waste.** Because of the nature of incineration and the significant capital investment involved, incinerators must operate at full capacity to be

¹ The FVRD Board of Directors passed a precautionary resolution on June 22, 2010. This resolution states that “the FVRD Board does not support Waste-to-Energy as a viable option for handling residual municipal solid waste, given the on-going need to supply incinerators with waste, the uncertainty regarding the contaminants that would be discharged and the potential effects on human health and the environment in the Lower Fraser Valley airshed”. The resolution also specifies that the Board “does not support energy recovery by any form of combustion including, but not limited to, incineration, gasification, pyrolysis, plasma technology, mass burn or any other similar technology for the residual management of municipal solid waste within a Waste-to-Energy facility”.

² The BC Ministry of Environment requires MSW incineration facilities to be at least 60% efficient, based on a formula developed by the European Commission. However, this model includes an adjustment that incentivizes electricity generated by MSW incineration by a factor of 2.6 relative to European coal plants. This adjustment should not be used in BC where the vast majority of our electricity is generated by clean hydro, not burning coal. If this adjustment factor is excluded from the formula, as it should be, it means incineration facilities with an efficiency of only 23% are going to be deemed acceptable in this province.

economically and technically viable. Incinerators require constant feedstock with high calorific value (such as plastic or wood) to make them operationally effective and financially viable. The goal of a Zero Waste strategy is to eliminate the need for these facilities entirely, which is contrary to a large-scale, long-term investment in an incinerator. Massive investment into a facility for long-term operation creates a path-dependency on incineration and undermines the flexibility of future improvements, or innovation in further reducing waste or recycling more material. Incinerators are rendered unnecessary if EPR programs, source separation, MWMR, and full organics diversion are in place under a Zero Waste strategy.

6. **Incinerators impose long-term financial burdens on local government.** Incinerators require regular costly upgrades over time, both to address technological shortcomings and in an attempt to meet ever-rising public health and safety standards. These are serious costs and risks that are borne directly by the community. Comparable local investment in recycling, repair, reuse and composting creates ten times more jobs (green jobs) in local businesses that increase the tax base, not the public debt.
7. **There are safer, smarter ways to manage non-recyclable materials.** Life cycle analysis shows that mechanical systems for materials recovery along with biological stabilization, followed by placement in landfills with 80% gas capture, are safer ways to manage municipal solid materials that cannot be recycled or composted. Residuals management systems should be seen as transitional and diminishing functions, as reduction, reuse, recycling are expanded.

5. TARGET AND MILESTONES

The FVRD is committed to municipal waste management practices that support sustainable progress towards Zero Waste. The region's commitment to the protection of air quality and its philosophy on sustainable waste management precludes use of any combustion-based incineration technology and therefore, the FVRD will pursue investments in programs and infrastructure that are economical, deliver positive social benefits, and achieve significant and growing rates of waste reduction, material diversion and recovery.

Zero Waste International Alliance indicates that although one should continually aim for 100% elimination of waste, reaching an acceptable minimum target of 90% would be considered a success. Therefore, the long-term (10 year) target of this Plan is an overall 90% diversion of waste from disposal.

TARGET

*ZERO WASTE by 2025 – 90% Diversion*³

Reaching 90% diversion is a formidable target and will be very challenging to achieve, but it is achievable. Building on the FVRD’s existing diversion rate of approximately 51%, it can be estimated that creating a region-wide, source-separated organics program, phased in over the next several years for all waste sectors, could increase diversion to 65-70%. Current data available on waste composition indicates that the incorporation of modern Mixed Waste Materials Recovery Facilities could further our diversion goals to 80-85%. The remaining 5-10% of waste reduction (required to meet the 90% overall target) will require a much broader provincial and national effort to minimize the production of waste, which the FVRD will endeavor to support. The remaining 5-10% will also be the most challenging to achieve.

The FVRD will divide its Zero Waste target into incremental milestones that will allow us to recognize accomplishments along the path toward Zero Waste.

MILESTONES

65% diversion by 2018

80% diversion by 2020

90% diversion by 2025

As waste generation rates continue to increase, striving for a percentage diversion rate is not sufficient. Population growth can be used as an excuse to tolerate more waste overall. However, Diversion Rates are the common method for regional districts to report waste statistics, and are the terminology used in mainstream media. To support its Zero Waste target, the FVRD will seek an overall reduction in its total waste disposal and will report accordingly to the Ministry of Environment. It is understood that Ministry staff are developing a “BC Waste Disposal Calculator” intended to be used for this purpose.

6. GOALS AND GUIDING PRINCIPLES

The FVRD will meet its Zero Waste target by 2025 through the pursuit of 3 overarching goals:

Goal 1: Reduce Waste Generation

Logically, the best way to minimize the amount of waste landfilled is to stop creating it in the first place. Policy and programs meant to reduce waste generation are aimed at preventing the production of waste by broader society, and at the individual level. For example, when fewer materials are utilized to manufacture products at the industrial level, consequently, less waste is produced. Reduction of waste

³ Regional Diversion Rate = Total Waste Diverted/(Total Disposed + Total Diverted)

involves the optimization of resources and product design, while encouraging the reuse of materials and products.

Goal 2: Maximize Diversion and Materials Recovery

As local government, it is our obligation to remove as much recyclable and compostable material from the solid waste stream as possible. This must be accomplished in a manner that balances front-end and back-end efforts. In other words, policies and regulation must maximize source separation and support the shift to that cultural norm, while employing advanced materials recovery to remove divertible material that ends up in the waste stream. In recognition of shared solid waste and recycling markets, and in support of overall, provincial targets, achieving this goal must include meeting or exceeding diversion requirements of neighbouring regional districts.

Goal 3: Manage Residual Waste Responsibly

Residual waste must be managed in an environmentally responsible manner, while addressing the requirements of our integrated system. We must forecast long term disposal requirements and plan for the future. The FVRD will work to optimize local disposal options where possible, but will also authorize waste-export in some situations to out-of-region landfills through a triple-bottom line analysis and in consideration of the needs of our integrated system. Through various overarching strategic plans of the FVRD, including its Regional Growth Strategy, Air Quality Management Plan and this Solid Waste Management Plan, the FVRD establishes a strong commitment to improving air quality. As an integral component of this plan, we will continue to build upon emissions reductions and commit to further reducing the impact that our solid waste management system has on air quality.

Several ***GUIDING PRINCIPLES*** will be followed in the pursuit of these goals. The ideology which flows from these guiding principles will form the foundation of future initiatives and serve as the fundamental rules that will guide us in our actions. These guiding principles include:

Collaboration

Strategies within the Plan will be developed through collaboration with our member municipalities and stakeholders to ensure region-wide acceptability and clarity of roles and responsibilities.

Triple Bottom Line

Decisions will be made using a balanced, Triple Bottom Line approach that will take into consideration the environmental, social and financial implications of each option.

User Pay

The true cost of waste management is not clear in a tax-based fee structure, resulting in little financial incentive to change behaviour. The Plan will discourage

general taxation and encourage a user pay approach to fund programs in order to promote waste reduction.

Energy Optimization

To help reduce our carbon footprint, the Plan will encourage the optimization of production and use of energy through effective management of landfill gas, processing of organics, and collection of municipal solid waste and recyclables.

Behaviour Change

In all educational pursuits, foster the creation of lasting behaviour change by altering people's norms, using incentives and disincentives, and building more sustainable waste disposal habits.

6'R's of Waste Management

The solid waste stream will be reduced to the greatest extent possible in accordance with the sequential hierarchy of the 6R's of waste management: Rethink, Reduce, Reuse, Recycle, Recover⁴, and Residual Management.

7. STRATEGIES

The following strategies are proposed to help us achieve our Vision. Each strategy is linked to one of the three goals outlined in the previous section and under each strategy there are associated actions. A schedule, which includes timelines and responsible parties for the implementation of these strategies, is included in Table 2. The schedule will serve to prioritize projects and will be assessed annually in an effort to stay on track and implement changes if necessary, which is imperative to ensure that we are continually progressing towards our Zero Waste target.

7.1 STRATEGIES FOR GOAL 1: REDUCE WASTE GENERATION

7.1.1 Implement an on-going Zero Waste Campaign

- a. Engage the public, governing bodies, and businesses to create ownership and lasting behavioural changes around the concepts of reducing and reusing materials. Deliver the campaign message using Community Based Social Marketing CBSM tactics (e.g. at a community level, involving direct contact with people) and using digital media including social networking (websites, Twitter, Facebook, and blogging), digital newsletters, radio, as well as personal contact, which would include the employment of summer student ambassadors to assist in delivering the campaign.

7.1.2 Stimulate and raise the profile of material exchange programs/businesses

- a. Identify and promote local reuse alternatives on the Recycling Council of BC's and local governments' websites, city pages and through the Zero Waste Campaign. Examples of reuse

⁴ Zero Waste by definition does not include incineration.

alternatives: swap websites, community garage sales, repair shops, free-stores, second hand stores, flea markets, farmers' markets.

- b. Establish a Waste Reduction Initiative Fund by allocating a portion of the regional solid waste budget that will provide grants to assist non-profit reuse organizations/initiatives on an annual basis.

7.1.3 Petition Provincial/Federal Government to act on matters outside local jurisdiction in an effort to minimize waste

- a. 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.
- b. Consider partnerships with other organizations for joint advocacy initiatives.

7.1.4 Execute and enforce local regulations to discourage waste generation

- a. Develop a standard template and conduct waste composition audit(s) in partnership with municipalities, and EPR Stewards.
- b. Establish a more equitable playing field for waste disposal across the region. This may include increasing and/or standardizing tipping fees, offering variable rate structures and decreasing bag limits.
- c. Expand and enforce landfill bans for specific materials (especially in consideration of EPR programs).
- d. Standardize/increase surcharges on contaminated loads across the region.

7.2 STRATEGIES FOR GOAL 2: MAXIMIZE DIVERSION AND MATERIALS RECOVERY

7.2.1 Maximize participation through convenience

- a. Investigate the pros and cons of standardizing recycling/compost materials accepted at the curbside and at public facilities in all areas of the region to streamline and simplify diversion.
- b. Promote the Eco-Depot concept, where feasible, and expand the level of service at public recycling facilities in an effort to make recycling more accessible.
- c. Situate facilities in proximity to population centres to maximize convenience.
- d. Continue to support new and existing diversion initiatives such as the Recycling Council of BC Recycling Hotline, which provide residents with convenient access to information about local diversion opportunities.
- e. Cooperate with the provincial ministries, and outside organizations to manage and promote diversion of waste which does not necessarily fall under the jurisdiction of this Plan, but which benefits the region and its residents.

7.2.2 Establish and implement local regulation to encourage diversion

- a. Establish waste reduction and recycling bylaw initiatives, in consultation with member municipalities and stakeholders, that may include, but not be limited to:
 - o Processing and disposal facility licensing
 - o Prohibiting/limiting the maximum recyclable content that can be included in residual waste before it is landfilled
 - o Regionalizing tipping fees
 - o Mandating organics diversion from all sectors
 - o Banning disposal of organic and EPR materials

- Eliminating unauthorized disposal of waste
 - Maximizing recycling, composting and materials recovery
 - Mandating “bundling⁵” of services by private waste haulers
 - Building and demolition permits that require a waste management plan
 - Development permits requiring provision for a waste diversion area and collection truck accessibility
 - Waste flow management techniques that maintain innovation and competition in the private sector
- b. Continue to improve the collection, accuracy and evaluation of waste statistics.

7.2.3 Increase diversion at all multi-family developments

- a. Facilitate discussion between multi-family complexes and waste haulers in an effort to overcome barriers to recycling and composting.
- b. Add stipulation to development permits requiring developers to incorporate adequate diversion areas into new multi-family developments.

7.2.4 Increase diversion in the Demolition and Land Clearing (DLC) sector

- a. Form a DLC working group to evaluate current disposal practices and end-market opportunities in order to determine current and future needs of sector.
- b. Create and implement a plan of action (which may require a waste management plan for large development projects, including the obligation to “deconstruct” instead of demolish before permits are granted, to promote diversion).
- c. Identify and promote new and existing DLC Material Recovery Facilities and explore ways to divert DLC material into the re-use sector.
- d. Consider the feasibility of providing a DLC diversion program for all residents.

7.2.5 Expand diversion in the Industrial, Commercial and Institutional (ICI) sector

- a. Form an ICI working group to evaluate current disposal practices, identify barriers to recycling and recommend ways to overcome these barriers.
- b. Work together to create and implement a plan of action (may include regional ICI recycling bylaw).
- c. Institute diversion pilot project within local ICI sector (e.g. food waste composting at a local restaurant).
- d. Explore the pros and cons of launching a recognition program to acknowledge the recycling efforts/achievements in the ICI sector.

7.2.6 Establish regional composting capacity

- a. Investigate a regional composting alternative.
 - Identify feedstock sources/quantities (e.g. kitchen, yard, contaminated paper, fats, oils, greases).
 - Investigate in-region or out-of-region composting alternatives.
 - Issue an Expression of Interest to evaluate in-region private alternatives.
 - If necessary, investigate the feasibility of a regionally owned facility (consider type of technologies, location).

⁵ Bundling refers to private waste haulers being obligated to offer garbage/recycling/compost services together as a package, providing a financial incentive to contribute less to garbage.

- o Conduct cost-analysis of the leading alternatives; investigate funding sources (e.g. Private Public Partnerships, cost sharing between the FVRD and municipalities, grant funding, gas-tax monies, reserve fund etc.) and transportation and logistics, in order to achieve the most cost effective and equitable solution.
- b. Secure support from regional and municipal boards, and establish implementation timeline.
- c. If supported, implement regional composting.

7.2.7 Establish a regional Mixed Waste Materials Recovery (MWMR) facility

Establish a regional MWMR facility and associated policy and regulation, which would complement existing regional infrastructure and source separation efforts, and augment diversion from disposal.

- a. Conduct a feasibility study that provides a thorough analysis of the economics, feedstock, logistics, challenges and opportunity for MWMR to assist in reaching Plan targets.
- b. Conduct a waste characterization study for the region in an effort to develop performance criteria for MWMR.
- c. Create a business case, through consultation with municipalities and stakeholders, which details the framework and explores ownership options for a regional MWMR facility.
- d. Secure support from regional and municipal boards and establish a funding mechanism and implementation timeline.

7.2.8 Petition Provincial/Federal Government for the expansion/addition of EPR programs

- a. 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.
- b. Insist that new EPR programs must meet or exceed current recycling collection programs and offer consistency of services.
- c. Collaborate with the BC Product Stewardship Council, EPR Stewards, the Canadian Council of Ministers of the Environment and the Recycling Council of BC.
- d. Partner with neighbouring regional districts and other organizations to ensure a broader, more unified message is expressed when shared concerns are brought forward.

7.2.9 Support innovation in the diversion of materials that are currently considered residual solid waste

- a. Research and support innovative ways of dealing with these materials.
- b. Seek new and more stable markets for these materials.
- c. Investigate the feasibility and financial viability of recovering landfilled materials via landfill mining.

7.3 STRATEGIES FOR GOAL 3: MANAGING REMAINING WASTE RESPONSIBLY

7.3.1 Address waste migration

- a. Lobby the Federal Government to inspect/ensure that disposal facilities located on Reserve land meet the minimum provincial environmental standards and provide regular reporting of waste statistics.
- b. Initiate ongoing dialogue with First Nations' representatives regarding issues of shared concern including solid waste management, diversion efforts and reporting of waste tonnages from facilities located on Reserve land.

- c. Address the issue of cross border waste migration to ensure that this practice is contributing to progressive diversion targets.
- d. Work with other regional districts or municipalities whose waste is/or could in the future migrate into our region for disposal and explore how this larger volume of material could allow for the economies of scale necessary for greater materials recovery or green energy-from-waste options and could bring added jobs to our communities.

7.3.2 Reduce unauthorized disposal of waste

- a. Update and implement the Illegal Dumping Strategy.
- b. Implement more restrictive bans governing smaller scale backyard/barrel burning of residual⁶ garbage originating from residential, DLC and ICI sectors⁷.
- c. Support community group cleanup events/programs.
- d. Partner with the Province, local municipalities, MOT, First Nations, and others to curb illegal dumping

7.3.3 Address future waste disposal requirements

- a. Identify future capacity issues at existing local government disposal facilities.
- b. Work with local municipalities to develop a regionally coordinated disposal system to improve efficiencies, achieve economies of scale and effectively utilize local disposal options at mutual benefit.

7.3.4 Reduce operations-related GHG emissions

- a. Conduct a GHG audit of waste transportation logistics.
- b. Lessen our carbon footprint in areas outside of landfill regulations/permits where possible (promote use of green waste-derived bio-fuel in collection vehicles, minimize transportation, and identify opportunities to improve collection efficiencies.
- c. When considering waste management alternatives, take into consideration the impact of any GHG emissions.

⁶ Residual garbage is the waste that remains following reduction, reuse, recycling and recovery activities. Please note this strategy targets smaller scale backyard/barrel burning not to be confused with larger scale incineration of MSW.

⁷ Waste produced on farms would not be considered under this strategy, as agricultural waste is not governed by solid waste management plans, but as indicated previously we will work together with stakeholders as it is an issue of shared concern.

Table 2: Implementation Schedule

Priority sequence of implementation:	Action:
1. Fundamental actions/setting the groundwork	Explore/Develop ●
2. Secondary actions	Implement ●
3. Supplementary actions	Maintain/Ongoing ●

Proposed implementation dates will be contingent upon the timing of the Plan’s approval by the Ministry of Environment, and the amount of resources available for the implementation of the strategies.

GOAL 1:	REDUCE WASTE GENERATION	ABBREVIATED STRATEGY	PRIORITY	2016	2017	2018	2019	2020
Strategy 7.1.1	Implement an on-going Zero Waste Campaign	a. Implement public engagement campaign(s)	2	●	●	●	●	●
Strategy 7.1.2	Stimulate and raise the profile of material exchange programs/businesses	a. Identify and promote local reuse alternatives	1	●	●	●	●	●
		b. Establish a Waste Reduction Initiation Fund	3	---	●	●	●	●
Strategy 7.1.3	Petition Provincial/Federal Government to act on matters outside local jurisdiction in an effort to minimize waste	a. Petition senior governments	1	●	●	●	●	●
		b. Consider Partnerships with other organizations	1	●	●	●	●	●
Strategy 7.1.4	Execute and enforce local regulation to discourage waste generation	a. Develop a standard/conduct waste audit(s)	1	●	●	●	●	●
		b. Work towards a level playing field	2	●	●	●	●	●
		c. Expand and enforce landfill bans	2	●	●	●	●	●
		d. Standardize/increase surcharges	2	●	●	●	●	●

GOAL 2:	MAXIMIZE DIVERSION	ABBREVIATED STRATEGY	PRIORITY	2016	2017	2018	2019	2020
Strategy 7.2.1	Maximize participation through convenience	a. Investigate the pros and cons of unifying recycling/compost	3	---	●	●	●	●
		b. Promote the Eco-Depot concept/expand the level of service	3	---	●	●	●	●
		c. Situate facilities in proximity to population centres	2	---	●	●	●	●
		d. Continue to support new and existing diversion initiatives	1	●	●	●	●	●
		e. Cooperate with orgs. for out-of-mandate waste	3	●	●	●	●	●
Strategy 7.2.2	Establish & Implement local regulation to encourage diversion	a. Establish waste reduction & recycling bylaw initiatives	1	●	●	●	●	●
		b. Improve collection and evaluation of waste statistics.	1	●	●	●	●	●
Strategy 7.2.3	Increase diversion at all multi-family developments	a. Facilitate discussion between multi-family and waste haulers	1	●	●	●	●	●
		b. Add stipulation to development permits requiring diversion plans	1	●	●	●	●	●
Strategy 7.2.4	Increase diversion in the DLC sector	a. Form a DLC working group.	1	●	●	●	●	●
		b. Create and implement a plan of action.	2	---	---	●	●	●
		c. Identify and promote new and existing authorized DLC MRFs.	1	●	●	●	●	●
		d. Consider the feasibility of residential DLC diversion program	3	---	●	●	●	●
Strategy 7.2.5	Expand diversion in the ICI sector	a. Form an ICI working group	1	●	●	●	●	●
		b. Create and implement a plan of action	2	---	---	●	●	●
		c. Institute diversion pilot project within local ICI sector	1	●	●	●	●	●
		d. Explore the pros and cons of launching a recognition program	3	---	---	●	●	●

GOAL 2:	MAXIMIZE DIVERSION	ABBREVIATED STRATEGY	PRIORITY	2016	2017	2018	2019	2020
Strategy 7.2.6	Establish regional composting capacity	a. Investigate a regional composting alternative	1	●	---	---	---	---
		b. Secure regional and municipal support.		●	---	---	---	---
		c. Implement regional composting, f supported	1	●	●	●	●	●
Strategy 7.2.7	Establish a regional MWMRF	a. Conduct a feasibility study	1	●●	---	---	---	---
		b. Conduct a waste characterization study		●●	---	---	---	---
		c. Create a business case	1	●				
		d. Secure support from Regional Board and municipal councils and establish a funding mechanism	1	●	●			
Strategy 7.2.8	Petition Provincial/Federal Government for the expansion/ addition of EPR programs.	a. Petition for expansion of EPR	1	●	●	●	●	●
		b. Insist new EPR programs meet or exceed current recycling programs		●	●	●	●	●
		c. Collaborate with BCPSC, EPR Stewards, CCME and RCBC	1	●	●	●	●	●
		d. Partner to ensure a broader, unified message	3	●	●	●	●	●
Strategy 7.2.9	Support innovation in the diversion of materials that are currently considered residual solid waste.	a. Research and support innovative	3	●	●	●	●	●
		b. Seek new and more stable markets for these materials.	3	●	●	●	●	●
		c. Investigate feasibility and financial viability of recovering landfill materials	2			●	●	●

GOAL 3:	MANAGE REMAINING WASTE RESPONSIBLY	ABBREVIATED STRATEGY	PRIORITY	2016	2017	2018	2019	2020
Strategy 7.3.1	Address waste migration	a. Lobby the Federal Government	1	●	●	●	●	●
		b. Initiate ongoing dialogue with First Nations	1	●	●	●	●	●
		c. Address cross border migration	1	●	●	●	●	●
		d. Work with others to bring economics of scale	2	●	●	●	●	●
Strategy 7.3.2	Reduce unauthorized disposal of waste	a. Update Illegal Dumping Strategy	3	---	●	●	●	●
		b. Implement more restrictive bans on burning	2	---	●	●	●	●
		c. Support community group clean-up events/programs	1	●	●	●	●	●
		d. Partner to curb illegal dumping	1	●	●	●	●	●
Strategy 7.3.3	Address future waste disposal requirements	a. Identify future capacity issues	3	●	●	●	●	●
		b. Work with local municipalities to develop a regionally coordinated disposal system	3	●●	●	●	●	●
Strategy 7.3.4	Reduce operations-related GHG emissions	a. GHG audit	3	---	●	●	●	●
		b. Lessen carbon footprint	1	●	●	●	●	●
		c. Consider potential GHG emissions	1	●	●	●	●	●

8. PLAN MANAGEMENT

8.1 Monitoring

A Plan Monitoring Advisory Committee (PMAC) will monitor the implementation of the Plan and make recommendations to increase its effectiveness. This committee will attempt to be balanced geographically, demographically and have representation from a variety of interests and perspectives including local government, First Nations, waste management businesses and the general public. The Terms of Reference for this committee is located in *Appendix I*.

The FVRD will conduct a regional waste composition audit. The audit will examine the structure of waste intended for disposal in our region and will be compared to a broad spectrum of relevant waste composition studies and past statistics. It is the intention of the FVRD to conduct this audit as a cost-sharing arrangement with EPR Stewards. The results of the audit will assist in making modifications and focusing in on specific Plan strategies to successfully reach our target.

An audit will also be conducted to quantify the generation of greenhouse gases that are produced as part of our regional solid waste operations. This audit will serve as a starting point to explore the feasibility of reducing our emissions in addition to any provincially mandated requirements for landfill gas capture systems.

Gaining a better understanding of how much waste is migrating to facilities in the region that are outside of the Plan's jurisdiction is also an important objective of this Plan. The FVRD will work with First Nations, Metro Vancouver, Aboriginal Affairs & Northern Development Canada and the Province to secure this information.

In addition, to support the Plan and to ensure its success, FVRD staff, to the best of their ability, will work to track waste generation and diversion. The method and ability of the FVRD to acquire accurate statistics will be addressed as the FVRD considers strategies outlined in Strategy 7.2.2 of this Plan which may result in a licencing or permit program for some or all facilities that are involved in the handling of municipal solid waste.

8.2 Reporting

The FVRD recognizes that there is a need to identify and report out on the success of initiatives outlined in this SWMP, and if these initiatives are achieving the overall goals of the SWMP. Therefore, FVRD staff will present a Plan status report to the Regional Board and the regional office of the Ministry of Environment every two years. A full review of the Plan will be undertaken every five years to ensure that our region's complex solid waste management system is adequately addressed. In an effort to provide information to the public and various stakeholders in regard to the success of the plan and its environmental performance, the FVRD will provide links on its website to reports provided to its Board and the Ministry of Environment in relation to the plan.

8.3 Plan Flexibility and Amendment

This Plan represents the current understanding and approach to the solid waste management challenges being faced by the FVRD. The SWMP is a “living document” that may be amended to reflect new considerations, technologies, and issues as they arise.

Due to changing circumstances and priorities that may evolve over time, and with the input of the stakeholders, all major components of the Plan will be reviewed for appropriateness before implementation. This will generally occur on an annual basis when the FVRD’s five-year financial planning process is initiated. The Plan’s implementation schedule will be flexible enough to reflect the variability in the availability of technologies that may arise over time, as well as the potential changes in regional issues and priorities. In addition, it will also take into account the financial priorities of the FVRD, its member municipalities and other partners, the availability of funding to undertake activities, and the availability of contractors and service providers.

The Plan Amendment Procedure applies to major changes (in the opinion of the Regional Director of the Ministry of Environment) to the solid waste management system, which would include but is not limited to:

- A change that would significantly alter the amount of solid waste to be managed under the Plan;
- The addition, deletion or revision of policies or strategies which in the opinion of the Regional Director, will adversely affect adjacent regional districts,
- The opening, closing, or relocation of a site or facility for the disposal of municipal solid waste.

When a Plan amendment becomes necessary, the FVRD must undergo a public consultation process and submit a revised Plan to the Minister for approval, along with a detailed consultation report. For more information on the Plan Amendment Procedure, please refer to **Appendix II**.

8.4 Dispute Resolution Procedure

The intent of the procedure outlined within this section is to provide a mechanism for parties to resolve issues arising from interpretation of bylaws or policies implemented as part of the SWMP. The goal of this procedure is to have disputes settled amicably and quickly, without the need for mediation or arbitration.

The SWMP is a legal document and it, along with the authority given the regional district through the *Environmental Management Act*, gives the FVRD Board the necessary powers to manage solid waste in accordance with the SWMP. This Dispute Resolution Procedure outlined below cannot be used to fetter the decisions of the Board. The Board has ultimate decision-making powers with regard to implementing the SWMP.

During implementation of the SWMP, disputes may arise as a result of actions or initiatives, or lack thereof, required by the SWMP. In accordance with the Province’s “Guide to the Preparation of Regional Solid Waste Management Plans” this document establishes a dispute resolution procedure for resolving the following disputes:

- an administrative decision made by the FVRD regarding issuance of a license pursuant to Part 3 of the British Columbia *Environmental Management Act*;
- interpretation of a statement or provision in the Plan; or
- the manner in which the Plan or an Operational Certificate is implemented.

Disputes will be settled using the following procedure:

- The parties will make all reasonable efforts to attempt to resolve the dispute in an amicable manner without outside intervention. FVRD staff may advise the FVRD PMAC and/or the Regional & Corporate Services Committee, which may make recommendations to the FVRD Board of Directors and/or Ministry of Environment as required.
- If the parties involved cannot resolve the dispute on their own, the matter will be referred to a mediator acceptable to both parties. If the parties cannot agree on a mediator, the matter shall be referred to the BC Mediation Roster Society or equivalent roster organization for selection of a mediator.
- The mediator's report may be reviewed by the FVRD PMAC and/or the Regional & Corporate Services Committee, which may make recommendations to the FVRD's Board of Directors and/or Ministry of Environment as required. All efforts will be made to reach an agreement through mediation.
- The costs of mediation shall be shared by both parties.
- If the dispute cannot be resolved by a mediator, the matter will be referred to arbitration and the dispute will be arbitrated in accordance with the *BC Commercial Arbitration Act* (the Act), with costs for the arbitration to be apportioned at the discretion of the arbitrator.
- The arbitrator's decision may be reviewed by the FVRD PMAC and/or the Regional & Corporate Services Committee which may make recommendations to the FVRD Board of Directors and/or Ministry of Environment as required. The arbitrator's decision shall be final.

8.5 Financial Implications of the SWMP

The FVRD will fund the programs and initiatives outlined in the SWMP through a user-pay system. This user-pay system is facilitated through Regional Bylaw XXX (*Appendix III*) which states that operators of all public or private landfills and transfer stations located within the FVRD will be subject to a surcharge per tonne for all waste that is accepted and destined for ultimate disposal at the facility itself, at a disposal facility located out of our region, or a disposal facility located on First Nation Reserve land. The FVRD also obtains funds to cover the administration cost of the Plan's authorization process by charging an application fee. Financial support from provincial and federal sources will also be sought to assist with infrastructure projects and for the implementation of specific Plan strategies.

The method of financing regional capital projects will be explored at the time of Board consideration and options will be brought forward as part of necessary feasibility studies. The possibility of applying for grants, P3 Canada funding, or creating other funding partnerships will also be explored.

The intent of the SWMP is to outline the FVRD’s conceptual plan on reaching its diversion target. Implementation of the strategies and actions outlined in the SWMP are dependent on annual budget allocations, staff resources and direction from the FVRD’s Board of Directors. The Board may choose to change the implementation schedule, not fund a particular initiative due to the results of a feasibility or business case assessment, or decide not to fund a particular initiative due to funding constraints, market conditions or other unforeseen reasons.

If necessary, staff will seek further direction from the Board as to any tonnage fee adjustments that may be required to fund certain strategies listed in this Plan. At such time, required consultation will be completed and reported to the Ministry of Environment.

The FVRD’s approved five-year financial plan for its Regional Solid Waste budget, including a breakdown of how funds will be allocated, is provided in **Table 3**. As indicated this table will be updated annually.

Table 3: 2013 – 2017 FVRD Financial Plan Forecast for Regional Solid Waste

Regional Solid Waste Management – General Financial Plan Forecast for 2013-2017					
Account Description	2013	2014	2015	2016	2017
REVENUE					
Grants in Place of Taxes	500	500	500	500	500
Tonnage Levy	304,641	331,891	331,891	331,891	331,891
Miscellaneous Revenue	2,000	2,000	2,000	2,000	2,000
Other Grants	5,000	5,000	5,000	5,000	5,000
Appropriated Surplus	10,000	0	0	0	0
Total Revenue	322,141	339,391	339,391	339,391	339,391
EXPENDITURES					
Staffing	161,358	161,358	161,358	161,358	161,358
Administration	9,200	9,200	9,200	9,200	9,200
Public Education	10,000	10,000	10,000	10,000	10,000
Legal Services	2,000	2,000	2,000	2,000	2,000
Contract Services	25,000	15,000	15,000	15,000	15,000
GIS/Mapping Support	2,283	2,283	2,283	2,283	2,283
Programs	73,150	100,400	100,400	100,400	100,400
Overhead Support	39,150	39,150	39,150	39,150	39,150
Total Expenditure	322,141	339,391	339,391	339,391	339,391

Member municipalities will be responsible for recovering the cost of their own distinct diversion, collection and disposal programs and the FVRD will be responsible for the same in electoral areas. Cost recovery mechanisms for these programs include tax requisition, user fees, disposal tipping fees and revenues from recovered resources (such as the sale of finished compost). Specific information for each municipality and electoral area can be found on the FVRD website.

EPR programs are self-funded, typically through revenues collected via return-deposits or eco-fees paid by consumers when they originally purchase a product. The FVRD and individual municipalities expect to be compensated fairly by industry stewards for all EPR material collected at municipally run facilities. As EPR programs grow and multiply, local private collection facilities may no longer be able to handle the huge quantities of future EPR materials. As a result, partnerships/contracts may need to be formed between stewardship groups and public programs/facilities in order to adequately manage the large volume of materials.

Many other significant and on-going recycling initiatives in our region do not require government funding. In these instances, residents and businesses pay private waste collectors or material handlers directly for their services. The FVRD will encourage and support the development of private sector initiatives which help us achieve our Zero Waste target.

8.6 Authorization of Facilities

The Plan requires that any facility involved, or proposed to be involved, in the handling of municipal solid waste, be it processing or disposal, is required to seek authorization under the Plan. The facility authorization process is provided in **Appendix IV** and the application package can be found on the FVRD website. Authorized local government landfills and transfers stations are listed in **Appendix V**.

Being *Authorized* means that the facility meets the environmental, public health, zoning and aesthetics standards of the municipality where it is located, as well as those of the BC Ministry of Environment. It also means that the facility becomes part of the FVRD's coordinated effort to monitor and promote diversion within this region. All authorized facilities must provide the FVRD with the annual tonnage of material handled and its origin as part of its operations. The FVRD is committed to continual improvement in its collection and evaluation of the waste statistics as this is the principal method of tracking the effectiveness of the Plan.

As indicated in Strategy 7.2.2 of this Plan, the FVRD may implement a licencing or permit program for some or all facilities that are involved in the handling of municipal solid waste (which includes recycling). FVRD staff will develop required bylaws, conduct necessary consultation, seek Ministry of Environment approval and subsequently will seek an amendment to the Authorization Process outlined in this section and associated appendices.

8.6.1 Authorization of Non-Typical Waste

Non-typical waste, or that which requires special handling such as Specified Risk Material, soil, mass carcass disposal, other agricultural waste, friable asbestos or material associated with natural disasters, is occasionally disposed at a landfill under certain circumstances from both in and out of region. Although the FVRD does not have a provincial mandate to accept or manage this waste, it does not wish to be restrictive in such matters. In cases where the quantity of material is minor, individual municipalities that own a landfill would decide for themselves whether or not to accept this type of waste, subject to provincial permit requirements and regulations.

At the same time, also authorized under this Plan, is the ability for each municipality or the FVRD to export non-typical waste to facilities that are willing and lawfully allowed to accept it, but are located outside of our region. These facilities may include, but are not limited to, the Cache Creek Landfill, the Ecowaste Landfill in Richmond, the Swan Hills Special Waste Treatment Centre in Alberta, and several in southern Washington State and northern Oregon State.

In accordance with the individual Operating Certificate or Permit of each landfill, soil, excluding Hazardous Waste as defined by the *Hazardous Waste Regulation*, may be accepted at landfills within the FVRD for use as daily and intermediate cover. Furthermore, soil may be used for final cover provided that the soil does not contain any substance exceeding the applicable numerical soil standard for the intended end use of the land as defined by the closure plan of the landfill. The applicable numerical soil standard is defined in the Contaminated Sites Regulation.

9. REGIONAL WASTE MANAGEMENT STRUCTURE

Our regional district is unique in that most member municipalities maintain their own distinct systems for the collection, diversion and disposal of solid waste, with the FVRD only providing service to most of its electoral areas. This combined effort results in numerous, constantly evolving programs throughout the region. Specific details on the practices of each member municipality and electoral area can be found on the FVRD website.

9.1 Landfills

There are several operating landfills within our region currently providing for the disposal of all residential waste within our own boundaries (except for the City of Abbotsford). These landfills have also provided disposal options for the ICI and DLC sectors, but as described in Section 4.3 a significant quantity of this waste is migrating out of our jurisdiction. For solid waste that has traditionally been disposed of in our region, the lifespan of our existing landfills is sufficient to carry us past the 10 year forecasting of this current update to the Plan. As a result, no new local disposal sites will be pursued at this time; however, long term forecasting for regional disposal (20 years) will be considered as one of the Plan's strategies.

Please refer to **Appendix VI** for a map of local government disposal and diversion facilities located in the FVRD.

Landfills Run by Local-Government

The Bailey Landfill in Chilliwack is owned and operated by the City of Chilliwack. It services its own community as well as other areas within the Fraser Valley Regional District for solid waste disposal options. The City received approval for the landfill's expansion, which increases its capacity by 1,800,000 cubic metres and incorporates state of the art controls and design features to protect groundwater and surface water adjacent to the landfill. A landfill gas collection system is currently being installed to minimize greenhouse gas emissions.

The District of Mission owns and operates its own landfill which services its local community and provides disposal options to Electoral Area C, F and G residents. The District of Mission's landfill experienced a serious breakout of landfill leachate in January 2006 as a result of heavy rains. Since that time, considerable resources have been allocated to studying the surface and groundwater interactions under the landfill and designing an improved water management strategy. As a result several improvements have been made to the site including:

- An improved aeration pond.
- A new infiltration pond to maximize natural attenuation in groundwater.
- Covering of older sections with impermeable geomembranes to reduce leachate generation.
- Construction of a Retention and Passive Treatment System to treat breakouts.
- Decreasing the size of future landfill cells to reduce leachate generation.

The FVRD owns the Chaumox Landfill in North Bend, which is operated by the Boston Bar "Area A" Landfill Society. The landfill primarily services the residents of Electoral Area A and occasionally accepts waste from other areas of the FVRD, under special arrangement. In 2012, the FVRD presented a proposal for early closure of the landfill that described relocating excavated waste material from an existing landfill site in Burnaby to the Chaumox landfill site. This proposal was taken to a public meeting where the residents of Electoral Area A voted against the proposed relocation of waste material and to retain their landfill.

Following this meeting the FVRD received and reviewed the updated filling and closure plan for Chaumox Landfill. This plan provides detailed information for the filling and closure requirements at the landfill and projects closure in 2107, or 2140 if increased rates of diversion are possible. The plan is being carefully followed and the landfill is expected to remain active until projected closure in 2107.

Landfills on Reserve Land

There are several on-Reserve landfills located in the Fraser Valley in outlying areas around Harrison Lake, and up the Fraser Canyon toward Boston Bar. Although these landfills fall within the geographical boundaries of the FVRD they fall outside of the jurisdiction of this Plan.

Of the known on-Reserve landfills, the largest are located in the Chilliwack area, including the Cheam Landfill, the Skwah Over-the-Edge Landfill, and the Shxwhá:y Village Landfill (permitted through

Aboriginal Affairs and Northern Development Canada). These facilities receive an unknown variety and tonnage of waste from both within and outside of our region.

Please refer to Table 4 for details regarding the estimated closure date and design capacity of known active landfills in this region. For additional details on disposal facilities and information regarding “closed” or non-operational landfills in our region, please refer to **Appendix V**.

Table 4: Estimated closure date & design capacity for landfills located in the FVRD (estimated closure dates are dynamic and subject to tonnages received at each facility).

Landfill	Design Capacity	Estimated Closure Date
Mission Landfill	2.6 million m ³	2062
Bailey Landfill	2.5 million m ³	2054 - 2070
Chaumox Landfill	116,000 m ³	2107
Cheam Landfill (on-reserve)	Unknown	Unknown
Skwah Over-the-Edge Landfill (on-reserve)	Unknown	Unknown
Shxwhá:y Village Landfill (on-reserve)	Unknown	Unknown

Landfills Out-of-Region

Two out-of-region landfills have been approved under this Plan to accept FVRD waste. These include the Cache Creek Landfill and any extension that has authorization under the Thompson Nicola Regional District's SWMP and the Roosevelt Regional Landfill located in Washington State. Several other out-of-region landfills located in BC, Alberta, Washington State and Oregon State have the potential to accept waste from this region. These facilities have not yet been approved under this Plan and would be considered on a case-by-case basis if required.

9.2 Transfer Stations

Transfer stations provide residents and haulers with a facility where waste can be temporarily dropped off, stored and transported for ultimate disposal once a sufficient quantity of waste accumulates. Transfer stations allow for a more economical way of transporting waste for end disposal; several of these facilities serve the residents of this region.

Transfer Stations Run by Local Government

The City of Abbotsford presently has an agreement with Metro Vancouver (Greater Vancouver Regional District), which accepts Abbotsford’s solid waste at its Matsqui Transfer Station and transports it to the Cache Creek Landfill. Wastech Services Ltd., part owner of the Cache Creek Landfill, has received approval for an expansion, allowing the landfill to accept waste for an additional 25 years. However, Metro Vancouver may choose to redirect its managed waste elsewhere as outlined in its Integrated Solid Waste and Resource Management Plan. Metro’s plan was approved in July 2011.

As the City of Abbotsford's agreement with Metro Vancouver expires with the closure of the existing Cache Creek Landfill annex, anticipated to take place at the end of 2016, the City is exploring future disposal options. These options may include renewing its agreement with Metro Vancouver, disposing of waste within an approved in-region landfill (Bailey Landfill or Mission Landfill) and/or entering into a contract directly with a private transfer station with potential disposal sites including approved in-region landfills (Bailey Landfill or Mission Landfill), the Cache Creek Landfill, the Roosevelt Regional Landfill, other Washington State landfills or landfills in Alberta. Changes to the FVRD's Plan may be required as a result for any facilities not currently approved or recognized in the FVRD Plan.

The District of Hope Landfill was closed at the end of 2013. The District has since developed and opened a transfer station, located on the site of the closed landfill. The Ministry of Environment has approved a short term option that allows waste from this transfer station to be diverted through the private First Class Transfer Station in Abbotsford for disposal at the Roosevelt Regional Landfill in Washington State. This arrangement may change over the long term.

The FVRD operates four rural transfer stations located in Hemlock Valley (Electoral Area C), Harrison Mills (Electoral Area C), Sunshine Valley (Electoral Area B), and Sylvester Road in Electoral Area F. These facilities accept only regular household amounts of waste, dropped off by the residents themselves. All of these rural transfer stations are gated and manned, with the exception of the Hemlock Valley facility. The FVRD is currently considering upgrading and relocating the Hemlock Valley Transfer Station due to the potential expansion of the local ski resort.

Private Transfer Stations

BFI Canada Inc. and First Class Waste Services Inc. both operate private transfer stations within the City of Abbotsford. These facilities accept residential and ICI waste from both their own collection vehicles, as well as those of other commercial hauling companies, curbside collection and residential drop-off. The waste is transferred by truck across the United States border, where it is then transported by rail for disposal at the Roosevelt Regional Landfill in Washington State.

Transfer Stations located on Reserve Land

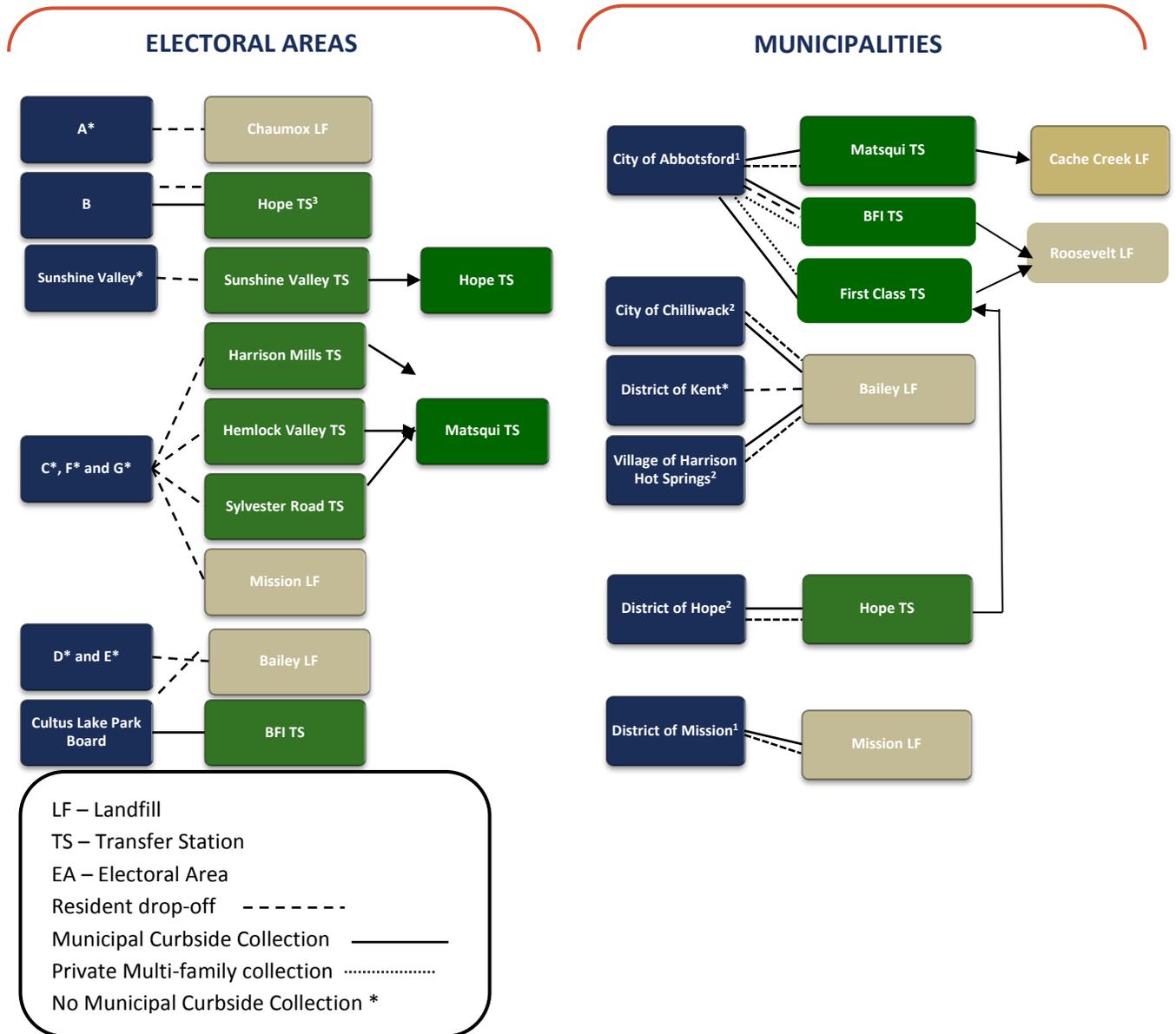
The exact number of transfer stations located on Reserve land is unknown, as they are outside the jurisdiction of the FVRD. The facilities that the FVRD is aware of include the Valley Tank & Container Transfer Station located in the City of Chilliwack, and the Leq'á:mel Transfer Station located in Electoral Area G. The final disposal facility for the waste transferred from these sites is unknown, but it is assumed to be one of the on-Reserve landfills mentioned previously in the Plan.

Please refer to Table 5 for a list of known transfer stations operating in the FVRD and to Figure 2 which provides a flowchart from source to disposal for waste managed by local government.

Table 5: Transfer stations operating in the FVRD.

Transfer Station	Public/Private
Harrison Mills Transfer Station	Public (FVRD)
Hemlock Valley Transfer Station	Public (FVRD)
Hope Transfer Station	Public (FVRD)
Matsqui Transfer Station	Public (Metro Vancouver)
Sunshine Valley Transfer Station	Public (FVRD)
Sylvester Road Transfer Station	Public (FVRD)
BFI Transfer Station	Private
First Class Waste Services Inc. Transfer Station	Private
Leq'á:mel Transfer Station	Private (Reserve land)
Valley Tank and Container Transfer Station	Private (Reserve land)

Figure 2: Residential Residual Waste Flowchart 2012/2013



¹ Municipal curbside collection service is only provided to single-family homes and duplexes; Multi-family units must make collection arrangements through a private contractor.

² Municipal curbside collection service is provided to single-family homes and duplexes. Multi-family units have the option of participating in the municipal program or contracting the service out to a private hauler.

9.3 Diversion Facilities

Within the FVRD there are many privately and publicly owned enterprises that assist in the diversion of recyclable material that would otherwise end up in a landfill. The Plan requires that any facility involved, or proposed to be involved, in the handling of municipal solid waste, be it processing or disposal, seek authorization under the Plan. Each facility must meet the environmental, public health, zoning and aesthetics standards of the BC Ministry of Environment and the municipality where the facility is located.

Due to the continuously changing diversion landscape, an updated list of facilities involved in the handling of recyclable material that are authorized under this Plan will be kept on the FVRD's website, rather than in this document. Facilities currently owned, operated or partially funded by local government are summarized below. Details regarding specific materials accepted at each facility are also listed on our website.

The Abbotsford Mission Recycling Program is jointly funded by the City of Abbotsford and the District of Mission. The Program is operated by Abbotsford Community Services that involves two depot locations: the Abbotsford Mission Recycling Depot (AMRD), located in the City of Abbotsford, and the Mission Recycling Depot, located in the District of Mission. All curbside blue bag recyclables from both the City of Abbotsford and the District of Mission are transported to the AMRD for sorting and marketing.

Both the AMRD and the Mission Recycling Depot provide drop-off areas for residential recyclables, some household hazardous waste covered under an EPR program, and e-waste, appliances and scrap metal. The AMRD also accepts recyclables from commercial operations, and the Mission Recycling Depot hosts an annual household hazardous waste day for Mission residents. Abbotsford residents also have the option of dropping off appliances and scrap metal at the Matsqui Transfer Station.

Curbside food and yard waste is taken to the Net Zero Waste Abbotsford Composting Facility. The Net Zero Waste facility is licenced to receive up to 40,000 T/year of residential and commercial organic waste. The facility uses an indoor Gore static aerated covered pile system with bio-filter.

Residents of the District of Mission and surrounding rural areas also have the option of dropping off their blue bag recyclables, food waste, and yard waste at the Mission Landfill. Since June 2011, a private contractor has been operating a composting facility at the Mission landfill. The facility currently processes curbside collected organics from approximately 11,000 households, together with yard waste and a limited amount of commercial organics dropped off at the site. Compost is processed in static, aerated, covered windrows.

The City of Chilliwack operates a recycling drop-off area at the Bailey Landfill (intended for Chilliwack residents only and not ICI customers), which accepts all blue bag items in addition to many other recyclable materials. The City of Chilliwack also owns the Parr Road Green Depot, which accepts a

variety of organic waste. In addition, as a requirement of a City contract, Emterra also offers a depot for all residents and ICI customers.

Residents of the District of Hope can drop off blue bag recyclables and a variety of other recyclable items at the Hope Transfer Station. Similarly, residents in the District of Kent and the Village of Harrison Hot Springs can visit Kent Recycling which accepts a wide variety of recyclable items. The District of Kent also provides a green waste drop off depot to its residents, which is open throughout the year.

Residents living in Electoral Areas C, F & G can drop off their blue bag recyclables at the Harrison Mills Transfer Station or the Sylvester Road Transfer Station, both of which have free-stores on site where reusable household items and appliances can be dropped off or picked up free of charge. These Electoral Area residents can also drop off recyclables at the Mission Landfill. The Sunshine Valley Transfer Station in Electoral Area B also has a free-store and a drop-off area for blue bag recyclables, green waste and scrap metal that is only available to Electoral Area B residents.

The Seabird Island Eco Centre & Waste Management Facility is owned and operated by the Seabird Island Band. The facility is located on reserve land and, as such, does not fall within the regulatory jurisdiction of the FVRD. However, the facility is geographically situated within the region. The Seabird Island Eco Centre and Waste Management Facility processes organic waste for re-use as soils for sustainable local food production. While not subject to regional regulatory mechanisms, the operation and use of the facility is recognized and supported by the FVRD.

Figures 3 and 4 are flowcharts of recycling and composting alternatives for residents living in the FVRD.

Figure 3: Residential blue bag recycling flowchart 2012/2013.

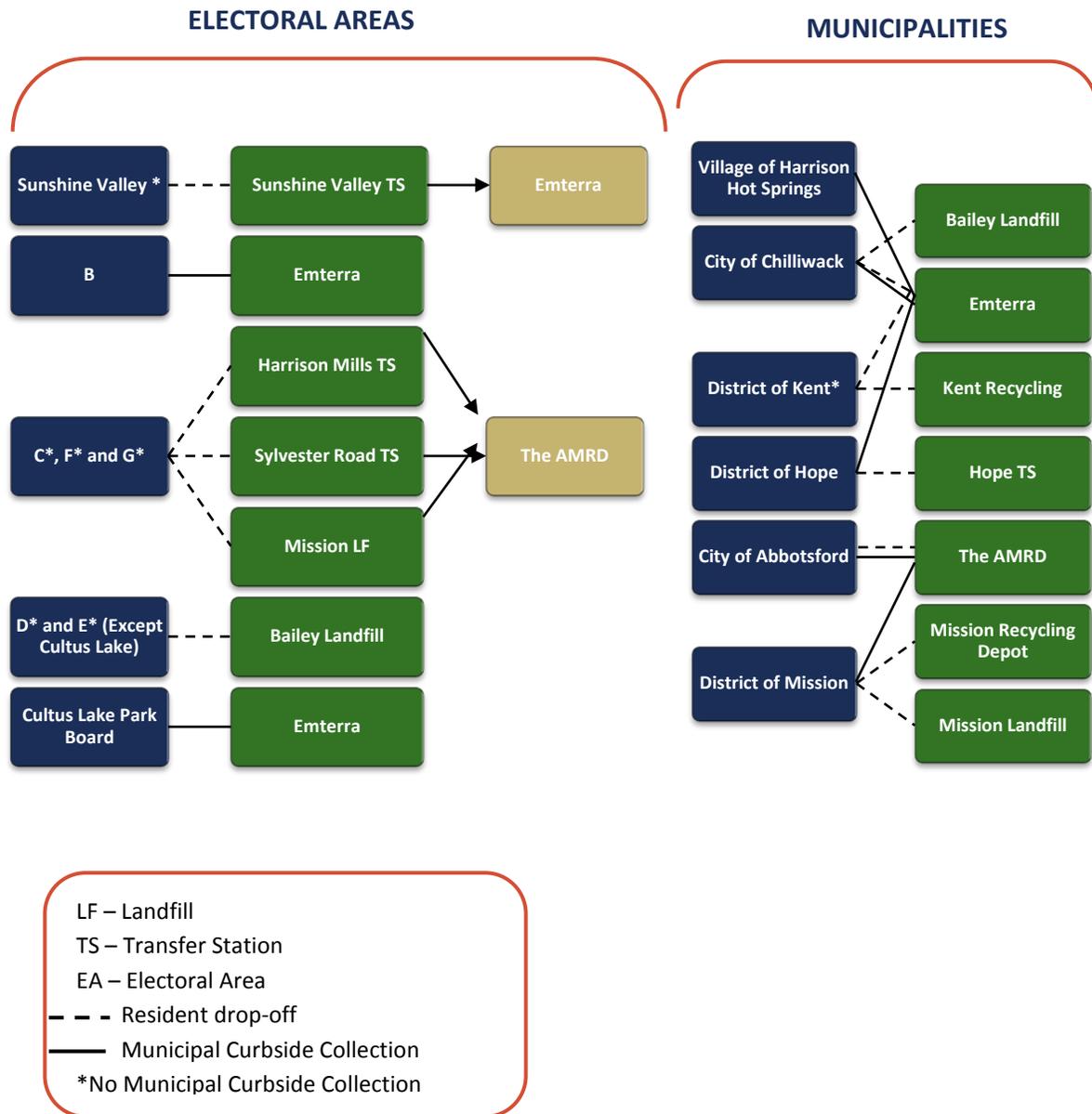
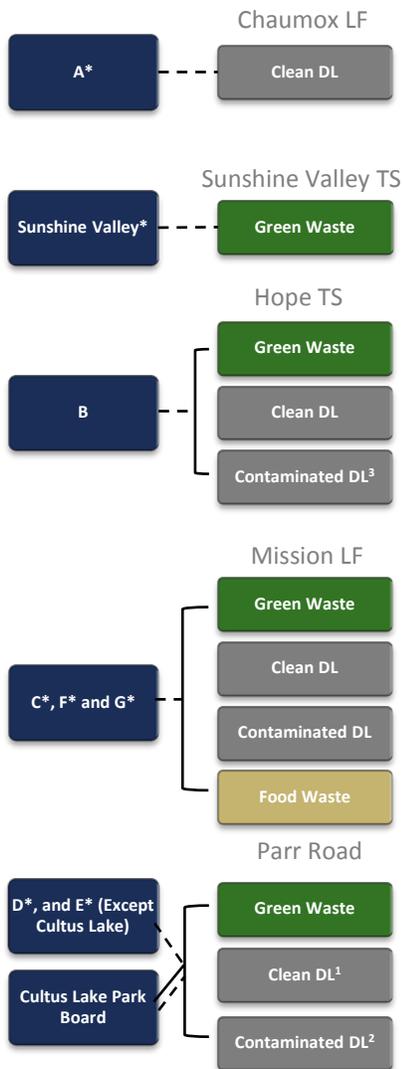


Figure 4: Residential green waste flowchart 2012/2013.

ELECTORAL AREAS



LF – Landfill
 TS – Transfer Station
 EA – Electoral Area
 DL = dimensional lumber (i.e. 2 by 4)
 - - -Resident drop-off
 — Municipal Curbside Collection
 *No Municipal Curbside Collection

MUNICIPALITIES



¹ Clean construction site materials (new construction material), demolition material (clean wood from demolition).
² Only plywood, Oriented Strand Board (OSB) and particle board. No treated wood, painted wood and creosoted wood.
³ Nails and screws are ok. Wood cannot have any metal objects larger than 3" attached to it (no door knobs). No DLC.

10. WASTE QUANTITY AND COMPOSITION

10.1 Local Government

Table 6 below summarizes all the facilities within the FVRD that accept waste destined for final disposal from all waste sectors, not just the residential contribution. Small rural transfer stations are not considered, as the waste from these facilities is transported to, and the amount captured within, the larger in-region facilities.

Knowledge gaps present an ongoing challenge as they prevent an accurate estimation of the total tonnage of waste being generated and disposed of within the FVRD. Specifically, an unknown quantity of waste is accepted at facilities located on Reserve lands and the percentage of waste originating from outside of our region, disposed of at the facilities listed in Table 6, is also unclear. Lower tipping fees and varying disposal bans are assumed to draw considerable quantities of waste from outside of this region to these facilities. This Plan includes a requirement for Authorized facilities to provide information on the generation location of the waste that the facilities manage in order to improve the accuracy of waste disposal statistics.

Table 6: Waste disposed at FVRD landfills and/or transfer stations in 2012 (tonnes).

Landfill or Transfer Station	2012 Waste tonnage
Matsqui TS	31,942.97
First Class Waste TS (Abbotsford)	23,557.73
BFI TS (Abbotsford)	94,202.37
Bailey LF (City of Chilliwack)	21,341.68
District of Mission LF	13,103.53
Capt'n Crunch TS (Abbotsford)	12,659.12
Hope LF (closed 2013)	5,304.47
Chaumox Landfill	500
Valley Tank & Container TS (on-Reserve)	Unknown
Cheam Landfill (on-Reserve)	Unknown
Skwah Over-the-edge Landfill (on-Reserve)	Unknown
Shxwha:y Village Landfill (on-Reserve)	Unknown
Total	202,611.87
Current Estimated Population	296,000
Per Capita Waste Disposal Rate (tonnes/capita/year)	0.68

The per capita waste disposal rate estimates the amount of solid waste destined for disposal each year, per person in the region. It is not just a reflection of the residential rate, but also takes into account the industrial, commercial and institutional sources (ICI) and demolition and land clearing operations (DLC). Table 4 shows this region's rate at 0.68 tonnes/capita/year. This figure can be compared to the FVRD's estimated rate 10 years ago of 0.51 tonnes/capita/year. This represents a 33% increase in waste disposal per capita over the past 10 years. However, based on the aforementioned reasons, these figures may not be an accurate representation of this region's true waste disposal rate.

If our current rate of diversion does not change, the per capita waste disposal rate climbs annually by a conservative 1%, and population forecasts for this region are realized, the quantity of solid waste requiring disposal will double in the next 25 years (see Figure 5). The strategies outlined in the Plan are intended to stop this trend and decrease waste generation.

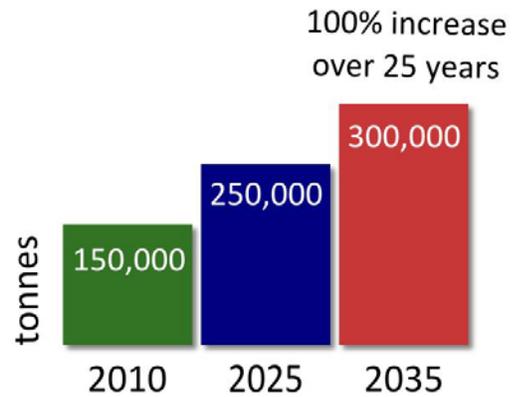


Figure 5: Predicted tonnage of waste requiring disposal. (Source: *Regional Population Projections (P.E.O.P.L.E 35)* by BC Statistics and *Estimated Waste Requiring Disposal.*)

10.2 Diversion Estimates

Approximately half our solid waste is diverted through reduction, reuse, recycling and composting provided through municipal services, extended producer responsibility programs, commercial enterprises and residential initiatives. Estimating total diversion accurately is limited by several factors, including:

- Reused materials do not enter the recycling or disposal system, and therefore, are not factored into the diversion equation.
- There is no provincial standard or uniform reporting template for what is or is not considered diverted; therefore, comparisons between regional districts are problematic.
- Obtaining figures from the multitude of commercial enterprises and EPR programs is challenging.
- Our close proximity to Metro Vancouver allows recyclables and waste materials to migrate freely and frequently across our borders.
- Unknown quantities of waste are being disposed of at sites that are outside of this Plan's jurisdiction.
- Despite burning restrictions, undetermined quantities of waste are being burned in backyards and on construction sites following demolition.
- Waste migrates to disposal facilities that do not have the same disposal bans or lack of resources to enforce bans.

Table 7: Estimation of regional diversion rate

Regional Material Category	2012 tonnes
Disposal	
Local Government Run Landfills	40,250
Out-of-Region authorized Landfills	162,362
Total Disposal	202,612
Diversion	
Municipal Recycling/Composting	47,042
Private Sector Recycling/Composting	150,294
Stewardship & Extended Producer Responsibility Programs	12,303
Total Diversion	209,639
Regional Diversion Rate 2012 = Total Waste Diverted/(Total Disposed of + Total Diverted):	51%⁸

10.3 Waste Composition

It is important to understand the contents of our region’s waste stream. Knowing the composition of our waste and its characteristics can help inform decision makers and improve services. It can target the materials that require diversion or extra outreach programs and help to monitor the success of reduction strategies.

A waste audit of curbside material was conducted in 2011 by the Abbotsford Mission Recycling Program, which targeted single family residences in the City of Abbotsford and the District of Mission. The audit included the analysis of both regular garbage and blue bags. Chilliwack conducted a similar audit in 2010. The results provide useful insight into the waste profile trends in these municipalities. Figures 6-8 provide a summary of the average individual results of the three municipalities.

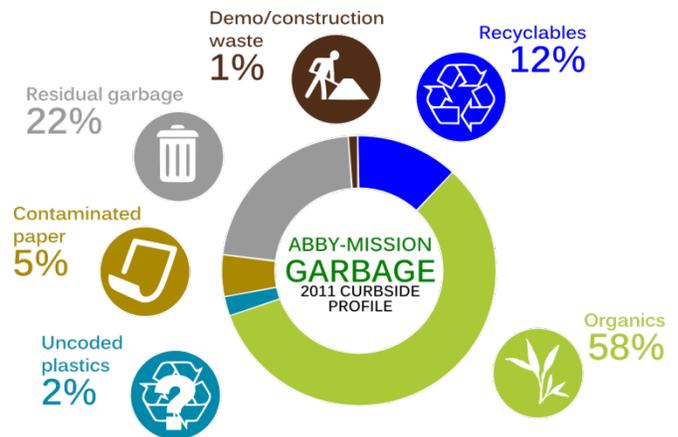


Figure 6: Contents of curbside garbage bags- Abbotsford-Mission Waste Audit 2011

Many waste characterization studies have been completed around the province in recent years. Despite differences in both economic and social

⁸ Since hard data are not available for all sectors, some data have been estimated based on various assumptions which, therefore, limit the confidence in the resulting calculated waste diversion rate. The estimate does not include waste disposed at landfills on Reserve land because the actual amounts of waste disposed at these facilities are unknown. Also, it is understood that private facilities receive significant amounts of waste from areas outside the FVRD.

aspects in each region, there are many similar trends, most notably that organics constitute an unnecessary and significant volume of our waste stream. Organic matter not only takes up valuable landfill space, but when it decomposes, it produces leachate and methane, a potent greenhouse gas contributing to climate change.

Many readily divertible products such as plastic, paper, glass and metal – some of which are included in EPR programs – are still ending up in the landfill. Reusable and recyclable building materials also end up in our landfills despite current regulatory efforts, such as landfill bans.

Certain plastic is not recyclable due to its type, or because it is a mixed material (such as a chip bag which is aluminum-lined plastic). The contribution of this type of plastic to our landfills is minor in comparison with organics or other recyclable material, but still presents a problem. As noted in Section 3.2, senior government must take action by banning certain plastics from entering our country and instituting stringent coding requirements.

Figure 6 indicates that 22% of materials picked up at the curbside are currently classified as garbage. The composition of this “garbage” should be further explored to maximize reuse and recycling potential of less well-defined waste streams such as textiles (e.g. worn-out clothing) in car insulation or roofing felts. Markets and collection programs for hard to recycle plastics (that are not already, or will in the future be part of an EPR program) must also be explored.

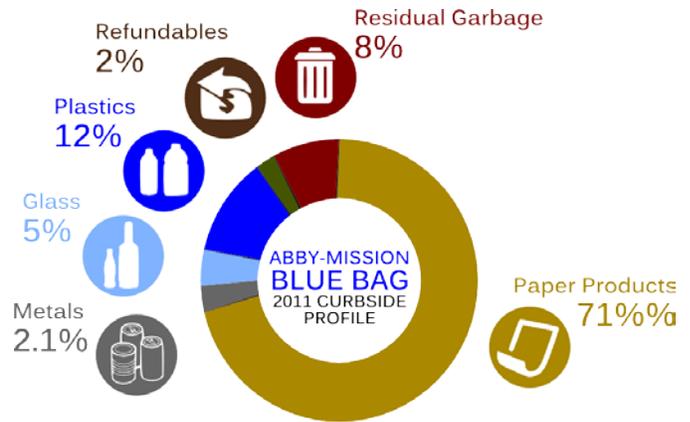


Figure 7: Contents of curbside blue bags (Abbotsford-Mission Waste Audit 2011)

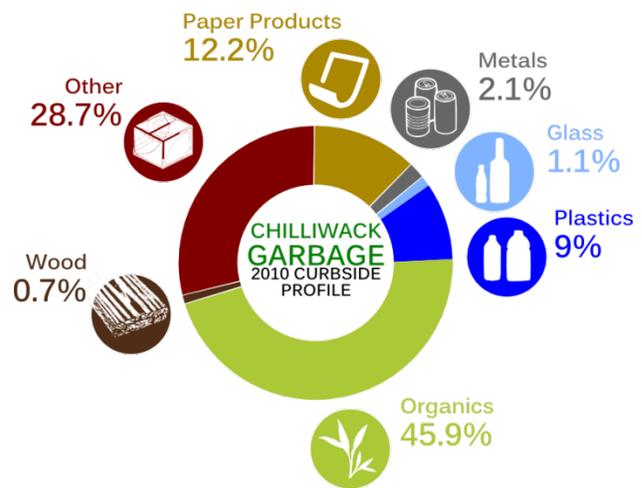


Figure 8: Contents of curbside garbage bags (Chilliwack Waste Audit 2010)

10.4 Sectors Contributing to the Waste Stream

Waste from within our region comes from a variety of sectors including single-family residential homes, multi-family units, ICI and DLC. Understanding which sector our waste originates from will assist in the development of sector-specific waste reduction programs.

A representation of the different sectors generating waste in British Columbia is provided in Figure 9. Statistics may vary from region to region, but it is generally accepted that throughout the highly urbanized and industrialized areas of BC, the ICI sector produces the most waste followed by the residential and then DLC sectors.

The residential sector is broken up into single-family homes and multi-family units. Per capita, those living in multi-family units recycle less than those in single-family homes. Historically, solid waste managers have provided single-family homes with curbside collection, but not all multi-family units have received the same level of service. There's a need for change in the future as this region's population growth is leading to the development of a broad range of housing types and densities in urban centres. New housing in these urban centres is shifting from mainly single-family homes to multi-family units. Census data also indicate that the highest growth category over the past decade has been the apartment/duplex category, which includes single-family homes with secondary suites. These changes to the urban landscape have led solid waste managers to re-examine their collection methods and education strategies.

Although the population in the FVRD resides primarily within municipalities (96%), the land mass of the region is predominantly rural, with only 4% of residents living in electoral areas. In electoral areas, residential waste is the highest contributor to the waste stream, as there are few industrial or commercial operations. Also, residents in rural areas are more likely to seek alternate disposal options such as composting or backyard burning, and have less convenient recycling options than their urban neighbours.

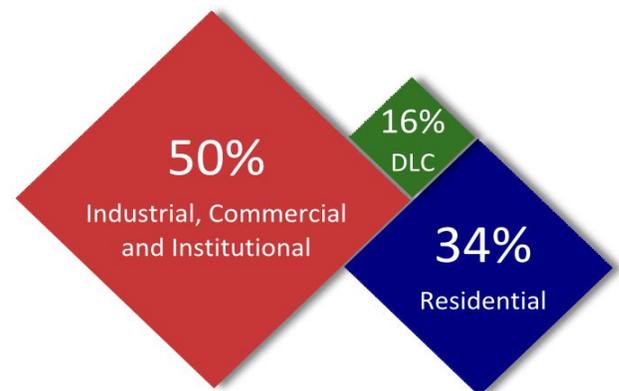


Figure 9: BC's estimated Solid Waste Generation by Sector, 2006 (weight). Source: BC Stats and Statistics Canada

APPENDIX I

Plan Monitoring Advisory Committee – Terms of Reference

Committee Role

The primary role of the Plan Monitoring Advisory Committee (PMAC) is to advise the Regional Board to effect and ensure the efficient and successful implementation of the Fraser Valley Regional District (FVRD) Solid Waste Management Plan (“the Plan”).

Committee Structure

PMAC will be comprised of a ‘core working group’ and a larger ‘resource group’. The core group will include FVRD staff members and at least one technical staff member from each member municipality. The resource group will include members of the core working group in addition to the following: One technical representative from First Nations; one Ministry of Environment representative; one member from the private composting sector; one member representing private sector waste management; two representatives from environmental and community groups; one resident of the FVRD; and one representative from the recycling industry.

Scope

The core working group will meet on a quarterly or as needed basis to oversee and/or review all routine business related to the Plan and make recommendations to the Regional and Corporate Services Committee. The resource group will meet at a minimum once yearly or more frequently as requested by the core group to discuss matters that are wider reaching in nature, deal with exceptional circumstances, and/or which require further consultation. All work would be carried out by Regional District staff or, in the case of municipalities, municipal staff. PMAC would serve to review work and provide input.

Objectives and Tasks

1. To meet on a regular basis to discuss issues relating to Plan monitoring.
2. To review all information related to implementation of the Plan, including waste quantities, populations, and diversion rates for each Plan component.
3. To act in an advisory role during each major Plan review which will occur every five years.
4. To act as a mediator in any disputes arising during implementation of the Plan that pertain to:
 - Interpretation of a statement or provision in the Plan or
 - Any other matter not related to a proposed change to the actual wording of the Plan or an operational certificate.
5. To ensure adequate public consultation in matters affecting the public, such as landfill siting, transfer station siting, etc.

6. Support municipal waste management staff recommendations to their respective councils when requested and if applicable (Plan dependent).
7. To review new facility applications.

Conduct of Meetings

The Chair will be an FVRD staff member or his/her duly appointed designate. The meetings will be carried out in a manner determined by the Chair. In general, the committee is to operate on a consensus basis. The Chair will have discretion as to when consensus is reached. Consensus will be formally recorded in the minutes of the meeting. In certain circumstances, issues raised during the course of a meeting may require a formal motion and vote.

Agreement among committee members shall be sought whenever an agenda item is advanced as a specific recommendation to the Regional and Corporate Services Committee. Consensus will be sought by the Chair as to whether a given issue is a voting matter.

APPENDIX II

Plan Amendment Procedure

This document outlines the review procedure for any proposed major amendments to the SWMP. As outlined in Section 8 of the Solid Waste Management Plan, any changes to the Plan considered to be major must be reviewed by the Plan Monitoring Advisory Committee (PMAC) and by the Regional Board. To ensure that adequate time exists for PMAC, the FVRD Regional & Corporate Services Committee and/or Electoral Areas Services Committee, and the Regional Board to consider the amendment, proposed amendments must be submitted a minimum of 60 days before the monthly Board meeting.

Board meetings are regularly scheduled for the 4th Tuesday of the month, however as the timing of meetings can change, please contact the FVRD Manager of Environmental Services to confirm the date.

Minor amendments are not required to go to the Board for approval. However, they must still be reviewed by PMAC. It is therefore recommended that submission of a minor amendment proposal follow similar protocol to ensure PMAC and the manager have adequate time to review the proposal.

In order to manage proposed amendments in the most efficient manner, all proposals must include:

1. a cover letter clearly indicating the reason and terms of the proposed amendment;
2. any potential implications to solid waste management in the region;
3. if applicable, a location map showing the area effected by the proposed amendment.
4. the date by which a response is requested.

Please send all proposals to: Manager of Environmental Services, Fraser Valley Regional District, 45950 Cheam Avenue, Chilliwack BC V2P1N6.



READ A THIRD TIME this 26th DAY OF February, 2013

APPROVED by the Ministry
of Environment this DAY OF

ADOPTED this DAY OF

Chair/Vice-Chair

Corporate Officer/Deputy

4. CERTIFICATION

I hereby certify that this is a true and correct copy of Bylaw No. 1224, 2013 as read a third time by the Board of Directors of the Fraser Valley Regional District on the 26th day of February, 2013.

Dated at Chilliwack, BC this 27th day of February, 2013.

Corporate Officer/Deputy

APPENDIX IV

Facility Authorization Process

Any applicant who is seeking to operate, is already operating, or is proposing to change the operations of an already approved municipal solid waste facility within the FVRD, is required to seek authorization under the Solid Waste Management Plan.

Potential applicants shall be provided with an application for authorization (Appendix VIII). Such facilities include those that are involved in the handling of municipal solid waste, including:

- Disposal Facility
- Brokering Facility
- Anaerobic digestion
- Pet Crematorium
- Transfer Station
- Composting Facility
- Non-typical waste as per Section 8.6.1
- Storage Facility
- Material Recovery Facility (MRF)
- Mixed Waste MRF
- Land Clearing/Demolition
- Other municipal solid waste related facilities at the discretion of the Manager of Environmental Services

N.B. These facilities are defined in Appendix VII – Glossary of Terms.

Under most circumstances and under the discretion of the FVRD’s Manager of Environmental Services, if a facility **only** handles materials covered under a provincial Stewardship Program it is considered to be authorized. As well, if the facility’s type of operation is already fully governed by specific provincial regulation or Code of Practice for that industry, it is considered authorized. Nonetheless, these facilities are still required to register with the FVRD and provide the FVRD with the annual tonnage of material that is handled at their facility for waste tracking purposes.

For facilities not covered by provincial regulation, or industry Code of Practice, the FVRD will accept completed applications, but will not proceed with the authorization process until the host municipality has reviewed the application and is satisfied that the facility or proposed facility meets its individual environmental protection, zoning requirements, or other aesthetic conditions. The FVRD will refer the application to the host municipality and that municipality is requested to forward FVRD staff correspondence stating its approval-in-principle.

- *If the potential environmental impact or complexity of operations is beyond the scope of municipal bylaws or monitoring capabilities, the municipality shall indicate its concerns in a letter to the FVRD. The FVRD then has the ability to request a provincial operational certificate from the Ministry of Environment (MOE).*

Once the FVRD receives approval-in-principle from the municipality, it will begin its review which may include:

- Site visit by staff from the FVRD, the host municipality and MOE.
- Consideration of concerns expressed by the municipality.

- The potential risk posed to the environment and public health from operations.
- The proposed facility's feasibility and its impact on other already authorized facilities.

Applicants that receive a satisfactory assessment will be instructed to proceed with public consultation according to the instructions provided below. The applicant is expected to complete this process within 30 days of receiving the instruction to begin.

Upon completion of the prescribed public consultation, the FVRD will send a concluding recommendation to the Board on whether to authorize the facility. Such Board resolution will be subject to subsequent referral and approval by MOE and other necessary approving bodies (i.e. Agricultural Land Commission). The authorization may also be contingent on the issuance of an Operational Certificate by the MOE.

Public Consultation Process

1. Publish Newspaper Notices

Publish two (2) successive notices in a newspaper that is distributed at least weekly in the area where the facility is located or proposed to be located. If the area is not serviced by a newspaper, the application should be posted in a manner acceptable to the FVRD's Manager of Environmental Services or duly appointed designate.

The notice must be FVRD-approved and entitled:

"SOLID WASTE MANAGEMENT PLAN – REQUEST FOR A NEW FACILITY AUTHORIZATION"

The notice must be at least 10 cm in width, at least 100 square centimetres in areas (i.e. equivalent to 4" X 4") and include at least the following information:

- a. The legal description and civic address of the facility.
- b. The name of the owner of the land on which the facility is located, or proposed to be located.
- c. The full name and address of the operator of the facility.
- d. A brief and complete description of the activity to be carried out, and the municipal solid waste or recyclable material to be handled at the facility.
- e. That any concerns should be addressed in writing to the FVRD.
- f. Other information considered necessary by the FVRD.

2. Post Application in a Visible Location

Post a readable copy of the application, at the discretion of the FVRD, in a visible place at all main road entrances to the land on which the facility is located, or proposed to be located, and/or mount a full-sized sign in a location visible to the general public for a period of not less than 30 days.

3. Serve Written Notice to Neighbouring Properties

Hand deliver or mail a written notice stating that an application has been filed to all neighbours (commercial and residential) within 50 metres from any lot line of the subject property. The written notice shall contain the information listed under subsections (a) to (f) under "Publish Newspaper Notices".

- *In cases where there is potential for significant discharge or impact on the environment or considerable financial impact on the Plan's current approved facilities, the FVRD's Manager of Environmental Services may decide to refer to the MOE for further guidance before beginning basic Public Consultation. As a result, the applicant, at their own cost, may be required to complete additional public consultation or fulfill other requirements as set forth by MOE.*

APPENDIX V

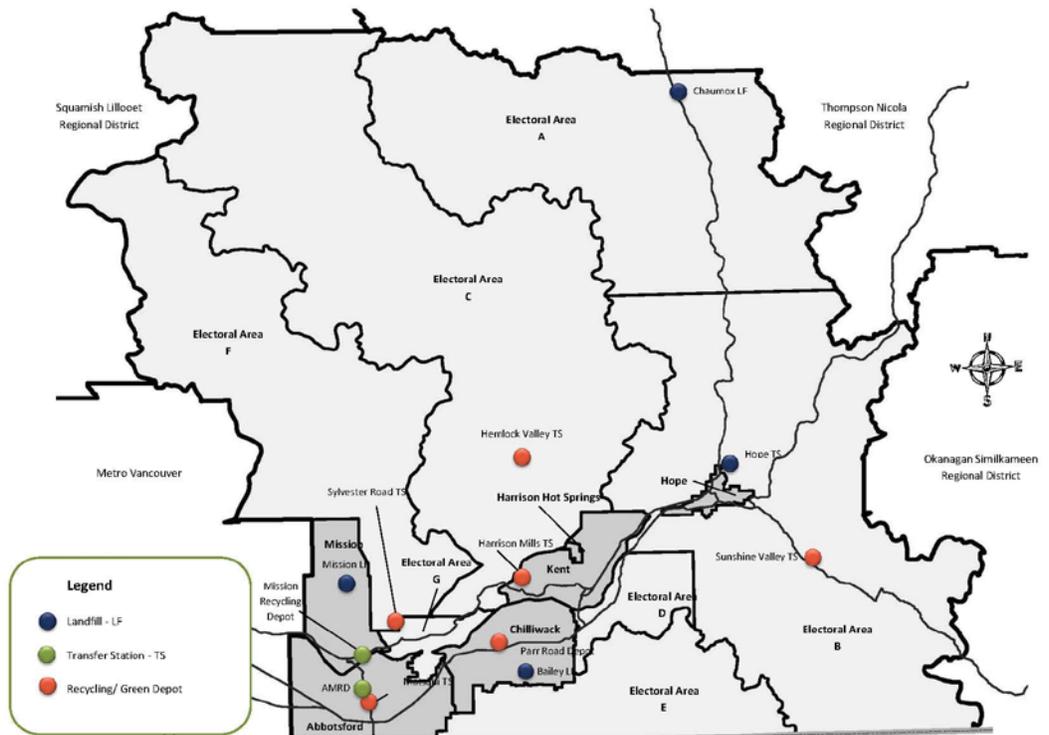
Current and Historical Local Government Landfills and Transfer Stations

Facility Name	Location	Active/Closed	Operational Certificate 2010, Permit Number	Authorization Date	Owner
Athey Road TS	Electoral Area G	Closed (May 2000)	N/A	1996	FVRD
Bailey Road LF	City of Chilliwack	Active	OC- 101798, PR-01822	1996	City of Chilliwack
Boston Bar LF	Electoral Area A	Closed (May 2000)	PR - 03770	N/A	FVRD
Boulder Bay LF	Electoral Area F	Closed (Unknown)	PR - 02989	1996	Ministry of Attorney General
Chaumox LF	Electoral Area A	Active	PR - 07763	1996	FVRD
Cultus Lake LF	Cultus Lake Park	Closed (Sep 2001)	PR - 05984	1996	Cultus Lake Park Board
District of Kent Incinerator	District of Kent	Closed (1994)	PA – 6729	N/A	District of Kent
District of Kent LF	District of Kent	Closed (1992)	PR – 02232	N/A	District of Kent
District of Mission LF	District of Mission	Active	OC – Pending, PR – 02043	1996	District of Mission
Harrison Hot Springs LF	Village of Harrison Hot Springs	Closed (1994)	PR – 00516	N/A	Village of Harrison Hot Springs
Harrison Mills TS	Electoral Area C	Active	N/A	1996	FVRD
Hemlock Valley TS	Electoral Area C	Active	N/A	1996	FVRD
Matsqui TS	City of Abbotsford	Active	N/A	1996	Metro Vancouver
McCallum Road LF	City of Abbotsford	Closed (1979)	PR - 03955	N/A	City of Abbotsford
Mission Flats LF	District of Mission	Closed (1971)	Unknown	N/A	Unknown
Old Chaumox Road LF	Electoral Area A	Closed (1988)	PR - 06669	N/A	FVRD
Popkum TS	Electoral Area D	Closed (Oct 1997)	N/A	N/A	FVRD
Silver Hope TS	District of Hope	Proposal Only	N/A	N/A	N/A
Skagit Valley LF	Electoral Area B (Skagit Valley Provincial Park)	Closed (1983)	PR - 04191	N/A	Ministry of Recreation & Conservation
Stave Lake LF	Electoral Area F	Closed (Jun 2002)	PR - 02990	1996	Ministry of Attorney General
Sunshine Valley TS	Electoral Area B	Active	N/A	2007	FVRD
Sylvester Road TS	Electoral Area F	Active	N/A	1996	FVRD
Trethewey Street LF	City of Abbotsford	Closed (Dec 1984)	PR - 01504	N/A	City of Abbotsford
Valley Road LF Standby Cell	City of Abbotsford	Active	PR - 08090	1996	City of Abbotsford
Valley Road LF	City of Abbotsford	Closed (Jan 1990) for municipal waste	PR - 07232	1996	City of Abbotsford
Wolfe Road LF	City of Chilliwack	Closed (Feb 1982)	PR - 0156	N/A	City of Chilliwack
Yale TS	Electoral Area B	Proposal Only	N/A	N/A	N/A

Note: This document will be updated whenever FVRD staff become aware of changes. (The accuracy of this document is not guaranteed).

APPENDIX VI

Fraser Valley Regional District Local Government Disposal and Diversion Facilities Map



APPENDIX VII

Glossary of Terms

Anaerobic Digestion – any land or buildings and related improvements where municipal solid waste is treated through various biological processes in which micro-organisms break down biodegradable material in the absence of oxygen.

Blue bag recyclables: Any recyclable material accepted by a municipality through their curbside collection program. Typically this material is put at the curbside in either a blue bag or blue bin.

Brokering Facility: any land or buildings and related improvements used for receiving, cleaning, sorting, baling or packaging only recyclable material that has been source separated, for the purpose of recycling.

Carbon footprint: the measure of greenhouse gasses that are produced by an activity, organization or person.

Closed-loop solid waste system: A sustainable system where the waste or by-products of one process or product is used to produce another product. As a result, fewer raw materials are used, less waste is generated and more materials are diverted for reuse and recycling.

Composting Facility: any land any land or buildings and related improvements where in organic material is composted using a composting method including, but not limited to, physical turning, windrowing, covered static pile aeration, or other method of composting, and where the organic material originates on a parcel other than the parcel where the composting activity occurs.

Daily cover material: The layer of compressed soil or alternative material which is laid on top of a day's deposition of waste on an operational landfill site. The cover helps prevent the interaction between the waste and the air, reducing odours and enabling a firm base upon which for vehicles to operate.

Dimensional lumber: Wood that is cut to a pre-defined size (used in building applications), including solid wood, plywood and oriented strand board (OSB). It can be either clean or contaminated.

Clean dimensional lumber: This wood has **not** been treated with paint, glue, creosote, stain etc., but may have nails or screws attached.

Contaminated dimensional lumber: This wood **has** been treated with paint, glue, creosote, stain etc.

Diversion: The act of reusing, recycling or composting materials that would otherwise be landfilled.

Disposal Facility: any land or buildings and related improvements used for the landfilling or destruction of municipal solid waste.

DLC: Demolition, Land Clearing and Construction debris.

Extended Producer Responsibility (EPR): Is an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. (Canadian Council of Ministers of the Environment).

Greenhouse gas emissions: A greenhouse gas (or GHG) is a gas that when present in the atmosphere, absorbs and emits radiation within the thermal infrared range. Many greenhouse gases occur naturally, while others result exclusively from human industrial processes. It is the elevated presence of GHG's from human processes that is linked to climate change.

Green waste: Yard waste materials including leaves, grass clippings, brush and smaller tree branches.

ICI: Industrial, Commercial and Institutional sectors.

Illegal dumping: Is the disposal of waste in non-permitted areas.

Land Clearing/Demolition: any land or buildings and related improvements used for receiving and sorting land clearing and demolition material for the purpose of recycling.

Leachate: A liquid formed in a landfill by precipitation infiltrating the waste, which dissolves and suspends contaminants contained in the waste.

Material Recovery Facility: any land or buildings and related improvements used for receiving municipal solid waste or recyclable material and at which materials are separated manually or mechanically for the purpose of recycling and/or composting.

Mixed Waste Material Recover Facility: (also called Advanced Material Recovery Facility or *dirty* Material Recovery Facility) a Material Recovery Facility that receives a mixed solid waste stream.

Natural attenuation in groundwater: Is the reliance on natural processes to clean up or to attenuate pollution in groundwater. "The 'natural attenuation processes' that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume or concentration of contaminants in soil or groundwater." (United States Environmental Protection Agency)

Municipal Solid Waste: Is the refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources.

Organic matter: The residues of dead plants and animals in various stages of decomposition that can commonly be found in soil or that which is commonly composted.

Pet Crematorium: any land or buildings and related improvements used for high-temperature burning, vaporization, or oxidation of dead animals to reduce them to basic chemical compounds, such as gases and mineral fragments retaining the appearance of dry bone.

Residual waste (garbage): That which remains in the solid waste stream following reduction, reuse, recycling and recovery activities.

Sequential hierarchy of waste management: An essential part of waste reduction which includes the implementation of the 6Rs in a specific order: rethink, reduce, reuse, recycle, recover, and residual management.

Rethink: to re-evaluate our current lifestyle and the way in which products are designed and produced in an effort to minimize/reduce/eliminate waste.

Reduce: to minimize the amount of material and energy used in a product's life cycle.

Reuse: to use an existing product (that would otherwise become waste) for another purpose, without processing it.

Recycle: to remove a product from the waste stream before it is disposed and to process it into a new product.

Recover: to reclaim a material or product destined for the landfill for an alternate use.

Residual management: to responsibly manage any remaining waste that cannot be reduced, reused, recycled or recovered, preferably using a triple bottom line approach.

Specified Risk Material: Specific tissues of ruminant animals that are not passed on for human consumption because this is where the Bovine spongiform encephalopathy-causing ("mad-cow disease") matter concentrates.

Storage Facility: any land or buildings and related improvements where municipal solid waste or recyclable material is accumulated and held and in respect of which there is no clear and convincing evidence that all the municipal solid waste or recyclable material will be recycled in the near future.

Source Separated: the removal of recyclable material from Municipal Solid Waste by the waste generator at the point of generation for the purposes of recycling.

Transfer Station: any land of buildings and related improvements where municipal solid waste is received, compacted or rearranged for subsequent transport.

Universal reporting template: A standard reporting mechanism developed by the province that will allow all regional districts to report their diversion statistics using the same method and equations. This template will allow for fair and equal comparisons.

Waste generation rate: Is the percentage rate at which waste is generated by a given source (e.g. a person, an organization, a sector etc.) and takes into account all materials and products that enter the waste stream **before** recycling, composting or landfilling takes place.

Waste migration: Describes the process of waste being transported to an area or region outside of where that waste was generated.

Windrows: Large, long rows of organic matter that are undergoing composting.

APPENDIX VIII

References and Bibliography

References:

Abbotsford Community Services, Abbotsford Mission Recycling Program. (2009). Curbside Material Waste Audit. Abbotsford, BC.

BC Ministry of Environment, Information Sheet: Waste-to-Energy and Solid Waste Management Plans: Considerations for the Inclusion of Waste-to-Energy Facilities (WTE) in Solid Waste Management Plans.

2010. Available online:

<http://www.env.gov.bc.ca/epd/mun-waste/waste-solid/sw-mgmt-plan/pdf/wte-factsheet-nov25.pdf>

BC Statistics. (2010, January). British Columbia Regional District and Municipal Population Estimates. (Infoline Report, Issue: 11-02).

<http://www.bcstats.gov.bc.ca/releases/info2011/in1102.pdf>

European Commission Directorate-General Environment. Guidelines on the Interpretation of the R1 Energy

Efficiency Formula for Incineration Facilities Dedicated to the Processing of Municipal Solid Waste According to Annex II of Directive 2008/98/EC on Waste. 2008. Available online:

<http://ec.europa.eu/environment/waste/framework/pdf/guidance.pdf>

Recycling Council of British Columbia. (2011, March). BC Product Stewardship Programs Summary.

<http://rcbc.bc.ca/education/product-stewardship/table>

Bibliography:

Alliance Professional Services & Richardson & Associates. (2000, August). Activity Summaries for the Implementation of the FVRD ICI Waste Reduction Strategy.

Alliance Professional Services & Richardson & Associates. (2000, August). ICI Waste Reduction Strategy: Fraser Valley Regional District.

Earth Tech. (2007, February). Full Cost Accounting Analysis of Alternatives to Waste Disposal in the Fraser Valley Regional District.

Fraser Valley Regional District, Regional Planning. (2011, March). Air Quality Management Plan. Draft. Chilliwack, BC.

<http://www.airqualitymatters.ca/wp-content/uploads/DRAFT-FVRD-AQMP.pdf>

- Fraser Valley Regional District, Environment Services. (2003, August). Illegal Dumping Strategy. Draft. Chilliwack, BC.
- Fraser Valley Regional District. (2010, June 22). Meeting of the Fraser Valley Regional District Board of Directors. (Board Resolution: 10.2 – Incineration).
<http://bitly.com/ferndU>
- Fraser Valley Regional District. (2010, June 22). Meeting of the Fraser Valley Regional District Board of Directors. (Board Resolution: 10.8 – Waste Export).
<http://bitly.com/ferndU>
- Fraser Valley Regional District, Regional Planning. (2004). Choice for our Future: Regional Growth Strategy for the Fraser Valley Regional District. Chilliwack, BC.
- Gartner Lee Ltd. (2003, June). Industrial, Commercial and Institutional Waste Composition Study.
- Maxwell, S. (2006, April). Strategies for Zero Waste in the Fraser Valley Regional District (Masters Thesis). Royal Roads University, Victoria, BC.
- McKenzie-Mohr, D., & Smith, W. (1999). Fostering Sustainable Behavior: An Introduction to Community Based Social Marketing. Gabriola Island: New Society Publishers.
- Ministry of Environment, Environmental Protection Division. (1994). Guide to the Preparation of Regional Solid Waste Management Plans by Regional Districts. Surrey, BC.
<http://www.env.gov.bc.ca/epd/mun-waste/waste-solid/sw-mgmt-plan/guideplan/pdf/guide-swmplan.pdf>
- Phillipoff, Klair. (2010, April). District of Mission: Curbside Pilot Project Final Report. (Prepared for the District of Mission).
- Urban Futures. (2005, January). Population Growth and the Context for Managing Change.