

Squamish-Lillooet Regional District 2022 Waste Composition Study



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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
CCME	Canadian Council of Ministers of the Environment
DO	Residential Drop Off
EPR	Extended Producer Responsibility
GBTS	Gold Bridge Transfer Station
HHW	Household Hazardous Waste
ICI	Industrial, Commercial, and Institutional
LLRC	Lillooet Landfill and Recycling Centre
NACTR	National Association for Charitable Textile Recycling
SF	Single Family
SLRD	Squamish-Lillooet Regional District
SUI	Single-use Item
Tetra Tech	Tetra Tech Canada Inc.

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Squamish-Lillooet Regional District and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Squamish-Lillooet Regional District, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

NOTE TO THE READER

The samples collected and characterized for this study are “snapshots” in time, meaning the reported quantities are estimates and only represent the conditions for the period in which they were collected. Annual variability, weather, and other factors can affect the amount and composition of waste and recyclables generated by the various sectors at any given time. Even with combined educational, regulatory, and financial initiatives the reader should not assume that it is necessarily easy, practical, or economical to recover a substantial portion of a disposed material from a mixed waste stream or at its source.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by the Squamish-Lillooet Regional District (SLRD) to conduct a waste composition study to characterize the garbage stream from the following locations:

1. **Gold Bridge and Electoral Area A**, which consists of waste dropped off at the Gold Bridge Transfer Station (GBTS) from small vehicles (defined as pick-ups with sideboards), including:
 - a. Household waste from residents in the surrounding areas.
 - b. Construction and demolition waste that is self-hauled in small vehicles.
2. **Lillooet and Electoral Area B**, which included:
 - a. Single Family (SF) sector, including curbside collected waste streams from single family households in Lillooet and Electoral Area B.
 - b. Residential Drop Off (DO), typically residential waste dropped off by residents from Lillooet and Electoral Area B.
 - c. Light Industrial, Commercial, and Institutional (ICI) sector, including waste collected by commercial waste haulers from various light industrial, commercial, and institutional sources in Lillooet and Electoral Area B, as well as construction and demolition waste self-hauled by local businesses.
3. **Britannia Beach (Electoral Area D)**, which consists of curbside single family residential garbage collection.
4. **Furry Creek (Electoral Area D)**, which consists of curbside single family residential garbage collection.

The purpose of this study was to:

1. Quantify and characterize the materials present in the garbage stream from Electoral Area A (Gold Bridge), Electoral Area B (Lillooet), and Electoral Area D (Britannia Beach and Furry Creek); and
2. Collect data to evaluate the performance of the current programs and compare to the previous waste composition study (2020).

The SLRD consists of four member municipalities (District of Lillooet, Village of Pemberton, Resort Municipality of Whistler, and District of Squamish) and four unincorporated rural Electoral Areas (A, B, C, and D). This waste characterization study focuses on the garbage streams from the GBTS in Electoral Area A, Lillooet and Electoral Area B, and Furry Creek and Britannia Beach in Electoral Area D.

Electoral Area A, which includes Gold Bridge, has a population of 305.¹ The GBTS accepts garbage, recycling, and some extended producer responsibility (EPR) materials (e.g., electronics, batteries, household appliances). As part of the Fire Fuel Management Program, the GBTS also accepts clean organic wood debris (e.g., branches, shrubs, stumps and fallen trees) from Easter weekend to Thanksgiving weekend.

The District of Lillooet has a population of 2,302 and Electoral Area B has a population of 373.¹ Some residents of Lillooet receive curbside garbage collection but those living outside the curbside collection area must self-haul their household waste to the Lillooet Landfill and Recycling Centre (LLRC). It accepts garbage, construction and

¹ Data from 2021 Census of Population (Statistics Canada), <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E>

demolition materials, recyclables, some EPR materials, and yard and garden waste. Six First Nation communities are located near Lillooet, including the Sekw'el'was (Cayoose Creek Band), Xwísten (Bridge River Indian Band), T'it'q'et First Nation, Ts'kw'aylaxw (Pavilion Indian Band), Xaxli'p, and Tsal'alh (Seton Lake Band).² These communities dispose their waste at the LLRC.

The communities of Furry Creek and Britannia Beach are located in Electoral Area D in the southern parts of the SLRD, south of the District of Squamish on the Sea-to-Sky Highway. Britannia Beach has a population of 384 and Furry Creek has a population of 270.¹ Waste from these two communities is currently landfilled at the Squamish Landfill. These two communities have been receiving curbside collection of garbage and recycling since 2012 and curbside organics collection since June 2019. Garbage and recycling are collected bi-weekly. Organics is collected weekly between May and October and bi-weekly the rest of the year.

Table 1-1 summarizes the number of samples characterized during this waste composition study. A previous waste composition study was completed in 2020 for Lillooet and the communities of Furry Creek and Britannia Beach. Table 1-2 summarizes and compares the number of samples collected for the 2020 and 2022 studies.

Table 1-1: Summary of Number and Origins of Samples

Dates	Sample Origin	Number of Samples
August 26, 2022	Gold Bridge Transfer Station	1
August 31 to September 1, 2022	Britannia Beach – curbside residential	3
	Furry Creek – curbside residential	3
October 15 to October 18, 2022	Gold Bridge Transfer Station	2
	Lillooet – single family residential	4
	Lillooet – ICI	4
	Lillooet – residential drop off	9
Total		26

Table 1-2: Number of Samples Collected in 2020 and 2022

Community/Sector	Number of Samples (Garbage Only)	
	2020	2022
Gold Bridge Transfer Station	-	3
Lillooet – SF	2	4
Lillooet – ICI	4	4
Lillooet – DO	9	9
Britannia Beach	2	3
Furry Creek	2	3
Total	19	26

² Information from <https://lillooet.ca/Arts,-Culture-Community/First-Nations.aspx>

2.0 METHODOLOGY

This section provides an overview of how waste was collected and sampled and outlines other key factors and considerations for the study. Tetra Tech's sampling methodology is based on the Canadian Council of Ministers of the Environment (CCME) *Recommended Waste Characterization Methodology for Direct Waste Analysis Studies in Canada*.

The waste characterization study was performed by Tetra Tech's field supervisor and environmental technicians who were trained on safety and material sorting procedures prior to the fieldwork. Personal protective equipment was used by staff according to the specifications of Tetra Tech's Health and Safety Plan, which factored in special requirements for working at various waste disposal facilities and landfills. Safety meetings were conducted at the beginning of each day to emphasize key concerns including how to handle material hazards such as sharps or hazardous materials, safe lifting practices, waste handling, wildlife issues, working around large industrial vehicles, and weather conditions.

2.1 Load Identification and Sample Selection

Tetra Tech's field supervisor worked directly with SLRD staff and landfill/transfer station staff to identify loads for sampling and characterization. Tetra Tech staff characterized the contents of the truck loads using a combination of approaches – depending on the percentage of bagged garbage relative to the total volume in the pile. If the load was found to have less than 30% bagged garbage, a volume-based visual estimate was conducted, but if the load was found to have more than 70% bagged garbage then a sample that is approximately 100 kg would be collected and hand sorted.

For hand sorted samples, Tetra Tech's field staff collected 100 kg of material from the entire load to sort and analyze. For visually assessed loads, visual estimates were conducted on the entire load.

2.1.1 Gold Bridge

Samples from the GBTS were sorted at two periods during this study.

- In August 2022, garbage from GBTS was collected and transported by SLRD staff to the sorting area. Tetra Tech staff sorted one sample that was approximately 100 kg.
- In October 2022, another load from the GBTS was delivered to the LLRC. Tetra Tech staff collected and sorted two samples that were approximately 100 kg each.

2.1.2 Lillooet

Tetra Tech's field supervisor worked closely with LLRC staff to coordinate identification and selection of loads from Lillooet and Electoral Area B to be sampled as they arrived at the LLRC in October 2022. The field supervisor designated selected loads as SF, ICI, or DO after talking to the drivers of the garbage trucks or self-haul vehicles. For the loads that were selected, the driver was directed to a designated area to tip their entire load (as shown on Figure 2-1). Residential DO material from multiple vehicles were collected and stored at a designated area. Once enough material was collected, approximately 100 kg samples were then collected from the combined materials to obtain a representative sample of materials being dropped off at the LLRC.



Figure 2-1: A Truck Load Being Tipped at the LLRC

It should be noted that during the time of the waste characterization study at the LLRC, there was a free dump week for Cayoose Creek Band members. Tetra Tech field staff identified the loads that were part of the free dump week by speaking with the residents who are self-hauling waste. Once the loads were identified, Tetra Tech's field staff collected approximately 100 kg of materials for hand sorting or conducted a visual estimation for the entire load.

2.1.3 Furry Creek and Britannia Beach

Tetra Tech's field supervisor worked with the SLRD to coordinate delivery of the curbside residential waste from Furry Creek and Britannia Beach. The field supervisor communicated directly with the truck driver to determine which segment of the load originated from which community. After the load was tipped at the active face of the landfill, a total of six samples were collected. Three samples were collected from the front half of the load (determined to be from Furry Creek) and three samples from the back half of the load (determined to be from Britannia Beach). Tetra Tech staff obtained approximately 100 kg of waste for each sample for hand sorting (Figure 2-2).



Figure 2-2: Tipped Truck Load from Furry Creek and Britannia Beach

2.2 Sample Sorting and Analysis

2.2.1 Hand Sorting

A random sample of 100 kg was sorted by hand into 12 primary categories, which were then further sorted into 54 secondary material subcategories (Figure 2-3). The categories were approved by the SLRD for optimal comparability with the 2020 waste composition results. The 12 primary categories were: paper, plastic, metal, glass, organics, building materials, electronic waste, household hazardous waste, household hygiene, bulky objects, textiles, and fines. In addition, 16 secondary categories of single-use items (SUIs) were sorted, counted, and weighed. A complete list of the material categories along with their descriptions is included in Appendix B.



Figure 2-3: Field Staff Hand Sorting a Sample

Once the samples were sorted, materials in each category were weighed and entered into Tetra Tech's waste composition spreadsheet tool.

2.2.2 Visual Estimates

The material categories for visual estimates were generally the same as hand-sorted materials but included six additional secondary material categories within the building materials category: gypsum/drywall plaster, masonry, rocks/sand/dirt/ceramic/porcelain, rigid asphalt products, carpet waste and underlay, and other inorganic building materials. The seven textiles secondary categories were collapsed into a single category and SUIs were not included in the category list for visual estimates. A complete list of the categories along with their descriptions is included in Appendix B.

For visual estimates, two staff members would walk around the load to visually estimate composition by volume, first by primary categories and then by secondary categories. Staff recorded their estimates individually (reduce the

potential for bias), then compared their results so that an average could be determined. The average results were then recorded on a data form.

2.3 Data Analysis

Data analysis was performed using Tetra Tech's waste composition spreadsheet tool. Data was compiled into primary and secondary categories by weight. For visual audits, standard densities of waste materials were used to convert volume estimates to weight estimates. All results are presented on a weight basis. The weighted average composition for each sector was calculated for each material category. Data was also compared with results from 2020. Waste composition results were compared at the primary material category level for each sector. Data was then compiled and analyzed further to calculate the overall diversion potential of each sector.

2.4 Health and Safety

A Health and Safety Plan was developed for this project to identify potential hazards in advance of the waste composition study. Tetra Tech staff conducting field work for this study were required to have up-to-date safety certifications and training for waste sorting activities. Upon arrival at the waste management facility, Tetra Tech staff conducted a site safety orientation with the operator to identify site-specific hazards and controls. A safe working location was selected and clearly demarcated. A safety meeting was conducted at the beginning of each day to remind staff of hazards from the previous day and identify new hazards and/or controls as applicable.

Tetra Tech staff adhered to strict COVID-19 protocols during the field work at the waste management facilities. This included wearing face masks when social distancing was not possible, such as at the waste sorting table. Additionally, high-touch surfaces such as the field laptop and the field camera were disinfected routinely throughout each field day.

3.0 WASTE CHARACTERIZATION RESULTS

The following section summarizes the results of the waste composition study. Results are presented by primary category. Primary category percentages were calculated by aggregating all sample data for each sector/community. An average percentage by weight was determined for each sector/community. Waste composition results for all sample results by material categories are presented in Appendix C. Selected photographs are shown in Appendix D.

The proportion of materials that could be diverted from disposal was also estimated and presented in the subsections below (diversion potential). Classifications for the diversion potential of each secondary category can be found in Appendix B. The materials were categorized as follows:

- **Recycle BC:** materials accepted by the Recycle BC program (e.g., paper, cardboard, plastic containers and packaging, metal, and glass containers, etc.)
- **EPR:** materials managed by EPR programs other than Recycle BC (e.g., deposit beverage containers, household batteries, lightbulbs and light fixtures, paint, used oil and antifreeze, etc.);
- **Compostable:** materials typically accepted by a composting program; and
- **Residual:** materials that would not fall within the above diversion options that would be disposed/landfilled.

3.1 Gold Bridge

The following section summarizes the results from the three samples from Gold Bridge Transfer Station (GBTS).

3.1.1 Waste Composition Results

Figure 3-1 represents the weighted average of primary categories for the three samples from the GBTS collected in August 2022 and October 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were paper (32.5%), organics (27.6%), textiles (15.4%), and plastic (11.1%). These four categories accounted for 86.6% of the overall weight of the samples.

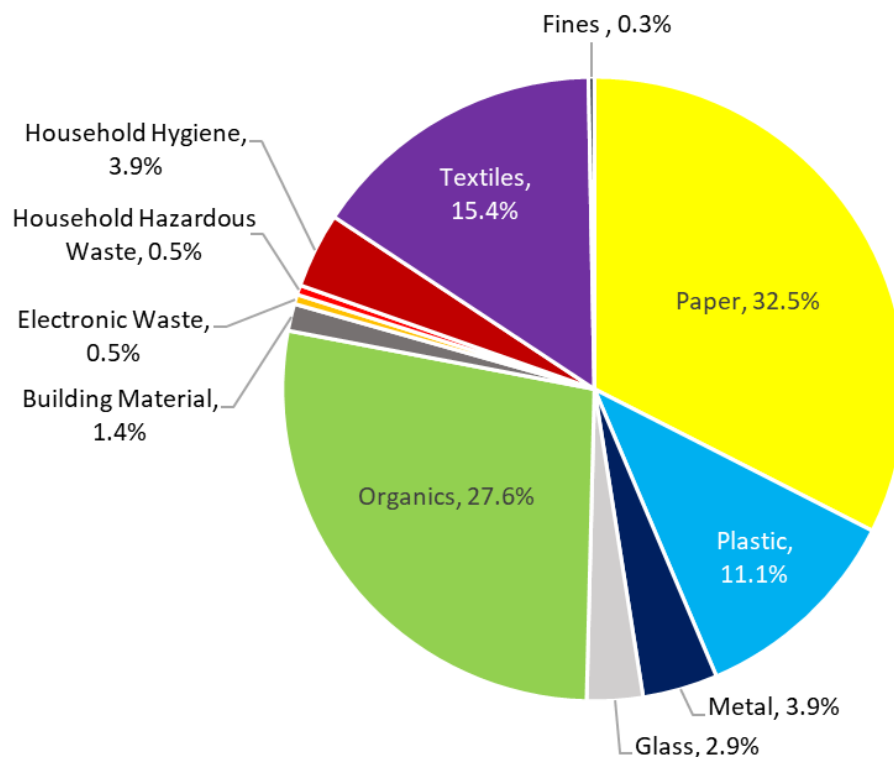


Figure 3-1: Waste Composition of Garbage from GBTS

The paper primary category mainly consisted of recyclable paper (16.7%), non-recyclable paper (10.3%), and compostable and food-soiled paper (4.7%). Recyclable paper in the GBTS samples included printed paper, cardboard, and boxboard. Examples of non-recyclable paper included books, waxed paper, and waxed cardboard.

Organics largely consisted of food waste, including avoidable food waste (16.3%), unavoidable food waste (6.9%), and yard waste (2.7%).

Textiles included clothing (8.4%), household textiles (2.8%), footwear (2.1%), and textiles not accepted by National Association for Charitable Textile Recycling (NACTR) (1.7%). Textiles not accepted by NACTR included canvas tarps, car floor mats, ski and snowboard boots, sports protection equipment, and tents.

The largest components of the plastic primary category were rigid plastic packaging (3.0%), flex packaging (2.5%), film products (2.1%), and durable plastic products (1.5%).

3.1.2 Diversion Potential

To calculate the diversion potential, each secondary category from the GBTS samples were further segregated into categories including compostable, Recycle BC, EPR, and residual categories. This information can be used to calculate the percentage of materials that could be diverted from the landfill.

The GBTS accepts Recycle BC materials such as paper and cardboard, plastic containers, foam packaging, plastic bags and overwrap, other flexible plastic, metal containers, and glass bottles and jars. The GBTS also accepts some types of EPR materials (e.g., electronics, household, and lead-acid batteries, used oil, oil containers, and oil filters, tires, power tools, and large appliances). Compostable materials are accepted seasonally as part of the Fire Fuel Management Program (clean organic wood debris only).

As shown on Figure 3-2, the total diversion potential is 60% and consists of 31% compostable materials, 28% Recycle BC material, and 1% EPR materials.

The main materials that could be compostable are avoidable food waste (16%), unavoidable food waste (7%), and compostable and food soiled paper (5%).

The materials that could be diverted through the Recycle BC program are recyclable paper (17%), rigid plastic packaging (3%), flex packaging (3%), and recyclable glass (2%). Examples of flex packaging are zipper lock pouches, stand-up pouches, potato chip bags, candy wrappers, and net bags.

Materials that could be diverted through registered EPR drop-off locations include paper, plastic, metal, and glass deposit beverage containers (<1%).

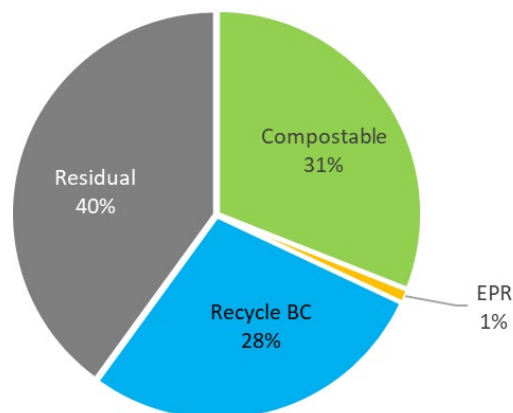


Figure 3-2: Diversion Potential of Material from GBTS

3.2 Lillooet

3.2.1 Single Family Sector

Four samples were characterized as part of the SF sector at the LLRC – two samples from curbside collection at Lillooet, one sample from Cayoose Creek Band, and one sample from T'it'q'et First Nation.

3.2.1.1 Waste Composition Results

Figure 3-3 represents the weighted average of primary categories from the SF samples received at the LLRC in October 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were organics (39.2%), paper (15.9%), household hygiene (12.1%), textiles (11.2%), and plastic (10.7%). These five categories represent 89.1% of the overall weight of the samples.

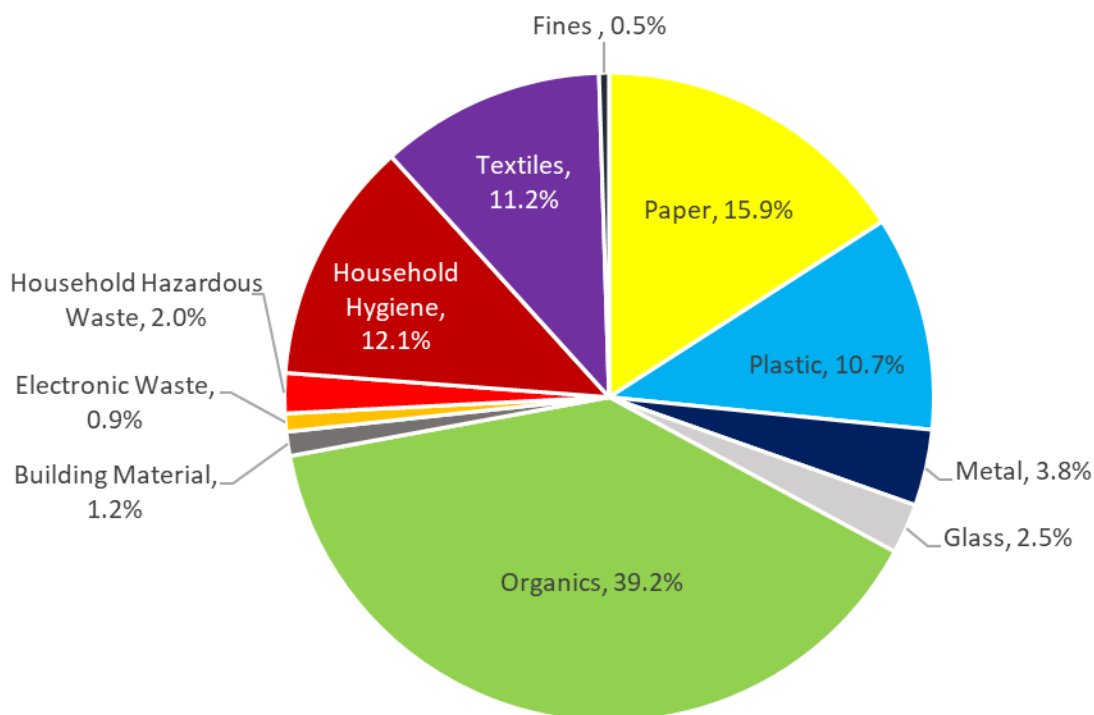


Figure 3-3: Waste Composition SF Garbage Received at the LLRC

Organics largely consisted of food waste, including avoidable food waste (28.1%) and unavoidable food waste (9.1%).

Paper products was mainly comprised of recyclable paper (7.8%) and compostable and food-soiled paper (5.9%). Examples of recyclable paper included office paper, corrugated cardboard, paper packaging, and newsprint.

Household hygiene (12.1%) included disposable diapers, pet waste, and personal hygiene products. Although the household hygiene category was composed of a single category with no sub-categories, field observations indicated that the category primarily consisted of disposable diapers and pet waste by weight.

The textiles category included clothing (6.6%), household textiles (1.9%), and footwear (1.7%).

For plastics, the largest components were rigid plastic packaging (2.5%), flex packaging (2.3%), film products (2.0%), and film packaging (1.1%).

3.2.1.2 Diversion Potential

To calculate the diversion potential, each secondary category from the SF samples were further segregated into categories including compostable, Recycle BC, EPR, and residual categories. This information can be used to calculate the percentage of materials that could potentially be diverted from the landfill.

The LLRC accepts Recycle BC materials such as paper and cardboard, plastic containers, foam packaging, plastic bags and overwrap, other flexible plastics, metal containers, and glass bottles and jars. The LLRC also accepts some types of EPR materials (e.g., electronics, lightbulbs and light fixtures, household, and lead-acid batteries, used paint, used oil and antifreeze, smoke and carbon monoxide alarms, tires, small appliances, power tools, and large appliances). Deposit beverage containers are accepted at the Return-It Depot at the Lillooet Country Store near the LLRC. Compostable materials such as yard and garden waste are accepted, but food waste is not accepted.

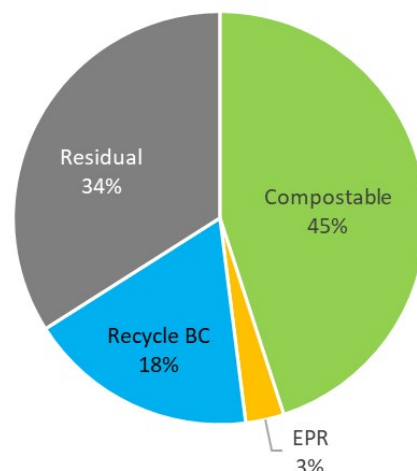


Figure 3-4: Diversion Potential for SF Garbage at the LLRC

As shown on Figure 3-4, the total diversion potential is 66% and consists of 45% compostable materials, 18% Recycle BC material, and 3% EPR materials.

The main materials that could be compostable are avoidable food waste (28%), unavoidable food waste (9%), and compostable and food-soiled paper (6%).

The materials that could be diverted through Recycle BC program are recyclable paper (8%), rigid plastic packaging (3%), flex packaging (2%), and recyclable metal (2%).

Materials that could be diverted through registered EPR drop-off locations include electronic waste (1%) and paper, plastic, metal, and glass deposit beverage containers (1%).

3.2.2 Residential Drop Off (DO) Sector

Nine samples were characterized as part of the DO sector at the LLRC. Seven of the samples were taken by combining materials dropped off by multiple vehicles then sampling from the consolidated materials. Overall, eight of the samples were hand sorted and one was characterized using visual estimation.

3.2.2.1 Waste Composition Results

Figure 3-5 represents the weighted average of primary categories from the DO samples received at LLRC in October 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were organics (28.1%), paper (14.5%), plastic (11.5%), textiles (11.1%), and metal (8.4%). These five categories represent 73.6% of the overall weight of the samples.

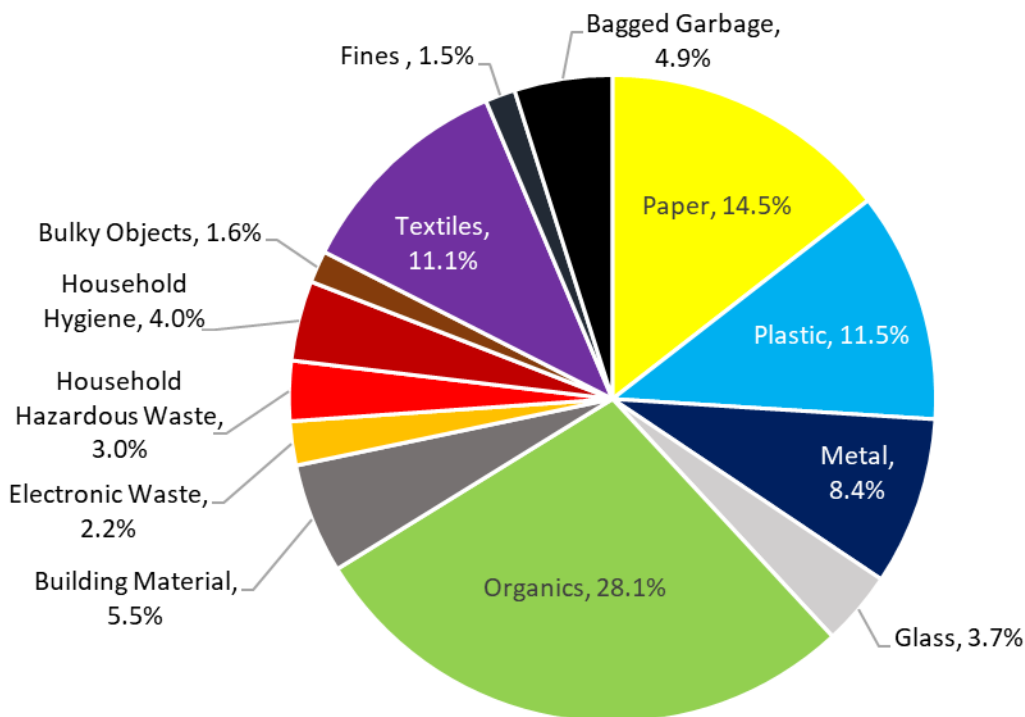


Figure 3-5: Waste Composition of Residential Drop Off Garbage Received at the LLRC

Organics mainly consisted of avoidable food waste (17.6%), non-compostable organics (3.3%), and unavoidable food waste (2.4%). The non-compostable organics category included rubber, wax, and animal carcasses.

The paper primary category was mainly comprised of recyclable paper (7.7%), non-recyclable paper (4.1%), and compostable and food-soiled paper (2.2%). Non-recyclable paper included paper lined or coated with other materials, such as plastic, metal, or wax.

For plastics, the largest component was durable plastic (5.1%), rigid plastic packaging (1.6%), flex packaging (1.5%), and film products (1.1%). The durable plastic category includes rigid plastic items that are not typically recyclable, such as plastic toys, household items, and storage bins.

The textiles category included household textiles (2.9%), textiles not accepted by the NACTR (1.7%), and clothing (1.6%).

Metal mainly consisted of non-recyclable metal (7.2%), which included scrap metal, empty aerosol cans that contained hazardous substances, empty propane and butane containers, and metal household items.

3.2.2.2 Diversion Potential

As shown on Figure 3-6, the total diversion potential is 46% and consists of 25% compostable materials, 14% Recycle BC materials, and 7% EPR materials.

The main materials that could be compostable are avoidable food waste (18%), unavoidable food waste (2%), and compostable and food-soiled paper (2%).

The materials that could be diverted through Recycle BC program are recyclable paper (8%), rigid plastic packaging (2%), and flex packaging (1%).

Materials that could be diverted through registered EPR drop-off locations include electronic waste (2%), EPR household hazardous waste (HHW) (2%), and glass deposit beverage containers (2%). EPR HHW includes batteries, lightbulbs, paints, and used oil and antifreeze.

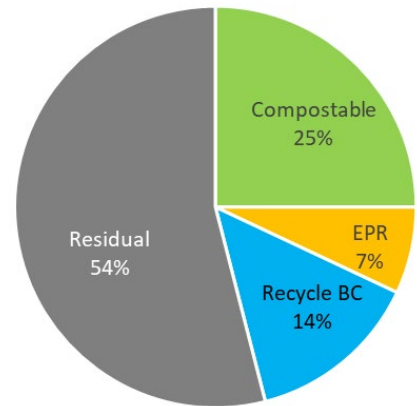


Figure 3-6: Diversion Potential for Residential Drop Off Garbage at the LLRC

3.2.3 Cayoose Creek Band Free Dump Week

Two of the samples were dropped off as part of the Cayoose Creek Band free dump week, with one of the samples being hand sorted and one of the samples being visually estimated. Figure 3-6 compares the composition of the one hand sorted sample from Cayoose and the seven other DO samples (i.e., excluding the two Cayoose samples). The Cayoose sample that was visually assessed has been excluded from the comparison as all other DO samples were hand sorted.

As seen in Figure 3-7, the composition of the Cayoose sample and the other DO sample are generally similar. There appears to be more bulky objects and textiles, but less organics, building materials, and metal in the Cayoose sample compared to the other DO samples. However, it is not possible to conclude whether there are significant differences due to the limited number of samples.

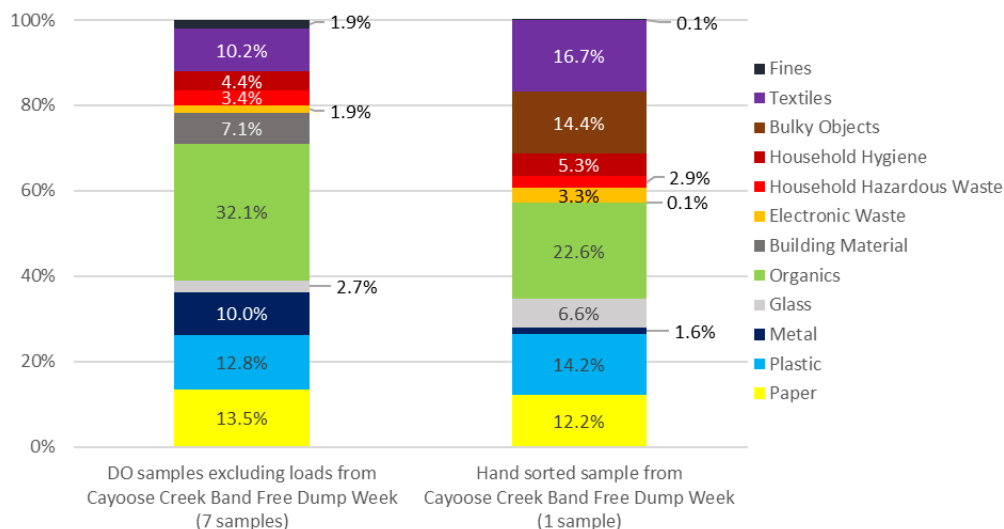


Figure 3-7: Comparison of the Samples from the Cayoose Creek Band Free Dump Week and Other Residential Drop Off Garbage Samples

3.2.4 Industrial, Commercial, and Institutional Sector

Four samples were characterized as part of the ICI sector at the LLRC.

3.2.4.1 Waste Composition Results

Figure 3-8 represents the weighted average of primary categories from the ICI samples received at the LLRC in October 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were building materials (34.9%), organics (33.4%), and paper (15.1%). These three categories represent 83.4% of the overall weight of the samples.

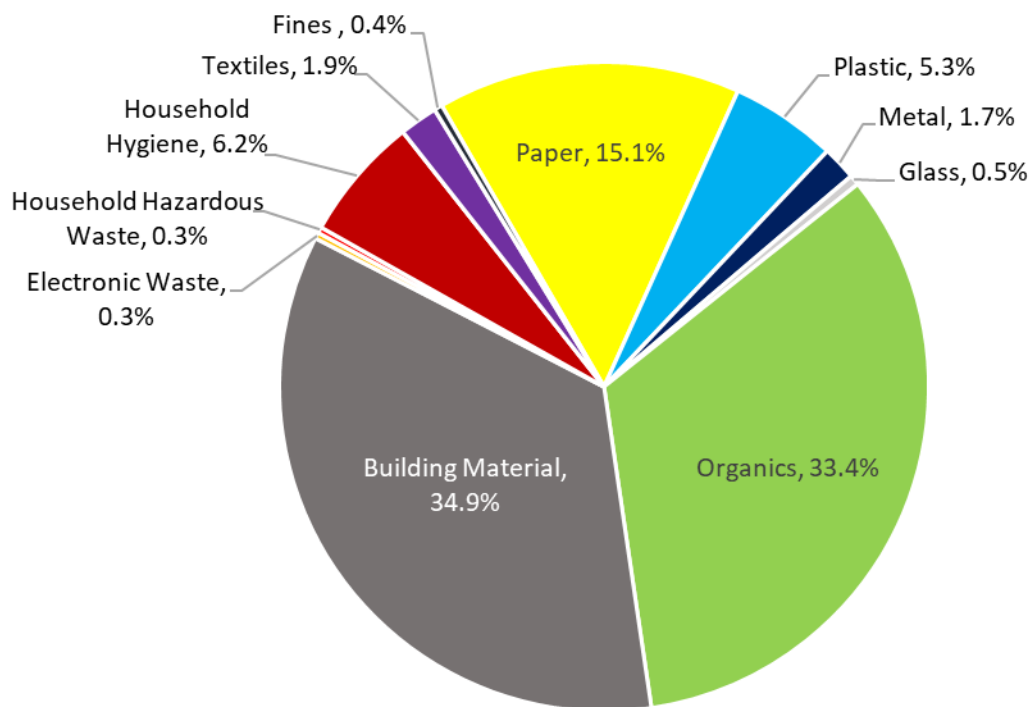


Figure 3-8: Waste Composition of ICI Garbage Received at the LLRC

Building materials consisted of rigid asphalt products (25.0%) and other inorganics (7.3%). The other inorganics category included a window and a door. It should be noted that one of the samples consisted entirely of asphalt shingles self-hauled to LLRC by a construction business.

Organics consisted of landfill wood (16.4%) and avoidable food waste (12.0%). Landfill wood were treated wood, painted or stained wood, composites, or wood containing large amounts of other material.

The paper primary category was mainly comprised of recyclable paper (8.1%) and compostable and food-soiled paper (5.0%).

3.2.4.2 Diversion Potential

As shown on Figure 3-9, the total diversion potential is 36% and consists of 22% compostable materials, 13% Recycle BC materials, and 1% EPR materials.

The main materials that could be compostable are avoidable food waste (12%), compostable and food-soiled paper (5%), and unavoidable food waste (3%).

The materials that could be diverted through Recycle BC include recyclable paper (8%), flex packaging (1%), and recyclable metal (1%).

Materials that could be diverted through registered EPR drop-off locations include paper, plastic, metal, and glass deposit beverage containers (<1%).

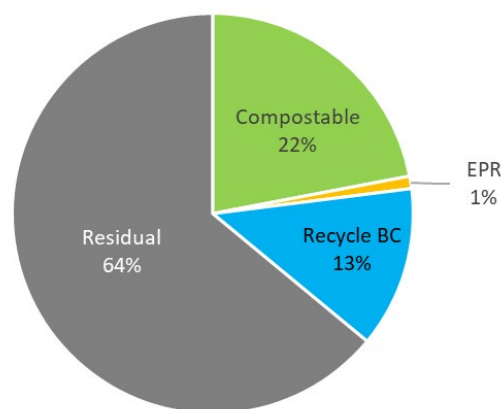


Figure 3-9: Diversion Potential for ICI Garbage at the LLRC

3.3 Britannia Beach

The following section summarizes the results from the three samples from the community of Britannia Beach.

3.3.1 Waste Composition Results

Figure 3-10 represents the weighted average of primary categories from the three Britannia Beach samples collected in August 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were organics (28.5%), household hygiene (22.9%), paper (17.4%), and plastic (14.8%). These four categories accounted for 83.6% of the overall weight of the samples.

Organics largely consisted of food waste, including avoidable food waste (17.2%) and unavoidable food waste (7.6%).

The household hygiene category (22.9%) included disposable diapers, disinfectant wipes, and personal hygiene products. Although the household hygiene category was composed of a single category with no sub-categories, field observations indicated that the category primarily consisted of disposable diapers by weight.

The paper primary category mainly consisted of compostable paper (8.2%), followed by recyclable paper (5.2%), and non-recyclable paper (1.9%). Examples of non-recyclable paper included waxed cardboard, paper that is lined or coated with plastic, foil, or wax, and laminated paper.

The largest components of the plastic primary category were flex packaging (5.1%), film products (2.4%), durable plastic products (2.3%), and rigid plastic packaging (2.1%).

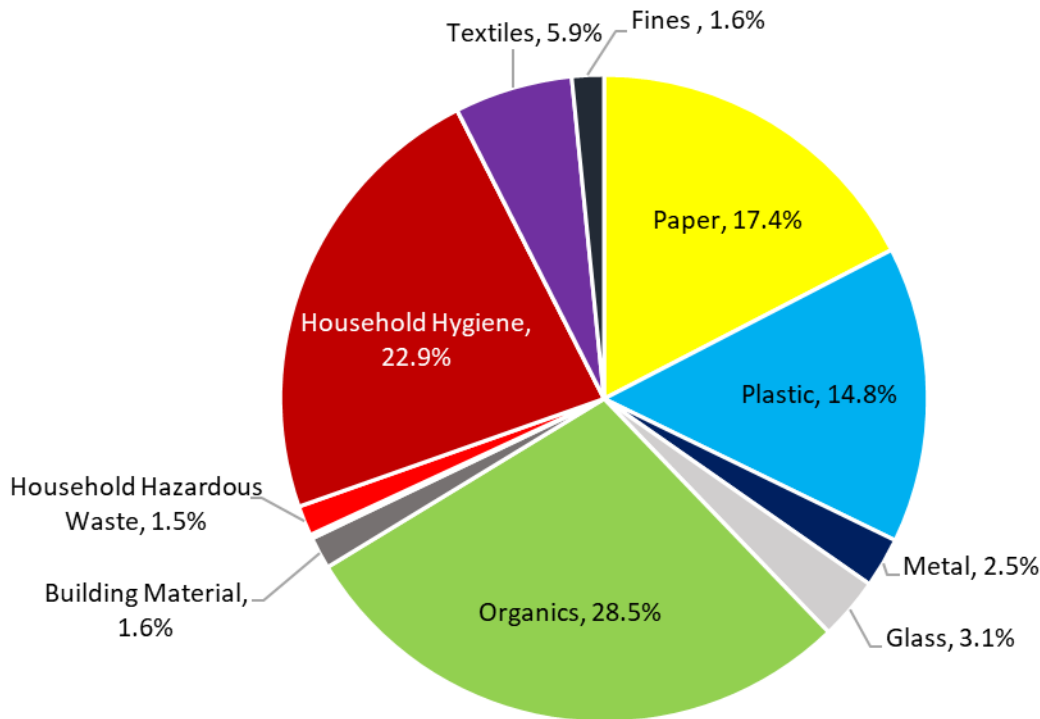


Figure 3-10: Waste Composition of Garbage from Britannia Beach

3.3.2 Diversion Potential

To calculate the diversion potential, each secondary category from the Britannia Beach samples were further segregated into categories including compostable, Recycle BC, EPR, and residual categories. This information can be used to calculate the percentage of materials that could be diverted from the landfill using existing programs that can be accessed by Britannia Beach residents.

Britannia Beach residents have curbside collection for garbage, recyclables, and organics. Recycle BC materials include the following:

- Materials accepted in the curbside recycling stream (e.g., plastic containers, metal containers, paper, and cardboard); and
- Materials accepted at recycling depots, including:
 - Styrofoam, foam packaging, plastic bags and overwrap, other flexible plastic at the Squamish Landfill; and
 - Glass jars and bottles at the Squamish Landfill and the unmanned glass depot in Britannia Beach.

EPR materials accepted at the Squamish Landfill include electronics, light fixtures, small and large appliances, paint and paint cans, solvents, gasoline, pesticides, and flammable liquids. Compostable materials include those collected as part of the curbside organics program (food scraps and plant trimmings) and yard waste and wood waste accepted at Squamish Landfill.

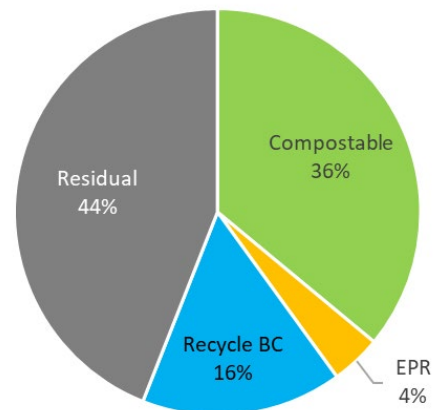


Figure 3-11: Diversion Potential of Material from Britannia Beach

As shown on Figure 3-11, the total diversion potential is 56% and consists of 36% compostable materials, 16% Recycle BC materials, and 4% EPR materials.

The main materials that could be compostable are avoidable food waste (17%), unavoidable food waste (8%), and compostable and food-soiled paper (8%).

The materials that could be diverted through Recycle BC include recyclable paper (5%), flex packaging (5%), and rigid plastic packaging (2%).

Materials that could be diverted through registered EPR-drop off locations include glass deposit beverage containers (2%).

3.4 Furry Creek

The following section summarizes the results from the three samples from the community of Furry Creek.

3.4.1 Waste Composition Results

Figure 3-12 represents the weighted average of primary categories from the three Furry Creek samples collected in August 2022. This is a snapshot of the types and relative quantities of materials that were discarded by residents at this time of the year.

The largest components were organics (29.6%), paper (19.4%), plastic (16.4%), and household hygiene (13.5%). These four categories represent 78.9% of the overall weight of the samples.

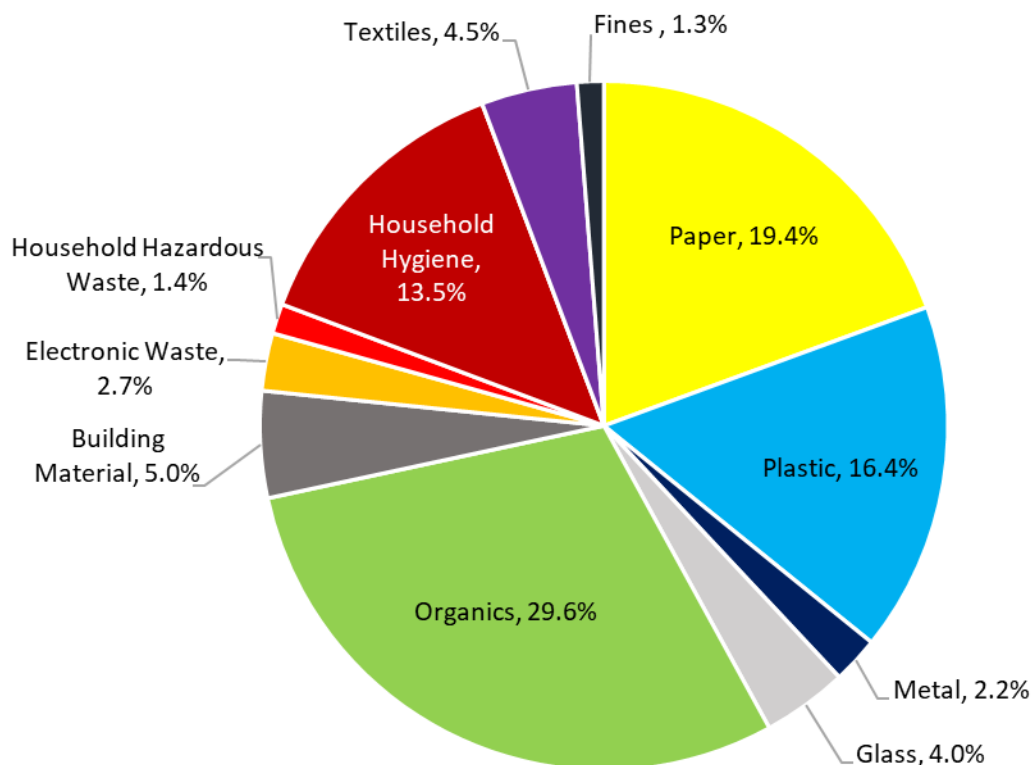


Figure 3-12: Waste Composition of Garbage from Furry Creek

Organics included avoidable food waste (15.2%) and unavoidable food waste (7.7%). Non-compostable organics (4.5%), which included rubber products and wax, was also a common sub-category under organics.

The paper primary category was mainly comprised of compostable and food-soiled paper (9.4%), recyclable paper (6.5%), and non-recyclable paper (2.1%). Examples of recyclable paper include office paper, corrugated cardboard, paper packaging, and newsprint. Examples of non-recyclable paper included paper that is lined or coated with plastic, foil, or wax (e.g., mailing envelopes lined with bubble wrap, paper chip bags with plastic lining).

For plastics, the largest component was flex packaging (6.4%), followed by durable plastic (3.0%), rigid plastic packaging (2.1%), and film products (2.0%).

Household hygiene (13.5%), which included disposable diapers, pet waste, and personal hygiene products, were also found in the waste stream from Furry Creek. Although the household hygiene category was composed of a single category with no sub-categories, field observations indicated that the category primarily consisted of disposable diapers and pet waste by weight.

3.4.2 Diversion Potential

To calculate the diversion potential, each secondary category from the Furry Creek samples were further segregated into categories including compostable, Recycle BC, EPR, and residual categories. This information can be used to calculate the percentage of materials that could be diverted from the landfill using existing programs that can potentially be accessed by Furry Creek residents.

Furry Creek residents have curbside collection for garbage, recyclables, and organics. Recycle BC materials include the following:

- Materials accepted in the curbside recycling stream (e.g., plastic containers, metal containers, paper, and cardboard); and
- Materials accepted at recycling depots, including:
 - Styrofoam, foam packaging, plastic bags and overwrap, other flexible plastic at the Squamish Landfill; and
 - Glass jars and bottles at the Squamish Landfill and the unmanned glass depot in Furry Creek.

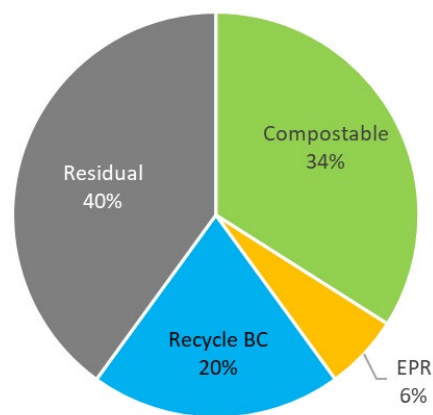


Figure 3-13: Diversion Potential for Material from Furry Creek

EPR materials accepted at the Squamish Landfill include electronics, light fixtures, small and large appliances, paint and paint cans, solvents, gasoline, pesticides, and flammable liquids. Compostable materials include those collected as part of the curbside organics program (food scraps and plant trimmings) and yard waste and wood waste accepted at Squamish Landfill.

As shown on Figure 3-13, the total diversion potential is 60% and consists of 34% compostable materials, 20% Recycle BC materials, and 6% EPR.

The main materials that could be compostable are avoidable food waste (15%), compostable and food-soiled paper (9%), and unavoidable food waste (8%).

The materials that could be diverted through Recycle BC are recyclable paper (6%), flex packaging (6%), rigid plastic packaging (2%), and recyclable glass (1%).

Material that could be diverted through registered EPR-drop off locations include electronic waste (3%) and glass deposit beverage containers (2%).

3.5 Single-Use Items

SUIs were also assessed as part of this waste composition study. For each sample, SUIs were weighed by SUI category and individually counted. Table 3-1 summarizes the number of SUIs found per category (normalized to 100 kg of the sample) found in the garbage stream. Generally, the SUI categories with higher numbers of SUIs included plastic takeout cups, plastic utensils, lined/polycoat paper cups, and empty and re-used plastic retail bags.

Table 3-1: Average Number of Single-use Items per 100 kg

Category	SUI	Average Number of SUIs per 100 kg					
		Lillooet			GBTS	Britannia Beach	Furry Creek
		SF	ICI	DO			
Retail Bags	Retail Paper Bags	1.2	-	0.6	-	2.3	2.9
	Re-Used Plastic Retail Bags	14.6	4.6	9.2	6.4	13.0	15.2
	Empty Plastic Retail Bags	48.5	9.2	13.3	5.1	4.6	10.4
	Compostable/Biodegradable Plastic Bags	-	-	0.1	-	2.9	2.3
Cups	Plastic Takeout Cups	22.6	51.6	11.1	6.1	21.2	14.3
	Lined/Polycoat Paper Cups	19.3	47.0	7.8	6.1	9.1	11.7
	Foam Takeout Cups	0.2	-	0.3	-	-	-
	Compostable/Biodegradable Takeout Cups	0.9	-	-	-	9.8	0.6
	Unlined Paper Cups	0.9	-	0.1	-	2.3	-
Takeout Containers	Plastic Takeout Containers	19.8	20.4	4.5	3.5	11.1	13.9
	Lined/Polycoat Takeout Containers	4.0	77.6	1.1	3.5	9.5	11.0
	Foam Takeout Containers	2.8	1.0	2.6	1.6	0.7	-
	Compostable/Biodegradable Takeout Containers	-	-	0.1	-	2.3	-
	Unlined Paper Takeout Containers	12.5	12.8	5.9	3.2	15.3	4.9
Straws	Plastic Straws	29.4	13.8	5.5	1.6	10.4	1.3
Utensils	Plastic Utensils	49.5	145.6	6.3	2.2	36.9	16.2
Total Count of SUIs per 100 kg		226.2	383.6	68.5	39.3	151.4	104.7

As shown in Table 3-2, SUIs represent approximately 1% to 4% of the waste stream by weight. The SUIs that generally made up the highest percentages by weight included unlined paper takeout containers, lined/polycoat paper takeout containers, plastic takeout containers, and lined/polycoat paper cups.

Table 3-2: Average Percent Weight of Single-use Items

SUI Category	SUI	Average Percent Weight of SUIs					
		Lillooet			GBTS	Britannia Beach	Furry Creek
		SF	ICI	DO			
Retail Bags	Retail Paper Bags	0.07%	-	0.06%	-	0.13%	0.18%
	Re-Used Plastic Retail Bags	0.26%	0.08%	0.16%	0.13%	0.29%	0.24%
	Empty Plastic Retail Bags	0.39%	0.10%	0.14%	0.06%	0.10%	0.18%
	Compostable/Biodegradable Plastic Bags	-	-	0.01%	-	0.07%	0.08%
Cups	Plastic Takeout Cups	0.15%	0.36%	0.11%	0.06%	0.15%	0.11%
	Lined/Polycoat Paper Cups	0.27%	0.79%	0.11%	0.16%	0.18%	0.23%
	Foam Takeout Cups	0.01%	-	0.01%	-	-	-
	Compostable/Biodegradable Takeout Cups	0.02%	-	-	-	0.13%	0.02%
	Unlined Paper Cups	0.01%	-	0.01%	-	0.08%	-
Takeout Containers	Plastic Takeout Containers	0.29%	0.18%	0.12%	0.10%	0.24%	0.34%
	Lined/Polycoat Takeout Containers	0.11%	1.46%	0.03%	0.26%	0.54%	0.50%
	Foam Takeout Containers	0.05%	0.03%	0.07%	0.03%	0.02%	-
	Compostable/Biodegradable Takeout Containers	-	-	0.01%	-	0.15%	-
	Unlined Paper Takeout Containers	0.38%	0.54%	0.30%	0.14%	0.67%	0.28%
Straws	Plastic Straws	0.06%	0.05%	0.04%	0.03%	0.05%	0.05%
Utensils	Plastic Utensils	0.19%	0.43%	0.09%	0.03%	0.23%	0.10%
Average Percent Weight of SUIs		2.26%	4.02%	1.27%	1.00%	3.03%	2.31%

4.0 COMPARISON TO 2020 STUDY

This section compares the results from waste composition studies conducted for Lillooet, Britannia Beach, and Furry Creek in 2020 and 2022. No waste characterization study was conducted for GBTS in 2020.

4.1 Lillooet Landfill and Recycling Centre

4.1.1 Single Family Sector

Figure 4-1 compares the composition of the SF waste stream received at LLRC in 2020 and 2022. Household hygiene in the SF waste stream received at LLRC increased from 4% in 2020 to 12% in 2022. In addition, plastics decreased from 17% in 2020 to 11% in 2022 and textiles increased from 7% in 2020 to 11% in 2022. The proportion

of potentially hazardous materials remained quite consistent, with electronic waste decreasing from 2% in 2020 to 1% in 2022 and HHW remaining at 2% for 2020 and 2022.

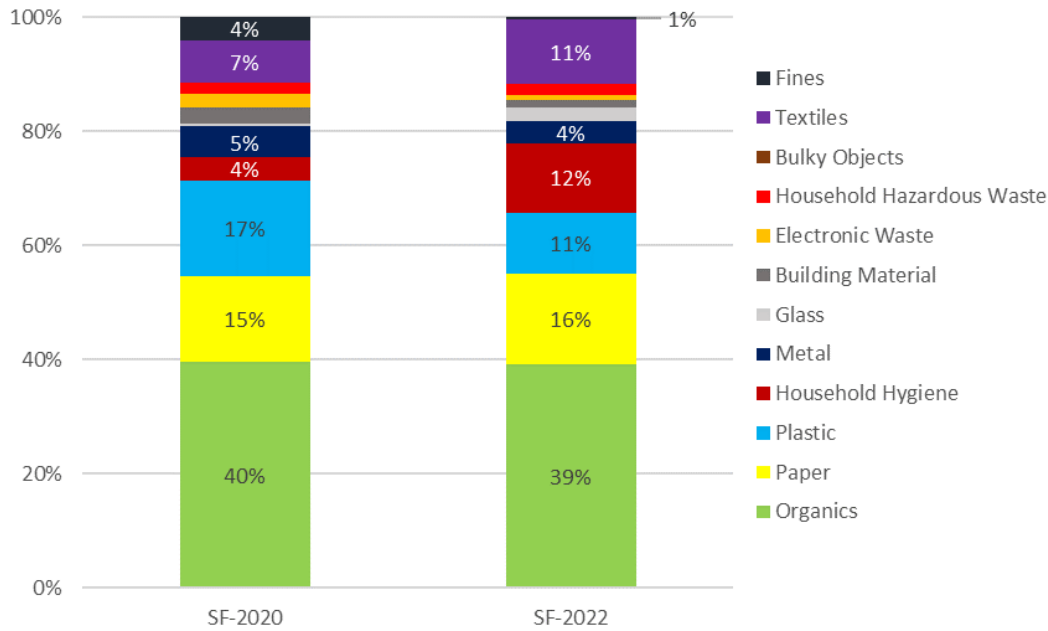


Figure 4-1: Waste Composition of SF Garbage Received at the LLRC in 2020 and 2022

4.1.2 Residential Drop Off Sector

Figure 4-2 compares the composition of the waste stream in the DO waste stream received at LLRC in 2020 and 2022. Building material decreased from 17% in 2020 to 6% in 2022. In addition, textiles increased from 4% in 2020 to 11% in 2022, and plastics increased from 9% in 2020 to 12% in 2022. The proportion of potentially hazardous materials fluctuated slightly, with electronic waste decreasing from 5% in 2020 to 2% in 2022 and HHW increasing slightly 1% in 2020 to 3% in 2022.

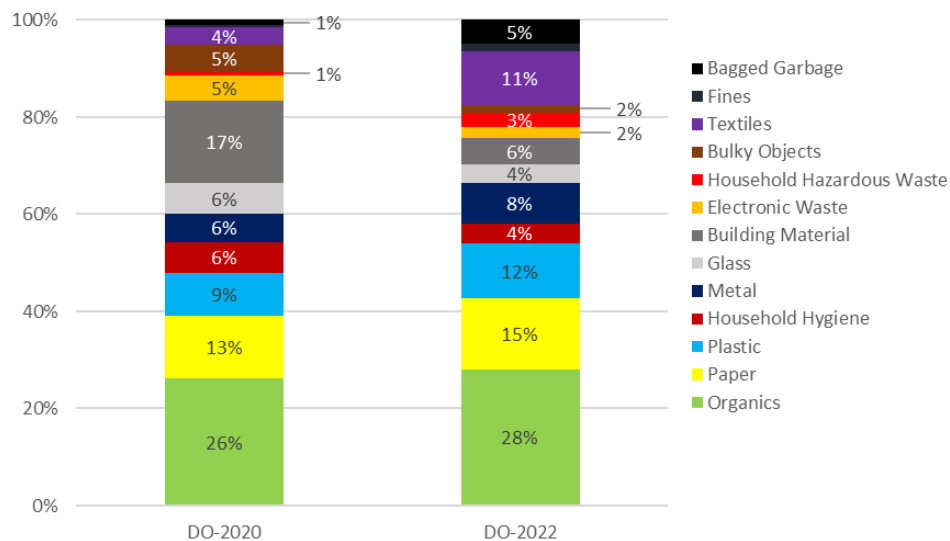


Figure 4-2: Waste Composition of Residential Drop Off Garbage Received at the LLRC in 2020 and 2022

4.1.3 Industrial, Commercial, and Institutional Sector

Figure 4-3 compares the composition of the waste stream in the ICI waste stream received at LLRC in 2020 and 2022. In terms of potentially hazardous materials, HHW decreased from 19% in 2020 to less than 1% in 2022, while electronic waste remained at 0% for both years. It should be noted that the proportion of HHW in 2020 was due to two of the four 2020 samples having a higher-than-normal proportion of household hazardous waste (62.4% and 10.6%).

In addition, organics increased from 17% in 2020 to 33% in 2022, and building material increased from 25% in 2020 to 35% in 2022. These increases may have been due to the higher proportion of construction waste, which included wood waste (part of organics) and building materials, dropped off at the landfill during the 2022 study. The proportion of plastic waste also decreased from 12% in 2020 to 5% in 2022.

The changes in the composition of the samples from the ICI sector demonstrate the inherent variability of smaller sample sizes, as only four ICI samples were characterized in both 2020 and 2022.

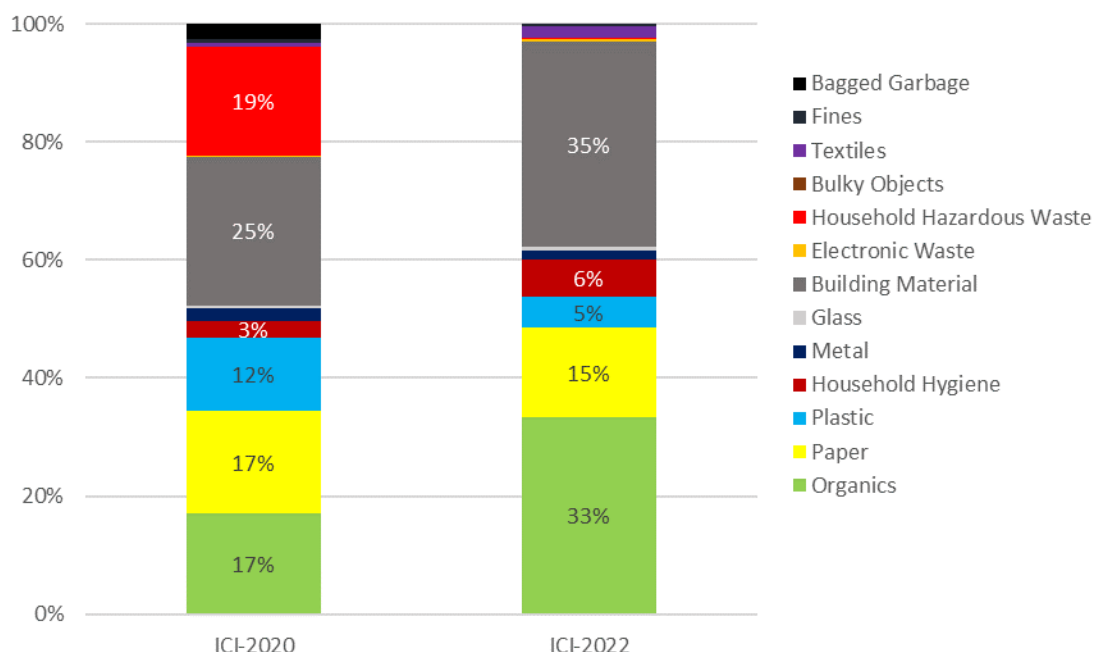


Figure 4-3: Waste Composition of ICI Garbage Received at the LLRC in 2020 and 2022

4.2 Britannia Beach

Figure 4-4 compares the composition of the waste stream from Britannia Beach in 2020 and 2022. Household hygiene in the waste stream from Britannia Beach increased from 7% in 2020 to 23% in 2022. In addition, plastics decreased from 21% in 2020 to 15% in 2022 and glass decreased from 8% in 2020 to 3% in 2022. Organics also decreased from 33% in 2020 to 29% in 2022. The proportion of potentially hazardous materials remained quite consistent, with HHW increasing from 1% in 2020 to 2% in 2022 and electronic waste remaining at 0% for both years.

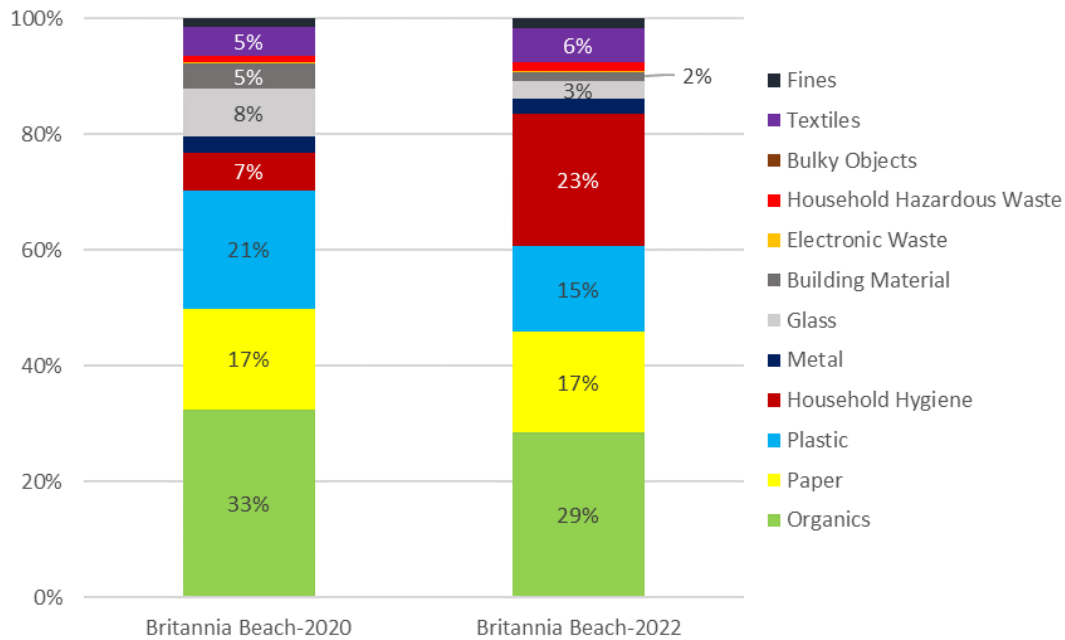


Figure 4-4: Waste Composition of Garbage from Britannia Beach in 2020 and 2022

4.3 Furry Creek

Figure 4-5 compares the composition of the waste stream from Furry Creek in 2020 and 2022. The average proportion of organics in the waste stream from Furry Creek dropped from 42% in 2020 to 30% in 2022. In addition, household hygiene increased from 5% in 2020 to 14% in 2022. The proportion of potentially hazardous materials remained quite consistent, with electronic waste increasing from 1% in 2020 to 3% in 2022 and HHW remaining at 1% for 2020 and 2022.

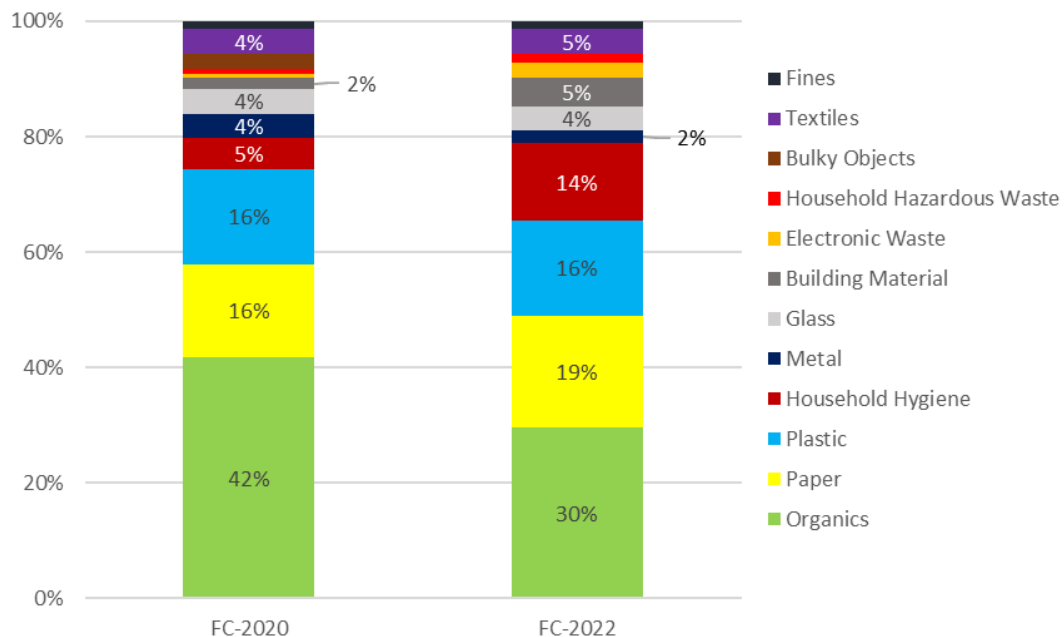


Figure 4-5: Waste Composition of Garbage from Furry Creek in 2020 and 2022

5.0 INTERESTING FINDS

Table 5-1 lists some of the notable, unexpected, and unusual materials found during the waste composition study. These materials will not necessarily skew the results as it is not atypical to have these types of materials present in the waste stream.

Table 5-1: List of Uncommon Materials Found During This Study

Community/Sector	Sample ID	Description	Photo
Gold Bridge Transfer Station	FA22-GB-G-02	Old papers and cheques from the 1970s	
Furry Creek	SU22-FC-G-03	Large doll in a box	
Lillooet – Residential Drop-off	FA22-DO-G-01	Lead acid car battery	

Community/Sector	Sample ID	Description	Photo
Lillooet – Residential Drop-off	SU22-DO-G-01	Marijuana cuttings	
Lillooet – Residential Drop-off	SU22-DO-G-07	Deer carcass	
Lillooet – Single Family	FA22-SF-G-03	Lots of mostly full nail polish	
Lillooet (all sectors)	All samples characterized at LLRC – consolidated	Batteries	

6.0 CLOSURE

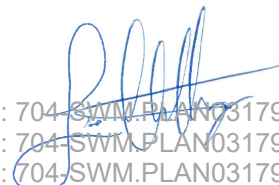
We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.



FILE: 704-SWM.PLAN03179-03
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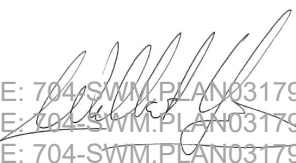
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APPENDIX A

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LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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APPENDIX B

MATERIAL CATEGORIES

Table B-1: Description of Garbage Hand Sort Material Categories

#	Secondary Category	Description and/or Examples	Diversion Potential Stream
Paper			
01	Paper Deposit Beverage Container	Paper refundable beverage container, paper milk container, milk alternative, milk container	Extended Producer Responsibility (EPR)
02	Recyclable Paper	Cardboard boxes, boxboard, cartons, fine paper, newsprint, receipts, magazines, paper packaging, etc.	Recycle BC
03	Compostable and Food-Soiled Paper	Paper towels, tissue, table napkins, food-soiled paper packaging (without wax or plastic lining), paper straws	Compostable
04	Non-Recyclable Paper	Paper lined or coated with other material including plastic, foil and wax, laminated paper, paper, and tissue soiled with cleaning products (not appropriate for composting)	Residual
05 ¹	Retail Paper Bag	Single-use paper retail bags	Compostable
06	Lined/Polycoat Paper Cup	Single-use plastic-lined/polycoat paper cups – hot and cold beverage	Recycle BC
07	Lined/Polycoat Paper Takeout Container	Single-use plastic-lined/polycoat paper takeout containers	Recycle BC
08	Unlined Paper Cup	Unlined paper cups, clearly marked compostable	Compostable
09	Unlined Paper Takeout Container	Unlined paper takeout containers	Compostable
Plastic			
10	Plastic Deposit Beverage Container	Plastic refundable beverage containers, plastic milk container, plastic milk alternative container	EPR
11	Rigid Plastic Packaging	Plastic packaging #1-7, clamshells, shampoo bottles, yogurt tubs, rigid flexible plastic packaging, rigid plastic packaging, plastic jars, etc.	Recycle BC
12	Durable Plastic	Plastic products, toys, food storage containers, coat hangers, storage bins	Residual
13	Styrofoam	Meat trays, egg cartons, electronic packaging, peanuts	Recycle BC
14	Film Packaging	Plastic bag and overwrap, dry cleaning bags, bread bags, diaper overwrap, toilet paper overwrap, water softener	Recycle BC
15	Flex Packaging	Other flexible plastic packaging, zipper lock pouches, stand-up pouches, chip bags, candy wrappers, net fruit bags, padded envelope, deli meat bags	Recycle BC
16	Film Product	Purchased film product, black garbage bags, blue recycling bag, tarp, shrink wrap	Residual
17	Reused Plastic Retail Bag	Plastic retail bag reused as a garbage bag or bin liner	Residual
18	Empty Plastic Retail Bag	Empty and not reused plastic retail bag	Recycle BC
19	Compostable/Biodegradable Plastic Bag	Plastic bag clearly marked/labelled as compostable or biodegradable	Residual
20	Plastic Takeout Cup	Single-use plastic cups – cold drinks	Recycle BC

¹ Categories highlighted orange were considered single-use items.

#	Secondary Category	Description and/or Examples	Diversion Potential Stream
21	Foam Takeout Cup	Single-use foam cups – cold or hot drinks	Recycle BC
22	Compostable/Biodegradable Plastic Takeout Cup	Single-use compostable or biodegradable plastic cups – cold or hot drinks	Residual
23	Plastic Takeout Container	Single-use plastic takeout containers	Recycle BC
24	Foam Takeout Container	Single-use foam takeout containers	Recycle BC
25	Compostable/Biodegradable Plastic Takeout Container	Single-use plastic takeout containers clearly marked compostable or biodegradable	Residual
26	Plastic Straw	Single-use plastic straws Paper straws are not defined as a separate category and are included in the Paper – Compostable category	Residual
27	Plastic Utensil	Single-use plastic utensils	Residual
Metal			
28	Metal Deposit Beverage Container	Metal refundable beverage containers, including ferrous and non-ferrous, non-alcoholic, and alcoholic beverages	EPR
29	Recyclable Metal	Ferrous and non-ferrous metal packaging, aluminum cans and lids, foil, pie trays, empty aerosol containers (food, personal hygiene)	Recycle BC
30	Non-Recyclable Metal	Empty spray paint, empty hazardous aerosol containers, empty propane and butane containers, coat hangers, scrap metal	Residual
Glass			
31	Glass Deposit Beverage Container	Glass refundable beverage containers, milk containers, alcohol containers	EPR
32	Recyclable Glass	Clear and coloured non-deposit glass bottles and jars	Recycle BC
33	Non-Recyclable Glass	Drinking glasses or dishes, ceramics, mirrors, broken glass	Residual
Organics			
34	Yard Waste	Grass, leaves, branches, mulch	Compostable
35	Avoidable Food Waste	Full uneaten food waste, edible parts of fruits and vegetables	Compostable
36	Unavoidable Food Waste	Bones, shells, fat and grease, coffee grounds, tea leaves, banana peel	Compostable
37	Non-Compostable Organics	Rubber, wax, animal carcass	Residual
38	Compostable Wood	Clean with no paint, stain or glue, unpainted pallets or skids, chopsticks	Compostable
39	Cogen Wood	Plywood, glue-lam, flakeboard, lightly stained or painted wood	Residual
40	Landfill Wood	Treated, heavily painted, or stained, composites or contains large amounts of other material	Residual
Building Material			
41	Building Material	Construction material, carpet, gypsum, asphalt, insulation, aggregate	Residual
Electronic Waste			
42	Electronic Waste	Anything with a cord or battery powered	EPR

#	Secondary Category	Description and/or Examples	Diversion Potential Stream
Household Hazardous Waste (HHW)			
43	EPR HHW	Batteries, lightbulbs, paints, pesticides, used oil and antifreeze	EPR
44	Non-EPR HHW	Sharps, glue, craft paint, cleaners	Residual
Household Hygiene			
45	Household Hygiene	Diapers, sanitary napkins, tampons, dental floss, Q-tips, etc.	Residual
Bulky Objects			
46	Bulky Objects	Furniture, appliances, mattress	Residual
Textiles			
47	Clothing	Includes all clothing, lingerie, socks, costumes, snowsuits, swimwear, etc.	Residual
48	Household Textiles	Includes all linens, towels, curtains, tablecloths, pet clothes, etc.	Residual
49	Footwear	Includes all footwear, sport shoes, insoles, etc.	Residual
50	Accessories	Includes all bags, purses, backpacks, gloves, mittens, hats, scarves, wallets, etc.	Residual
51	Soft Toys	Stuffed toys and animals	Residual
52	Other Textiles	Masks, pet collars and leashes	Residual
53	Non-Accepted Textiles by the National Association for Charitable Textile Recycling (NACTR)	Canvas tarps, car floor mats, ice cleats/crampons, clothing in bulk (retail dump), fabric bolts, hard luggage, hard toys, hospital bedding and linens, hotel bedding and linens, cut-offs, rice bags, ski and snowboard boots, sports protection, tents, umbrellas, wigs	Residual
Fines			
54	Fines	Fines and misc. garbage <1"	Residual

Table B-2: Description of Garbage Visual Material Categories

#	Secondary Category	Description and/or Examples	Diversion Potential Stream	Density (kg/yd ³)
Paper				
01	Paper Deposit Beverage Container	Paper refundable beverage container, paper milk container, milk alternative, milk container	Extended Producer Responsibility (EPR)	70.34
02	Recyclable Paper	Cardboard boxes, boxboard, cartons, fine paper, newsprint, receipts, magazines, paper packaging, etc.	Recycle BC	56.83
03	Compostable and Food-Soiled Paper	Paper towels, tissue, table napkins, food-soiled paper packaging (without wax or plastic lining), paper straws	Compostable	42.05
04	Non-Recyclable Paper	Paper lined or coated with other material including plastic, foil and wax, laminated paper, paper, and tissue soiled with cleaning products (not appropriate for composting)	Residual	70.34
Plastic				
05	Plastic Deposit Beverage Container	Plastic refundable beverage containers, plastic milk container, plastic milk alternative container	EPR	55.05
06	Rigid Plastic Packaging	Plastic packaging #1-7, clamshells, shampoo bottles, yogurt tubs, rigid flexible plastic packaging, rigid plastic packaging, plastic jars, etc.	Recycle BC	55.05
07	Durable Plastic	Plastic products, toys, food storage containers, coat hangers, storage bins	Residual	160.00
08	Styrofoam	Meat trays, egg cartons, electronic packaging, peanuts	Recycle BC	10.70
09	Film Packaging	Plastic bag and overwrap, dry cleaning bags, bread bags, diaper overwrap, toilet paper overwrap, water softener	Recycle BC	29.82
10	Flex Packaging	Other flexible plastic packaging, zipper lock pouches, stand-up pouches, chip bags, candy wrappers, net fruit bags, padded envelope, deli meat bags	Recycle BC	29.82
11	Film Product	Purchased film product, black garbage bags, blue recycling bag, tarp, shrink wrap	Residual	29.82
Metal				
12	Metal Deposit Beverage Container	Metal refundable beverage containers, including ferrous and non-ferrous, non-alcoholic, and alcoholic beverages	EPR	10.00
13	Recyclable Metal	Ferrous and non-ferrous metal packaging, aluminum cans and lids, foil, pie trays, empty aerosol containers (food, personal hygiene)	Recycle BC	91.75
14	Non-Recyclable Metal	Empty spray paint, empty hazardous aerosol containers, empty propane and butane containers, coat hangers, scrap metal	Residual	106.27
Glass				
15	Glass Deposit Beverage Container	Glass refundable beverage containers, milk containers, alcohol containers	EPR	191.14
16	Recyclable Glass	Clear and coloured non-deposit glass bottles and jars	Recycle BC	191.14
17	Non-Recyclable Glass	Drinking glasses or dishes, ceramics, mirrors, broken glass	Residual	191.14

#	Secondary Category	Description and/or Examples	Diversion Potential Stream	Density (kg/yd³)
Organics				
18	Yard Waste	Grass, leaves, branches, mulch	Compostable	69.57
19	Avoidable Food Waste	Full uneaten food waste, edible parts of fruits and vegetables	Compostable	262.24
20	Unavoidable Food Waste	Bones, shells, fat and grease, coffee grounds, tea leaves, banana peel	Compostable	262.24
21	Non-Compostable Organics	Rubber, wax, animal carcass	Residual	103.98
22	Compostable Wood	Clean with no paint, stain or glue, unpainted pallets or skids, chopsticks	Compostable	119.27
23	Cogen Wood	Plywood, glue-lam, flakeboard, lightly stained or painted wood	Residual	119.27
24	Landfill Wood	Treated, heavily painted, or stained, composites or contains large amounts of other material	Residual	119.27
Building Material				
25	Gypsum/Drywall Plaster	Gypsum/drywall plaster	Residual	212.27
26	Masonry	Bricks, blocks, concrete, etc.	Residual	390.91
27	Rock, Sand, Dirt, Ceramic, Porcelain	Rock, sand, dirt, ceramic, porcelain	Residual	390.91
28	Rigid Asphalt Products	Rigid asphalt products	Residual	332.27
29	Carpet Waste	Carpet waste and underlay	Residual	66.82
30	Other Inorganics	Linoleum, etc.	Residual	66.82
Electronic Waste				
31	Electronic Waste	Anything with a cord or battery powered	EPR	80.28
Household Hazardous Waste (HHW)				
32	EPR HHW	Batteries, lightbulbs, paints, pesticides, used oil and antifreeze	EPR	129.97
33	Non-EPR HHW	Sharps, glue, craft paint, cleaners	Residual	129.97
Household Hygiene				
34	Household Hygiene	Diapers, sanitary napkins, tampons, dental floss, Q-tips, etc.	Residual	173.55
Bulky Objects				
35	Bulky Objects	Furniture, appliances, mattress	Residual	80.28
Textiles				
36	Textiles	Clothing, linens, bags, shoes, etc.	Residual	69.58
Fines				
37	Bagged Garbage	Bagged garbage	Residual	523.19
38	Fines	Fines and misc. garbage <1"	Residual	129.97

APPENDIX C

WASTE COMPOSITION RESULTS

Table C.1: Waste Composition Results

Category	Lillooet			BB	FC	GBTS
	SF	ICI	DO			
Paper	15.90%	15.09%	14.54%	17.37%	19.39%	32.50%
Paper Deposit Beverage Container	0.21%	0.10%	0.11%	0.44%	0.21%	0.25%
Recyclable Paper	7.78%	8.14%	7.66%	5.17%	6.48%	16.70%
Compostable and Food-Soiled Paper	5.89%	5.02%	2.18%	8.24%	9.38%	4.67%
Non-Recyclable Paper	1.17%	0.42%	4.11%	1.93%	2.15%	10.34%
Retail Paper Bag	0.07%	0.00%	0.05%	0.13%	0.18%	0.00%
Lined/Polycoat Paper Cup	0.28%	0.39%	0.11%	0.18%	0.23%	0.16%
Lined/Polycoat Paper Takeout Container	0.11%	0.75%	0.03%	0.54%	0.50%	0.25%
Unlined Paper Cup	0.01%	0.00%	0.01%	0.08%	0.00%	0.00%
Unlined Paper Takeout Container	0.38%	0.27%	0.28%	0.67%	0.27%	0.14%
Plastic	10.73%	5.34%	11.51%	14.85%	16.37%	11.09%
Plastic Deposit Beverage Container	0.26%	0.21%	0.69%	0.29%	0.36%	0.14%
Rigid Plastic Packaging	2.52%	0.76%	1.57%	2.14%	2.09%	3.03%
Durable Plastic	0.91%	0.70%	5.14%	2.35%	2.97%	1.49%
Styrofoam	0.30%	0.07%	0.20%	0.52%	0.52%	0.23%
Film Packaging	1.05%	0.53%	0.56%	0.60%	0.97%	1.14%
Flex Packaging	2.28%	1.13%	1.46%	5.09%	6.39%	2.52%
Film Product	1.97%	1.33%	1.15%	2.43%	1.96%	2.10%
Reused Plastic Retail Bag	0.26%	0.04%	0.16%	0.29%	0.24%	0.12%
Empty Plastic Retail Bag	0.40%	0.05%	0.14%	0.10%	0.18%	0.06%
Compostable/Biodegradable Plastic Bag	0.00%	0.00%	0.01%	0.07%	0.08%	0.00%
Plastic Takeout Cup	0.15%	0.18%	0.11%	0.15%	0.11%	0.06%
Foam Takeout Cup	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%
Compostable/Biodegradable Plastic Takeout Cup	0.02%	0.00%	0.00%	0.13%	0.02%	0.00%
Plastic Takeout Container	0.30%	0.09%	0.11%	0.24%	0.34%	0.09%
Foam Takeout Container	0.05%	0.01%	0.07%	0.02%	0.00%	0.03%

Category	Lillooet			BB	FC	GBTS
	SF	ICI	DO			
Compostable/Biodegradable Plastic Takeout Container	0.00%	0.00%	0.01%	0.15%	0.00%	0.00%
Plastic Straw	0.06%	0.03%	0.04%	0.05%	0.05%	0.03%
Plastic Utensil	0.19%	0.22%	0.09%	0.23%	0.10%	0.03%
Metal	3.77%	1.67%	8.42%	2.45%	2.20%	3.93%
Metal Deposit Beverage Container	0.07%	0.06%	0.56%	0.40%	0.16%	0.45%
Recyclable Metal	1.80%	0.98%	0.66%	0.86%	0.88%	1.23%
Non-Recyclable Metal	1.90%	0.63%	7.20%	1.18%	1.16%	2.26%
Glass	2.49%	0.45%	3.69%	3.14%	3.97%	2.92%
Glass Deposit Beverage Container	0.57%	0.19%	1.67%	1.66%	1.60%	0.16%
Recyclable Glass	1.21%	0.26%	0.98%	0.70%	1.47%	2.04%
Non-Recyclable Glass	0.71%	0.00%	1.04%	0.79%	0.90%	0.71%
Organics	39.24%	33.37%	28.05%	28.52%	29.58%	27.62%
Yard Waste	1.32%	1.19%	0.94%	1.23%	1.49%	2.71%
Avoidable Food Waste	28.06%	12.04%	17.55%	17.19%	15.22%	16.33%
Unavoidable Food Waste	9.10%	3.09%	2.38%	7.59%	7.68%	6.87%
Non-Compostable Organics	0.30%	0.41%	3.31%	0.86%	4.47%	0.25%
Compostable Wood	0.06%	0.21%	1.16%	0.44%	0.26%	0.49%
Cogen Wood	0.38%	0.07%	1.08%	0.08%	0.08%	0.95%
Landfill Wood	0.01%	16.37%	1.62%	1.13%	0.39%	0.02%
Building Material	1.22%	34.90%	5.52%	1.61%	5.06%	1.44%
Building Material	1.22%	2.61%	5.52%	1.61%	5.06%	1.44%
Gypsum/Drywall Plaster ¹	-	0.00%	0.00%	-	-	-
Masonry (Bricks, Blocks, Concrete, etc.) ¹	-	0.00%	0.00%	-	-	-
Rock, Sand, Dirt, Ceramic, Porcelain ¹	-	0.00%	0.00%	-	-	-
Rigid Asphalt Products ¹	-	25.00%	0.00%	-	-	-
Carpet Waste (and Underlay) ¹	-	0.00%	0.00%	-	-	-

¹ Building material categories were expanded for visual estimates.

Category	Lillooet			BB	FC	GBTS
	SF	ICI	DO			
Other Inorganics (Linoleum, etc.) ¹	-	7.30%	0.00%	-	-	-
Electronic Waste	0.87%	0.34%	2.23%	0.23%	2.75%	0.44%
Electronic Waste	0.87%	0.34%	2.23%	0.23%	2.75%	0.44%
Household Hazardous Waste (HHW)	1.96%	0.31%	2.98%	1.45%	1.41%	0.50%
Extended Producer Responsibility (EPR) HHW	0.61%	0.02%	2.22%	0.55%	0.60%	0.08%
Non-EPR HHW	1.35%	0.29%	0.77%	0.91%	0.81%	0.42%
Household Hygiene	12.13%	6.21%	3.97%	22.87%	13.50%	3.91%
Household Hygiene	12.13%	6.21%	3.97%	22.87%	13.50%	3.91%
Bulky Objects	0.00%	0.00%	1.61%	0.00%	0.00%	0.00%
Bulky Objects	0.00%	0.00%	1.61%	0.00%	0.00%	0.00%
Textiles	11.18%	1.92%	11.10%	5.94%	4.50%	15.40%
Clothing	6.60%	0.68%	1.61%	2.85%	0.72%	8.36%
Household Textiles	1.86%	0.84%	2.91%	0.03%	0.72%	2.78%
Footwear	1.73%	0.00%	0.85%	0.02%	0.70%	2.07%
Accessories	0.63%	0.11%	1.35%	0.18%	0.34%	0.45%
Soft Toys	0.01%	0.00%	0.28%	0.08%	0.10%	0.00%
Other Textiles	0.18%	0.06%	1.07%	0.27%	0.23%	0.05%
Non-Accepted Textiles by the National Association for Charitable Textile Recycling (NACTR)	0.18%	0.22%	1.75%	2.50%	1.70%	1.68%
Textiles ²	-	0.00%	1.29%	-	-	-
Fines	0.51%	0.41%	1.52%	1.56%	1.26%	0.24%
Fines	0.51%	0.41%	1.52%	1.56%	1.26%	0.24%
Bagged Garbage	0.00%	0.00%	4.85%	-	-	-
Bagged Garbage	0.00%	0.00%	4.85%	-	-	-
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

SF – Single Family Sector at the Lillooet Landfill and Recycling Centre (LLRC)
ICI – Industrial, Commercial, and Institutional Sector at the LLRC
DO – Residential Drop Off Sector at the LLRC

BB – Britannia Beach
FC – Furry Creek
GBTS – Gold Bridge Transfer Station

² Textile categories were combined for visual estimates.

APPENDIX D

SELECTED PHOTOGRAPHS



Photo 1: Garbage Truck Unloading a Garbage Sample



Photo 2: Field Staff Collecting a Sample from a Tipped Load



Photo 3: Field Staff Hand Sorting a Sample



Photo 4: Truck Unloading a Single-Family Sample



Photo 5: Example of a Residential Drop-Off Sample



Photo 6: Example of an Industrial, Commercial, and Institutional (ICI) Sample



Photo 7: Example of a 100 kg Sample Collected for Hand Sorting



Photo 8: Example of the Recyclable Paper Category



Photo 9: Example of the Non-Recyclable Paper Category



Photo 10: Example of the Lined/Polycoat Paper Cup Category



Photo 11: Example of the Unlined Paper Takeout Container Category



Photo 12: Example of the Rigid Plastic Packaging Category



Photo 13: Example of the Durable Plastic Category



Photo 14: Example of the Styrofoam Category



Photo 15: Example of the Plastic Flex Packaging Category



Photo 16: Example of the Re-Used Plastic Retail Bag Category



Photo 17: Example of the Plastic Takeout Cup Category



Photo 18: Example of the Plastic Takeout Container Category



Photo 19: Example of the Plastic Utensil Category



Photo 20: Example of the Metal Deposit Beverage Container Category



Photo 21: Example of the Non-Recyclable Metal Category



Photo 22: Example of the Recyclable Glass Category



Photo 23: Example of the Yard Waste Category



Photo 24: Example of the Avoidable Food Waste Category



Photo 25: Example of the Unavoidable Food Waste Category



Photo 26: Example of the Cogen Wood Category



Photo 27: Example of the Building Material Category (Drywall and Insulation)



Photo 28: Example of the Electronic Waste Category



Photo 29: Example of the Household Hazardous Waste (HHW) – Extended Producer Responsibility (EPR) Category



Photo 30: Example of the HHW – Non-EPR Category



Photo 31: Example of the Household Hygiene Category



Photo 32: Example of the Textiles – Clothing Category



Photo 33: Example of the Household Textiles Category



Photo 34: Example of the Textiles – Accessories Category