

Alberni-Clayoquot Regional District 2023 Waste Composition Study



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Alberni-Clayoquot Regional District

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
ACRD	Alberni-Clayoquot Regional District
CCME	Canadian Council of Ministers of the Environment
ICI	Industrial, Commercial, and Institutional
MSW	Municipal solid waste
SF	Single family
Tetra Tech	Tetra Tech Canada Inc.

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Alberni-Clayoquot 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 Alberni-Clayoquot 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 Alberni-Clayoquot Regional District (ACRD) to conduct a waste composition study across various streams and sectors, as the ACRD prepares to update their Solid Waste Management Plan. This study updates the municipal solid waste (MSW), also known as garbage, composition for materials disposed at the Alberni Valley Sort'nGo Centre (formerly known as the Alberni Valley Landfill) and West Coast Landfill. Previously, a waste composition study was conducted in 2019.

Field work for the waste composition study took place from August 23 to August 25, 2023, at the West Coast Landfill and August 28 to August 30, 2023, at the Alberni Valley Sort'nGo Centre. MSW was sorted by hand from single family (SF) residential and industrial, commercial, and institutional (ICI) sectors. Residential self-haul MSW was characterized with either hand sorting techniques or visual estimate approaches.

2.0 METHODOLOGY

This section outlines how Tetra Tech selected and sorted the collected MSW samples. Tetra Tech's sampling methodology is based on the Canadian Council of Ministers of the Environment's (CCME) Recommended Waste Characterization Methodology for Direct Waste Analysis Studies in Canada.¹ The fieldwork was conducted by Tetra Tech's field team who were trained on proper safety and material sorting procedures. Photos were taken to provide visual records of the activities that occurred during the waste composition study. Appendix B includes selected photographs from the sorting event.

2.1 Sampling Plan

A sampling plan was developed in conjunction with the ACRD to obtain a representative distribution of the different types of communities and sectors, as defined below:

- **Single family:** Waste from detached homes that have curbside collection services. These collection services are provided by the ACRD for homes in municipalities and by private haulers for homes in electoral areas.
- **Industrial, commercial, and institutional:** Waste from businesses, institutions, and multi-family residential buildings. Waste from these areas is collected together in the same type of collection trucks. Waste from tourist destinations such as national parks and resorts are also included in this sector.
- **Self-haul:** Waste that is delivered to disposal sites or transfer stations by residents. This includes a broad range of materials such as bagged residential MSW (typical of SF waste) to bulky items such as building materials and furniture.

¹ Canadian Council of Ministers of the Environment. 1999. *Recommended Waste Characterization Methodology for Direct Waste Analysis Studies in Canada*. Prepared under contract by SENES Consultants Limited.

The total number of samples characterized by sector and sampling location during this sorting event is summarized in Table 2-1.

Table 2-1: Total Number of Samples Characterized

Facility	SF	ICI	Self-Haul (Hand Sort)	Self-Haul (Visual)	Total
Alberni Valley Sort'nGo Centre	6	5	2	1	14
West Coast Landfill	3	7	1	2	13
Total	9	12	3	3	27

2.2 Sample Collection

Tetra Tech's field lead worked with each facility's staff to identify loads for sampling. As selected loads arrived at the facility, Tetra Tech's field lead would communicate with the loader operator to collect a portion of the target load for sampling. A loader bucket of material would be collected and taken to the designated sorting area for characterization. For SF and ICI samples, Tetra Tech staff collected approximately 100 kg of material from random parts of the load (Figure 2-1).

For self-haul samples, Tetra Tech's field lead would assess the load to determine whether it would be hand-sorted or visually estimated. If bagged materials appeared to comprise more than 30% of the load volume, then a sample would be collected with the loader bucket for hand-sorting. Otherwise, a volume-based visual estimate would be conducted.



Figure 2-1: Sample Collection

2.3 Sorting Procedures

Materials placed on the sorting table are sorted into their respective categories. Categories are selected and approved by the ACRD. Samples were categorized into 12 primary categories, which are further divided into 38 secondary categories for hand-sorted samples and 39 secondary categories for visually estimated samples. The additional secondary category for the visually estimated samples was for bagged garbage, which was left unsorted. The primary categories included the following:

- Paper.
- Glass.
- Construction and Demolition Material (non-wood).
- Plastic.
- Compostable Organics.
- Electronic Waste.
- Metal.
- Non-Compostable Organics.
- Household Hazardous Waste.
- Household Hygiene.
- Bulky Objects.
- Other Waste

A detailed list of the primary categories, secondary categories, descriptions, and diversion potential is included in Appendix C. Note that construction and demolition material (non-wood) and household hygiene were not further subdivided into secondary categories.

Hand-sorted samples are weighed before sorting to confirm that at least 100 kg was obtained. Materials are then sorted into their secondary categories and each material category is weighed. Weights are recorded electronically in a data template.

Visually estimated samples are assessed by teams of two sorters. Each sorter walked around the load to first conduct a volume estimate of primary categories individually. The two sorters then compared their results and entered the average into the data template. The same process was then repeated for secondary categories within each primary category, whereby the estimates are made individually and then averaged.

2.4 Data Analysis

Data was compiled from individual field data records into one database for analysis. The composition of each sample is calculated by weight. Averages for each sector by facility are calculated based on the weight-based composition. Scale data from 2022 was used to estimate the annual quantity of material disposed by category. The percent composition from each sector and facility is multiplied by the tonnage of material disposed.

2.5 Project Limitations

Waste composition data provides a snapshot of the waste stream during each sampling period and may not account for variances in composition over the course of the year. For example, disposal habits tend to vary in different seasons due to high and low tourism activity.

Limitation of this dataset includes the following:

- During the sorting event, materials being delivered by Berry and Vale from transfer stations were typically mixed from multiple sources. Due to the collection and co-mingling of material, ACRD and Tetra Tech staff were not able to separate and determine the source of the residential self-haul material.
- Landfill traffic and disposal patterns were affected due to the highway closures during the sorting event.

- Due to the location of the sorting area where the Tetra Tech field staff were located and where garbage was unloaded, staff were unable to directly communicate with the truck drivers to collect information regarding the load source, and origin of material. Information regarding the materials collected was provided by the loader operator, the scale house attendant, and scale tickets.
- During the field dates at the West Coast Landfill, the garbage collection schedule for single family residential was every other week. This affected sampling from Ucluelet, Millstream, Port Albion, and hitacu (Yuulu?il?ath Government) which received weekly organics collection on Mondays, garbage collection which occurs every other week on Thursday and recycling on the alternate Wednesday of the week of the 21st. Garbage collection occurred on Thursday, August 24.

3.0 WASTE COMPOSITION RESULTS

The following section summarizes the waste composition results which are presented by primary category and weight-based percentages. Details of the waste composition results are attached in Appendix D.

The waste composition results also include a diversion potential assessment which estimates the proportion of the waste stream that could theoretically be diverted through recycling, composting, product stewardship programs, and reuse. Details of the divertible materials (which is based on secondary categories) are listed in Appendix C. The diversion potential is calculated based on an ideal scenario. This is the theoretical maximum and represents the upper boundary of what is possible given the current waste composition.

Diversion potential of materials in the waste stream was divided into five options:

- **Recycling:** materials acceptable in curbside collection services (or at drop-off points for residents without curbside service).
- **Compostable:** materials acceptable in the curbside organics stream (or at drop-off points for residents without curbside service).
- **Product Stewardship:** divertible materials managed by product stewardship programs (excluding Recycle BC materials).
- **Reuse:** divertible materials that have high reuse potential (textiles, furniture).
- **Garbage:** materials that do not fall within the above diversion options and would be landfilled.

3.1 Alberni Valley Sort'nGo Centre Waste Composition Results

The following summarizes the waste composition results for samples sorted at the Alberni Valley Sort'nGo Centre. Results are presented by primary category for each sector and the overall composition.

3.1.1 Single Family

Figure 3-1 represents the SF composition for garbage delivered to the Alberni Valley Sort'nGo Centre. It primarily consisted of compostable organics (32%), household hygiene (19%), plastics (19%), and non-compostable organics (10%). These four primary categories represent 80% of the materials.

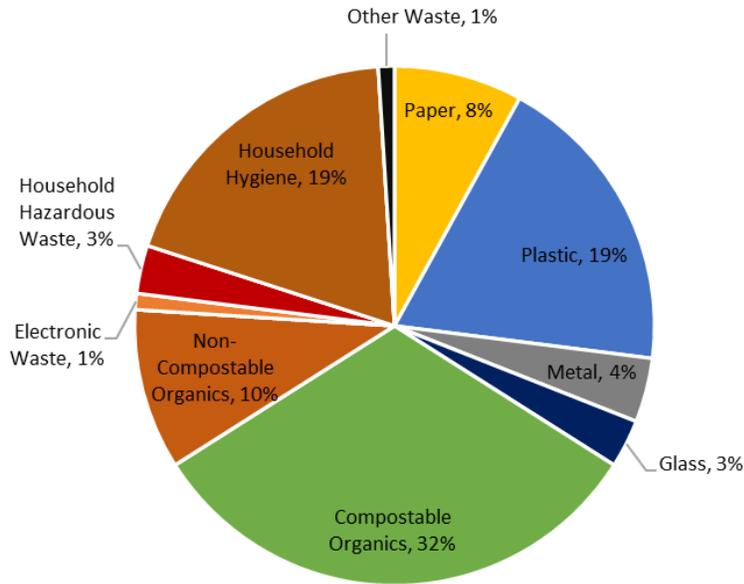


Figure 3-1: Alberni Valley Sort'nGo Centre Single Family Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (16%), compostable and food-soiled paper (7%), and food waste – unavoidable (5%).

The household hygiene category was not subdivided into secondary categories but was observed to contain diapers, hygiene products, personal care products, and pet waste.

The plastics category was primarily composed of film packaging (7%), film product (4%), rigid recyclable packaging (3%), and durable products (3%).

Non-compostable organics was primarily composed of textiles (6%) and dirty/treated wood (3%).

Diversion Potential

Figure 3-2 summarizes the diversion potential for the SF waste stream that goes to Alberni Valley Sort’nGo Centre. This represents the percentage of materials that could be diverted through composting, recycling, product stewardship programs, and reuse. The total diversion potential was estimated to be 62% and this consists of 32% compostable, 14% recycling, 10% product stewardship, and 6% reuse materials.

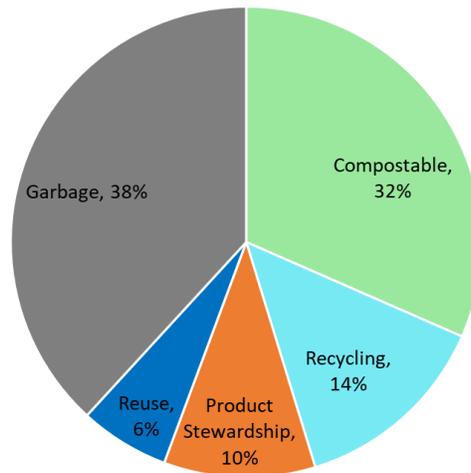


Figure 3-2: Alberni Valley Sort’nGo Centre Single Family Waste Diversion Potential

3.1.2 Industrial, Commercial, and Institutional

Figure 3-3 represents the ICI waste composition for waste delivered to Alberni Valley Sortn’Go Centre. The ICI waste stream was primarily composed of construction and demolition material (non-wood) (25%), compostable organics (21%), paper (17%), plastic (15%), and non-compostable organics (11%). These four primary categories represent 89% of the materials.

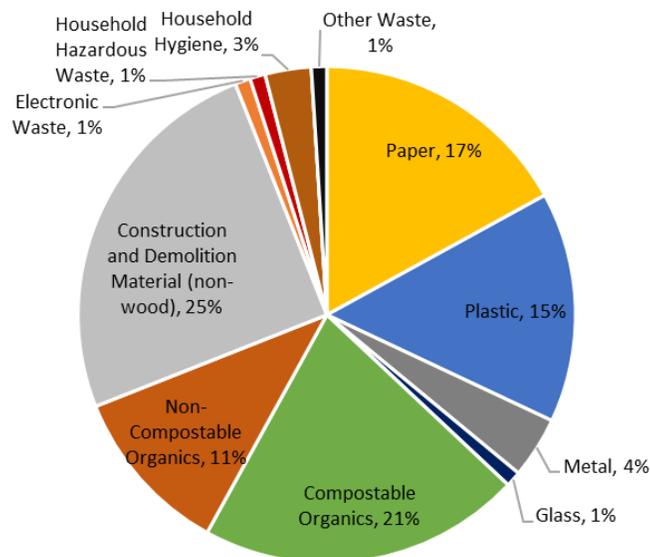


Figure 3-3: Alberni Valley Sort’nGo Centre ICI Waste Composition

The construction and demolition material (non-wood) category was not subdivided into secondary categories but was observed to contain concrete bags, drywall, and fiberglass insulation.

The compostable organics category was primarily composed of food waste – avoidable or donatable (9%), compostable and food-soiled paper (5%), and yard and garden materials (4%).

The paper category was primarily composed of cardboard (7%), recyclable paper (5%), and other non-recyclable paper (5%).

The plastic category was primarily composed of film packaging (4%), durable products (4%), film product (3%), and rigid recyclable packaging (3%).

Diversion Potential

Figure 3-4 summarizes the diversion potential for ICI materials entering the Alberni Valley Sortn’Go Centre. This represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was estimated to be 51% and consisted of 21% compostable, 17% recycling, 6% product stewardship, and 7% reuse materials.

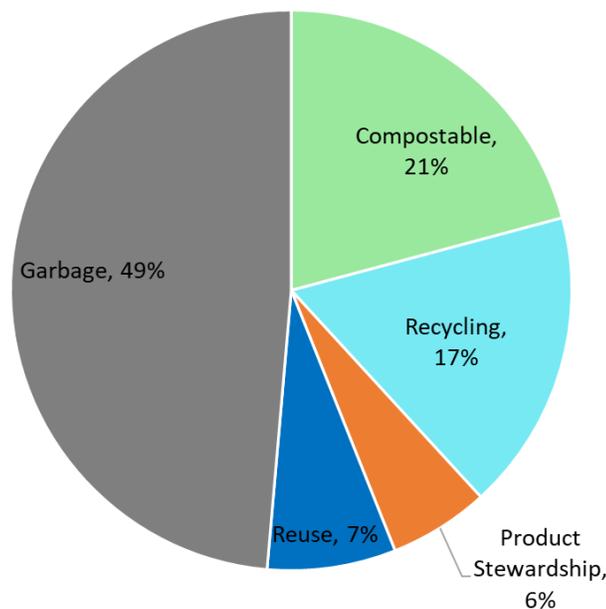


Figure 3-4: Alberni Valley Sort’nGo Centre ICI Waste Diversion Potential

3.1.3 Self-Haul

Figure 3-5 represents the self-haul waste composition for materials delivered to Alberni Valley Sortn'Go Centre. Self haul materials were primarily composed of non-compostable organics (44%), construction and demolition material (non-wood) (17%), plastic (10%), and paper (9%). These four primary categories represent 80% of the materials.

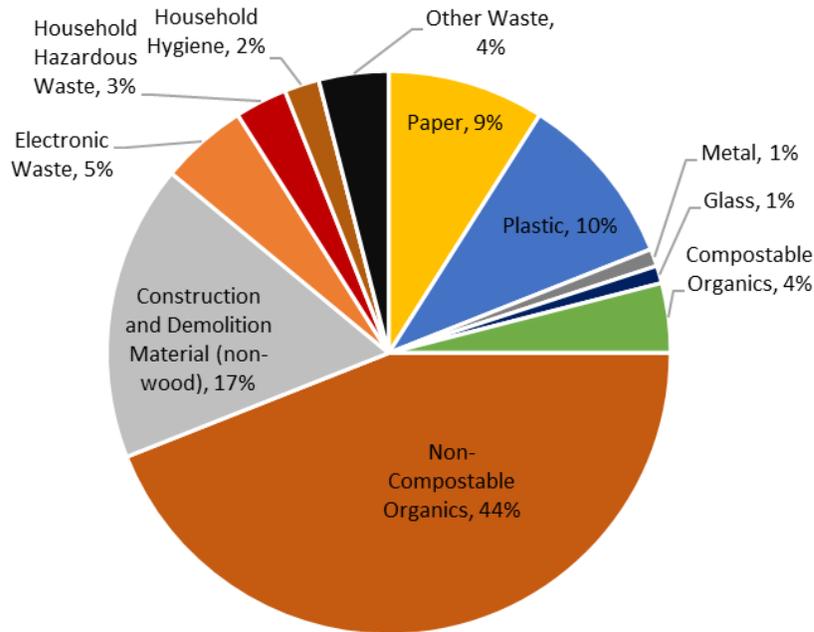


Figure 3-5: Alberni Valley Sort'nGo Centre Self-Haul Residential Waste Composition

The non-compostable organics category was primarily composed of textiles (22%) and dirty/treated wood (21%).

The construction and demolition material (non-wood) category was not subdivided into secondary categories but was observed to contain a toilet, carpet and carpet underlay, and insulation.

The plastic category was primarily composed of durable products (8%).

The paper category was primarily composed of cardboard (4%), other non-recyclable paper (3%), and recyclable paper (2%).

Diversion Potential

Figure 3-6 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 41% and consisted of 22% reuse, 8% recycling, 7% product stewardship, and 4% compostable materials.

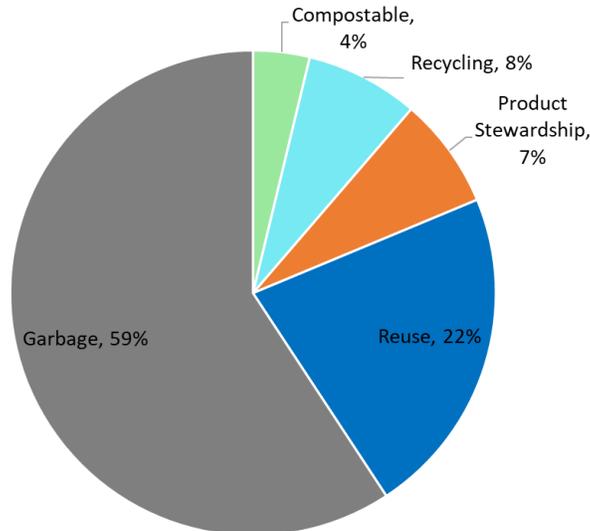


Figure 3-6: Alberni Valley Sort’nGo Centre Self-Haul Residential Waste Diversion Potential

3.1.4 Alberni Valley Sort’nGo Centre Overall Waste Composition

Figure 3-7 represents the weighted average waste composition for the Alberni Valley Sort’nGo Centre with the sectors combined. Weighted averages were calculated using the waste composition results for each sector and the amount of waste from each sector. The overall results were primarily composed of compostable organics (20%), non-compostable organics (19%), construction and demolition material (non-wood) (16%), plastic (15%), and paper (12%). These five primary categories represent 82% of the materials.

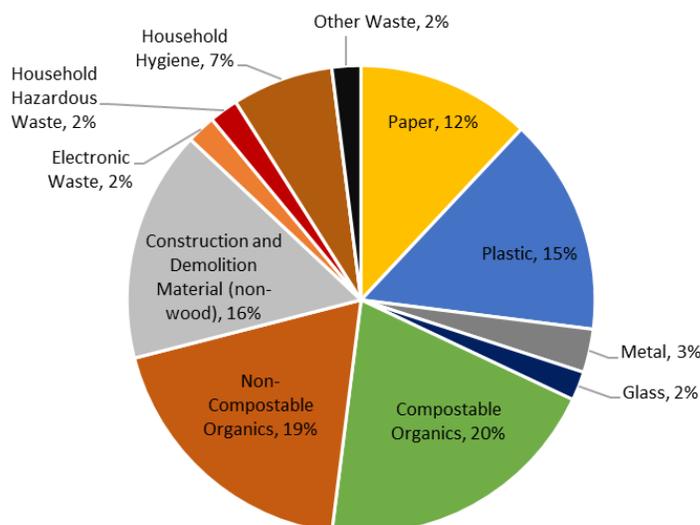


Figure 3-7: Alberni Valley Sort’nGo Centre Combined Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (9%), compostable and food-soiled paper (4%), and food waste – unavoidable (3%).

The non-compostable organics category was primarily composed of textiles (11%) and dirty/treated wood (8%).

The plastic category was primarily composed of durable products (5%), film packaging (4%), and rigid recyclable packaging (3%).

The paper category was primarily composed of old corrugated cardboard (4.4%), recyclable paper (4.4%), and other non-recyclable paper (3.4%).

Diversion Potential

Figure 3-8 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 52% and consisted of 20% compostable, 14% recycling, 11% reuse, and 7% product stewardship.

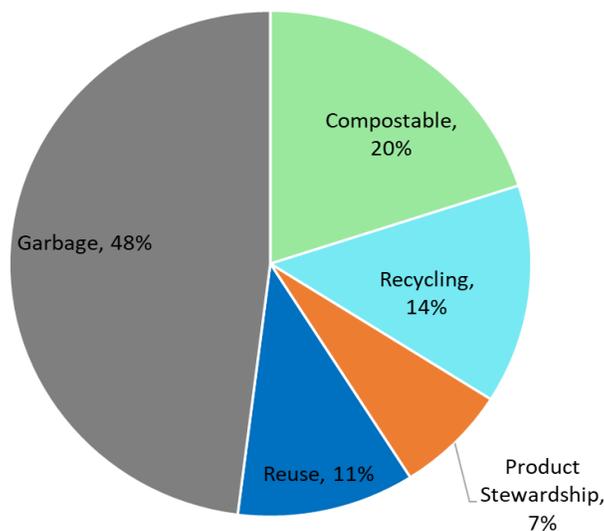


Figure 3-8: Alberni Valley Sort’nGo Centre Combined Waste Diversion Potential

3.2 West Coast Landfill Waste Composition Results

The following section summarizes the waste composition results for materials that went to the West Coast Landfill. Results are presented by primary category for each sector and the overall weighted composition.

3.2.1 Single Family

Figure 3-9 represents the average SF waste composition for materials delivered to the West Coast Landfill. SF waste was primarily composed of compostable organics (38%), household hygiene (16%), plastic (15%), paper (7%), and non-compostable organics (7%). These five primary categories represent 83% of the materials.

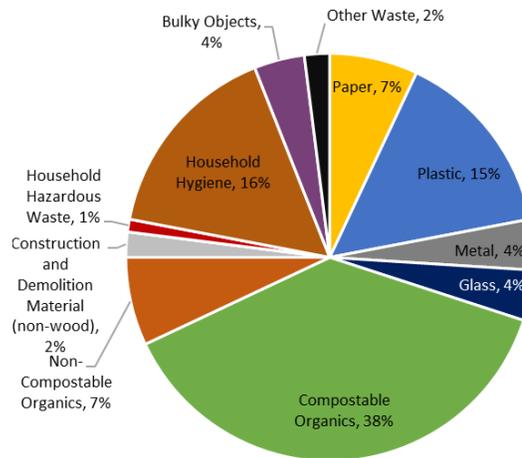


Figure 3-9: West Coast Landfill Single Family Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (22%), compostable and food-soiled paper (8%), and food waste – unavoidable (6%).

The household hygiene category was not subdivided into secondary categories was observed to contain diapers, hygiene products, personal care products, and pet waste.

The plastic category was primarily composed of film packaging (8%), recyclable rigid packaging (3%), and film product (2%).

The paper category was primarily composed of recyclable paper (5%).

Non-compostable organics was primarily composed of textiles (6%).

Diversion Potential

Figure 3-10 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 69% and consisted of 38% compostable, 12% recycling, 9% product stewardship, and 10% reuse materials.

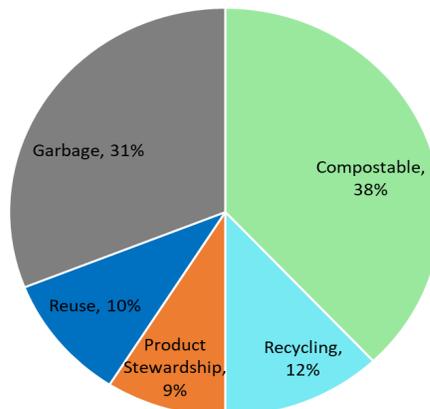


Figure 3-10: West Coast Landfill Single Family Waste Diversion Potential

3.2.2 Industrial, Commercial, and Institutional

Figure 3-11 represents the ICI waste composition for materials taken to West Coast Landfill. ICI waste was primarily composed of compostable organics (45%), plastic (18%), paper (11%), and non-compostable organics (7%). These four primary categories represent 81% of the materials.

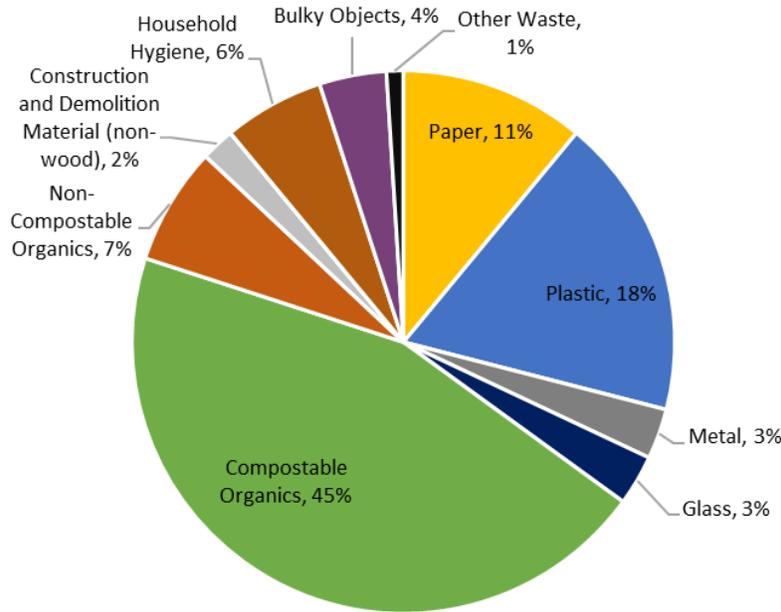


Figure 3-11: West Coast Landfill ICI Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (24%), compostable and food-soiled paper (9%), and food waste – unavoidable (9%).

The plastic category was primarily composed of film product (5%), film packaging (5%), and durable products (4%).

The paper category was primarily composed of recyclable paper (6%), cardboard (2%), and other non-recyclable paper (2%).

The non-compostable organics category was primarily composed of textiles (3%) and dirty/treated wood (2%).

Diversion Potential

Figure 3-12 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 74% and consisted of 45% compostable, 14% recycling, 8% product stewardship materials, and 7% reuse.

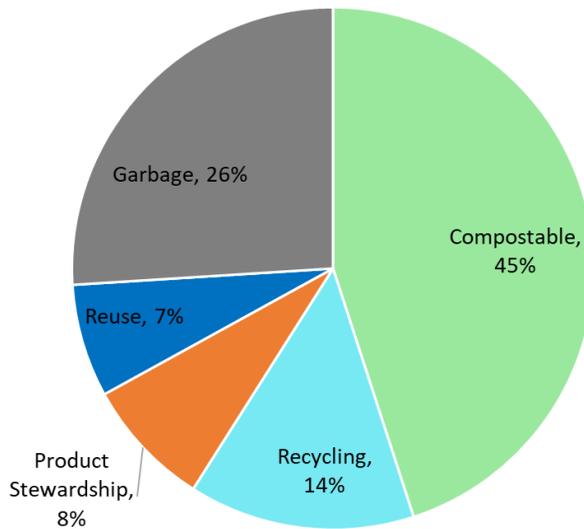


Figure 3-12: West Coast Landfill ICI Waste Diversion Potential

3.2.3 Self-Haul

Figure 3-13 represents the self-haul waste composition for West Coast Landfill. It was primarily composed of non-compostable organics (28%), bulky objects (17%), compostable organics (17%), and plastic (9%). These four primary categories represent 71% of the materials.

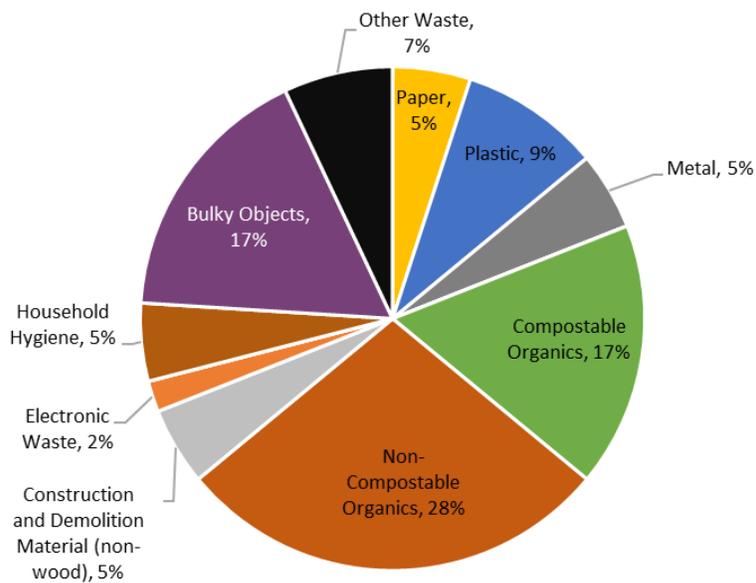


Figure 3-13: West Coast Landfill Self-Haul Residential Waste Composition

The non-compostable organics category was primarily composed of dirty/treated wood (27%).

Bulky objects were primarily composed of furniture (17%).

The compostable organics category was primarily composed of food waste – avoidable or donatable (7%) and yard and garden materials (6%).

The plastic category was primarily composed of durable products (6%).

Diversion Potential

Figure 3-14 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 43% and consisted of 18% reuse, 16% compostable, 6% recycling, and 3% product stewardship.

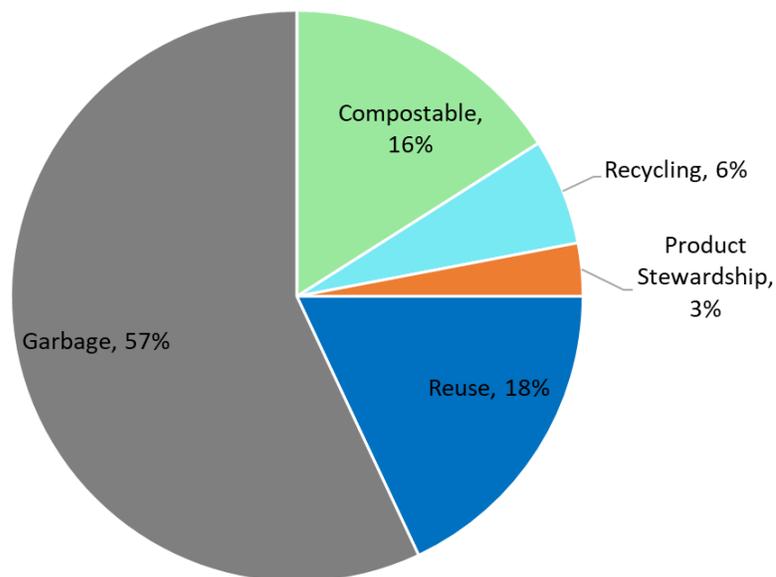


Figure 3-14: West Coast Landfill Self-Haul Residential Waste Diversion Potential

3.2.4 West Coast Landfill Overall Waste Composition

Figure 3-15 represents the weighted average waste composition for the West Coast Landfill. Overall, the materials that ended up at the West Coast Landfill consisted of compostable organics (41%), plastic (16%), paper (9%), and non-compostable organics (9%). These four primary categories represent 75% of the waste stream.

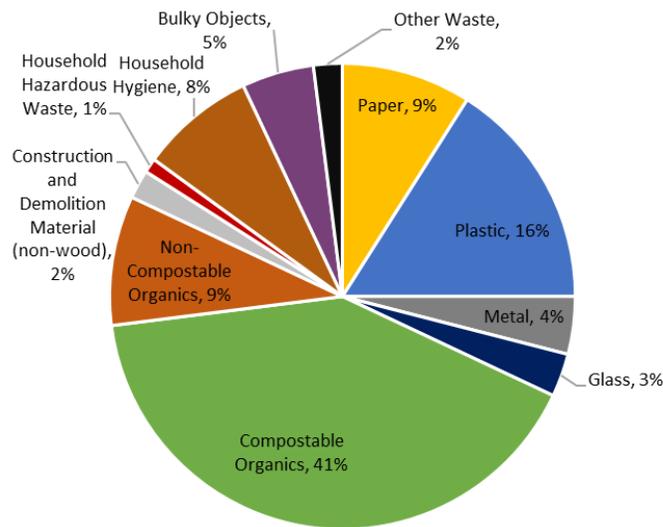


Figure 3-15: West Coast Landfill Combined Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (21%), compostable and food-soiled paper (8%), and food waste – unavoidable (8%).

The plastic category was primarily composed of film packaging (5%), durable products (4%), and film product (4%).

The paper category was primarily composed of recyclable paper (5%), cardboard (2%), and non-recyclable paper (2%).

The non-compostable organics category was primarily composed of dirty/treated wood (5%) and textiles (4%).

Diversion Potential

Figure 3-16 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 70% and consisted of 40% compostable, 13% recycling, 9% reuse, and 8% product stewardship materials.

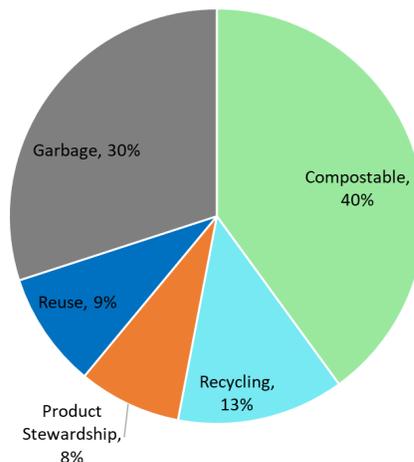


Figure 3-16: West Coast Landfill Combined Waste Diversion Potential

3.3 Regional Waste Composition Results

The following sections summarizes the waste composition results for the ACRD. Results are first presented by sector and weighted based on the amount of waste disposed from each sector.

3.3.1 Single Family

Figure 3-17 represents the regional SF waste composition. It consists primarily of compostable organics (33%), household hygiene (18%), plastic (18%), non-compostable organics (9%), and paper (8%). These five primary categories represent 86% of the materials disposed from SF households.

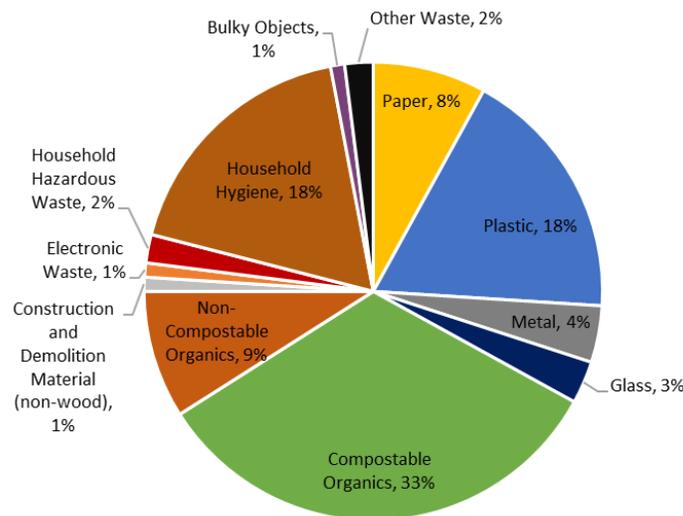


Figure 3-17: Regional Single Family Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (17%), compostable and food-soiled paper (7%), and food waste – unavoidable (6%).

The household hygiene category was not subdivided into secondary categories but was observed to contain diapers, hygiene products, personal care products, and pet waste.

The plastic category was primarily composed of film packaging (7%), rigid recyclable packaging (3%), durable products (3%), and film product (3%).

Non-compostable organics was primarily composed of textiles (6%).

The paper category was primarily composed of recyclable paper (4.7%), old corrugated cardboard (3.7%), and other non-recyclable paper (2.9%).

Diversion Potential

Figure 3-18 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 63% and consisted of 33% compostable, 13% recycling, 10% product stewardship materials, and 7% reuse.

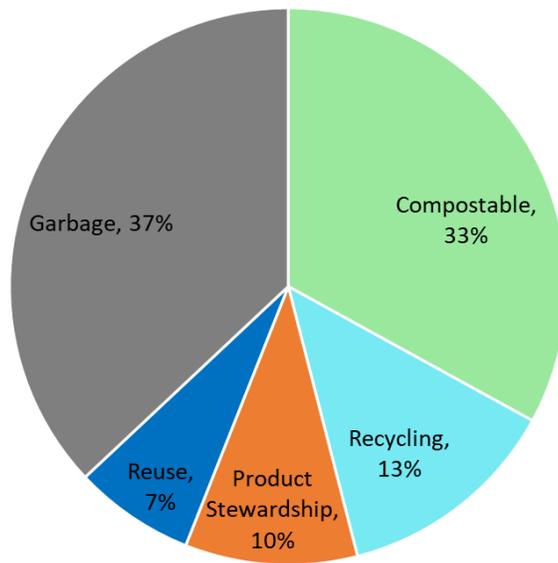


Figure 3-18: Regional Single Family Waste Diversion Potential

3.3.2 Industrial, Commercial, and Institutional

Figure 3-19 represents the regional ICI waste composition. It consists primarily of compostable organics (30%), plastic (16%), construction and demolition material (non-wood) (16%), and paper (15%). These four primary categories represent 77% of the materials.

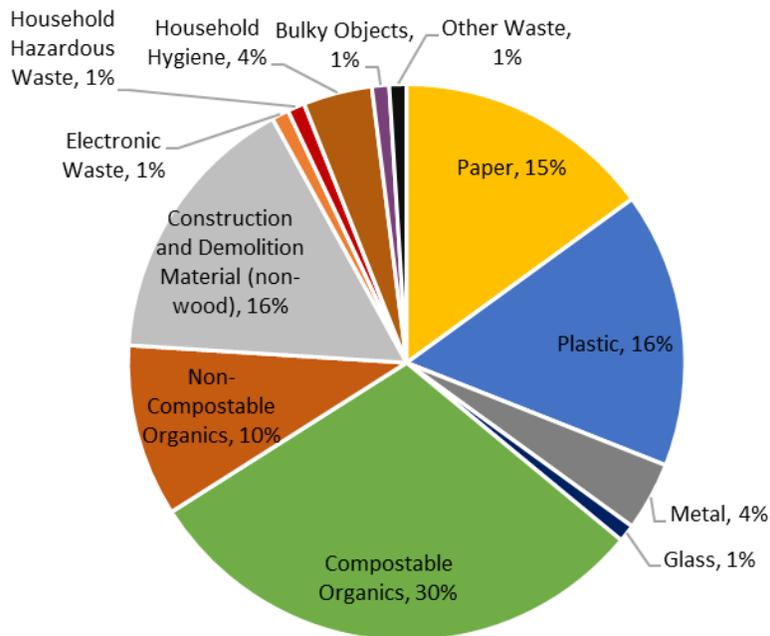


Figure 3-19: Regional ICI Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (15%), compostable and food-soiled paper (6%), and food waste – unavoidable (5%).

The plastic category was primarily composed of film product (4%), film packaging (4%), and durable products (4%).

The paper category was primarily composed of recyclable paper (5%), cardboard (5%), and other non-recyclable paper (4%).

Diversion Potential

Figure 3-20 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 60% and consisted of 30% compostable, 16% recycling, 7% product stewardship materials, and 7% reuse.

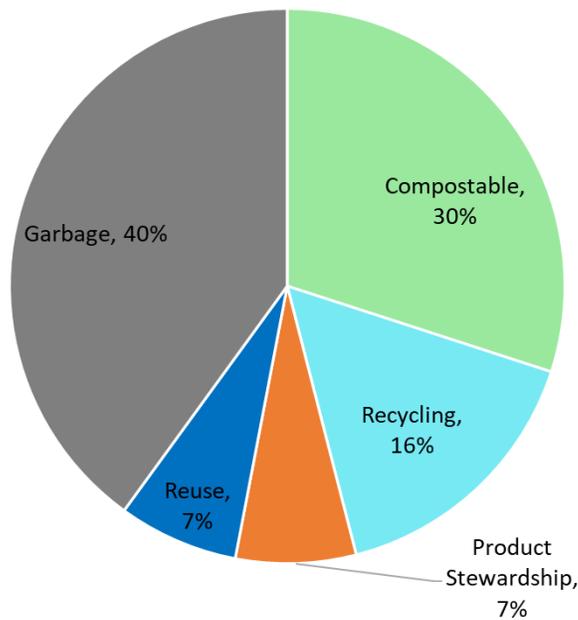


Figure 3-20: Regional ICI Waste Diversion Potential

3.3.3 Self-Haul

Figure 3-21 represents the regional self-haul waste composition. It was primarily composed of non-compostable organics (42%), construction and demolition material (non-wood) (15%), plastic (10%), and paper (9%). These four primary categories represent 76% of the materials.

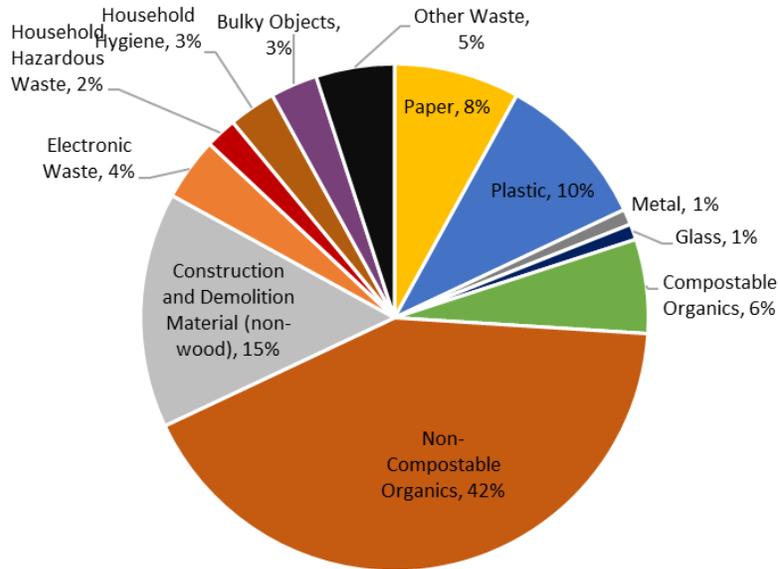


Figure 3-21: Regional Self-Haul Residential Waste Composition

The non-compostable organics category was primarily composed of dirty/treated wood (22%) and textiles (19%).

The construction and demolition material (non-wood) category was not subdivided into secondary categories but was observed to contain drywall, carpet, and carpet underlay.

The plastic category was primarily composed of durable products (8%).

The paper category was primarily composed of cardboard (4%) and other non-recyclable paper (3%).

Diversion Potential

Figure 3-22 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship, and reuse programs. The total diversion potential was 41% and consisted of 21% reuse, 7% recycling, 7% product stewardship, and 6% compostable.

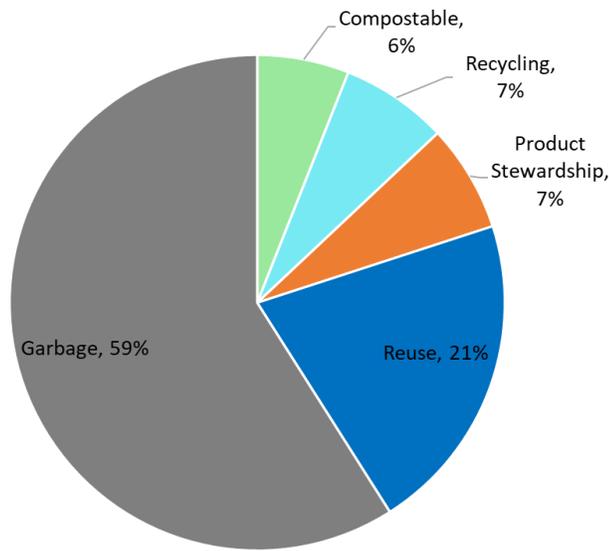


Figure 3-22: Regional Self-Haul Residential Waste Diversion Potential

3.3.4 Overall Regional Waste Composition

Figure 3-23 represents the regional waste composition of waste disposed in the ACRD. It was determined that the regional waste composition was composed of compostable organics (26%), non-compostable organics (16%), plastic (16%), construction and demolition material (non-wood) (12%), and paper (11%). These five primary categories represent 81% of the materials.

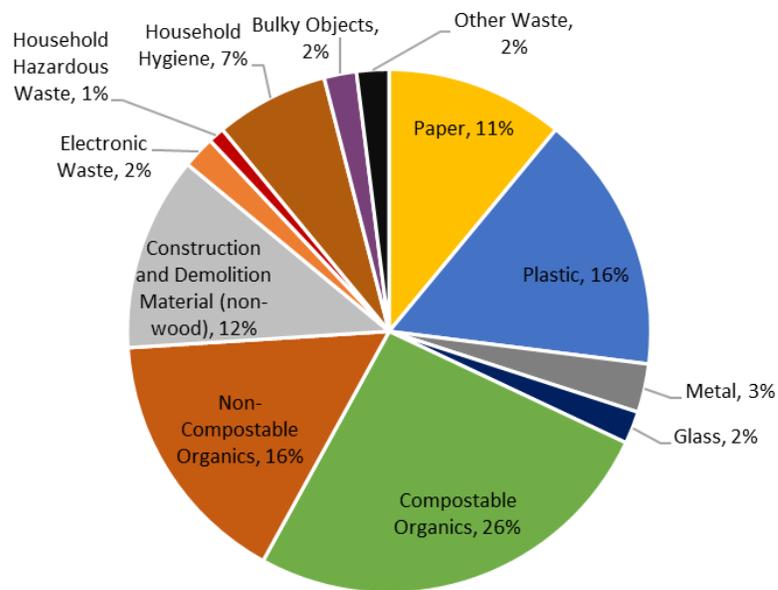


Figure 3-23: Combined Waste Composition

The compostable organics category was primarily composed of food waste – avoidable or donatable (13%), compostable and food-soiled paper (5%), and food waste – unavoidable (4%).

The non-compostable organics category was primarily composed of textiles (9%) and dirty/treated wood (7%).

The plastic category was primarily composed of durable products (5%), film packaging (4%), film product (3%), and rigid recyclable packaging (3%).

The construction and demolition material (non-wood) category was not subdivided into secondary categories.

The paper category was primarily composed of recyclable paper (5%) and cardboard (4%).

Diversion Potential

Figure 3-24 summarizes the diversion potential, which represents the percentage of materials that could be diverted through composting, recycling, product stewardship programs, and reuse. The total diversion potential was 57% and consisted of 26% compostable, 13% recycling, 10% reuse, and 8% product stewardship.

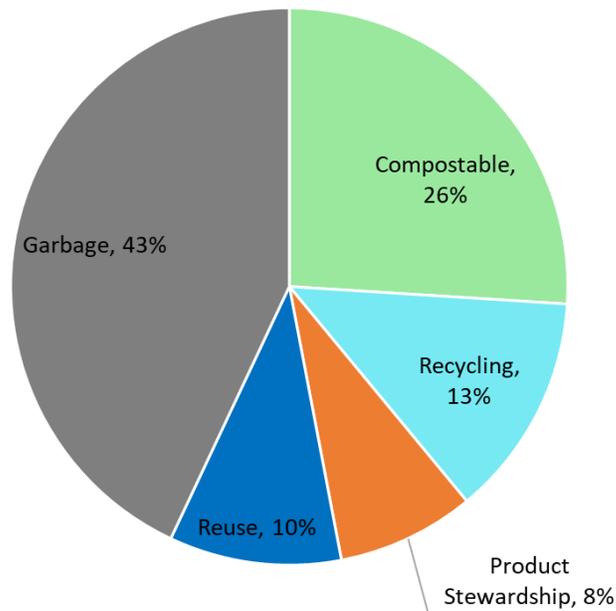


Figure 3-24: Combined Waste Diversion Potential

4.0 ESTIMATED ANNUAL QUANTITIES

Estimated annual quantities of materials disposed by primary category are summarized in Table 4-1 for the Alberni Valley Sort'nGo Centre, Table 4-2 for the West Coast Landfill, and Table 4-3 for ACRD as a whole. These estimates are based on the scaled weights of disposed materials in 2022.

Table 4-1: Alberni Valley Sort'nGo Centre Estimated Annual Quantities by Primary Category (tonnes/year)

Primary Category	SF	ICI	Self-Haul Residential	Total
Paper	254	850	258	1,362
Plastic	633	770	292	1,695
Metal	139	190	20	348
Glass	102	40	20	162
Compostable Organics	1,046	1,040	107	2,192
Non-Compostable Organics	323	570	1,237	2,131
Construction and Demolition Material (non-wood)	13	1,235	471	1,719
Electronic Waste	43	65	123	231
Household Hazardous Waste	89	30	81	200
Household Hygiene	617	135	65	816
Bulky Objects	0	0	8	8
Other Waste	43	70	123	236
Total	3,302	4,994	2,806	11,102

Table 4-2: West Coast Landfill Estimated Annual Quantities by Primary Category (tonnes/year)

Primary Category	SF	ICI	Self-Haul Residential	Total
Paper	70	349	24	443
Plastic	143	572	45	760
Metal	37	110	27	173
Glass	38	87	3	128
Compostable Organics	368	1,463	83	1,914
Non-Compostable Organics	71	232	141	444
Construction and Demolition Material (non-wood)	13	65	27	105
Electronic Waste	3	13	8	23
Household Hazardous Waste	9	16	3	27
Household Hygiene	155	181	23	359
Bulky Objects	37	129	84	250
Other Waste	17	19	36	73
Total	961	3,235	504	4,700

Table 4-3: ACRD Estimated Annual Quantities by Primary Category (tonnes/year)

Primary Category	Alberni Valley Sort'nGo Centre	West Coast Landfill	Total
Paper	1,362	443	1,805
Plastic	1,695	760	2,455
Metal	348	173	522
Glass	162	128	290
Compostable Organics	2,192	1,914	4,106
Non-Compostable Organics	2,131	444	2,575
Construction and Demolition Material (non-wood)	1,719	105	1,825
Electronic Waste	231	23	255
Household Hazardous Waste	200	27	228
Household Hygiene	816	359	1,175
Bulky Objects	8	250	258
Other Waste	236	73	309
Total	11,102	4,700	15,802

5.0 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.PLAN03294-01
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APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

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1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

SELECTED PHOTOGRAPHS



Photo 1: Tetra Tech Field Staff Collecting a Sample



Photo 2: Tetra Tech Field Staff Sorting a Sample



Photo 3: Example of a 100 kg Sample for Sorting by Hand



Photo 4: Example of a Sample for a Visual Estimate



Photo 5: Example of Recyclable Paper



Photo 6: Example of Film Packaging



Photo 7: Example of Film Product



Photo 8: Example of Food Waste – Avoidable or Donatable



Photo 9: Example of Compostable Paper



Photo 10: Example of Textiles



Photo 11: Example of Household Hygiene



Photo 12: Example of Furniture

APPENDIX C

MATERIAL CATEGORIES

Table C-1: Material Categories

#	Category	Description and/or Examples	Potential Diversion	Density (kg/yd ³)
1	Paper & Paperboard			
01	Recyclable Paper	Office paper, newspaper, coffee cups, magazines, fine paper, gable top cartons and aseptic boxes (non-beverage, non-deposit), brown kraft paper bags	Recycling	146.82
02	Cardboard	Corrugated cardboard, boxboard	Recycling	33.88
03	Other Non-Recyclable Paper	Paper products not accepted by Recycle BC – books, tar paper, composites	Garbage	146.82
04	Paper Beverage Containers – Deposit	Gable top cartons – juice, pop, milk and plant-based substitutes, etc. Aseptic boxes – juice, pop, milk and plant-based substitutes, etc.	Product Stewardship	22.73
2	Plastics			
05	Plastic Beverage Containers – Deposit	#1 – refundable plastic bottles #2 High Density Polyethylene – milk jugs Other refundable plastic bottles/jugs	Product Stewardship	18.36
06	Rigid Recyclable Packaging	#1 – dish soap, cooking oil, etc. #2 – shampoo, etc. #3 – lotions, soap, etc. #4,5,7 – ketchup, etc.	Recycling	15.91
07	Durable Products	Non-packaging plastics	Garbage	15.91
08	Styrofoam	Expanded polystyrene #6 foam packaging – meat trays etc.	Product Stewardship	14.55
09	Hot and Cold Beverage Containers (Polycoat)	Polycoated drink cups – coffee cups, cold drink cups, etc.	Recycling	22.73
10	Film Packaging	Plastic bags and film packaging accepted by Recycle BC – retail bags, plastic overwrap, Ziploc bags, food packaging, etc.	Product Stewardship	15.91
11	Film Product	Film not accepted by Recycle BC – garbage bags, tarps, 6-pack rings.	Garbage	15.91
12	Compostable Plastics	Plastic marked "compostable" or "biodegradable"	Garbage	15.91
3	Metals			
13	Metal Beverage Containers – Deposit	Refundable metal beverage containers – alcoholic and non-alcoholic	Product Stewardship	20.91
14	Recyclable Metal	Recyclable metal – soup cans, aluminum foil and trays, food cans, pet food containers, etc.	Recycling	20.91
15	Other Metal	Metal objects not accepted under Recycle BC – scrap metal, pots and pans, coat hangers, keys, etc.	Garbage	102.27

4 Glass				
16	Glass Beverage Containers – Deposit	Refundable glass beverage bottles – alcoholic and non-alcoholic	Product Stewardship	172.73
17	Recyclable Glass	Recyclable glass containers – food and product containers	Recycling	172.73
18	Other Glass	Non-Recycle BC products – mirrors, windows, ceramic plates and cups, glass drinking cups, etc.	Garbage	172.73
5 Compostable Organics				
19	Food Waste – Unavoidable	Waste from food/drink preparation that is not edible – bones, cartilage, inedible fruit peels and seeds, etc.	Compostable	210.45
20	Food Waste – Avoidable or Donatable	Leftovers, plate scrapings, industrial, commercial and institutional food waste that is not past the expiration date, unused ready-made food, whole meats/fish, baked goods, liquids	Compostable	210.45
21	Food Waste – Fats, Oils and Grease	Brown and yellow fats, oils, and grease	Compostable	571.07
22	Yard and Garden	Yard trimmings, branches, manure	Compostable	113.64
23	Compostable and Food-Soiled Paper	Tissue paper, paper towels, napkins, pizza boxes	Compostable	210.45
24	Clean Wood	Pallets, plywood (without paint, treatment or glue), chopsticks, wooden cutlery	Compostable	76.82
25	Other Organics Waste	Other organic waste – animal carcasses, soil, soot/ash	Garbage	210.45
6 Non-Compostable Organics				
26	Dirty/Treated Wood	Plywood, flakeboard, stained or painted wood, treated wood	Garbage	76.82
27	Other Non-Compostable Organics	Leather, rubber, wax (non-clothing)	Garbage	125.00
28	Textiles	Clothing, linens, bags, shoes, accessories, dryer sheets, lint	Reuse	125.00
7 Construction and Demolition Material (non-wood)				
29	Building Material	Carpet, gypsum, asphalt, insulation, aggregate	Garbage	189.55
8 Electronic Waste				
30	Extended Producer Responsibility (EPR)	Anything with a cord or battery operated that is accepted under a product stewardship program – e.g., television and audio/video equipment, computers and peripherals, telephones and answer machines, cell phones, small appliances, outdoor power equipment, toys	Product Stewardship	199.09
31	Non-EPR	Anything with a cord or battery operated that is not accepted under any product stewardship programs – e.g., vapes, paper shredders, ink cartridges	Garbage	199.09

9	Household Hazardous Waste (HHW)			
32	EPR	HHW that is accepted under a product stewardship program – e.g., batteries, paints, motor oil, pesticides and fertilizers, pharmaceuticals, solvents, mercury containing thermostats	Product Stewardship	125.00
33	Non-EPR	HHW that is not accepted under any product stewardship programs – e.g., sharps, glue, caulk, household cleaners, craft paint	Garbage	125.00
10	Household Hygiene			
34	Household Hygiene	Diapers, hygiene products, personal care products, pet waste	Garbage	125.00
11	Bulky Objects			
35	Furniture	Couches, mattresses, chairs, desks	Reuse	65.91
36	White Goods	Stove, fridge, other items accepted under the Major Appliance Recycling Roundtable program	Product Stewardship	65.91
12	Other Waste			
37	Other Waste	All other waste	Garbage	125.00
38	Fines	Fines less than one inch in size	Garbage	125.00
39	Bagged Garbage	Bagged garbage (self-haul only, left unsorted)	Garbage	125.00

APPENDIX D

WASTE COMPOSITION RESULTS

Table D-1: Alberni Valley Sort'nGo Cente Waste Composition Results

Material Category	SF	ICI	DO	Combined
01 Recyclable Paper	5.4%	4.9%	2.2%	4.4%
02 Cardboard	0.5%	7.2%	4.0%	4.4%
03 Other Non-Recyclable Paper	1.6%	4.8%	2.9%	3.4%
04 Paper Beverage Containers – Deposit	0.2%	0.1%	0.0%	0.1%
05 Plastic Beverage Containers – Deposit	0.4%	0.3%	0.0%	0.2%
06 Rigid Recyclable Packaging	3.5%	3.2%	1.0%	2.7%
07 Durable Products	3.2%	4.2%	8.3%	4.9%
08 Styrofoam	0.7%	0.2%	0.0%	0.3%
09 Hot and Cold Beverage Containers (Polycoat)	1.1%	1.1%	0.1%	0.9%
10 Film Packaging	6.6%	3.6%	0.6%	3.7%
11 Film Product	3.6%	2.9%	0.3%	2.4%
12 Compostable Plastics	0.1%	0.0%	0.0%	0.1%
13 Metal Beverage Containers – Deposit	0.4%	0.1%	0.0%	0.2%
14 Recyclable Metal	1.7%	0.7%	0.2%	0.9%
15 Other Metal	2.1%	2.9%	0.5%	2.1%
16 Glass Beverage Containers – Deposit	0.0%	0.1%	0.0%	0.1%
17 Recyclable Glass	1.5%	0.3%	0.0%	0.6%
18 Other Glass	1.5%	0.5%	0.7%	0.8%
19 Food Waste – Unavoidable	5.4%	3.2%	0.2%	3.1%
20 Food Waste – Avoidable or Donatable	15.5%	8.8%	2.6%	9.2%
21 Food Waste – Fats, Oils, and Grease	1.5%	0.3%	0.0%	0.6%
22 Yard and Garden	2.2%	3.8%	0.2%	2.4%
23 Compostable and Food-Soiled Paper	6.8%	4.6%	0.7%	4.2%
24 Clean Wood	0.2%	0.1%	0.0%	0.1%
25 Other Organics Waste	0.1%	0.0%	0.0%	0.1%
26 Dirty/Treated Wood	2.8%	3.7%	21.4%	7.9%
27 Other Non-Compostable Organics	0.8%	0.4%	1.0%	0.6%
28 Textiles	6.2%	7.4%	21.7%	10.7%
29 Building Material	0.4%	24.7%	16.8%	15.5%
30 Electronic Waste – EPR	1.1%	1.2%	4.4%	2.0%
31 Electronic Waste – Non-EPR	0.2%	0.2%	0.0%	0.1%
32 HHW – EPR	1.0%	0.2%	2.3%	1.0%

Material Category	SF	ICI	DO	Combined
33 HHW – Non-EPR	1.7%	0.3%	0.6%	0.8%
34 Household Hygiene	18.7%	2.7%	2.3%	7.4%
35 Furniture	0.0%	0.0%	0.3%	0.1%
36 White Goods	0.0%	0.0%	0.0%	0.0%
37 Other Waste	0.0%	1.0%	4.2%	1.5%
38 Fines	1.3%	0.4%	0.2%	0.6%
39 Bagged Garbage	N/A	N/A	0.0%	0.0%

Notes:

DO – Drop-off.

EPR – Extended Producer Responsibility.

HHW – Household Hazardous Waste.

ICI – Industrial, Commercial, and Institutional.

SF – Single Family.

Table D-2: West Coast Landfill Waste Composition Results

Material Category	SF	ICI	DO	Combined
01 Recyclable Paper	4.7%	6.2%	1.3%	5.4%
02 Cardboard	0.8%	2.2%	2.9%	2.0%
03 Other Non-Recyclable Paper	1.8%	2.0%	0.5%	1.8%
04 Paper Beverage Containers – Deposit	0.1%	0.3%	0.1%	0.2%
05 Plastic Beverage Containers – Deposit	0.2%	0.6%	0.1%	0.5%
06 Rigid Recyclable Packaging	2.6%	2.7%	0.7%	2.5%
07 Durable Products	1.4%	4.0%	5.7%	3.6%
08 Styrofoam	0.7%	0.4%	0.2%	0.5%
09 Hot and Cold Beverage Containers (Polycoat)	0.2%	0.5%	0.1%	0.4%
10 Film Packaging	7.7%	4.6%	1.1%	4.8%
11 Film Product	2.0%	4.6%	1.2%	3.7%
12 Compostable Plastics	0.1%	0.2%	0.0%	0.2%
13 Metal Beverage Containers – Deposit	0.1%	0.5%	0.1%	0.4%
14 Recyclable Metal	1.8%	1.2%	0.6%	1.2%
15 Other Metal	1.9%	1.7%	4.8%	2.1%
16 Glass Beverage Containers – Deposit	0.1%	1.1%	0.0%	0.7%
17 Recyclable Glass	1.6%	1.1%	0.3%	1.1%
18 Other Glass	2.3%	0.5%	0.2%	0.9%
19 Food Waste – Unavoidable	6.3%	9.1%	1.4%	7.7%
20 Food Waste – Avoidable or Donatable	22.0%	23.6%	6.6%	21.5%
21 Food Waste – Fats, Oils, and Grease	0.0%	0.0%	0.1%	0.0%
22 Yard and Garden	1.3%	2.9%	5.9%	2.9%
23 Compostable and Food-Soiled Paper	8.4%	8.8%	2.1%	8.0%
24 Clean Wood	0.1%	0.5%	0.3%	0.4%
25 Other Organics Waste	0.2%	0.4%	0.0%	0.3%
26 Dirty/Treated Wood	0.1%	2.5%	26.5%	4.6%
27 Other Non-Compostable Organics	0.9%	1.5%	0.6%	1.2%
28 Textiles	6.4%	3.3%	0.9%	3.7%
29 Building Material	1.4%	2.0%	5.4%	2.2%
30 Electronic Waste – EPR	0.2%	0.3%	1.4%	0.4%
31 Electronic Waste – Non-EPR	0.1%	0.1%	0.1%	0.1%

Material Category	SF	ICI	DO	Combined
32 HHW – EPR	0.4%	0.2%	0.1%	0.2%
33 HHW – Non-EPR	0.6%	0.3%	0.4%	0.3%
34 Household Hygiene	16.1%	5.6%	4.6%	7.6%
35 Furniture	3.8%	4.0%	16.7%	5.3%
36 White Goods	0.0%	0.0%	0.0%	0.0%
37 Other Waste	0.0%	0.0%	0.1%	0.0%
38 Fines	1.8%	0.6%	0.4%	0.8%
39 Bagged Garbage	N/A	N/A	6.7%	0.7%

Notes:

DO – Drop-off.

EPR – Extended Producer Responsibility.

HHW – Household Hazardous Waste.

ICI – Industrial, Commercial, and Institutional.

SF – Single Family.

Table D-3: Overall Waste Composition Results

Material Category	SF	ICI	DO	Combined
01 Recyclable Paper	5.3%	5.4%	2.1%	4.7%
02 Cardboard	0.6%	5.2%	3.8%	3.7%
03 Other Non-Recyclable Paper	1.6%	3.7%	2.6%	2.9%
04 Paper Beverage Containers – Deposit	0.2%	0.2%	0.0%	0.2%
05 Plastic Beverage Containers – Deposit	0.3%	0.4%	0.0%	0.3%
06 Rigid Recyclable Packaging	3.3%	3.0%	1.0%	2.6%
07 Durable Products	2.8%	4.1%	7.9%	4.6%
08 Styrofoam	0.7%	0.3%	0.1%	0.3%
09 Hot and Cold Beverage Containers (Polycoat)	0.9%	0.9%	0.1%	0.7%
10 Film Packaging	6.9%	4.0%	0.6%	4.1%
11 Film Product	3.2%	3.5%	0.5%	2.8%
12 Compostable Plastics	0.1%	0.1%	0.0%	0.1%
13 Metal Beverage Containers – Deposit	0.3%	0.3%	0.0%	0.2%
14 Recyclable Metal	1.7%	0.9%	0.2%	1.0%
15 Other Metal	2.0%	2.5%	1.1%	2.1%
16 Glass Beverage Containers – Deposit	0.1%	0.5%	0.0%	0.3%
17 Recyclable Glass	1.5%	0.6%	0.0%	0.7%
18 Other Glass	1.7%	0.5%	0.6%	0.8%
19 Food Waste – Unavoidable	5.6%	5.5%	0.4%	4.5%
20 Food Waste – Avoidable or Donatable	17.0%	14.6%	3.2%	12.9%
21 Food Waste – Fats, Oils, and Grease	1.1%	0.2%	0.0%	0.4%
22 Yard and Garden	2.0%	3.4%	1.1%	2.6%
23 Compostable and Food-Soiled Paper	7.1%	6.2%	0.9%	5.4%
24 Clean Wood	0.2%	0.3%	0.1%	0.2%
25 Other Organics Waste	0.2%	0.1%	0.0%	0.1%
26 Dirty/Treated Wood	2.2%	3.2%	22.2%	6.9%
27 Other Non-Compostable Organics	0.8%	0.8%	0.9%	0.8%
28 Textiles	6.2%	5.8%	18.5%	8.6%
29 Building Material	0.6%	15.8%	15.1%	11.5%
30 Electronic Waste – EPR	0.9%	0.8%	4.0%	1.5%
31 Electronic Waste – Non-EPR	0.2%	0.1%	0.0%	0.1%

Material Category	SF	ICI	DO	Combined
32 HHW – EPR	0.8%	0.2%	2.0%	0.7%
33 HHW – Non-EPR	1.5%	0.3%	0.6%	0.7%
34 Household Hygiene	18.1%	3.8%	2.6%	7.4%
35 Furniture	0.9%	1.6%	2.8%	1.6%
36 White Goods	0.0%	0.0%	0.0%	0.0%
37 Other Waste	0.0%	0.6%	3.6%	1.1%
38 Fines	1.4%	0.5%	0.3%	0.7%
39 Bagged Garbage	N/A	N/A	1.0%	0.2%

Notes:

DO – Drop-off.

EPR – Extended Producer Responsibility.

HHW – Household Hazardous Waste.

ICI – Industrial, Commercial, and Institutional.

SF – Single Family.