



**DILLON**  
CONSULTING

SUNSHINE COAST REGIONAL DISTRICT  
**2015 Waste Composition Audit**

Roll-off Bins at Sechelt Landfill and  
Pender Harbour Transfer Station



February 16, 2016



Sunshine Coast Regional District  
Infrastructure Services  
1975 Field Road  
Sechelt, BC V0N 3A1

Attention: Robyn Cooper  
Manager of Waste Reduction and Recovery

*Waste Composition Audit for the Sunshine Coast Regional District*

Dear Robyn:

Dillon Consulting Limited (Dillon) is pleased to provide this report which summarizes the information collected during the August and November 2015 waste composition audits for the Sunshine Coast Regional District (SCRD).

Through this report we believe that we have efficiently collected information on the current composition of solid waste from roll-off bins at both the Sechelt Landfill and Pender Harbour Transfer Station.

Thank you for the opportunity to assist you with this important assignment.

Yours sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink that reads "Alida Kusch".

Alida Kusch  
Project Manager

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# Executive Summary

Guided by the long-term goal of Zero Waste, the Sunshine Coast Regional District's (SCRD) goal is to increase the regional waste diversion rate from 50% to between 66 and 69% by 2016. While the SCRCD has existing recycling and diversion programs in place, there is still room for improvement. Dillon Consulting Limited (Dillon) was retained by the SCRCD in 2014 to undertake a waste composition audit to determine the actual composition of waste disposed of at the Sechelt Landfill from residential collection. The 2014 waste composition audit included MSW from six waste collection areas within SCRCD disposing at the Sechelt Landfill. This included electoral areas that SCRCD provides municipal waste collection services to and municipalities that provide their own municipal waste collection services.

Dillon was further retained in 2015 to complete a waste composition audit on waste generated from the roll-off bins containing refuse at Sechelt Landfill and Pender Harbour Transfer Station. Two sorting activities took place, one in mid-August and one in early November to account for seasonal variation (consistent with the 2014 study). A team of two Dillon staff sorted each type of waste into eight primary categories and their respective sub-categories. The primary categories and respective sub-categories are outlined in Table ES-1.

TABLE ES-1: PRIMARY SORT CATEGORIES AND SUBSEQUENT SUB-CATEGORIES

<b>Fibre</b>	<b>Organics</b>
<ul style="list-style-type: none"> <li>Paper (office paper, envelopes, flyers)</li> <li>Newsprint</li> <li>OCC</li> <li>Boxboard</li> <li>Other paper (coffee cups, paper plates)</li> </ul>	<ul style="list-style-type: none"> <li>Food scraps and kitchen waste</li> <li>Yard and garden waste</li> <li>Pet waste</li> <li>Food soiled paper</li> </ul>
<b>Glass</b>	<b>Refundables</b>
<ul style="list-style-type: none"> <li>Any glass container/item that is not refundable</li> </ul>	<ul style="list-style-type: none"> <li>Glass</li> <li>Non-glass</li> </ul>
<b>Plastics</b>	<b>Other</b>
<ul style="list-style-type: none"> <li>Film (PPP EPR)</li> <li>Film - all other film plastic</li> <li>Rigid (PPP EPR)</li> <li>Other plastics</li> <li>Styrofoam (PPP EPR)</li> <li>Styrofoam - all other</li> <li>Bulky items (including plastic furniture)</li> </ul>	<ul style="list-style-type: none"> <li>Building materials – wood</li> <li>Building materials – metal</li> <li>Building materials – gypsum/drywall</li> <li>Building materials – textiles (carpets, underlay, drop cloths)</li> <li>Building materials - other</li> <li>Wood: non-building material</li> <li>Metal: non-building material</li> <li>Household hygiene</li> <li>Home medical waste</li> <li>Textiles (clothing and accessories)</li> <li>Refuse</li> <li>Fines</li> <li>Furniture (not including plastic furniture)</li> </ul>
<b>Electronic Waste</b>	
<ul style="list-style-type: none"> <li>Product Care (all items accepted as part of Product Care EPR)</li> <li>Other (Items not accepted as part of EPR)</li> </ul>	
<b>Household Hazardous Waste</b>	
<ul style="list-style-type: none"> <li>Batteries</li> <li>Items accepted through Product Care</li> <li>All other items</li> </ul>	

## Waste Audit Results

In total, 23 samples (16 from Sechelt Landfill and 7 from Pender Harbour Transfer Station) with a combined weight of 6,426 kg was sorted into 37 sub-categories and weighed over the two sampling periods.

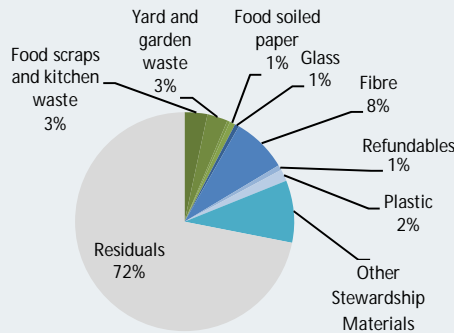
The composition of waste between each site is quite different; Sechelt Landfill roll-off bins contain more large (bulky) items while Pender Harbour Transfer Station roll-off bins contain mostly bagged waste. Additionally, more waste is generated at each location during the summer months with usage decreasing in the fall and winter. However, it should be noted that despite the differences in composition between each site, and the seasonal change in amounts generated, the composition of waste at each location in the fall was consistent with the summer findings.

The waste sampled from Sechelt Landfill roll-off bins totalled 4,593 kg. Building materials – textiles was the largest component of the waste stream (16%), by weight. The majority of the remaining sample was comprised of furniture (12%), other textiles (11%), EPR electronic waste (9%), plastic bulky items (7%), building materials – other (6%), and building materials – wood (6%), other plastic (5%), paper (5%). Sampled waste from Pender Harbour Transfer Station totalled 1,833 kg. The majority of the samples were food scraps and kitchen waste (19%), building materials – other (9%), food soiled paper (6%), building materials – textiles (6%), other textiles (6%), and other plastics (5%). Table ES-2 summarizes the totals of each sub-category from the samples collected from the Sechelt Landfill and Pender Harbour Transfer Station. A detailed analysis for Sechelt Landfill is presented in Figure ES-1 and a detailed analysis for Pender Harbour Transfer Station is presented in Figure ES-2.

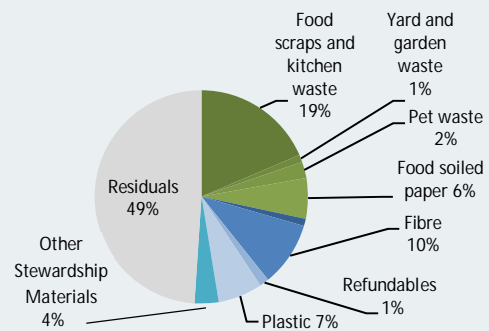


TABLE ES-2: SUNSHINE COAST REGIONAL DISTRICT WASTE COMPOSITION SUMMARY

Sechelt Landfill Summary



Pender Harbour Transfer Station Summary



Category	Sub-Category	Sechelt		Pender Harbour		
		Weight (kg)	%	Weight (kg)	%	
Organics	Organics	Food scraps and kitchen waste	153.2	3%	339.5	19%
		Yard and garden waste	140.9	3%	21.7	1%
		Pet waste	15.5	0%	44.7	2%
		Food soiled paper	38	1%	113.3	6%
Curbside and Depot Printed Packaging (PPP) Recyclables	Glass	Non-refundable glass (PPP)	29.3	1%	20.6	1%
		Paper	213.5	5%	46.3	3%
	Fibre	Newsprint	5.6	0%	18.4	1%
		OCC	102.8	2%	67.6	4%
		Boxboard	43.7	1%	26.5	1%
		Other paper	13.3	0%	19.7	1%
	Refundables	Glass	15.1	0%	14.9	1%
		Non-glass	15.7	0%	12.9	1%
	Plastic	Film (PPP EPR)	34.3	1%	66	4%
		Rigid (PPP EPR)	43.7	1%	46.5	3%
Styrofoam (PPP EPR)		5.8	0%	10.4	1%	
Other Stewardship Materials	HHW	Batteries	0.5	0%	1.5	0%
		Product Care items	20.5	0%	2.1	0%
	Electronic Waste	EPR	399	9%	63.9	3%
Residuals	Other	Building materials – wood	284.2	6%	20.1	1%
		Building materials – metal	8.5	0%	14.8	1%
		Building materials – gypsum/drywall	100.2	2%	39.2	2%
		Building materials – textiles	716.7	16%	104.6	6%
		Building materials – other	253.7	6%	155.9	9%
		Wood: non-building material	14.4	0%	9.7	1%
		Metal: non-building material	33.1	1%	40.3	2%
		Household hygiene	37	1%	27.8	2%
		Home medical waste	1.8	0%	6.6	0%
		Textiles	516.8	11%	112.4	6%
		Refuse	191.2	4%	75.5	4%
		Fines	3.3	0%	8.4	0%
		Electronic Waste - other	1.1	0%	0.4	0%
	HHW - other	3.4	0%	1.9	0%	
	Furniture (not including plastic furniture)	551.5	12%	74.4	4%	
	Plastic	Film - all other film plastic	41	1%	53	3%
		Styrofoam - all other	2.2	0%	6.1	0%
		Bulky items (including plastic furniture)	306.3	7%	62.4	3%
		Other plastics	236.2	5%	83.8	5%
Total		4592.4	100%	1832.6	100%	



FIGURE ES-1: SECHLT LANDFILL DETAILED ANALYSIS

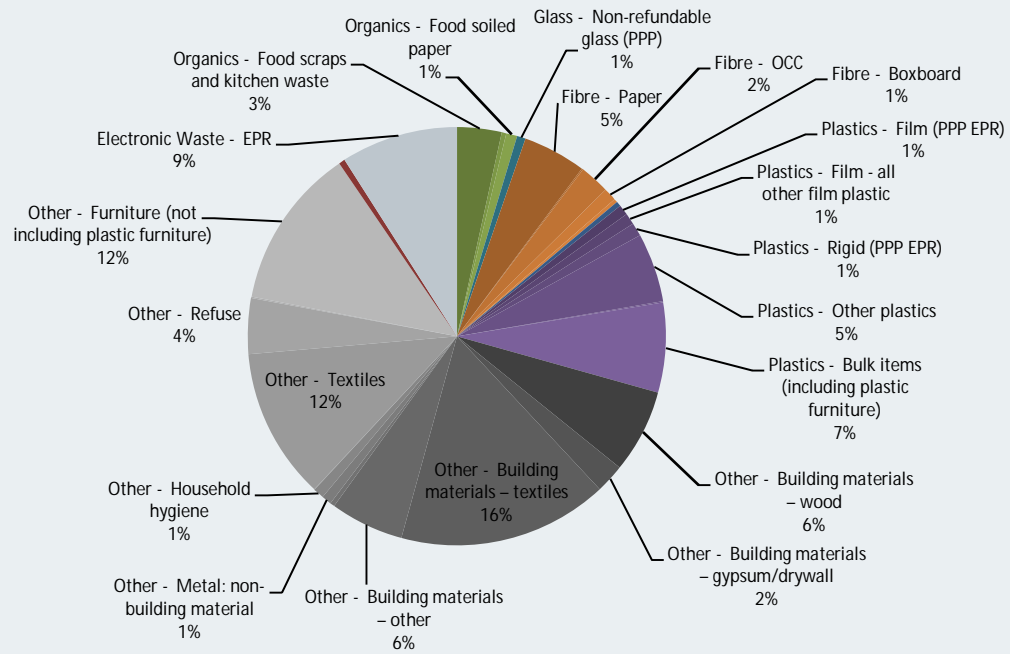
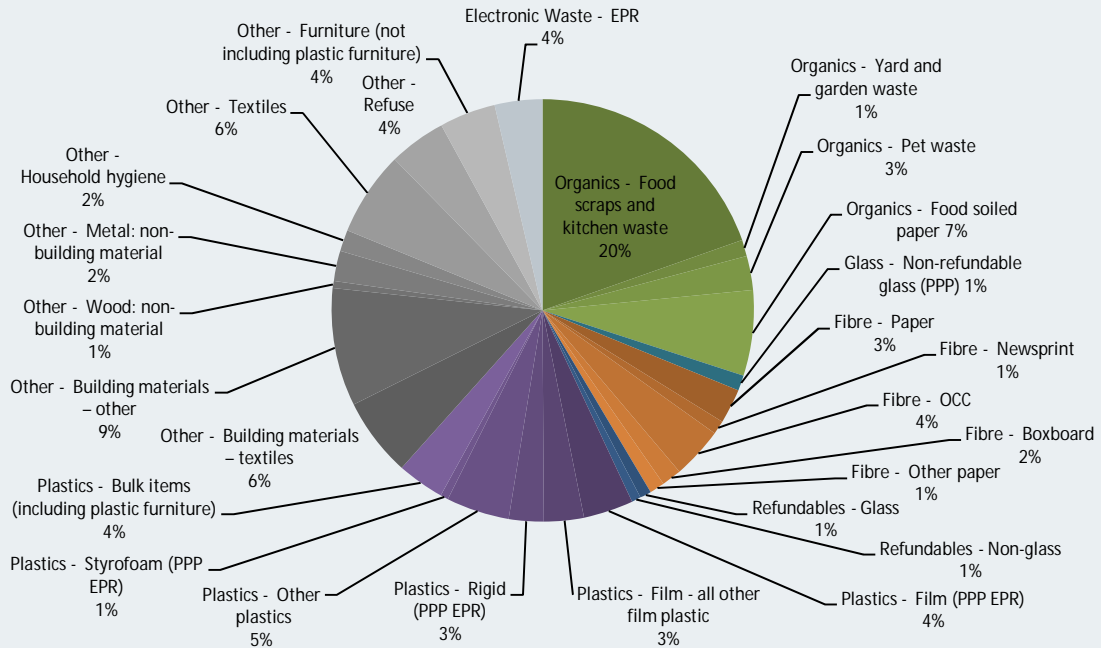


FIGURE ES-2: PENDER HARBOUR TRANSFER STATION DETAILED ANALYSIS



\*Note that only sub-categories that represent 1% or more of the waste stream have been labelled in the pie-charts

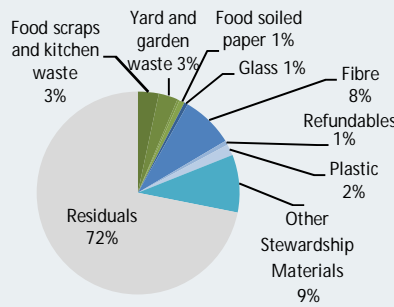
Table ES-3 provides a comparison by primary category for the Sechelt Landfill and Pender Harbour Transfer Station roll-off bins. It also includes 2014 results from the six SCR D collection areas.

TABLE ES-3: COMPARISON OF SECHELT LANDFILL, PENDER HARBOUR TRANSFER STATION AND COLLECTION AREAS– SUMMARY

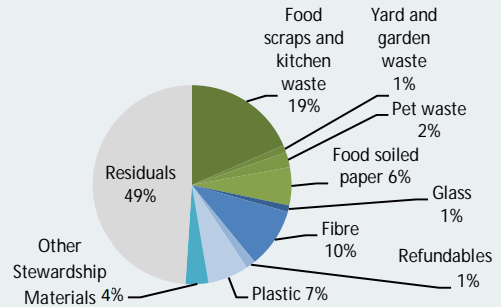
	Organics					Recyclables			Residuals
	Food scraps and kitchen waste	Yard and garden waste	Pet waste	Food Soiled Paper	Total Organics	Curbside and Depot PPP Recyclables	Other Stewardship Materials	Total Recyclables	
Sechelt Landfill	3%	3%	0%	1%	7%	10%	9%	19%	73%
Pender Harbour Transfer Station	19%	1%	2%	6%	28%	21%	3%	24%	49%
Roll-off Bins Average	11%	2%	1%	4%	17%	16%	6%	22%	61%
District of Sechelt	36%	2%	4%	9%	51%	20%	1%	21%	28%
Town of Gibsons	33%	0%	4%	9%	46%	25%	0%	25%	29%
Sechelt Indian Government District	31%	0%	1%	9%	41%	28%	3%	31%	27%
Electoral Area B	34%	4%	4%	8%	50%	23%	3%	26%	24%
Electoral Area D & E (South of Hwy 101)	36%	0%	5%	10%	52%	21%	1%	22%	26%
Electoral Area D & E (North of Hwy 101) & F (all of F)	36%	0%	3%	10%	48%	23%	1%	24%	28%
Municipal Solid Waste Average	34%	1%	4%	9%	48%	23%	2%	25%	27%

Figure ES-3 displays a summary of the average waste composition of the six SCR D collection areas from the 2014 analysis and each of the two roll-off bin locations from the 2015 analysis.

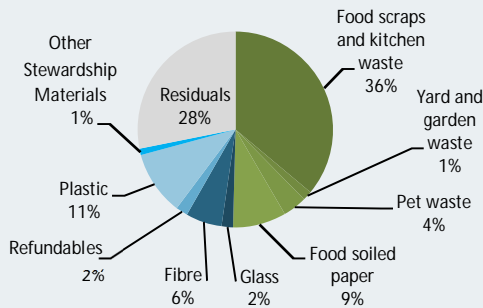
FIGURE ES-3 COMPARISON OF SCRd COLLECTION AREAS AND ROLL-OFF BINS



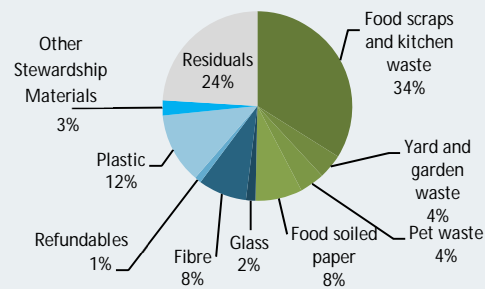
Sechelt Landfill Roll-Off Bins



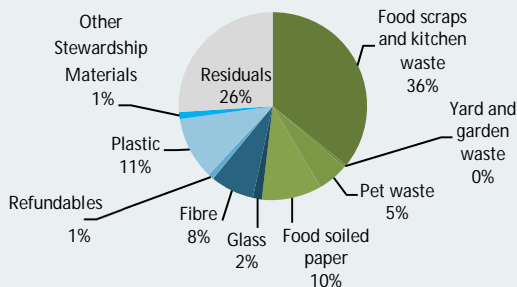
Pender Harbour Transfer Station Roll-Off Bins



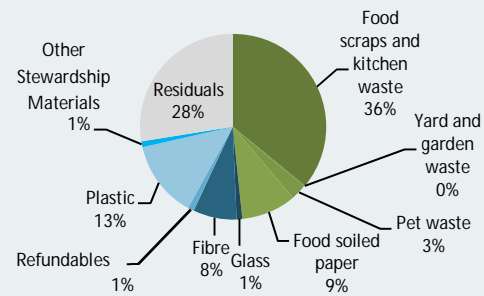
District of Sechelt



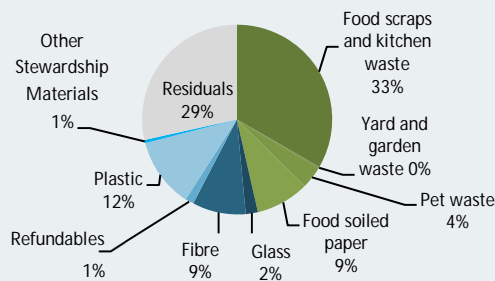
Electoral Area B



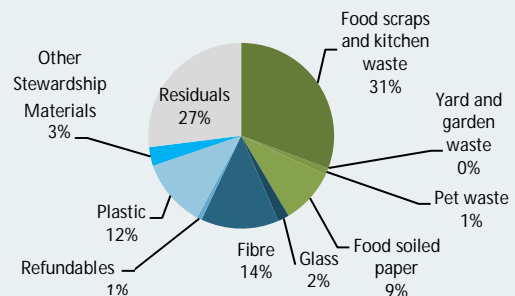
Electoral Area D & E (South of Highway 101)



Electoral Area D, E & F (D & E north of Highway 101, all of F)



Town of Gibsons



Sechelt Indian Government District

## 1.0 Background to This Report

The Sunshine Coast Regional District's (SCRD) current goal is to increase the regional waste diversion rate from 50% to between 65 and 69% by 2016. In an effort to move towards the goal of "zero waste", the SCRD continues to strive towards improving existing recycling and diversion programs. In 2015, the SCRD contracted Dillon Consulting Limited (Dillon) to undertake a waste composition audit to gain a better understanding of the composition of solid waste from roll-off bins containing refuse at both the Sechelt Landfill and Pender Harbour Transfer Station. This work builds off of the 2014 waste analysis conducted by Dillon in 2014 which provided the SCRD with a baseline of the composition of municipal solid waste from the single family residential waste stream. During the 2014 waste analysis, two sorting activities took place. The first sorting event was conducted in mid-August when there is high population (influx of seasonal residents) and the second sorting event took place in November (when the population consists of mostly permanent residents). The completion of the two sorting events accounted for any seasonal variation.

This Waste Composition Audit Report provides an overview of the 2015 composition of the solid waste stream disposed of in the Sechelt Landfill and Pender Harbour Transfer Station roll-off bins. Similar to the 2014 waste composition audit, two sorting activities took place, one in August and one in November. A comparison study between each site and the 2014 audit results has been included as part of this analysis. Dillon understands that the results of this analysis will be used to continue to develop and implement new programs that target materials for diversion and decrease the overall proportion of waste being sent to landfill.

## 2.0 Introduction

The Sunshine Coast is home to approximately 29,000 residents and is located across the Georgia Strait from Vancouver Island on the southern mainland coast. The Solid Waste Management Program, part of the Infrastructure Services Division for the SCRD, is responsible for solid waste management on the Sunshine Coast. This includes waste collection services for electoral area residents living in designated waste collection areas, operation of recycling facilities, and waste reduction planning and programming. The SCRD is also responsible for the operation and maintenance of the Sechelt Landfill and Pender Harbour Transfer Station (previously known as the Pender Harbour Landfill). In August 2015, the Pender Harbour Landfill stopped accepting waste for burial and began transferring roll-off bins containing waste to the Sechelt Landfill for disposal on site. The Sechelt Landfill also has a roll-off bin area available for customers who bring their waste directly to the landfill. The SCRD has indicated that the roll-off bins are more frequently used during the summer with usage decreasing in the fall and winter, which appears to be consistent with the SCRD's population trends.

During the weeks of August 10, 2015 and November 2, 2015 a waste composition audit was completed at the Sechelt Landfill. Waste from the roll-off bins at both the Pender Harbour Transfer Station and Sechelt Landfill was transported to the tipping face at the Sechelt Landfill when the bins were full. Bins were emptied onto the tipping face and once dumped, approximately 275 kg of waste was randomly selected from each roll-off bin and moved to a separate area for storage until it could be sorted into sub-categories and weighed.

In August, two full roll-off bins were sampled from Sechelt Landfill and one full roll-off bin from Pender Harbour Transfer Station was sampled, per day, over the five day audit with the exception of August 15 where no Pender Harbour Load came in. In November, one full roll-off bin was typically sampled from Sechelt Landfill per day with the exception of November 3, where two roll-off bins were sampled. Three roll-off bins from Pender Harbour Transfer Station were sampled during the five day period with one delivered on November 5 and two delivered on November 6. The weight of waste for each disposal was provided to Dillon staff so that the percentage of waste sampled from the total roll-off bin could be determined.

It should be noted that although the sample is labeled on the day it was sorted (*e.g.*, Sample 1 (Aug 11)), waste accumulated in the roll-off bin could have been disposed of 24 hours prior to the sorting date at the Sechelt Landfill and up to 48 hours in the Pender Harbour roll-off bin based on how long each roll-off bin took to fill up with waste.

A team of two Dillon staff sorted each type of waste into eight primary categories and 37 sub-categories. Two sub-categories were added in the field as large quantities of the sub-categories were observed from the onset of the audit. These sub categories included: furniture (not

including plastic furniture), which was added to the “Other” sort category and plastic bulky items which was added under the “Plastics” category. The eight categories and sub-categories are outlined in Table 1.

TABLE 1: PRIMARY SORT CATEGORIES AND SUBSEQUENT SUB-CATEGORIES

Fibre	Organics
<ul style="list-style-type: none"> <li>• Paper (office paper, envelopes, flyers)</li> <li>• Newsprint</li> <li>• OCC</li> <li>• Boxboard</li> <li>• Other paper (coffee cups, paper plates)</li> </ul>	<ul style="list-style-type: none"> <li>• Food scraps and kitchen waste</li> <li>• Yard and garden waste</li> <li>• Pet waste</li> <li>• Food soiled paper</li> </ul>
Glass	Refundables
<ul style="list-style-type: none"> <li>• Any glass container/item that is not refundable</li> </ul>	<ul style="list-style-type: none"> <li>• Glass</li> <li>• Non-glass</li> </ul>
Plastics	Other
<ul style="list-style-type: none"> <li>• Film (PPP EPR)</li> <li>• Film - all other film plastic</li> <li>• Rigid (PPP EPR)</li> <li>• Other plastics</li> <li>• Styrofoam (PPP EPR)</li> <li>• Styrofoam - all other</li> <li>• Bulky items (including plastic furniture)</li> </ul>	<ul style="list-style-type: none"> <li>• Building materials – wood</li> <li>• Building materials – metal</li> <li>• Building materials – gypsum/drywall</li> <li>• Building materials – textiles (carpets, underlay, drop cloths)</li> <li>• Building materials - other</li> <li>• Wood: non-building material</li> <li>• Metal: non-building material</li> <li>• Household hygiene</li> <li>• Home medical waste</li> <li>• Textiles (clothing, and accessories)</li> <li>• Refuse</li> <li>• Fines</li> <li>• Furniture (not including plastic furniture)</li> </ul>
Electronic Waste	
<ul style="list-style-type: none"> <li>• Product Care (all items accepted as part of Product Care EPR)</li> <li>• Other (Items not accepted as part of EPR)</li> </ul>	
Household Hazardous Waste	
<ul style="list-style-type: none"> <li>• Batteries</li> <li>• Items accepted through Product Care</li> <li>• All other items</li> </ul>	

## 3.0 Results of Waste Composition Audit

A total of 23 samples were taken during the two sampling events, 14 samples in August and 9 samples in November. The results from the waste composition audit are broken down in the report by the two sites (Sechelt Landfill and Pender Harbour Transfer Station). A breakdown by sample is outlined in Appendix A. Additionally, representative photographs provided in the report and Appendix A reflect sub-categories that were significant by weight and/or volume.

The following items which are not expected to skew waste results should be noted as part of the composition analysis methodology:

- Although a waste sort representing one or two weeks' worth of waste generated does not consider multiple seasonal variances in the waste stream, it does provide the level of statistical precision achievable in a more intense program. This approach was considered appropriate for the overall scope of the project and intended use of the data.
- Where food waste was found wrapped in plastic film or in plastic bags the film was left on in order to be more time efficient since the film did not account for a significant weight.
- The "pet waste" encountered throughout this analysis included dog waste, cat litter, and substrate used for small animal cages. When pet waste was found separately in plastic bags, the waste was left in the bag as the weight from the plastic bag was not considered significant.
- When bags with needles were encountered, the remaining contents of the bag were placed in the refuse sub-category for employee health and safety.
- Rain occurred Saturday, November 7, 2015 which could have increased the weight of some of the items in the fibre category. Efforts were taken to minimize any rain impacting the audits by tarping samples until sorting activities were completed.



### 3.1 Sechelt Landfill

A total of sixteen samples weighing 4,593 kg were collected from Sechelt Landfill between the two sample periods. On average, the total weight of materials in roll-off bins was 2,980 kg and 285 kg of waste was sampled (10%). Table 4 displays the totals of each sub-category from all samples collected during the August and November 2015 audits.

#### August Results

Ten samples weighing 2,765 kg were collected from Sechelt Landfill between Tuesday, August 11 and Saturday, August 15, 2015. On average, the total weight of materials in the roll-off bins was 2,925 kg and 275 kg of waste was sampled from each roll-off bin (9%).

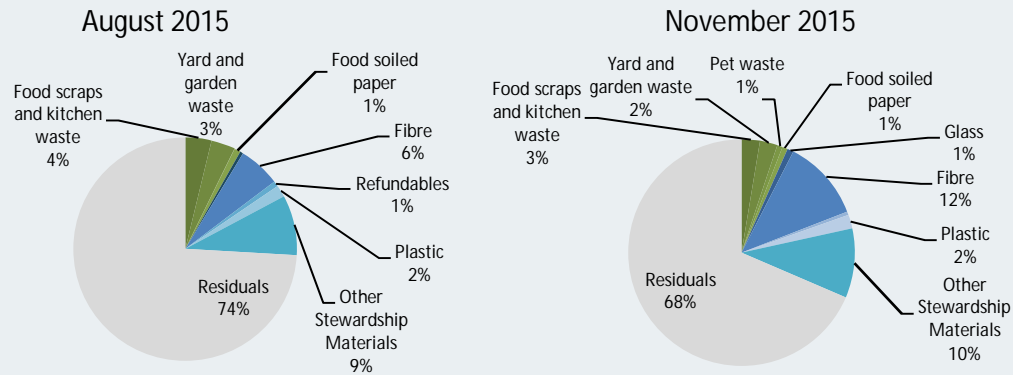
Building materials – textiles was the largest component of the waste stream (20%), by weight. The majority of the remaining sample was comprised of furniture (15%), other textiles (10%), plastic bulky items (10%), EPR electronic waste (8%), building materials – wood (6%), refuse (6%), and building materials – other (5%). Common items in the sub-categories included carpet and insulation, couches, clothing, plastic furniture, assorted large plastic containers, speakers, wood, other unrecyclable materials (refuse), and other building materials such as plastics and sandpaper.

#### November Results

A total of six samples weighing 1,828 kg were collected from Sechelt Landfill between Tuesday, November 3 and Saturday, November 7, 2015. On average, the total weight of the materials in the roll-off bins was 3,068 kg and 305 kg of waste was sampled from each roll-off bin (10%).

Other - textiles were the largest component of the waste stream (14%), by weight. The remaining composition included other plastics (12%), EPR – electronic waste (10%), building materials – textiles (9%), paper (8%), furniture (8%), building materials – other (7%), building materials – wood (6%), building materials – gypsum/drywall (5%). Common items included clothing and bedding materials, large plastic bins, books, magazines and carpets.

TABLE 2: SECHULT LANDFILL WASTE COMPOSITION AUDIT (TOTAL)



Category	Sub-Category	August 2015		November 2015		Average			
		Weight (kg)	%	Weight (kg)	%	Weight (kg)	%		
Organics	Organics	Food scraps and kitchen waste	105	4%	48.2	3%	76.6	4%	
		Yard and garden waste	95.5	3%	45.5	2%	70.5	3%	
		Pet waste	2.1	0%	13.4	1%	7.8	1%	
		Food soiled paper	24.2	1%	13.8	1%	19	1%	
Curbside and Depot Printed Packaging (PPP) Recyclables	Glass	Non-refundable glass (PPP)	11.5	0%	17.9	1%	14.7	1%	
		Fibre	Paper	72.6	3%	140.9	8%	106.8	6%
	Newsprint		3.5	0%	2.1	0%	2.8	0%	
	OCC		66.2	2%	36.6	2%	51.4	2%	
	Boxboard		20.6	1%	23.1	1%	21.9	1%	
	Refundables	Other paper	4.4	0%	9.0	0%	6.7	0%	
		Plastic	Glass	13.8	0%	1.4	0%	7.6	0%
	Non-glass		9	0%	6.7	0%	7.9	0%	
	Other Stewardship Materials	HHW	Film (PPP EPR)	18.8	1%	15.6	1%	17.2	1%
			Rigid (PPP EPR)	23.7	1%	20.1	1%	21.9	1%
Styrofoam (PPP EPR)			5	0%	0.8	0%	2.9	0%	
Other Stewardship Materials	Electronic Waste	Batteries	0.2	0%	0.3	0%	0.3	0%	
		Product Care items	20	1%	0.5	0%	10.3	1%	
Residuals	Other	EPR	218.8	8%	180.2	10%	199.5	9%	
		Building materials – wood	170.9	6%	113.3	6%	142.1	6%	
		Building materials – metal	6.4	0%	2.1	0%	4.3	0%	
		Building materials – gypsum/drywall	6.2	0%	94.0	5%	50.1	3%	
		Building materials – textiles	545.6	20%	171.1	9%	358.4	15%	
		Building materials – other	132.8	5%	120.9	7%	126.9	6%	
		Wood: non-building material	11.2	0%	3.2	0%	7.2	0%	
		Metal: non-building material	10.7	0%	22.5	1%	16.6	1%	
		Household hygiene	11	0%	26.1	1%	18.6	1%	
		Home medical waste	1.6	0%	0.3	0%	1	0%	
		Textiles	267.6	10%	249.2	14%	258.4	12%	
		Refuse	161.5	6%	29.8	2%	95.7	4%	
		Fines	2.9	0%	0.4	0%	1.7	0%	
		Electronic Waste - other	1.1	0%	0.0	0%	0.6	0%	
	HHW - other	2.4	0%	1.1	0%	1.8	0%		
	Plastic	Furniture (not including plastic furniture)	402.8	15%	148.7	8%	275.8	12%	
		Film - all other film plastic	19	1%	22.0	1%	20.5	1%	
Styrofoam - all other		0.3	0%	2.0	0%	1.2	0%		
Bulky items(including plastic furniture)		280	10%	26.3	1%	153.2	6%		
Other plastics		16.2	1%	220.0	12%	118.1	7%		
Total		2764.2	100%	1828.2	100%	2296.2	100%		

\*Note that only sub-categories that represent 1% or more of the waste stream have been shown in the pie-charts.

A breakdown of each sample and the most significant materials encountered are as follows:

- Sechelt Landfill - Sample 1 (Aug 11). The dominant material that comprised the waste stream from this sample was building materials – textiles (22%). Furniture (17%), other textiles (11%), plastic bulky items (11%), and building materials – other such as plastics and painting accessories (10%) made up the majority of the remaining waste stream.
- Sechelt Landfill - Sample 2 (Aug 11). The largest component of the waste stream from the second was building materials - textiles (32%). The majority of the remaining waste stream was comprised of furniture (23%) and plastic bulky items (20%).
- Sechelt Landfill - Sample 3 (Aug 12). This sample was comprised of building materials – wood (23%), EPR electronic waste such as computer accessories and calculators (18%), building materials – textiles (15%), refuse (10%), plastic bulky items (10%), and other textiles (6%).
- Sechelt Landfill - Sample 4 (Aug 12). Furniture accounted for 27% of the waste stream from this sample. The remaining sample consisted of the following sub-categories: building materials – textiles (14%), refuse such as ceramic bowls (11%), building material – wood (11%), other textiles (9%), food scraps and kitchen waste (6%), and plastic bulky items (6%).
- Sechelt Landfill - Sample 5 (Aug 13). Building materials – textiles were the largest component of this sample (24%). The majority of the remaining waste consisted of EPR electronic waste (e.g., speaker) (23%), furniture (13%), textiles (8%), refuse (6%), yard and garden waste (6%), and plastic bulky items (5%).
- Sechelt Landfill - Sample 6 (Aug 13). The sample primarily consisted of yard and garden waste (16%), paper (12%), furniture (12%), plastic bulky items (12%), EPR electronic waste such as speakers and vacuums (11%), other textiles (10%), building materials – other (plastics and sandpaper) (6%), and household hazardous waste - product care items (cans of paint) (6%).
- Sechelt Landfill - Sample 7 (Aug 14). Consistent with findings from a number of samples, building materials - textiles was the largest component in this sample (34%). The remaining sample consisted of the following sub-categories: textiles (16%), building materials – other such as sandpaper and plastics, plastic bulky items (11%), yard and garden waste (8%), and food scraps and kitchen waste (5%).
- Sechelt Landfill - Sample 8 (Aug 14). The waste from this sample was comprised of a significant amount of furniture (39%). The second largest sub-category in this waste stream was other textiles (15%). The remaining waste primarily consisted of EPR electronic waste such as speakers and a leaf blower (10%), building materials – textiles (9%), and building materials – wood (7%).
- Sechelt Landfill - Sample 9 (Aug 15). Building materials – textiles comprised 23% of this sample. Plastic bulky items (18%), refuse (10%), food scraps and kitchen waste (9%), EPR electronic waste (speakers) (6%), building materials – wood (6%), and other textiles (6%) made up the majority of the remaining sample.

- Sechelt Landfill - Sample 10 (Aug 15). Similar to the previous sample from August 15, building materials – textiles comprised the greatest amount in the sample (28%). The remaining sample consisted of other textiles (11%), plastic bulky items (10%), refuse (*e.g.*, artificial Christmas tree, umbrella, and other mixed material items) (8%), building materials – other (7%), paper (6%), building materials – wood (5%), and furniture (5%).
- Sechelt Landfill – Sample 11 (Nov 3). Other textiles (*e.g.*, clothing and bedding) accounted for 18% of this sample. The remaining sample consisted of furniture (not including plastic furniture) (16%), food scraps and kitchen waste (9%), yard and garden waste (9%), building materials (gypsum/drywall) (8%), household hygiene (7%), and other plastic (*e.g.*, thermos, gardening containers, plastic bins)(5%).
- Sechelt Landfill - Sample 12 (Nov 3). Building materials - textiles and other plastics comprised the greatest amount in this sample, each accounting for 19%. The remaining sample consisted of furniture (not including plastic furniture) (16%), other textiles (10%), and EPR electronic waste (7%).
- Sechelt Landfill - Sample 13 (Nov 4). The dominant materials observed in this sample were building materials – wood (20%) and paper (18%). Building materials - textiles (15%), EPR electronic waste (8%), other textiles (8%), other plastics (5%) and building materials – other (5%) made up the majority of the rest of the sample.
- Sechelt Landfill - Sample 14 (Nov 5). Other textiles (*e.g.*, clothing, bedding, shoes) were the dominant material found, accounting for 20% of the sample. Building materials – gypsum/drywall and other plastics each comprised 13% of the sample. The remaining materials consisted of EPR electronic waste (9%), building material – other (9%), paper (7%), furniture (not including plastic furniture) (6%), and building materials – wood (5%).
- Sechelt Landfill - Sample 15 (Nov 6). This sample was comprised of 29% EPR electronic waste (*e.g.*, computers, laptops, Play Station), and 21% other textiles. The remaining materials consisted of building materials – other (12%), other plastics (10%), furniture (not including plastic furniture) (9%), and paper (6%).
- Sechelt Landfill - Sample 16 (Nov 7). Other plastics accounted for 21% of this sample, while building materials – textiles accounted for 18%. The majority of the rest of the sample consisted of paper (13%), building materials – wood (8%), building materials – gypsum/drywall (7%), other textiles (7%), EPR electronic waste (7%), and non-refundable glass (6%).

Detailed breakdowns by percent with representative graphs and photographs of each of the sixteen samples are provided in Appendix A. Figure 1 contains images of each sample load and Figure 2 displays representative photographs.



FIGURE 1: SECHELT LANDFILL SAMPLE LOADS



Sechelt Landfill – Sample 1 (Aug 11)



Sechelt Landfill – Sample 2 (Aug 11)



Sechelt Landfill – Sample 3 (Aug 12)



Sechelt Landfill – Sample 4 (Aug 12)



Sechelt Landfill – Sample 5 (Aug 13)



Sechelt Landfill – Sample 6 (Aug 13)





Sechelt Landfill – Sample 7 (Aug 14)



Sechelt Landfill – Sample 8 (Aug 14)



Sechelt Landfill – Sample 9 (Aug 15)



Sechelt Landfill – Sample 10 (Aug 15)



Sechelt Landfill – Sample 11 (Nov 3)



Sechelt Landfill – Sample 12 (Nov 3)



Sechelt Landfill – Sample 13 (Nov 4)



Sechelt Landfill – Sample 14 (Nov 5)



Sechelt Landfill – Sample 15 (Nov 6)



Sechelt Landfill – Sample 16 (Nov 7)



FIGURE 2: SECHULT LANDFILL REPRESENTATIVE WASTE COMPOSITION AUDIT CATEGORIES



Building materials - textiles



Furniture



Other textiles



Bulky items - plastics



EPR – electronic waste



Building materials - wood



## 3.2 Pender Harbour Transfer Station

A total of seven samples were collected from Pender Harbour Transfer Station between the two sample periods. One sample was collected and analyzed each day between Tuesday, August 11 and Friday, August 14, 2015. (No roll-off bin was received from Pender Harbour Transfer Station on Saturday, August 15). Three samples were collected from Pender Harbour Transfer Station between Tuesday, November 3 and Saturday, November 7, 2015. One sample was collected on Thursday, November 5 and two were collected on Friday, November 6. A total of 1,833 kg of garbage was sampled from roll-off bins transferred to Sechelt Landfill. On average, the total weight of materials in the roll-off bins was 7,300 kg and 260 kg of waste was sampled from each roll-off bin (4%). Table 3 displays the totals of each sub-category from the seven Pender Harbour Transfer Station samples.

### August Results

A total of 960 kg of garbage was sampled from roll-off bins transferred to Sechelt Landfill. On average, the total weight of materials in the roll-off bins was 7,400 kg and 240 kg of waste was sampled from each roll-off bin (3%).

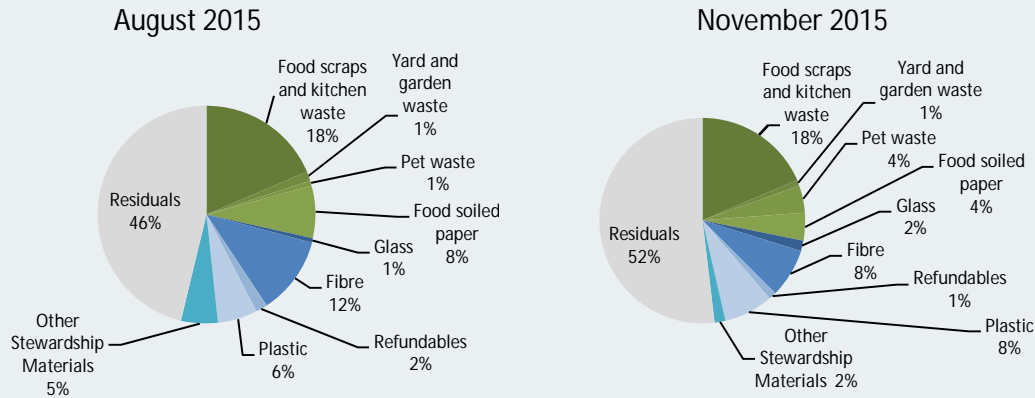
The waste was comprised of food scraps and kitchen waste (19%), building materials – textiles (10%), food soiled paper (8%), refuse (7%), plastic bulky items (7%), OCC (6%), other textiles (6%), and EPR – electronic waste (5%). Common items in the sub-categories included household food waste, carpet, paper towels and soiled take-out paper, mixed materials packaging (refuse), assorted large plastic containers, toys, and clothing.

### November Results

A total of 875 kg of garbage was sampled from roll-off bins transferred from Pender Harbour Transfer Station to Sechelt Landfill. On average, the total weight of materials in the roll-off bins was 7,100 kg and 290 kg of waste was sampled from each roll-off bin (4%).

Food scraps and kitchen waste was the largest component of the waste stream (19%), by weight. Building material – other represented 14%, other plastic represented 9% and other – textiles represented 6%. Common items in the sub-categories included bags of household garbage, household food waste, clothing and building materials.

TABLE 3: PENDER HARBOUR TRANSFER STATION WASTE COMPOSITION AUDIT (TOTAL)



Category	Sub-Category	August 2015		November 2015		Average		
		Weight (kg)	%	Weight (kg)	%	Weight (kg)	%	
Organics	Organics	Food scraps and kitchen waste	177.6	19%	162.0	19%	169.8	19%
		Yard and garden waste	13.4	1%	8.3	1%	10.85	1%
		Pet waste	7.3	1%	37.5	4%	22.4	3%
		Food soiled paper	74.7	8%	38.6	4%	56.65	6%
Curbside and Depot Printed Packaging (PPP) Recyclables	Glass	Non-refundable glass (PPP)	6.6	1%	14.0	2%	10.3	2%
		Paper	18.8	2%	27.5	3%	23.15	3%
	Fibre	Newsprint	12.7	1%	5.7	1%	9.2	1%
		OCC	56.4	6%	11.2	1%	33.8	4%
		Boxboard	15.9	2%	10.6	1%	13.25	2%
		Other paper	7.2	1%	12.5	1%	9.85	1%
	Refundables	Glass	8.6	1%	6.3	1%	7.45	1%
		Non-glass	7.5	1%	4.8	1%	6.15	1%
		Film (PPP EPR)	33.2	3%	32.9	4%	33.05	4%
	Plastic	Rigid (PPP EPR)	16.7	2%	29.8	3%	23.25	3%
Styrofoam (PPP EPR)		6.2	1%	4.2	0%	5.2	1%	
Other Stewardship Materials	HHW	Batteries	1.2	0%	0.3	0%	0.75	0%
		Product Care items	2.1	0%	0.0	0%	1.05	0%
	Electronic Waste	EPR	48.9	5%	15.0	2%	31.95	4%
Residuals	Other	Building materials – wood	0.3	0%	19.8	2%	10.05	1%
		Building materials – metal	3.8	0%	11.1	1%	7.45	1%
		Building materials – gypsum/drywall	0	0%	39.2	4%	19.6	2%
		Building materials – textiles	92.4	10%	12.3	1%	52.35	6%
		Building materials – other	36.5	4%	119.5	14%	78	9%
		Wood: non-building material	5.1	1%	4.7	1%	4.9	1%
		Metal: non-building material	15	2%	25.3	3%	20.15	3%
		Household hygiene	17.7	2%	10.2	1%	13.95	2%
		Home medical waste	2.5	0%	4.2	0%	3.35	0%
		Textiles	59.5	6%	52.9	6%	56.2	6%
		Refuse	63.2	7%	12.3	1%	37.75	4%
		Fines	2.3	0%	6.1	1%	4.2	1%
		Electronic Waste - other	0	0%	0.4	0%	0.2	0%
		HHW - other	0	0%	1.9	0%	0.95	0%
	Furniture (not including plastic furniture)	43	4%	31.4	4%	37.2	4%	
	Plastic	Film - all other film plastic	32.1	3%	20.9	2%	26.5	3%
		Styrofoam - all other	0.6	0%	5.6	1%	3.1	1%
		Bulky items(including plastic furniture)	62.4	7%	0.0	0%	31.2	4%
Other plastics		7	1%	76.9	9%	41.95	5%	
Total		957.8	100%	874.8	100%	916.3	100%	

\*Note that only sub-categories that represent 1% or more of the waste stream have been shown in the pie-charts.

A breakdown of each sample and the most significant materials encountered are as follows:

- Pender Harbour Transfer Station – Sample 1 (Aug 11). This sample was composed of food scraps and kitchen waste (20%), food soiled paper (13%), refuse (*e.g.*, toilet) (11%), film (PPP EPR), and OCC (5%). The remaining amount of waste in each sub-category totalled less than 5% of the sample.
- Pender Harbour Transfer Station – Sample 2 (Aug 12). Food scraps and kitchen waste comprised the largest component of this sample (24%). The majority of the remaining sample consisted of the following sub-categories: food soiled paper (13%), OCC (11%), plastic bulky items (11%), EPR electronic waste such as light fixtures (5%), and building materials – other such as sandpaper (5%).
- Pender Harbour Transfer Station – Sample 3 (Aug 13). Waste in this sample consisted primarily of the following sub-categories: food scraps and kitchen waste (32%), other textiles (13%), paper (6%), food soiled paper (5%), refuse (5%), and furniture (5%).
- Pender Harbour Transfer Station – Sample 4 (Aug 14). Unlike samples from the other days at the Pender Harbour Transfer Station which mainly consisted of food scraps and kitchen waste, building materials – textiles was the largest component of the waste stream (31%). EPR electronic waste (12%), furniture (10%), plastic bulky items (10%), other textiles (8%), refuse (7%), and OCC (5%) made up the majority of the remaining sample.
- Pender Harbour Transfer Station – Sample 5 (Nov 5). Food scraps and kitchen waste accounted for 19% of this sample. Building materials – gypsum/drywall accounted for 15%. Other textiles (8%), other plastics (7%), pet waste (6%), food soiled paper (6%), and paper (6%) made up the majority of the remaining sample.
- Pender Harbour Transfer Station – Sample 6 (Nov 6). In this sample, food scraps and kitchen waste accounted for 23% and building materials – other accounted for 17%. Pet waste, food soiled paper, and building materials – wood each represented 5% of the remaining sample.
- Pender Harbour Transfer Station – Sample 7 (Nov 6). Building materials – other made up 22% of this sample. Food scraps and kitchen waste and other plastics each made up 15%. The rest of the sample was primarily made up of other textiles (6%) and furniture (not including plastic furniture) (6%).

Detailed breakdowns by percent with representative graphs and photographs of each of the seven samples are provided in Appendix A. Figure 3 contains images of the load from each sample and Figure 4 displays representative photographs from the total sample.

FIGURE 3: PENDER HARBOUR TRANSFER STATION SAMPLE LOADS



Pender Harbour Transfer Station – Sample 1  
(Aug 11)



Pender Harbour Transfer Station – Sample 2  
(Aug 12)



Pender Harbour Transfer Station – Sample 3  
(Aug 13)



Pender Harbour Transfer Station – Sample 4  
(Aug 14)



Pender Harbour Transfer Station – Sample 5  
(Nov 5)



Pender Harbour Transfer Station – Sample 6  
(Nov 6)





Pender Harbour Transfer Station – Sample 7  
(Nov 7)

FIGURE 4: PENDER HARBOUR TRANSFER STATION REPRESENTATIVE WASTE COMPOSITION AUDIT CATEGORIES



Food scraps and kitchen waste



Building materials - textiles



Food soiled paper



Metal – non-building material



Wood –building material



Other textiles

## 4.0

## Conclusion

In total, 23 samples (16 from Sechelt Landfill and 7 from Pender Harbour Transfer Station) with a combined weight of 6,426 kg was sorted into 37 sub-categories and weighed over the two sampling periods.

The composition of waste between each site is quite different; Sechelt Landfill roll-off bins contain more large (bulky items) while Pender Harbour Transfer Station roll-off bins contain mostly bagged waste. Additionally, more waste is generated at each location during the summer months with usage decreasing in the fall and winter. However, it should be noted that despite the differences in composition between each site, and the seasonal change in amounts generated, the composition of waste at each location in the fall was consistent with the summer findings.

The waste sampled from Sechelt Landfill totalled 4,593 kg. Building materials – textiles was the largest component of the waste stream (16%), by weight. The majority of the remaining sample was comprised of furniture (12%), other textiles (11%), EPR electronic waste (9%), plastic bulky items (7%), building materials – other (6%), and building materials – wood (6%), other plastic (5%), paper (5%). Sampled waste from Pender Harbour Transfer Station totalled 1,833 kg. The majority of the samples were food scraps and kitchen waste (19%), building materials – other (9%), food soiled paper (6%), building materials – textiles (6%), other textiles (6%), and other plastics (5%).

Waste samples from each site contained recyclables, including recyclables that could be collected either through curbside programs (for electoral areas/municipalities with a curbside program) or dropped off at a local depot (Sechelt Landfill – 19%, Pender Harbour Transfer Station – 24%). There were also many pieces of furniture that appeared to be in good condition that could have been donated which could contribute to further waste diversion.

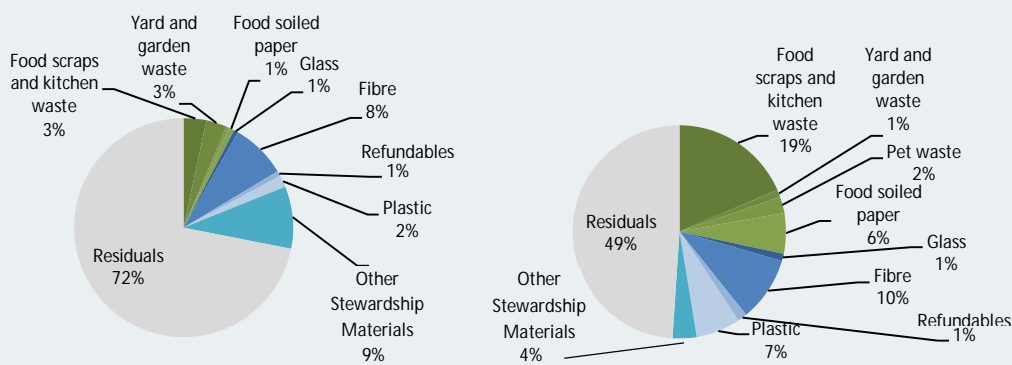
Organic waste was found in samples from both sites (Sechelt Landfill – 7%, Pender Harbour Transfer Station – 28%). The implementation of an organics diversion program could assist with diverting waste from the landfill and contribute to the SCRD's overall waste diversion goals.

While the above mentioned observations are not the only observations made, they were the key findings in the 2015 waste composition audit. Focusing on programs related to diverting organics, increasing recycling and encouraging reuse/donations of furniture and clothing could assist SCRD in achieving waste reduction/diversion goals. Furthermore, new and/or enhanced programs could result in increasing the life span of the Sechelt Landfill. Table 4 summarizes the totals of each sub-category from the samples collected from both sites.

TABLE 4: SUNSHINE COAST REGIONAL DISTRICT WASTE COMPOSITION SUMMARY

Sechelt Landfill Summary

Pender Harbour Transfer Station Summary



Category	Sub-Category	Sechelt		Pender Harbour		
		Weight (kg)	%	Weight (kg)	%	
Organics	Organics	Food scraps and kitchen waste	153.2	3%	339.5	19%
		Yard and garden waste	140.9	3%	21.7	1%
		Pet waste	15.5	0%	44.7	2%
		Food soiled paper	38	1%	113.3	6%
Curbside and Depot Printed Packaging (PPP) Recyclables	Glass	Non-refundable glass (PPP)	29.3	1%	20.6	1%
		Paper	213.5	5%	46.3	3%
	Fibre	Newsprint	5.6	0%	18.4	1%
		OCC	102.8	2%	67.6	4%
		Boxboard	43.7	1%	26.5	1%
		Other paper	13.3	0%	19.7	1%
	Refundables	Glass	15.1	0%	14.9	1%
		Non-glass	15.7	0%	12.9	1%
	Plastic	Film (PPP EPR)	34.3	1%	66	4%
		Rigid (PPP EPR)	43.7	1%	46.5	3%
Styrofoam (PPP EPR)		5.8	0%	10.4	1%	
Other Stewardship Materials	HHW	Batteries	0.5	0%	1.5	0%
		Product Care items	20.5	0%	2.1	0%
	Electronic Waste	EPR	399	9%	63.9	3%
Residuals	Other	Building materials – wood	284.2	6%	20.1	1%
		Building materials – metal	8.5	0%	14.8	1%
		Building materials – gypsum/drywall	100.2	2%	39.2	2%
		Building materials – textiles	716.7	16%	104.6	6%
		Building materials – other	253.7	6%	155.9	9%
		Wood: non-building material	14.4	0%	9.7	1%
		Metal: non-building material	33.1	1%	40.3	2%
		Household hygiene	37	1%	27.8	2%
		Home medical waste	1.8	0%	6.6	0%
		Textiles	516.8	11%	112.4	6%
		Refuse	191.2	4%	75.5	4%
		Fines	3.3	0%	8.4	0%
		Electronic Waste - other	1.1	0%	0.4	0%
		HHW - other	3.4	0%	1.9	0%
	Furniture (not including plastic furniture)	551.5	12%	74.4	4%	
	Plastic	Film - all other film plastic	41	1%	53	3%
		Styrofoam - all other	2.2	0%	6.1	0%
		Bulky items (including plastic furniture)	306.3	7%	62.4	3%
		Other plastics	236.2	5%	83.8	5%
		Total	4592.4	100%	1832.6	100%

\*Note that only sub-categories that represent 1% or more of the waste stream have been shown in the pie-charts.



## 4.1

## Comparison of 2014 and 2015 Audit Results

In August and November 2014, Dillon completed a waste composition audit of municipal solid waste from six collection areas within SCR D disposing at the Sechelt Landfill. This included electoral areas that SCR D provided municipal waste collection services to and municipalities that provide their own municipal waste collection services. The following summary table (Table 5) provides a breakdown of each primary category for each of the six SCR D collection areas and the 2015 roll-off bins at Sechelt Landfill and Pender Harbour Transfer Station for comparison purposes.

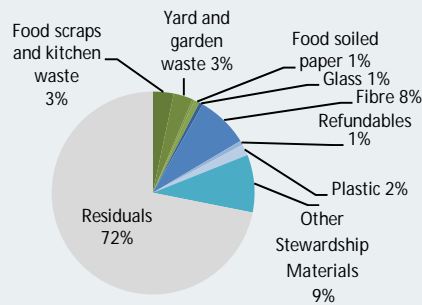
TABLE 5: COMPARISON OF SCR D SITES AND COLLECTION AREAS– SUMMARY

	Organics					Recyclables			Residuals
	Food scraps and kitchen waste	Yard and garden waste	Pet waste	Food Soiled Paper	Total Organics	Curbside and Depot PPP Recyclables	Other Stewardship Materials	Total Recyclables	
Sechelt Landfill	3%	3%	0%	1%	7%	10%	9%	19%	73%
Pender Harbour Transfer Station	19%	1%	2%	6%	28%	21%	3%	24%	49%
Roll-off Bins Average	11%	2%	1%	4%	17%	16%	6%	22%	61%
District of Sechelt	36%	2%	4%	9%	51%	20%	1%	21%	28%
Town of Gibsons	33%	0%	4%	9%	46%	25%	0%	25%	29%
Sechelt Indian Government District	31%	0%	1%	9%	41%	28%	3%	31%	27%
Electoral Area B	34%	4%	4%	8%	50%	23%	3%	26%	24%
Electoral Area D & E (South of Hwy 101)	36%	0%	5%	10%	52%	21%	1%	22%	26%
Electoral Area D & E (North of Hwy 101) & F (all of F)	36%	0%	3%	10%	48%	23%	1%	24%	28%
Municipal Solid Waste Average	34%	1%	4%	9%	48%	23%	2%	25%	27%

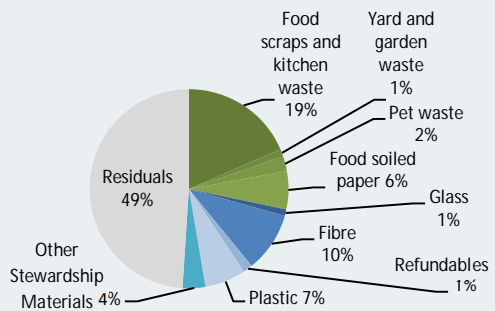
The results of the waste composition audit of Pender Harbour Transfer Station and the 2014 waste composition audit of six SCR D collection areas reveal a high percentage of organics in the waste stream. Organics accounted for approximately 48% (by weight) of the waste stream for the six SCR D collection areas and approximately 28% (by weight) of the waste stream for Pender Harbour Transfer Station. Recycling (both curbside/depot and stewardship materials) were found in samples of municipal solid waste and roll-off bins.

Figure 5 displays a summary of the average waste composition of the six SCR D collection areas from the 2014 analysis and each of the two roll-off bin locations from the 2015 analysis.

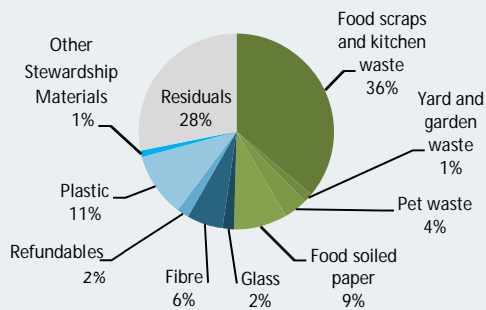
FIGURE 5: COMPARISON OF SCRd COLLECTION AREAS AND ROLL-OFF BINS



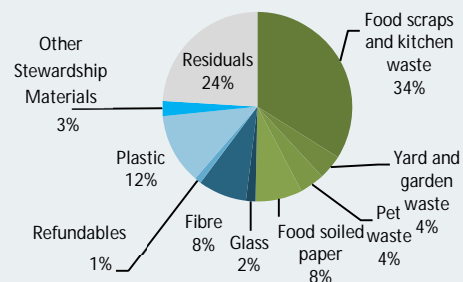
Sechelt Landfill Roll-Off Bins



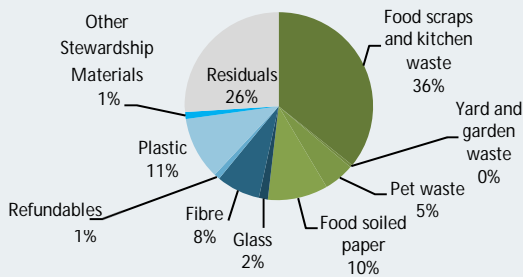
Pender Harbour Transfer Station Roll-Off Bins



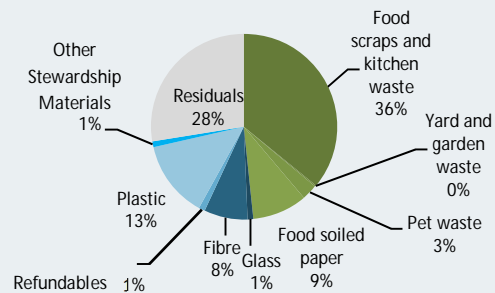
District of Sechelt



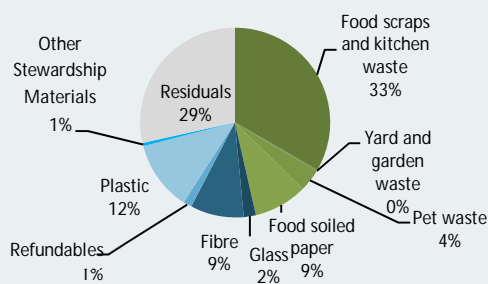
Electoral Area B



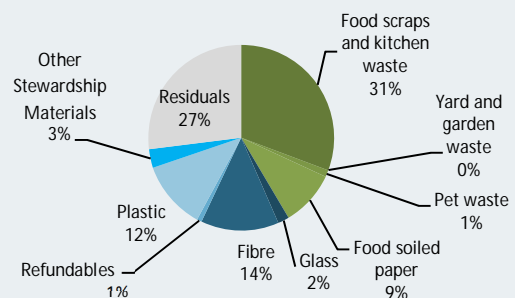
Electoral Area D & E (South of Highway 101)



Electoral Area D, E & F (D & E north of Highway 101, all of F)



Town of Gibsons



Sechelt Indian Government District

## 5.0

## Project Limitations

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This report was prepared exclusively for the purposes, project, and site location outlined in this report. The report is based on information provided to, or obtained by Dillon as indicated in the report. Although a reasonable analysis was conducted by Dillon, Dillon's analysis was by no means exhaustive. Rather, Dillon's report represents a reasonable review of available information within an established work scope and schedule.

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Yours sincerely,

DILLON CONSULTING LIMITED



Alida Kusch

Project Manager