2022/23 Montgomery County Waste Composition Study

**Recycling and Resource Management Division
Department of Environmental Protection**
2425 Reedie Dr
Wheaton, MD 20902

SCS ENGINEERS

11260 Roger Bacon Drive, #300
Reston, VA   20190
800-767-4727

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1 INTRODUCTION

Montgomery County of Maryland (the County) contracted with SCS Engineers (SCS) to conduct a waste composition analysis of waste generated within the County. The primary objective of the study is to determine the composition of the municipal solid waste stream received at the Montgomery County Transfer Station (Transfer Station). The Recycling and Resource Management Division will utilize this data of the composition of the County's waste stream to maximize diversion and thereby minimize the tons of waste the County disposes through Waste to Energy and landfilling. The data will also be used to evaluate changes in the character, quantity, and sources of materials in the County's solid waste stream.

The Waste Characterization Study consists of four sampling periods during Spring 2022, Summer 2022, Fall 2022, and Winter 2023. The following five waste generating sectors were targeted for sampling:

- Single-Family Subdistrict A ("SFA"),

- Single-Family Subdistrict B ("SFB"),

- Single-Family Municipal ("SFM"),

- Multi-Family Residential ("MF"), and

- Non-Residential ("NR").

Single-Family Subdistrict A consists of approximately 93,000 single-family homes, as well as multi-family buildings with six or fewer dwelling units in the southern third of the County where private haulers are contracted with the County for waste collection. Single-Family Subdistrict B has approximately 128,000 single-family homes in the County, where waste collection is performed by private haulers that contract directly with individual homeowners. There are additionally 39,000 single-family houses within the County that are collected by the municipality, such as Rockville, Gaithersburg, and Tacoma Park.

SCS would like to thank Covanta, NMWDA, Montgomery County, and Maryland Environmental Service staff for providing a safe work location and project support throughout the project period.

2   METHODS

This section summarizes the methods used to characterize the waste stream generated in Montgomery County. Sorting periods for the study took place during March 2022 (Spring), July 2022 (Summer), October 2022 (Fall), and January/February 2023 (Winter). Sorting activities were performed by manually sorting samples from municipal solid waste (MSW) into 53 distinct waste categories, based on ASTM D5231 – 92 (2003), Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste.

WASTE SAMPLING

Waste sample collection was performed on the annex floor of the Transfer Station during normal operating hours of the facility in conformance with ASTM D5231 – 92 (2003). Each day, vehicles carrying waste from targeted sectors of the County were randomly selected and diverted to the annex floor to dump their loads for sampling. Drivers of front-load trucks were interviewed in order to find loads that were purely collected from multi-family. SCS staff manually gathered samples from a randomly selected segment of each target load, each weighing approximately two hundred and fifty pounds. Two important procedural factors were considered:

- The target vehicle selected for sampling contained MSW that was representative of the type of waste typically generated in that sector; and

- The process of acquiring the waste sample did not alter the apparent MSW composition.

If an item was too large or bulky to be weighed and was in the sampling area, its weight was estimated and added to the sample. This process was repeated until samples had been collected from all the targeted loads. The sampled MSW was placed in trash cans and driven to the sorting site in order to be manually sorted into the material categories.

NUMBER OF SAMPLES

A total of 75 samples were collected for each season for a total of 300 samples during the entire project. For each season, the following numbers of samples were collected from each generating sector:

- Single-Family Subdistrict A – 15 samples

- Single-Family Subdistrict B – 15 samples

- Single-Family Municipal – 5 samples

- Multi-Family Residential – 10 samples

- Non-Residential – 30 samples

WASTE SORTING

The sorting and weighing program for samples entailed the use of one sorting crew and an SCS Crew Supervisor. During each day of fieldwork, samples were collected from waste loads that were discharged at the Montgomery County Transfer Station. The basic procedures and objectives for

sorting (as described below) were identical for each sample, each day. Sorting was performed as follows:

1.   The sort crew transferred the refuse sample onto the sorting table until it was full and began sort activities. Large or heavy waste items, such as bags of yard waste, were torn open, examined, and then placed directly into the appropriate waste container for subsequent weighing.

2.   Plastic bags of refuse were opened, and crew members manually segregated each item of waste, according to material categories defined in Appendix B and placed it in the appropriate waste container. These steps were repeated until the entire sample was sorted.

3.   At the completion of sorting, the waste containers were moved to the scale where a representative of SCS weighed each category and recorded the net weight on the Sort Data Sheet. In most cases, measurements were made to the nearest 0.02 pounds using scales that were calibrated prior to each sorting event.

4.   After each waste category had been recorded, the recyclables were placed in a hopper for diversion to the material recovery facility and the waste materials were placed in a roll off container.

5.   This four-step process was repeated until all the day's samples taken at the site were characterized. Waste samples were maintained in as-disposed condition or as close to this as possible until the actual sorting began. Proper site layout and close supervision of sampling was maintained to avoid the need to repeatedly handle sampled wastes.

Members of the sorting crew were fully equipped with high visibility vests, puncture/cut resistant gloves, safety glasses, and Tyvek suits.

Consistent with good practice in such sampling programs, efforts were made to minimize sampling bias or other impacts on the integrity of the database. To this end, field sampling had been coordinated to avoid holidays and other out of ordinary events.

Material categories and definitions can be found in Appendix B.

DATA ANALYSIS

Data from the sort was entered into an Excel sheet that calculated the weight of each material category based on the tare weight of the bin that held that material.

There were 300 samples manually sorted during the four seasonal field activities. Data presented include mean percentages by weight, standard deviations, and statistical confidence intervals (95 percent confidence interval) for each group of data. Derivation of this data is as follows:

$$Mean\left(\overline{X}\right) = \sum_{i=1}^{n} x_i * \frac{1}{n};$$

$$Standard\ Deviation\ (s) = \sqrt{\frac{\left(n\sum x^2\right) - \left(\sum x\right)^2}{n(n-1)}}\ ;\ and$$

$$\text{Upper/Lower Confidence Interval Limits} = \overline{X} \pm \left[1.96 * \left(\frac{\sigma}{\sqrt{n}} \right) \right]$$

Where: n = number of samples; and

x = sample percentage.

Waste samples were acquired to estimate the County's true waste composition (i.e., the proportion of each waste component present in residential waste collected in the County). The mean is the arithmetic average of all data, and the standard deviation is a measure of the dispersion in the data. Together, the mean and standard deviation determine the confidence interval. A 95 percent confidence interval contains the true proportion of a waste component with 95 percent confidence. Weighting ratios based on the actual total weights of solid waste being disposed at the transfer station during calendar year 2021 were used to determine the overall composition.

3   SUMMARY OF RESULTS

This section contains overall results in the first section, results by season in the second section, and a side-by-side comparison to the previous study in the third section.

OVERALL RESULTS

The following compositions present the compiled results of the four seasonal field efforts for each of the five generating sectors.

Weighted Overall Waste Composition

Weighting ratios are used to calculate the overall waste stream composition and reflect the actual ratios of waste disposed from the generating sectors at the County's Transfer Station during calendar year 2021. Table 1 shows the weighting ratios used to create the overall composition by aggregating the five generating sectors.

Table 1.   Generating Sector Weight Ratios

Generating Sector	Weight Ratio
Single-Family Subdistrict A	13.26%
Single-Family Subdistrict B	21.26%
Single-Family Municipal	4.55%
Multi-Family	16.87%
Non-Residential	44.06%

Exhibit 1 shows a side by side of each of the generating sectors. The materials are aggregated by diversion potential such as recyclable paper and commingled recyclables. The material groups presented in Exhibit 1 and used in exhibits throughout this report such as "Recyclable Paper" are defined in Appendix A.

Exhibit 1.   Generating Sector Waste Compositions by Material Type

Exhibits 2 and 3 present a compilation of the 300 waste samples collected from five generating sectors during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability in composition between the samples. Based on the samples collected, the three largest subcomponents by weight of the waste stream are Food Waste (16.6 percent), Film Plastic - Other (7.3 percent), and Non-Recyclable Paper (6.9 percent). The three largest recyclable subcomponents are Corrugated Cardboard (4.9 percent), Other Recyclable Paper (3.3 percent), and Paperboard (2.1 percent).

Exhibit 2.   Weighted Overall Waste Composition by Material Type
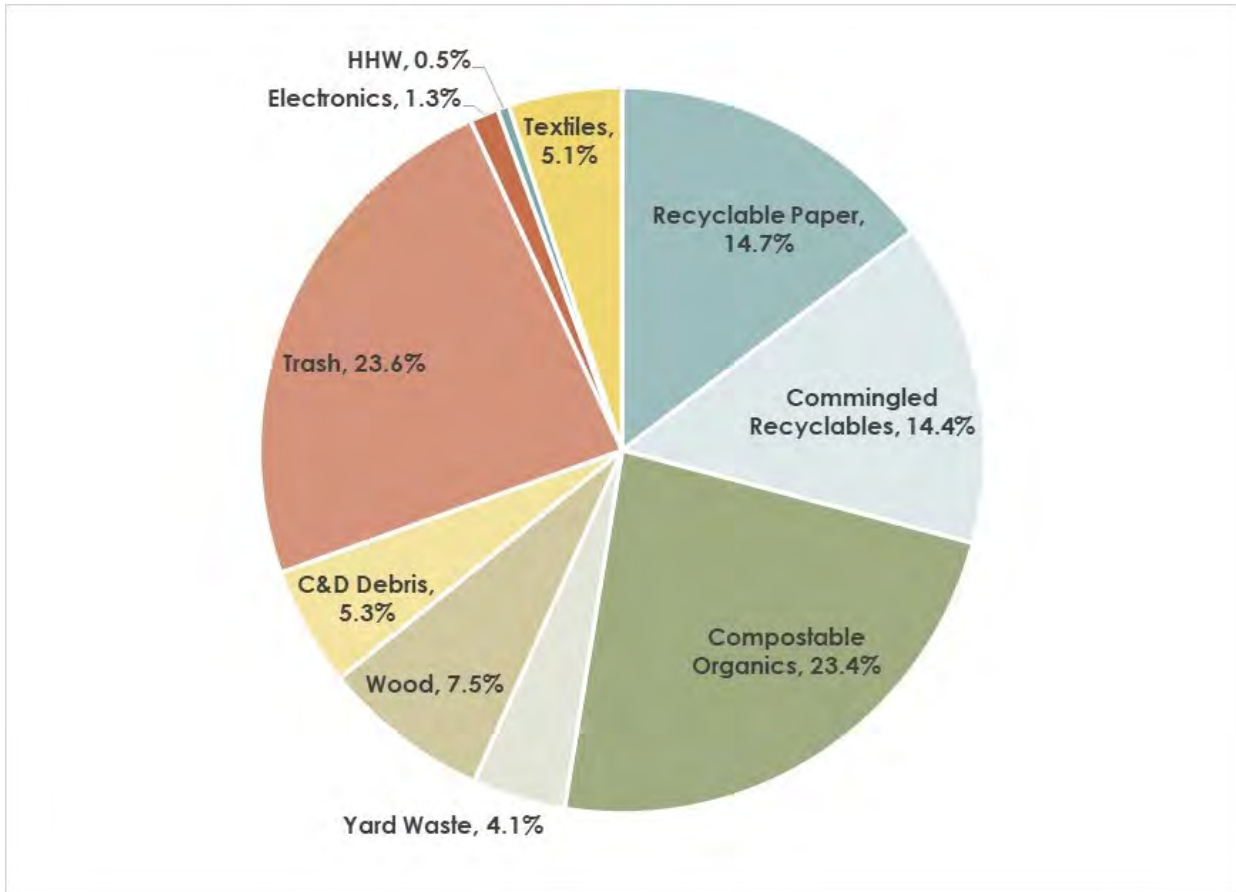
<div align="center">Exhibit 3.   Weighted Overall Waste Composition</div>

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.3%	2.4%	1.0%	1.6%
Corrugated Cardboard	4.8%	5.6%	4.2%	5.5%
Paperboard	2.1%	2.5%	1.9%	2.4%
Aseptic/Coated Paper Containers	0.7%	1.2%	0.6%	0.8%
Office Paper	1.8%	2.4%	1.6%	2.1%
Carryout Paper Bags	0.6%	0.6%	0.5%	0.6%
Other Recyclable Mixed Paper	3.3%	2.1%	3.1%	3.6%
Non-Recyclable Paper	6.9%	3.2%	6.5%	7.2%
Total Paper	**21.6%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	1.2%	0.8%	1.1%	1.3%
Other PET (#1) Bottles	0.2%	0.3%	0.2%	0.2%
#1 PET Thermoforms	0.9%	1.4%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.3%	0.3%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.6%	0.4%	0.6%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.9%	0.6%	0.8%	0.9%
Plastic Flower Pots	0.1%	0.6%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.9%	1.1%	1.7%	2.0%
Film Plastic - Shopping Bags	0.5%	0.6%	0.4%	0.5%
Film Plastic - Other	7.3%	3.5%	6.9%	7.7%
Other Rigid Plastic	3.5%	3.8%	3.0%	3.9%
Total Plastic	**17.2%**			
ORGANIC				
Food Waste	16.6%	6.9%	15.8%	17.4%
Clothing/Linens/Textiles/Leather	5.1%	4.9%	4.5%	5.6%
Diapers & Sanitary Products	3.2%	2.8%	2.9%	3.5%
Fines	1.7%	1.0%	1.6%	1.9%
Miscellaneous Organics	6.7%	2.1%	6.4%	6.9%
Total Organics	**33.3%**			
YARD WASTE				
Grass/Leaves	1.8%	4.1%	1.3%	2.3%
Brush/Pruning	2.4%	4.2%	1.9%	2.8%
Total Yard Waste	**4.1%**			

Exhibit 3. Weighted Overall Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
WOOD				
Lumber	1.9%	3.6%	1.5%	2.3%
Pallets	1.7%	4.9%	1.1%	2.2%
Other Wood	3.9%	5.1%	3.3%	4.5%
Total Wood	**7.5%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.5%	0.7%	0.4%	0.6%
Other Ferrous	1.2%	1.9%	1.0%	1.4%
Total Ferrous Metals	**1.6%**			
NON-FERROUS METAL				
Aluminum Cans	0.4%	0.3%	0.3%	0.4%
Aluminum Tins/Foil	0.4%	0.4%	0.3%	0.4%
Other Aluminum	0.4%	2.1%	0.1%	0.6%
Total Non-Ferrous Metals	**1.1%**			
GLASS				
Clear	1.4%	1.4%	1.3%	1.6%
Brown	0.6%	1.1%	0.4%	0.7%
Green	0.6%	1.0%	0.5%	0.7%
Non-container Glass	0.4%	1.1%	0.3%	0.5%
Total Glass	**3.0%**			
INORGANIC				
Concrete/Brick/Rock	1.1%	3.0%	0.7%	1.4%
Sheet Rock	1.2%	3.5%	0.8%	1.6%
Latex Paints	0.4%	1.4%	0.2%	0.5%
Fluorescent Lamps	<0.1%	0.1%	<0.1%	<0.1%
Electronics	1.3%	2.4%	1.0%	1.6%
Carpets/Rugs/Carpet Padding	2.7%	6.8%	1.9%	3.4%
Automobile Tires	0.3%	1.8%	0.1%	0.5%
Miscellaneous Inorganic	3.1%	3.8%	2.6%	3.5%
Total Inorganics	**10.0%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.2%	<0.1%	<0.1%
Other Hazardous	0.5%	1.6%	0.3%	0.6%
Total Household Hazardous Wastes	**0.5%**			
TOTALS	**100.0%**			

Notes: Composition based on 300 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict A Waste Composition

Exhibits 4 and 5 present a compilation of the 60 Single-Family Subdistrict A residential waste samples collected and sorted during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability between the samples. Based on the samples collected, the three largest subcomponents, by weight, of the Single-Family Subdistrict A waste stream are Food Waste (19.3 percent), Non-Recyclable Paper (7.7 percent), and Film Plastic - Other (7.4 percent). The three largest recyclable subcomponents are Other Recyclable Paper (3.3 percent), Corrugated Cardboard (2.5 percent), and Other Plastic Containers/Tubs (2.1 percent).

Exhibit 4.   Single-Family Subdistrict A Waste Composition by Material Type

Exhibit 5.   Single-Family Subdistrict A Waste Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.6%	2.0%	1.1%	2.1%
Corrugated Cardboard	2.5%	2.5%	1.8%	3.1%
Paperboard	1.7%	1.1%	1.5%	2.0%
Aseptic/Coated Paper Containers	0.6%	0.5%	0.5%	0.7%
Office Paper	1.6%	1.3%	1.3%	1.9%
Carryout Paper Bags	0.5%	0.4%	0.4%	0.6%
Other Recyclable Mixed Paper	3.3%	2.0%	2.8%	3.8%
Non-Recyclable Paper	7.7%	2.9%	7.0%	8.4%
Total Paper	**19.6%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	0.7%	0.5%	0.6%	0.9%
Other PET (#1) Bottles	0.2%	0.2%	0.1%	0.3%
#1 PET Thermoforms	0.8%	0.6%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.2%	0.2%	0.3%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.6%	0.4%	0.7%
#3-#7 Bottles	<0.1%	0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.9%	0.6%	0.7%	1.0%
Plastic Flower Pots	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	2.1%	1.3%	1.8%	2.4%
Film Plastic - Shopping Bags	0.6%	0.5%	0.5%	0.7%
Film Plastic - Other	7.4%	2.7%	6.7%	8.1%
Other Rigid Plastic	3.6%	3.4%	2.7%	4.4%
Total Plastic	**17.2%**			
ORGANIC				
Food Waste	19.3%	6.5%	17.7%	21.0%
Clothing/Linens/Textiles/Leather	5.6%	3.9%	4.6%	6.5%
Diapers & Sanitary Products	3.9%	2.5%	3.2%	4.5%
Fines	2.1%	1.9%	1.7%	2.6%
Miscellaneous Organics	7.0%	1.5%	6.6%	7.3%
Total Organics	**37.8%**			
YARD WASTE				
Grass/Leaves	3.4%	5.7%	2.0%	4.9%
Brush/Pruning	3.1%	4.3%	2.0%	4.2%
Total Yard Waste	**6.5%**			

Exhibit 5. Single-Family Subdistrict A Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
WOOD				
Lumber	1.0%	2.4%	0.4%	1.6%
Pallets	0.5%	2.1%	<0.1%	1.1%
Other Wood	2.9%	3.3%	2.1%	3.7%
Total Wood	**4.4%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.5%	0.5%	0.4%	0.7%
Other Ferrous	1.5%	3.2%	0.7%	2.3%
Total Ferrous Metals	**2.1%**			
NON-FERROUS METAL				
Aluminum Cans	0.3%	0.2%	0.2%	0.3%
Aluminum Tins/Foil	0.5%	0.4%	0.4%	0.6%
Other Aluminum	0.2%	0.4%	<0.1%	0.3%
Total Non-Ferrous Metals	**1.0%**			
GLASS				
Clear	1.1%	1.3%	0.8%	1.4%
Brown	0.4%	0.6%	0.3%	0.6%
Green	0.4%	0.6%	0.3%	0.6%
Non-container Glass	0.4%	0.7%	0.2%	0.6%
Total Glass	**2.4%**			
INORGANIC				
Concrete/Brick/Rock	1.0%	1.9%	0.5%	1.5%
Sheet Rock	1.4%	4.0%	0.4%	2.4%
Latex Paints	0.4%	1.3%	<0.1%	0.7%
Fluorescent Lamps	<0.1%	0.3%	<0.1%	0.1%
Electronics	1.3%	2.1%	0.8%	1.8%
Carpets/Rugs/Carpet Padding	2.1%	4.5%	0.9%	3.2%
Automobile Tires	0.2%	1.1%	<0.1%	0.4%
Miscellaneous Inorganic	2.5%	3.1%	1.7%	3.3%
Total Inorganics	**8.8%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.1%	<0.1%	<0.1%
Other Hazardous	<0.1%	0.4%	<0.1%	0.2%
Total Household Hazardous Wastes	**0.1%**			
TOTALS	**100.0%**			

Notes: Composition based on 60 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict B Waste Composition

Exhibits 6 and 7 present a compilation of the 60 waste samples collected and sorted during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability between the samples. Based on the samples collected, the three largest subcomponents, by weight, of the Single-Family Subdistrict B waste stream are Food Waste (19.2 percent), Non-Recyclable Paper (7.3 percent), and Miscellaneous Organics (7.3 percent). The three largest recyclable subcomponents are Other Recyclable Paper (3.4 percent), Corrugated Cardboard (3.2 percent), and Paperboard (2.0 percent).

Exhibit 6. Single-Family Subdistrict B Composition by Material Type
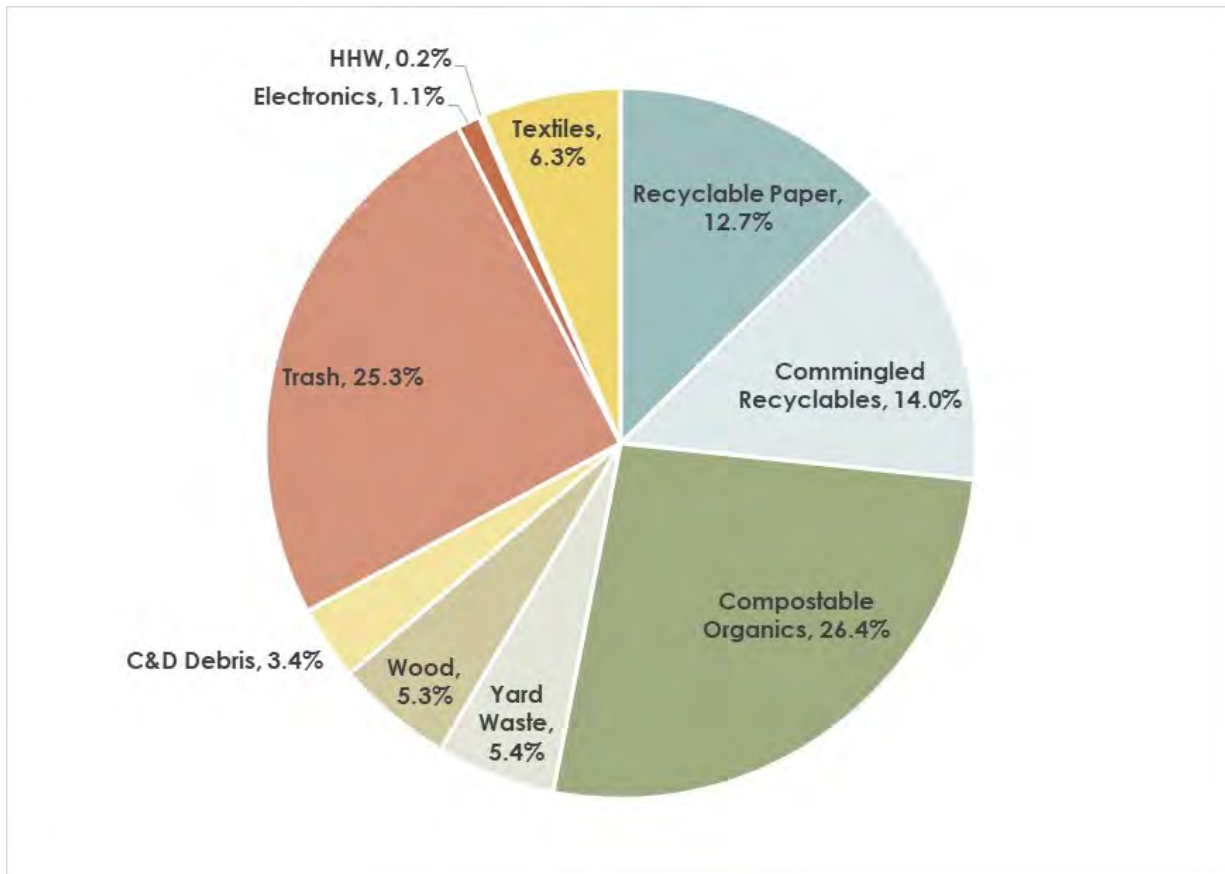
Exhibit 7.   Single-Family Subdistrict B Waste Composition

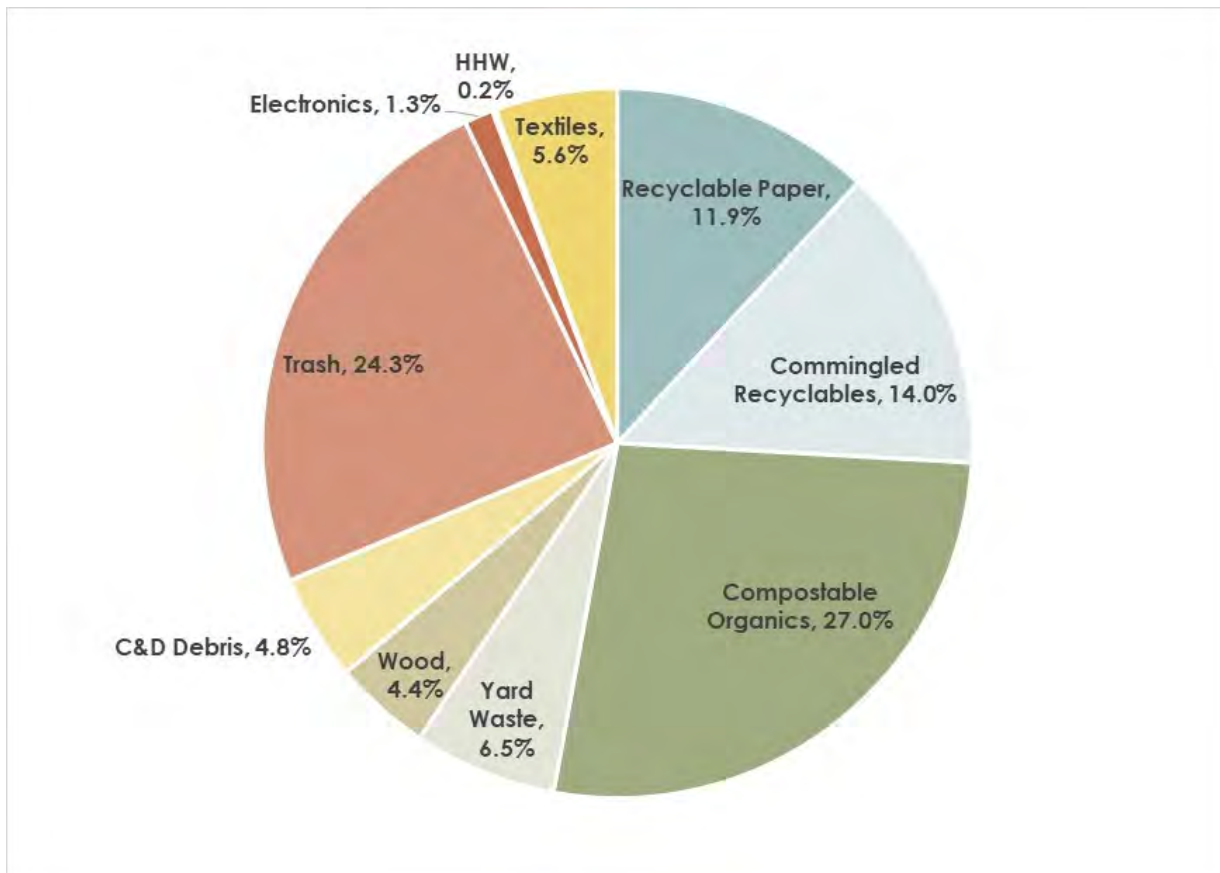| Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.0%	0.8%	0.8%	1.2%
Corrugated Cardboard	3.2%	3.8%	2.2%	4.1%
Paperboard	2.0%	1.1%	1.7%	2.3%
Aseptic/Coated Paper Containers	0.6%	0.6%	0.5%	0.8%
Office Paper	1.9%	2.0%	1.4%	2.4%
Carryout Paper Bags	0.6%	0.5%	0.4%	0.7%
Other Recyclable Mixed Paper	3.4%	1.8%	2.9%	3.8%
Non-Recyclable Paper	7.3%	2.8%	6.6%	8.0%
Total Paper	**19.9%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	1.0%	0.8%	0.8%	1.2%
Other PET (#1) Bottles	0.2%	0.3%	0.1%	0.3%
#1 PET Thermoforms	0.9%	0.5%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.3%	0.2%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.3%	0.4%	0.6%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	0.1%	<0.1%	<0.1%
Other Polysytrene	1.0%	0.6%	0.8%	1.1%
Plastic Flower Pots	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.9%	0.9%	1.7%	2.2%
Film Plastic - Shopping Bags	0.5%	0.5%	0.4%	0.6%
Film Plastic - Other	7.2%	2.6%	6.5%	7.9%
Other Rigid Plastic	3.2%	3.2%	2.4%	4.0%
Total Plastic	**16.8%**			
ORGANIC				
Food Waste	19.2%	6.3%	17.6%	20.7%
Clothing/Linens/Textiles/Leather	6.3%	4.8%	5.1%	7.5%
Diapers & Sanitary Products	3.8%	3.0%	3.1%	4.6%
Fines	1.9%	0.9%	1.7%	2.1%
Miscellaneous Organics	7.3%	1.4%	7.0%	7.7%
Total Organics	**38.6%**			
YARD WASTE				
Grass/Leaves	2.2%	4.0%	1.2%	3.2%
Brush/Pruning	3.2%	3.9%	2.2%	4.2%
Total Yard Waste	**5.4%**			

Exhibit 7.   Single-Family Subdistrict B Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
WOOD				
Lumber	2.1%	3.8%	1.1%	3.0%
Pallets	0.5%	2.3%	<0.1%	1.1%
Other Wood	2.7%	3.7%	1.8%	3.7%
Total Wood	**5.3%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.6%	0.6%	0.4%	0.7%
Other Ferrous	1.2%	2.0%	0.7%	1.7%
Total Ferrous Metals	**1.8%**			
NON-FERROUS METAL				
Aluminum Cans	0.4%	0.3%	0.3%	0.5%
Aluminum Tins/Foil	0.5%	0.3%	0.4%	0.5%
Other Aluminum	0.3%	1.0%	<0.1%	0.5%
Total Non-Ferrous Metals	**1.1%**			
GLASS				
Clear	1.4%	1.3%	1.0%	1.7%
Brown	0.5%	0.6%	0.3%	0.6%
Green	0.6%	1.2%	0.3%	0.9%
Non-container Glass	0.5%	1.5%	0.2%	0.9%
Total Glass	**3.0%**			
INORGANIC				
Concrete/Brick/Rock	0.8%	2.3%	0.2%	1.4%
Sheet Rock	0.9%	2.3%	0.3%	1.5%
Latex Paints	0.5%	1.6%	0.1%	0.9%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	1.1%	1.5%	0.7%	1.4%
Carpets/Rugs/Carpet Padding	1.2%	3.1%	0.4%	1.9%
Automobile Tires	<0.1%	<0.1%	N/A	N/A
Miscellaneous Inorganic	3.4%	3.8%	2.5%	4.4%
Total Inorganics	**7.9%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.1%	<0.1%	<0.1%
Other Hazardous	0.1%	0.4%	<0.1%	0.2%
Total Household Hazardous Wastes	**0.2%**			
TOTALS	**100.0%**			

Notes: Composition based on 60 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Municipal Waste Composition

Exhibits 8 and 9 present a compilation of the 20 Single-Family Municipal waste samples collected and sorted during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability between the samples. Based on the samples collected, the three largest subcomponents, by weight, of the Single-Family Municipal waste stream are Food Waste (16.4 percent), Non-Recyclable Paper (8.1 percent), and Miscellaneous Organics (7.8 percent). The three largest recyclable subcomponents are Corrugated Cardboard (3.4 percent), Other Recyclable Paper (2.7 percent), and Other Plastic Container/Tubs (2.3 percent).

Exhibit 8.   Single-Family Municipal Waste Composition by Material Type
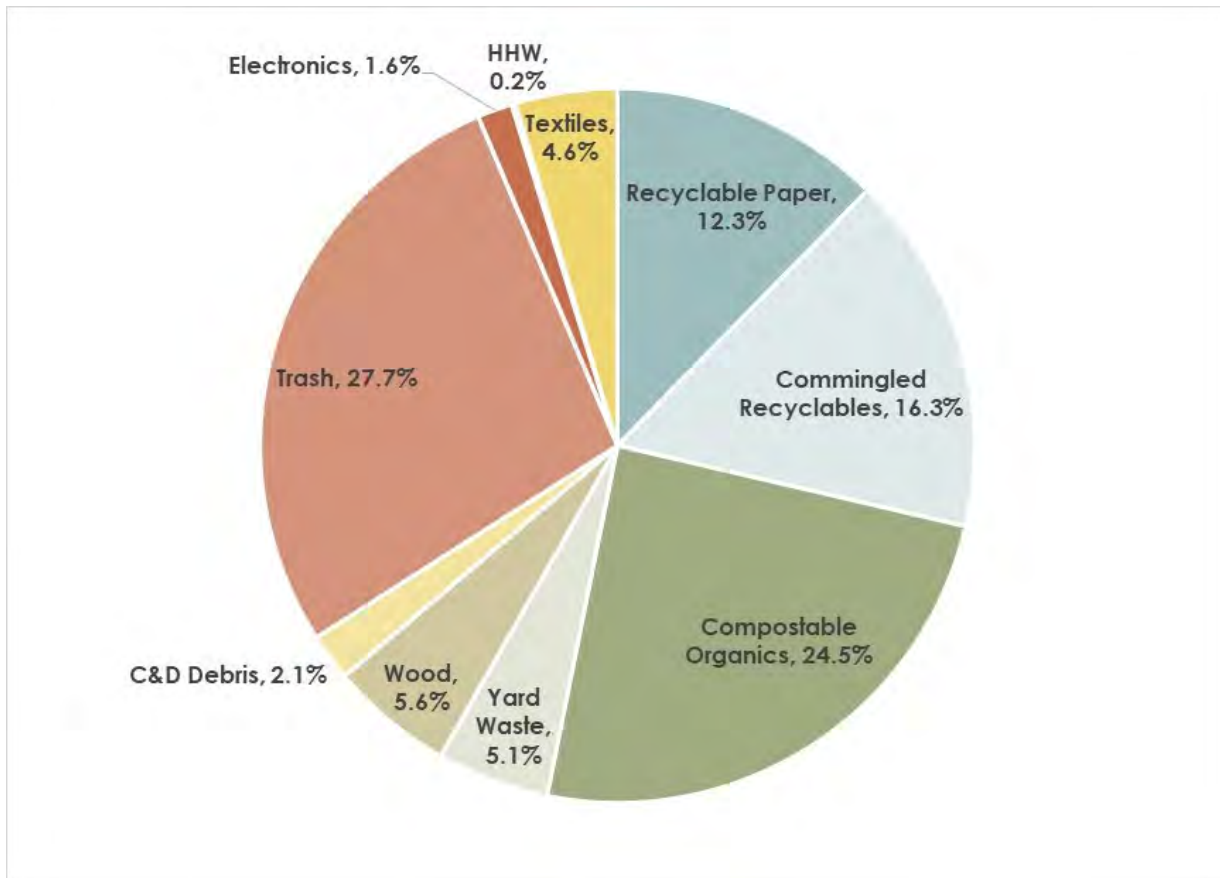
<p align="center">Exhibit 9. Single-Family Municipal Waste Composition</p>

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.2%	1.0%	0.7%	1.7%
Corrugated Cardboard	3.4%	3.2%	2.0%	4.8%
Paperboard	1.8%	0.9%	1.4%	2.1%
Aseptic/Coated Paper Containers	0.5%	0.3%	0.4%	0.6%
Office Paper	2.2%	1.7%	1.4%	2.9%
Carryout Paper Bags	0.6%	0.4%	0.4%	0.8%
Other Recyclable Mixed Paper	2.7%	1.3%	2.1%	3.2%
Non-Recyclable Paper	8.1%	2.5%	7.0%	9.2%
Total Paper	**20.4%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	0.7%	0.4%	0.5%	0.9%
Other PET (#1) Bottles	0.2%	0.3%	0.1%	0.3%
#1 PET Thermoforms	0.9%	0.8%	0.6%	1.3%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.3%	0.1%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.3%	0.2%	0.3%	0.4%
#3-#7 Bottles	<0.1%	0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	0.5%	0.6%	1.1%
Plastic Flower Pots	0.6%	1.9%	<0.1%	1.4%
Other Plastic Containers/Tubs	2.3%	0.9%	1.9%	2.7%
Film Plastic - Shopping Bags	0.4%	0.2%	0.3%	0.5%
Film Plastic - Other	6.8%	2.7%	5.6%	8.0%
Other Rigid Plastic	4.1%	5.1%	1.8%	6.3%
Total Plastic	**17.5%**			
ORGANIC				
Food Waste	16.4%	4.9%	14.3%	18.6%
Clothing/Linens/Textiles/Leather	4.6%	3.0%	3.3%	5.9%
Diapers & Sanitary Products	5.2%	4.2%	3.3%	7.0%
Fines	1.8%	0.8%	1.5%	2.2%
Miscellaneous Organics	7.8%	2.2%	6.8%	8.8%
Total Organics	**35.9%**			
YARD WASTE				
Grass/Leaves	1.9%	3.5%	0.4%	3.4%
Brush/Pruning	3.2%	3.8%	1.5%	4.8%
Total Yard Waste	**5.1%**			

Exhibit 9.　　Single-Family Municipal Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
WOOD				
Lumber	0.7%	1.5%	<0.1%	1.4%
Pallets	<0.1%	<0.1%	N/A	N/A
Other Wood	4.9%	4.6%	2.8%	6.9%
Total Wood	**5.6%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.4%	0.4%	0.3%	0.6%
Other Ferrous	1.9%	2.9%	0.7%	3.2%
Total Ferrous Metals	**2.3%**			
NON-FERROUS METAL				
Aluminum Cans	0.3%	0.3%	0.2%	0.5%
Aluminum Tins/Foil	0.4%	0.3%	0.3%	0.5%
Other Aluminum	0.4%	1.5%	<0.1%	1.0%
Total Non-Ferrous Metals	**1.1%**			
GLASS				
Clear	1.6%	0.9%	1.2%	2.0%
Brown	0.7%	1.0%	0.3%	1.2%
Green	0.7%	0.8%	0.4%	1.0%
Non-container Glass	0.4%	0.7%	0.1%	0.7%
Total Glass	**3.4%**			
INORGANIC				
Concrete/Brick/Rock	0.9%	1.4%	0.2%	1.5%
Sheet Rock	0.6%	1.5%	<0.1%	1.2%
Latex Paints	<0.1%	<0.1%	N/A	N/A
Fluorescent Lamps	<0.1%	0.1%	<0.1%	<0.1%
Electronics	1.6%	1.8%	0.8%	2.4%
Carpets/Rugs/Carpet Padding	0.7%	2.4%	<0.1%	1.8%
Automobile Tires	0.7%	2.2%	<0.1%	1.6%
Miscellaneous Inorganic	4.0%	4.2%	2.2%	5.9%
Total Inorganics	**8.4%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	N/A	N/A
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	N/A	N/A
Other Hazardous	0.1%	0.4%	<0.1%	0.3%
Total Household Hazardous Wastes	**0.2%**			
TOTALS	**100.0%**			

Notes: Composition based on 20 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Multi-Family Waste Composition

Exhibits 10 and 11 present a compilation of the 40 Multi-Family residential waste samples collected and sorted during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability between the samples. Based on the samples collected, the three largest subcomponents, by weight, of the Multi-Family waste stream are Food Waste (15.9 percent), Non-Recyclable Paper (7.5 percent), and Film Plastic - Other (7.3 percent). The three largest recyclable subcomponents are Corrugated Cardboard (4.3 percent), Other Recyclable Mixed Paper (3.9 percent), and Office Paper (1.9 percent).

Exhibit 10.   Multi-Family Composition by Material Type
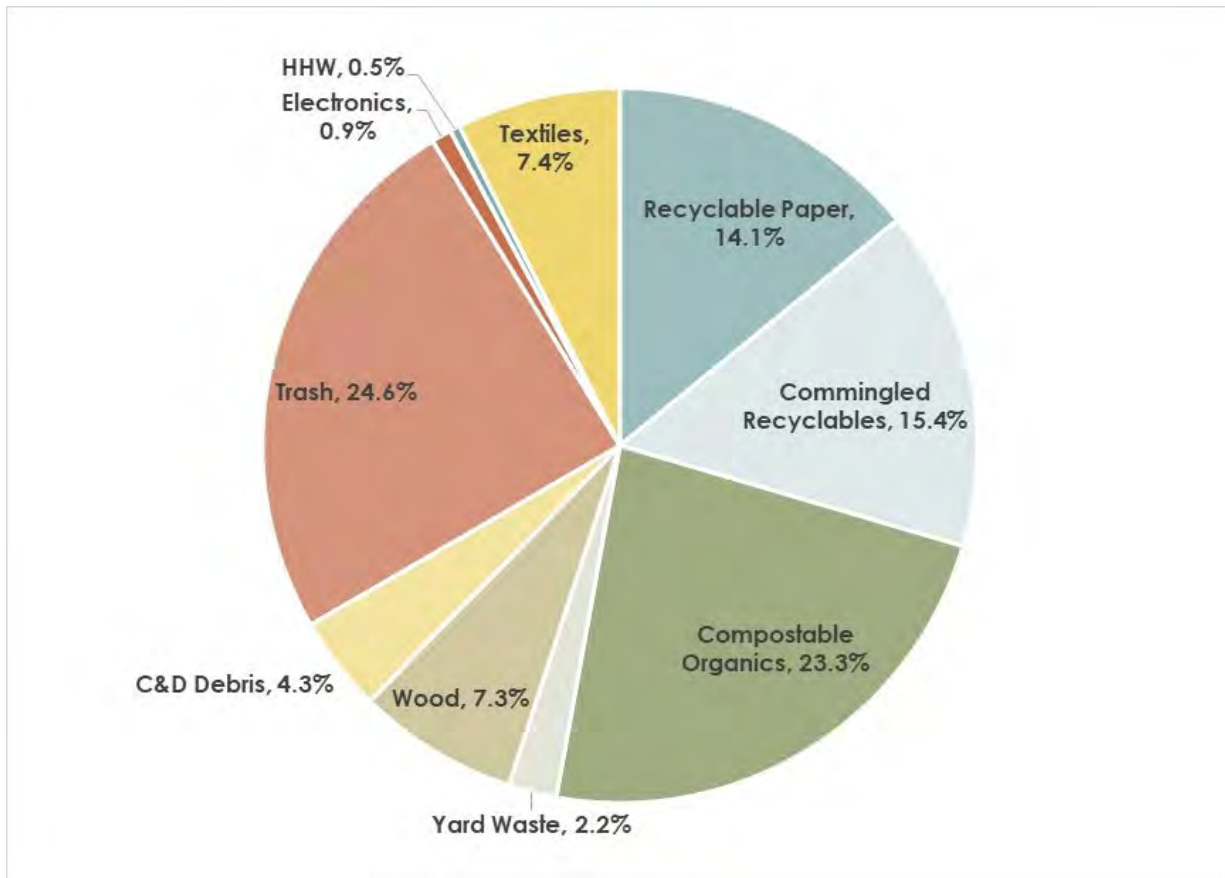
Exhibit 11. Multi-Family Waste Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.1%	0.9%	0.8%	1.3%
Corrugated Cardboard	4.3%	3.7%	3.2%	5.4%
Paperboard	1.8%	1.2%	1.5%	2.2%
Aseptic/Coated Paper Containers	0.6%	0.7%	0.4%	0.9%
Office Paper	1.9%	4.0%	0.7%	3.2%
Carryout Paper Bags	0.4%	0.3%	0.3%	0.5%
Other Recyclable Mixed Paper	3.9%	2.3%	3.2%	4.6%
Non-Recyclable Paper	7.5%	3.8%	6.3%	8.6%
Total Paper	**21.6%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	1.6%	0.7%	1.4%	1.8%
Other PET (#1) Bottles	0.2%	0.2%	0.1%	0.3%
#1 PET Thermoforms	0.7%	0.5%	0.6%	0.9%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.3%	0.2%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.6%	0.9%	0.3%	0.9%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.9%	0.6%	0.7%	1.1%
Plastic Flower Pots	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.9%	1.1%	1.6%	2.2%
Film Plastic - Shopping Bags	0.5%	0.3%	0.4%	0.5%
Film Plastic - Other	7.3%	2.5%	6.5%	8.1%
Other Rigid Plastic	3.7%	3.8%	2.5%	4.9%
Total Plastic	**17.9%**			
ORGANIC				
Food Waste	15.9%	5.5%	14.1%	17.6%
Clothing/Linens/Textiles/Leather	7.4%	8.2%	4.9%	10.0%
Diapers & Sanitary Products	4.2%	2.7%	3.3%	5.0%
Fines	1.6%	0.6%	1.4%	1.8%
Miscellaneous Organics	6.6%	1.5%	6.2%	7.1%
Total Organics	**35.7%**			
YARD WASTE				
Grass/Leaves	0.8%	2.1%	0.2%	1.5%
Brush/Pruning	1.3%	2.8%	0.5%	2.2%
Total Yard Waste	**2.2%**			

Exhibit 11.   Multi-Family Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
WOOD				
Lumber	0.8%	1.9%	0.2%	1.4%
Pallets	2.3%	7.7%	<0.1%	4.7%
Other Wood	4.2%	4.1%	2.9%	5.4%
Total Wood	**7.3%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.5%	0.6%	0.3%	0.7%
Other Ferrous	1.3%	2.0%	0.6%	1.9%
Total Ferrous Metals	**1.7%**			
NON-FERROUS METAL				
Aluminum Cans	0.3%	0.2%	0.3%	0.4%
Aluminum Tins/Foil	0.3%	0.3%	0.2%	0.4%
Other Aluminum	0.2%	0.3%	<0.1%	0.2%
Total Non-Ferrous Metals	**0.9%**			
GLASS				
Clear	1.6%	1.3%	1.2%	2.0%
Brown	0.8%	1.1%	0.5%	1.2%
Green	0.7%	0.9%	0.4%	1.0%
Non-container Glass	0.6%	1.4%	0.1%	1.0%
Total Glass	**3.6%**			
INORGANIC				
Concrete/Brick/Rock	1.1%	3.1%	0.1%	2.1%
Sheet Rock	1.2%	2.6%	0.3%	2.0%
Latex Paints	0.2%	0.8%	<0.1%	0.5%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	0.9%	1.6%	0.4%	1.4%
Carpets/Rugs/Carpet Padding	1.8%	3.6%	0.7%	2.9%
Automobile Tires	<0.1%	<0.1%	N/A	N/A
Miscellaneous Inorganic	3.4%	3.6%	2.3%	4.5%
Total Inorganics	**8.6%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	<0.1%	<0.1%
Other Hazardous	0.4%	1.6%	<0.1%	0.9%
Total Household Hazardous Wastes	**0.4%**			
TOTALS	**100.0%**			

Notes: Composition based on 40 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Non-Residential Waste Composition

Exhibits 12 and 13 present a compilation of the 120 Non-Residential waste samples collected and sorted during the four seasonal field efforts. The composition includes confidence intervals based on the number of samples and variability between the samples. Based on the samples collected, the three largest subcomponents, by weight, of the Non-Residential waste stream are Food Waste (14.8 percent), Film Plastic - Other (7.4 percent), and Non-Recyclable Paper (6.1 percent). The three largest recyclable subcomponents are Corrugated Cardboard (6.7 percent), Other Recyclable Paper (3.4 percent), and Paperboard (2.5 percent).

Exhibit 12.   Non-Residential Composition by Material Type
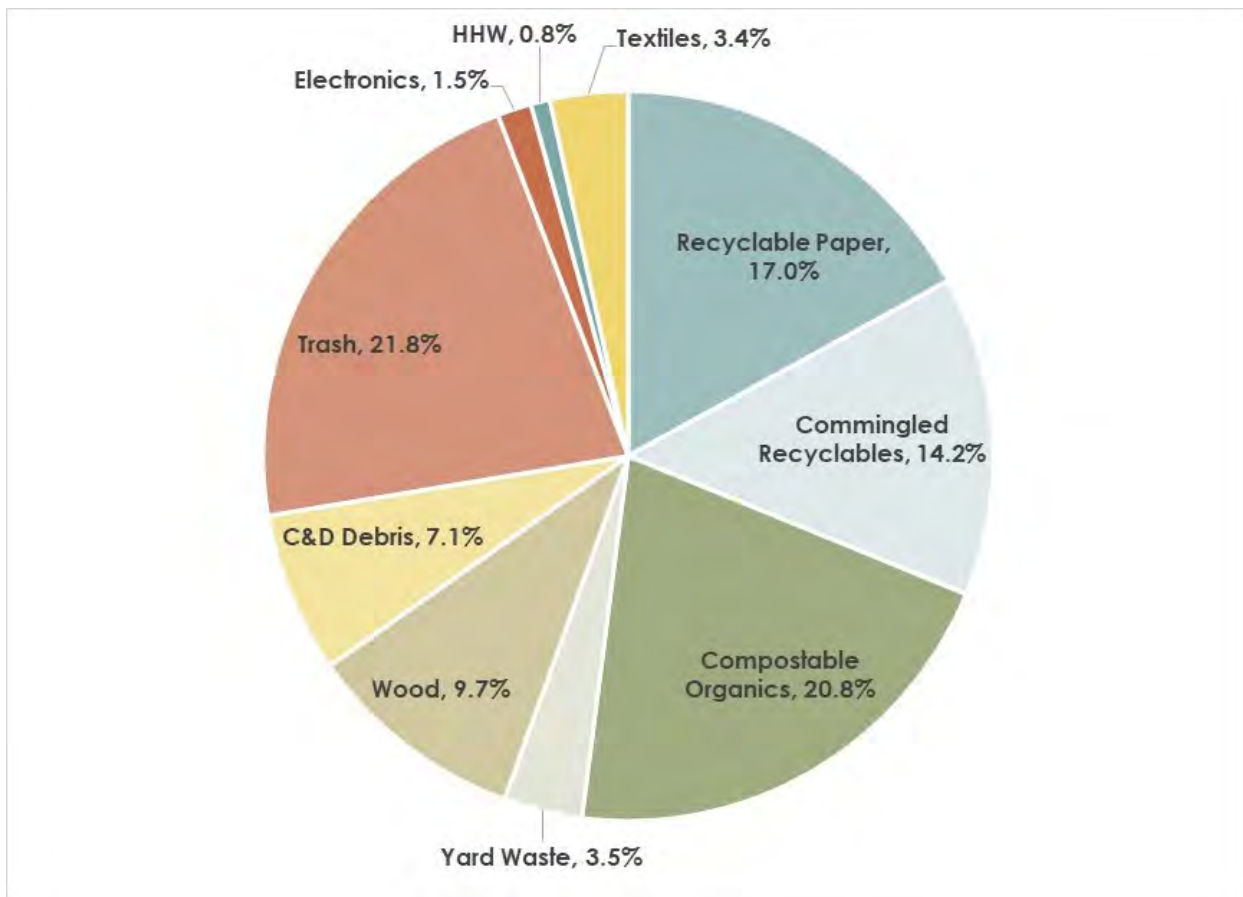
Exhibit 13.   Non-Residential Waste Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
PAPER				
Newspapers/Magazines/Catalogs/Books	1.4%	3.3%	0.8%	2.0%
Corrugated Cardboard	6.7%	7.5%	5.4%	8.1%
Paperboard	2.5%	3.6%	1.8%	3.1%
Aseptic/Coated Paper Containers	0.8%	1.8%	0.5%	1.1%
Office Paper	1.8%	2.0%	1.5%	2.2%
Carryout Paper Bags	0.6%	0.7%	0.5%	0.7%
Other Recyclable Mixed Paper	3.2%	2.3%	2.8%	3.6%
Non-Recyclable Paper	6.1%	3.2%	5.5%	6.6%
Total Paper	**23.1%**			
PLASTIC				
PET (#1) Bottle Bill Bottles	1.4%	0.9%	1.2%	1.5%
Other PET (#1) Bottles	0.2%	0.3%	0.2%	0.3%
#1 PET Thermoforms	0.9%	2.0%	0.6%	1.3%
HDPE (#2) Narrow Neck Bottles-Natural	0.4%	0.4%	0.3%	0.5%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.5%	0.3%	0.5%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	0.6%	0.7%	0.9%
Plastic Flower Pots	<0.1%	0.5%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.7%	1.1%	1.5%	1.9%
Film Plastic - Shopping Bags	0.4%	0.8%	0.3%	0.6%
Film Plastic - Other	7.4%	4.3%	6.6%	8.2%
Other Rigid Plastic	3.4%	4.1%	2.7%	4.1%
Total Plastic	**17.0%**			
ORGANIC				
Food Waste	14.8%	8.0%	13.4%	16.2%
Clothing/Linens/Textiles/Leather	3.4%	3.5%	2.8%	4.1%
Diapers & Sanitary Products	2.2%	2.6%	1.7%	2.6%
Fines	1.6%	0.9%	1.4%	1.7%
Miscellaneous Organics	6.2%	2.7%	5.7%	6.7%
Total Organics	**28.2%**			
YARD WASTE				
Grass/Leaves	1.5%	4.2%	0.7%	2.2%
Brush/Pruning	2.0%	4.7%	1.2%	2.9%
Total Yard Waste	**3.5%**			

Exhibit 11.   Non-Residential Waste Composition (continued)

Material Components	Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper
WOOD				
Lumber	2.6%	4.4%	1.9%	3.4%
Pallets	2.5%	5.3%	1.5%	3.4%
Other Wood	4.6%	6.3%	3.5%	5.7%
Total Wood	**9.7%**			
FERROUS METAL				
Ferous/Bi-metal Cans	0.4%	0.9%	0.3%	0.6%
Other Ferrous	0.9%	1.1%	0.7%	1.1%
Total Ferrous Metals	**1.3%**			
NON-FERROUS METAL				
Aluminum Cans	0.4%	0.3%	0.4%	0.5%
Aluminum Tins/Foil	0.3%	0.4%	0.2%	0.4%
Other Aluminum	0.6%	3.0%	<0.1%	1.1%
Total Non-Ferrous Metals	**1.3%**			
GLASS				
Clear	1.5%	1.6%	1.2%	1.8%
Brown	0.5%	1.4%	0.3%	0.8%
Green	0.6%	1.1%	0.4%	0.8%
Non-container Glass	0.2%	0.9%	<0.1%	0.4%
Total Glass	**2.8%**			
INORGANIC				
Concrete/Brick/Rock	1.3%	3.5%	0.6%	1.9%
Sheet Rock	1.4%	4.2%	0.7%	2.2%
Latex Paints	0.3%	1.6%	<0.1%	0.6%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	1.5%	3.1%	1.0%	2.1%
Carpets/Rugs/Carpet Padding	4.1%	9.5%	2.4%	5.8%
Automobile Tires	0.6%	2.5%	0.2%	1.1%
Miscellaneous Inorganic	2.8%	3.9%	2.1%	3.5%
Total Inorganics	**12.1%**			
HHW				
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.3%	<0.1%	0.1%
Other Hazardous	0.8%	2.1%	0.4%	1.1%
Total Household Hazardous Wastes	**0.8%**			
TOTALS	**100.0%**			

Notes: Composition based on 120 samples

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

SEASONAL RESULTS

The following exhibits show the seasonal composition for each generating sector and overall.

Weighted Overall Seasonal Composition

The following exhibits show the weighted overall waste stream by season. Seventy-five samples were collected from the different generating sectors each season.

Exhibit 14 shows the seasonal waste composition by material type. Materials such as yard waste and wood were more prevalent in the Spring, Summer, and Fall seasons. When comparing the 95 percent confidence intervals, it is evident that most materials do not fluctuate very much seasonally.

Exhibit 14.   Seasonal Overall Waste Composition by Material Type

Exhibit 15. Seasonal Overall Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	1.5%	0.6%	2.5%	0.9%	0.7%	1.1%	1.1%	0.9%	1.3%	1.6%	1.2%	2.1%
Corrugated Cardboard	5.0%	3.6%	6.4%	4.6%	3.6%	5.6%	5.3%	3.9%	6.7%	4.5%	3.2%	5.7%
Paperboard	2.1%	1.7%	2.5%	1.4%	1.2%	1.7%	2.5%	2.0%	3.1%	2.5%	1.6%	3.4%
Aseptic/Coated Paper Containers	0.9%	0.7%	1.1%	1.0%	0.5%	1.4%	0.4%	0.3%	0.4%	0.6%	0.5%	0.7%
Office Paper	1.9%	1.5%	2.3%	2.0%	1.2%	2.9%	1.9%	1.5%	2.3%	1.6%	1.3%	1.8%
Carryout Paper Bags	0.7%	0.5%	0.8%	0.3%	0.2%	0.4%	0.3%	0.3%	0.4%	0.9%	0.7%	1.0%
Other Recyclable Mixed Paper	3.0%	2.5%	3.5%	2.5%	2.1%	2.8%	3.8%	3.4%	4.3%	4.0%	3.5%	4.5%
Non-Recyclable Paper	6.9%	6.2%	7.6%	6.3%	5.4%	7.2%	6.9%	6.3%	7.6%	7.3%	6.7%	7.9%
Total Paper	**22.1%**			**19.0%**			**22.3%**			**23.0%**		
PET (#1) Bottle Bill Bottles	1.2%	1.0%	1.4%	1.2%	1.0%	1.4%	1.1%	1.0%	1.3%	1.3%	1.1%	1.4%
Other PET (#1) Bottles	0.2%	0.1%	0.3%	<0.1%	<0.1%	0.1%	0.2%	0.1%	0.2%	0.4%	0.3%	0.5%
#1 PET Thermoforms	1.1%	0.5%	1.7%	0.4%	0.3%	0.5%	1.0%	0.9%	1.2%	1.0%	0.8%	1.1%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.2%	0.4%	0.3%	0.2%	0.3%	0.4%	0.3%	0.4%	0.4%	0.4%	0.5%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.3%	0.5%	0.3%	0.3%	0.4%	0.6%	0.4%	0.7%	0.7%	0.5%	0.8%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	0.7%	0.9%	0.9%	0.7%	1.0%	0.9%	0.8%	1.0%	0.9%	0.8%	1.0%
Plastic Flower Pots	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	0.2%	<0.1%	0.4%	0.2%	<0.1%	0.3%
Other Plastic Containers/Tubs	1.7%	1.4%	2.0%	1.6%	1.4%	1.8%	1.9%	1.7%	2.1%	2.3%	2.0%	2.5%
Film Plastic - Shopping Bags	0.6%	0.5%	0.7%	0.4%	0.4%	0.5%	0.4%	0.3%	0.5%	0.5%	0.2%	0.7%
Film Plastic - Other	7.1%	6.4%	7.8%	6.8%	5.7%	7.9%	6.8%	6.3%	7.4%	8.5%	7.9%	9.1%
Other Rigid Plastic	3.0%	2.3%	3.7%	5.5%	4.3%	6.8%	3.2%	2.4%	3.9%	2.1%	1.8%	2.5%
Total Plastic	**16.3%**			**17.4%**			**16.7%**			**18.2%**		
Food Waste	17.0%	15.6%	18.3%	15.2%	13.6%	16.8%	16.6%	15.0%	18.2%	17.5%	15.8%	19.1%
Clothing/Linens/Textiles/Leather	5.2%	4.1%	6.2%	5.2%	3.8%	6.7%	4.7%	3.8%	5.5%	5.2%	4.2%	6.2%
Diapers & Sanitary Products	2.8%	2.2%	3.3%	2.6%	2.0%	3.2%	3.3%	2.8%	3.9%	4.2%	3.4%	4.9%
Fines	1.6%	1.4%	1.8%	1.6%	1.2%	1.9%	1.9%	1.7%	2.1%	1.9%	1.7%	2.1%
Miscellaneous Organics	6.5%	6.2%	6.9%	6.3%	5.8%	6.7%	7.2%	6.6%	7.8%	6.7%	6.3%	7.1%
Total Organics	**33.0%**			**30.8%**			**33.8%**			**35.5%**		
Grass/Leaves	1.0%	0.5%	1.6%	3.3%	2.3%	4.2%	2.7%	1.4%	4.0%	0.2%	<0.1%	0.3%
Brush/Pruning	3.1%	2.0%	4.2%	3.2%	2.0%	4.3%	2.2%	1.4%	3.1%	0.9%	0.5%	1.3%
Total Yard Waste	**4.1%**			**6.5%**			**4.9%**			**1.1%**		
Lumber	2.5%	1.5%	3.5%	1.8%	1.1%	2.5%	2.1%	1.2%	2.9%	1.2%	0.6%	1.9%
Pallets	1.4%	0.6%	2.2%	3.6%	1.9%	5.3%	0.8%	0.2%	1.5%	0.8%	0.1%	1.6%
Other Wood	4.9%	3.5%	6.3%	4.7%	3.4%	6.0%	3.2%	2.4%	3.9%	2.8%	1.8%	3.8%
Total Wood	**8.9%**			**10.1%**			**6.1%**			**4.9%**		

Exhibit 15.   Seasonal Overall Waste Composition (continued)

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
Ferous/Bi-metal Cans	0.4%	0.3%	0.5%	0.3%	0.1%	0.4%	0.6%	0.4%	0.7%	0.7%	0.5%	0.9%
Other Ferrous	1.2%	0.7%	1.7%	1.4%	0.9%	1.9%	1.1%	0.8%	1.4%	1.0%	0.6%	1.4%
Total Ferrous Metals	**1.6%**			**1.6%**			**1.7%**			**1.7%**		
Aluminum Cans	0.3%	0.3%	0.4%	0.4%	0.3%	0.4%	0.4%	0.3%	0.5%	0.4%	0.4%	0.5%
Aluminum Tins/Foil	0.3%	0.2%	0.3%	0.3%	0.2%	0.3%	0.5%	0.4%	0.6%	0.5%	0.4%	0.6%
Other Aluminum	<0.1%	<0.1%	0.1%	0.6%	<0.1%	1.2%	0.3%	<0.1%	0.5%	0.6%	<0.1%	1.2%
Total Non-Ferrous Metals	**0.6%**			**1.2%**			**1.1%**			**1.5%**		
Clear	1.4%	1.1%	1.7%	1.5%	1.0%	1.9%	1.2%	1.0%	1.5%	1.6%	1.3%	1.9%
Brown	0.6%	0.4%	0.7%	0.5%	0.1%	0.8%	0.4%	0.3%	0.5%	0.9%	0.6%	1.2%
Green	0.6%	0.4%	0.8%	0.3%	0.2%	0.4%	0.5%	0.4%	0.7%	0.9%	0.6%	1.3%
Non-container Glass	0.3%	0.1%	0.5%	0.2%	<0.1%	0.5%	0.6%	0.3%	1.0%	0.4%	0.2%	0.5%
Total Glass	**2.9%**			**2.5%**			**2.8%**			**3.8%**		
Concrete/Brick/Rock	0.8%	0.2%	1.4%	1.4%	0.5%	2.2%	1.0%	0.4%	1.7%	1.1%	0.5%	1.6%
Sheet Rock	1.1%	0.6%	1.5%	1.7%	0.5%	2.9%	1.1%	0.5%	1.7%	1.1%	0.4%	1.7%
Latex Paints	0.6%	0.1%	1.0%	0.3%	<0.1%	0.5%	0.4%	<0.1%	0.7%	0.2%	<0.1%	0.4%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	1.8%	1.0%	2.6%	1.1%	0.6%	1.6%	0.7%	0.4%	1.0%	1.5%	1.1%	2.0%
Carpets/Rugs/Carpet Padding	3.2%	1.1%	5.2%	3.3%	1.8%	4.9%	2.3%	1.0%	3.6%	1.8%	0.7%	3.0%
Automobile Tires	0.1%	<0.1%	0.4%	0.9%	0.2%	1.6%	0.1%	<0.1%	0.3%	0.2%	<0.1%	0.4%
Miscellaneous Inorganic	2.7%	2.1%	3.2%	1.9%	1.3%	2.5%	3.8%	2.7%	4.9%	3.9%	2.9%	4.8%
Total Inorganics	**10.2%**			**10.7%**			**9.4%**			**9.8%**		
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%
Other Hazardous	0.1%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	1.1%	0.6%	1.7%	0.5%	0.2%	0.9%
Total HHW	**0.2%**			**<0.1%**			**1.2%**			**0.7%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositions based on 75 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict A Seasonal Waste Composition

The following exhibits show the Single-Family Subdistrict A waste stream by season. Fifteen samples were collected from Single-Family Subdistrict A collection vehicles each season.

Exhibit 16.   Seasonal Single-Family Subdistrict A Waste Composition by Material Type

Exhibit 17.   Seasonal Single-Family Subdistrict A Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	1.3%	0.9%	1.8%	1.3%	0.6%	1.9%	1.3%	0.9%	1.7%	2.6%	0.8%	4.4%
Corrugated Cardboard	1.7%	0.5%	2.9%	3.3%	1.8%	4.7%	3.4%	1.8%	5.0%	1.6%	1.1%	2.1%
Paperboard	2.0%	1.4%	2.6%	1.3%	0.9%	1.6%	1.8%	1.1%	2.4%	1.9%	1.5%	2.3%
Aseptic/Coated Paper Containers	0.5%	0.4%	0.6%	0.9%	0.5%	1.2%	0.3%	0.3%	0.4%	0.7%	0.4%	1.0%
Office Paper	2.1%	1.4%	2.9%	1.2%	0.4%	1.9%	1.4%	0.9%	1.9%	1.7%	1.1%	2.3%
Carryout Paper Bags	0.5%	0.4%	0.6%	0.3%	0.2%	0.4%	0.3%	0.2%	0.4%	1.0%	0.8%	1.2%
Other Recyclable Mixed Paper	4.1%	2.9%	5.3%	1.9%	1.3%	2.5%	3.9%	2.9%	4.8%	3.4%	2.4%	4.4%
Non-Recyclable Paper	8.5%	6.7%	10.2%	7.0%	5.2%	8.7%	7.5%	6.2%	8.7%	7.9%	6.9%	8.9%
Total Paper	**20.7%**			**17.0%**			**19.8%**			**20.8%**		
PLASTIC												
PET (#1) Bottle Bill Bottles	0.6%	0.4%	0.9%	0.7%	0.5%	0.9%	0.8%	0.5%	1.1%	0.8%	0.6%	1.1%
Other PET (#1) Bottles	0.1%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.2%	0.5%	0.4%	0.6%
#1 PET Thermoforms	0.9%	0.7%	1.2%	0.3%	0.2%	0.4%	1.1%	0.8%	1.4%	0.9%	0.6%	1.3%
HDPE (#2) Narrow Neck Bottles-Natural	0.2%	0.1%	0.3%	0.2%	0.1%	0.3%	0.3%	0.2%	0.4%	0.4%	0.2%	0.5%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.2%	0.5%	0.4%	0.3%	0.6%	0.8%	0.3%	1.3%	0.5%	0.4%	0.7%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Polysytrene	0.8%	0.5%	1.1%	0.8%	0.4%	1.2%	1.0%	0.8%	1.2%	0.8%	0.6%	1.1%
Plastic Flower Pots	<0.1%	N/A	N/A	0.1%	<0.1%	0.3%	0.1%	<0.1%	0.2%	0.2%	<0.1%	0.4%
Other Plastic Containers/Tubs	1.9%	1.4%	2.4%	1.7%	1.3%	2.0%	1.8%	1.5%	2.2%	3.0%	2.1%	4.0%
Film Plastic - Shopping Bags	0.8%	0.6%	1.1%	0.5%	0.4%	0.6%	0.4%	0.3%	0.5%	0.7%	0.4%	1.0%
Film Plastic - Other	8.1%	6.5%	9.7%	5.8%	4.9%	6.6%	6.7%	5.6%	7.8%	9.0%	7.9%	10.1%
Other Rigid Plastic	3.5%	1.4%	5.6%	5.2%	2.9%	7.5%	2.5%	1.5%	3.6%	3.1%	2.2%	3.9%
Total Plastic	**17.4%**			**15.7%**			**15.6%**			**20.0%**		
ORGANIC												
Food Waste	17.8%	15.7%	19.8%	18.0%	14.5%	21.5%	20.3%	17.0%	23.5%	21.2%	17.1%	25.3%
Clothing/Linens/Textiles/Leather	3.7%	2.8%	4.7%	5.9%	3.8%	7.9%	6.5%	4.1%	9.0%	6.1%	4.2%	8.0%
Diapers & Sanitary Products	4.2%	2.8%	5.7%	3.1%	1.6%	4.6%	4.2%	3.2%	5.2%	3.9%	2.8%	4.9%
Fines	1.8%	1.6%	2.1%	2.4%	0.6%	4.3%	2.1%	1.8%	2.3%	2.2%	1.8%	2.5%
Miscellaneous Organics	7.3%	6.6%	8.1%	6.8%	6.3%	7.4%	7.0%	5.9%	8.1%	6.7%	6.2%	7.2%
Total Organics	**34.9%**			**36.2%**			**40.1%**			**40.1%**		
YARD WASTE												
Grass/Leaves	2.0%	<0.1%	4.0%	7.4%	4.5%	10.2%	4.2%	0.3%	8.1%	0.2%	<0.1%	0.6%
Brush/Pruning	6.3%	3.8%	8.7%	2.9%	0.4%	5.4%	2.2%	0.6%	3.8%	1.0%	0.2%	1.8%
Total Yard Waste	**8.3%**			**10.3%**			**6.4%**			**1.2%**		
WOOD												
Lumber	2.1%	0.3%	4.0%	0.5%	<0.1%	1.0%	0.5%	<0.1%	1.2%	0.9%	<0.1%	2.2%
Pallets	0.5%	<0.1%	1.4%	0.8%	<0.1%	2.2%	0.3%	<0.1%	1.0%	0.6%	<0.1%	1.8%
Other Wood	2.4%	0.5%	4.2%	5.0%	3.1%	6.8%	2.2%	1.0%	3.3%	2.0%	0.8%	3.3%
Total Wood	**5.0%**			**6.2%**			**3.0%**			**3.6%**		

| | Spring | | | Summer | | | Fall | | | Winter | | |
Material Components	Mean Composition	Confidence Limits Lower	Upper	Mean Composition	Confidence Limits Lower	Upper	Mean Composition	Confidence Limits Lower	Upper	Mean Composition	Confidence Limits Lower	Upper
FERROUS METAL												
Ferous/Bi-metal Cans	0.5%	0.4%	0.6%	0.4%	<0.1%	0.6%	0.4%	0.3%	0.6%	0.8%	0.4%	1.2%
Other Ferrous	2.9%	0.3%	5.5%	0.9%	0.4%	1.4%	1.0%	0.6%	1.5%	1.3%	<0.1%	3.0%
Total Ferrous Metals	**3.4%**			**1.3%**			**1.5%**			**2.1%**		
NON-FERROUS METAL												
Aluminum Cans	0.2%	0.1%	0.3%	0.3%	0.2%	0.5%	0.3%	0.2%	0.4%	0.3%	0.2%	0.5%
Aluminum Tins/Foil	0.4%	0.2%	0.5%	0.3%	0.2%	0.3%	0.7%	0.4%	0.9%	0.7%	0.6%	0.9%
Other Aluminum	0.3%	<0.1%	0.6%	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	0.4%	0.3%	<0.1%	0.5%
Total Non-Ferrous Metals	**0.8%**			**0.6%**			**1.1%**			**1.3%**		
GLASS												
Clear	1.3%	0.2%	2.3%	0.9%	0.4%	1.4%	1.2%	0.7%	1.7%	1.1%	0.6%	1.6%
Brown	0.5%	<0.1%	0.9%	0.5%	<0.1%	0.8%	0.4%	0.2%	0.6%	0.4%	0.1%	0.7%
Green	0.6%	0.2%	0.9%	0.2%	<0.1%	0.4%	0.5%	0.2%	0.8%	0.4%	<0.1%	0.7%
Non-container Glass	0.2%	<0.1%	0.4%	0.2%	<0.1%	0.3%	0.8%	0.3%	1.2%	0.5%	<0.1%	0.9%
Total Glass	**2.5%**			**1.7%**			**2.9%**			**2.4%**		
INORGANIC												
Concrete/Brick/Rock	0.3%	<0.1%	0.7%	0.7%	<0.1%	1.3%	1.4%	<0.1%	2.7%	1.5%	0.3%	2.8%
Sheet Rock	0.8%	<0.1%	1.6%	2.0%	<0.1%	5.2%	1.5%	<0.1%	3.0%	1.4%	<0.1%	3.3%
Latex Paints	0.8%	<0.1%	1.5%	<0.1%	<0.1%	<0.1%	0.7%	<0.1%	1.7%	0.2%	<0.1%	0.6%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.4%	<0.1%	N/A	N/A
Electronics	1.0%	0.3%	1.7%	1.5%	<0.1%	3.2%	0.9%	0.5%	1.4%	1.7%	0.7%	2.7%
Carpets/Rugs/Carpet Padding	1.9%	0.4%	3.5%	4.6%	1.5%	7.7%	1.3%	<0.1%	3.9%	0.3%	<0.1%	0.9%
Automobile Tires	<0.1%	N/A	N/A	0.6%	<0.1%	1.7%	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Miscellaneous Inorganic	2.1%	1.1%	3.1%	1.3%	0.5%	2.2%	3.4%	1.7%	5.1%	3.2%	1.0%	5.3%
Total Inorganics	**6.9%**			**10.8%**			**9.4%**			**8.3%**		
HHW												
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%
Other Hazardous	<0.1%	N/A	N/A	<0.1%	N/A	N/A	0.2%	<0.1%	0.6%	<0.1%	<0.1%	0.2%
Total HHW	**<0.1%**			**<0.1%**			**0.3%**			**0.2%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositions based on 15 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict B Seasonal Waste Composition

The following exhibits show the Single-Family Subdistrict B waste stream by season. Fifteen samples were collected from Single-Family Subdistrict B collection vehicles each season.

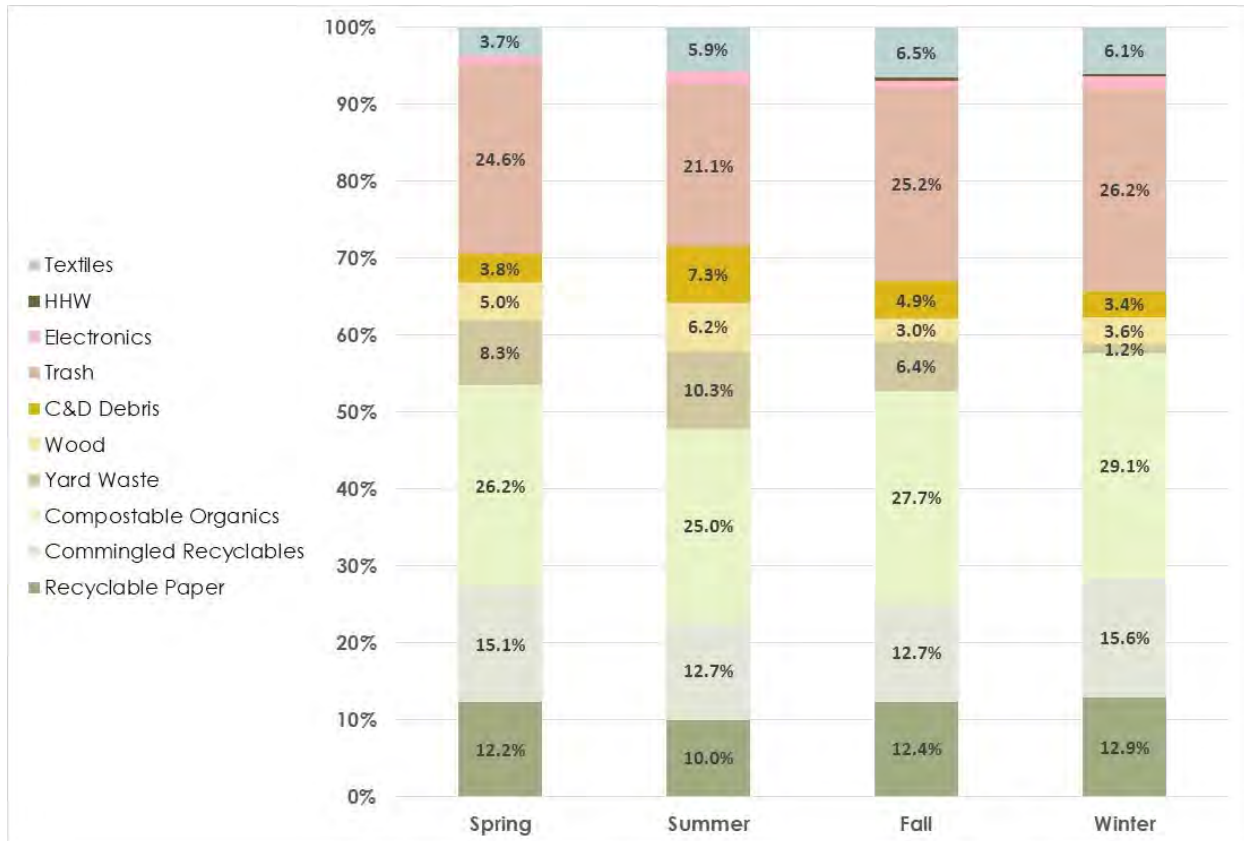Exhibit 18. Seasonal Single-Family Subdistrict B Composition by Material Type
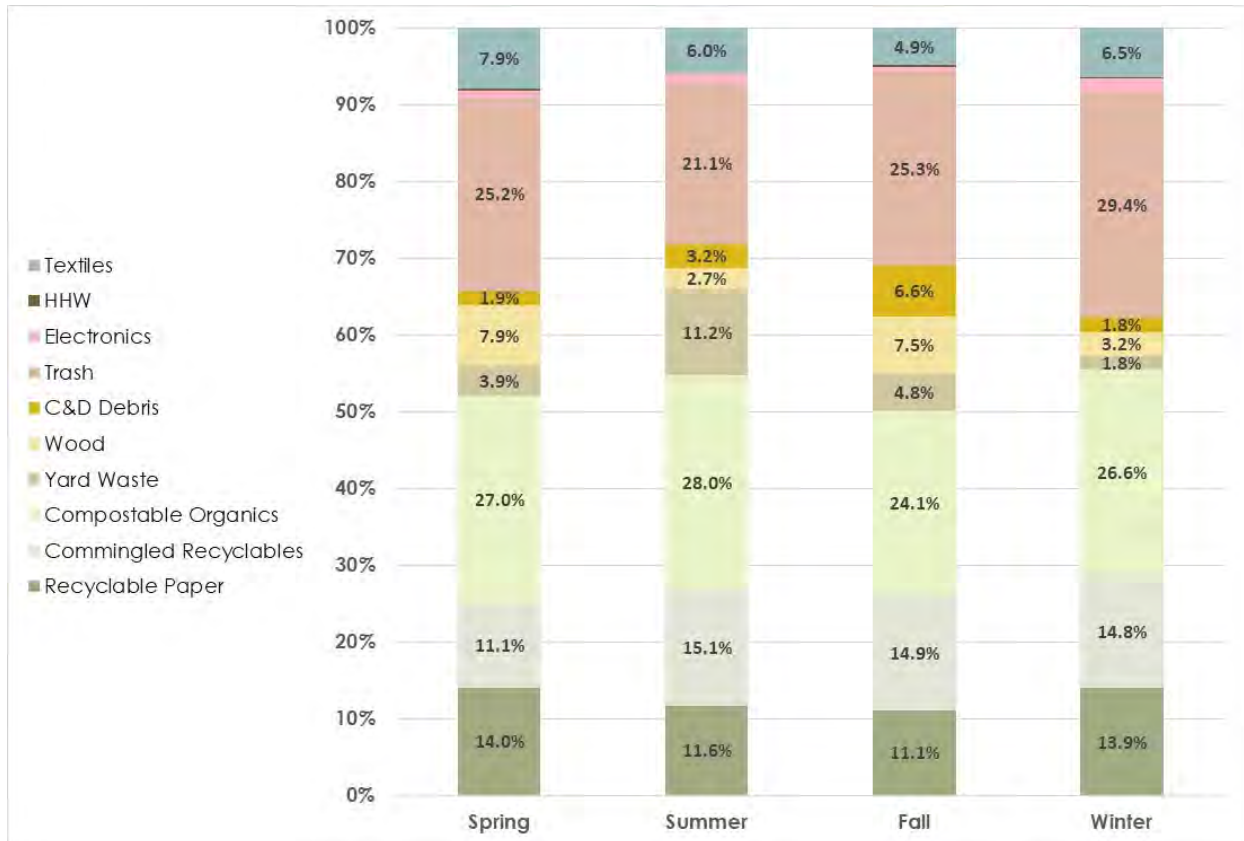
Exhibit 19.   Seasonal Single-Family Subdistrict B Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	1.1%	0.7%	1.5%	0.7%	0.5%	0.9%	0.9%	0.6%	1.1%	1.5%	0.9%	2.1%
Corrugated Cardboard	3.4%	1.0%	5.7%	2.6%	1.1%	4.0%	3.1%	1.6%	4.6%	3.7%	1.4%	6.0%
Paperboard	2.1%	1.4%	2.7%	2.0%	1.3%	2.7%	1.8%	1.4%	2.3%	2.2%	1.6%	2.8%
Aseptic/Coated Paper Containers	0.8%	0.5%	1.1%	0.9%	0.5%	1.3%	0.3%	0.2%	0.4%	0.5%	0.3%	0.8%
Office Paper	2.5%	1.4%	3.7%	2.1%	0.6%	3.6%	1.4%	0.9%	1.8%	1.5%	1.1%	1.8%
Carryout Paper Bags	0.5%	0.3%	0.8%	0.4%	0.2%	0.6%	0.5%	0.3%	0.6%	0.9%	0.5%	1.2%
Other Recyclable Mixed Paper	3.6%	2.3%	4.8%	3.0%	2.2%	3.9%	3.2%	2.5%	3.8%	3.6%	2.8%	4.5%
Non-Recyclable Paper	7.8%	6.1%	9.4%	7.5%	5.9%	9.1%	6.8%	5.4%	8.2%	7.0%	6.0%	7.9%
Total Paper	**21.7%**			**19.1%**			**17.9%**			**20.9%**		
PLASTIC												
PET (#1) Bottle Bill Bottles	1.0%	0.5%	1.4%	1.2%	0.6%	1.9%	0.8%	0.6%	0.9%	0.9%	0.7%	1.1%
Other PET (#1) Bottles	0.2%	<0.1%	0.2%	<0.1%	<0.1%	0.1%	0.2%	<0.1%	0.3%	0.4%	0.2%	0.6%
#1 PET Thermoforms	0.9%	0.6%	1.2%	0.5%	0.3%	0.6%	1.1%	0.9%	1.4%	0.9%	0.7%	1.2%
HDPE (#2) Narrow Neck Bottles-Natural	0.2%	0.1%	0.4%	0.3%	0.1%	0.4%	0.3%	0.2%	0.4%	0.4%	0.2%	0.5%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.3%	0.7%	0.4%	0.2%	0.6%	0.5%	0.4%	0.7%	0.6%	0.5%	0.8%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	0.1%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Polysytrene	0.7%	0.5%	1.0%	1.0%	0.7%	1.2%	0.7%	0.5%	0.9%	1.4%	1.1%	1.8%
Plastic Flower Pots	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	0.4%	0.2%	<0.1%	0.3%	0.1%	<0.1%	0.3%
Other Plastic Containers/Tubs	1.6%	1.1%	2.2%	1.7%	1.4%	2.0%	1.7%	1.4%	2.0%	2.7%	2.2%	3.2%
Film Plastic - Shopping Bags	0.8%	0.4%	1.2%	0.5%	0.4%	0.7%	0.4%	0.3%	0.5%	0.3%	0.2%	0.5%
Film Plastic - Other	7.3%	5.9%	8.7%	6.0%	4.5%	7.4%	6.4%	5.6%	7.2%	9.2%	8.2%	10.2%
Other Rigid Plastic	1.7%	1.0%	2.5%	4.8%	2.6%	7.0%	3.9%	1.9%	6.0%	2.4%	1.8%	3.0%
Total Plastic	**15.0%**			**16.6%**			**16.1%**			**19.4%**		
ORGANIC												
Food Waste	19.2%	16.8%	21.6%	20.5%	15.9%	25.1%	17.3%	14.7%	19.9%	19.6%	17.0%	22.3%
Clothing/Linens/Textiles/Leather	7.9%	5.2%	10.5%	6.0%	2.8%	9.3%	4.9%	3.5%	6.3%	6.5%	4.3%	8.6%
Diapers & Sanitary Products	3.3%	2.0%	4.6%	3.3%	1.4%	5.1%	3.6%	2.3%	4.8%	5.1%	3.6%	6.7%
Fines	1.6%	1.2%	1.9%	2.0%	1.3%	2.6%	2.1%	1.6%	2.5%	2.0%	1.6%	2.4%
Miscellaneous Organics	7.6%	6.9%	8.3%	7.3%	6.6%	8.1%	7.0%	6.4%	7.7%	7.4%	6.6%	8.2%
Total Organics	**39.6%**			**39.1%**			**34.9%**			**40.7%**		
YARD WASTE												
Grass/Leaves	0.6%	<0.1%	1.5%	5.6%	3.1%	8.0%	2.3%	<0.1%	4.7%	0.2%	<0.1%	0.6%
Brush/Pruning	3.2%	0.9%	5.5%	5.7%	3.2%	8.2%	2.5%	1.2%	3.7%	1.5%	0.5%	2.6%
Total Yard Waste	**3.9%**			**11.2%**			**4.8%**			**1.8%**		
WOOD												
Lumber	3.3%	1.0%	5.7%	0.6%	<0.1%	1.2%	2.6%	0.6%	4.6%	1.7%	<0.1%	3.9%
Pallets	0.8%	<0.1%	2.3%	<0.1%	N/A	N/A	1.2%	<0.1%	2.9%	<0.1%	N/A	N/A
Other Wood	3.8%	1.2%	6.5%	2.0%	0.5%	3.6%	3.6%	1.9%	5.4%	1.4%	0.4%	2.5%
Total Wood	**7.9%**			**2.7%**			**7.5%**			**3.2%**		

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
FERROUS METAL												
Ferous/Bi-metal Cans	0.5%	0.3%	0.6%	0.2%	0.2%	0.3%	0.5%	0.3%	0.7%	1.0%	0.5%	1.5%
Other Ferrous	0.8%	0.3%	1.2%	2.1%	0.3%	3.8%	1.2%	0.7%	1.7%	0.9%	0.1%	1.7%
Total Ferrous Metals	**1.2%**			**2.3%**			**1.7%**			**1.9%**		
NON-FERROUS METAL												
Aluminum Cans	0.5%	0.4%	0.7%	0.4%	0.3%	0.4%	0.4%	0.2%	0.7%	0.4%	0.2%	0.5%
Aluminum Tins/Foil	0.3%	0.1%	0.4%	0.4%	0.3%	0.6%	0.5%	0.4%	0.6%	0.6%	0.5%	0.8%
Other Aluminum	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	0.7%	<0.1%	1.7%	0.2%	<0.1%	0.4%
Total Non-Ferrous Metals	**0.8%**			**0.8%**			**1.6%**			**1.2%**		
GLASS												
Clear	1.1%	0.7%	1.6%	1.6%	0.7%	2.5%	1.5%	1.0%	2.0%	1.3%	0.6%	1.9%
Brown	0.6%	0.2%	1.1%	0.2%	<0.1%	0.4%	0.6%	0.3%	0.9%	0.4%	<0.1%	0.8%
Green	0.3%	<0.1%	0.6%	0.4%	<0.1%	0.7%	0.4%	0.2%	0.7%	1.3%	0.1%	2.4%
Non-container Glass	0.2%	<0.1%	0.4%	0.1%	<0.1%	0.3%	1.0%	<0.1%	2.3%	0.9%	0.3%	1.5%
Total Glass	**2.3%**			**2.3%**			**3.5%**			**3.8%**		
INORGANIC												
Concrete/Brick/Rock	0.2%	<0.1%	0.6%	1.2%	<0.1%	2.5%	1.4%	<0.1%	3.2%	0.3%	<0.1%	0.8%
Sheet Rock	0.7%	<0.1%	1.8%	0.4%	<0.1%	0.9%	1.8%	<0.1%	3.6%	0.8%	<0.1%	1.7%
Latex Paints	0.6%	<0.1%	1.2%	0.3%	<0.1%	0.7%	1.0%	<0.1%	2.5%	0.1%	<0.1%	0.4%
Fluorescent Lamps	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	0.9%	0.4%	1.4%	1.0%	<0.1%	2.0%	0.6%	0.2%	0.9%	1.7%	0.8%	2.7%
Carpets/Rugs/Carpet Padding	0.4%	<0.1%	1.1%	1.3%	<0.1%	3.0%	2.4%	<0.1%	4.8%	0.5%	<0.1%	1.3%
Automobile Tires	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Miscellaneous Inorganic	4.4%	2.7%	6.0%	1.4%	0.7%	2.2%	4.6%	1.6%	7.6%	3.3%	1.9%	4.8%
Total Inorganics	**7.2%**			**5.6%**			**11.7%**			**6.9%**		
HHW												
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%
Other Hazardous	0.3%	<0.1%	0.5%	<0.1%	N/A	N/A	0.2%	<0.1%	0.5%	<0.1%	<0.1%	0.3%
Total HHW	**0.3%**			**<0.1%**			**0.2%**			**0.2%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositions based on 15 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Municipal Seasonal Waste Composition

The following exhibits show the Single-Family Municipal waste stream by season. Five samples were collected from Single-Family Municipal collection vehicles each season.

Exhibit 20.   Seasonal Single-Family Municipal Waste Composition by Material Type

Exhibit 21. Seasonal Single-Family Municipal Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	1.7%	0.8%	2.6%	0.6%	0.3%	0.9%	1.1%	0.4%	1.7%	1.5%	<0.1%	2.9%
Corrugated Cardboard	4.0%	1.2%	6.9%	2.0%	<0.1%	4.1%	3.6%	1.4%	5.8%	4.0%	<0.1%	8.0%
Paperboard	1.6%	1.1%	2.1%	1.0%	0.6%	1.4%	1.9%	1.6%	2.3%	2.5%	1.5%	3.5%
Aseptic/Coated Paper Containers	0.7%	0.3%	1.1%	0.6%	0.3%	0.8%	0.4%	0.2%	0.5%	0.3%	0.2%	0.5%
Office Paper	2.8%	0.5%	5.0%	1.5%	<0.1%	3.1%	2.0%	0.5%	3.6%	2.3%	1.9%	2.8%
Carryout Paper Bags	0.6%	0.2%	1.0%	0.7%	0.2%	1.1%	0.4%	0.2%	0.7%	0.9%	0.4%	1.3%
Other Recyclable Mixed Paper	2.6%	1.1%	4.1%	2.4%	1.1%	3.7%	3.0%	1.8%	4.1%	2.7%	2.0%	3.4%
Non-Recyclable Paper	9.1%	5.9%	12.2%	8.7%	6.2%	11.2%	7.5%	5.7%	9.2%	7.1%	6.2%	8.1%
Total Paper	**23.0%**			**17.5%**			**19.9%**			**21.3%**		
PLASTIC												
PET (#1) Bottle Bill Bottles	0.4%	0.2%	0.7%	0.7%	0.4%	1.1%	0.9%	0.8%	1.1%	0.7%	0.2%	1.3%
Other PET (#1) Bottles	0.1%	<0.1%	0.2%	0.1%	<0.1%	0.3%	0.2%	<0.1%	0.4%	0.4%	<0.1%	0.8%
#1 PET Thermoforms	0.4%	0.1%	0.6%	0.6%	0.2%	1.1%	1.3%	0.6%	2.1%	1.4%	0.7%	2.1%
HDPE (#2) Narrow Neck Bottles-Natural	0.2%	<0.1%	0.3%	0.2%	<0.1%	0.4%	0.3%	0.2%	0.4%	0.4%	<0.1%	0.8%
HDPE (#2) Narrow Neck Bottles-Colored	0.2%	<0.1%	0.4%	0.4%	0.1%	0.6%	0.3%	<0.1%	0.6%	0.5%	0.4%	0.5%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.3%
Banned Polystyrene	0.1%	<0.1%	0.3%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Polysytrene	0.6%	0.2%	1.0%	0.8%	0.1%	1.6%	1.1%	0.7%	1.5%	0.8%	0.5%	1.1%
Plastic Flower Pots	0.1%	<0.1%	0.3%	<0.1%	<0.1%	0.2%	1.8%	<0.1%	5.1%	0.3%	<0.1%	0.8%
Other Plastic Containers/Tubs	2.5%	1.9%	3.0%	2.0%	1.0%	2.9%	2.6%	1.6%	3.7%	2.2%	1.6%	2.9%
Film Plastic - Shopping Bags	0.5%	0.3%	0.7%	0.5%	0.2%	0.8%	0.4%	0.2%	0.6%	0.2%	0.1%	0.3%
Film Plastic - Other	5.5%	4.4%	6.6%	6.2%	3.1%	9.3%	6.3%	4.5%	8.0%	9.3%	7.3%	11.3%
Other Rigid Plastic	3.8%	2.0%	5.7%	6.4%	<0.1%	15.0%	3.7%	0.9%	6.6%	2.3%	1.3%	3.3%
Total Plastic	**14.4%**			**17.9%**			**19.0%**			**18.7%**		
ORGANIC												
Food Waste	15.0%	11.6%	18.5%	21.5%	16.9%	26.0%	15.5%	13.6%	17.4%	13.8%	9.8%	17.8%
Clothing/Linens/Textiles/Leather	4.9%	1.6%	8.3%	5.1%	2.5%	7.7%	4.4%	1.4%	7.4%	4.0%	1.9%	6.1%
Diapers & Sanitary Products	2.9%	0.7%	5.1%	6.9%	2.1%	11.7%	6.1%	2.8%	9.4%	4.8%	0.5%	9.0%
Fines	1.4%	0.8%	2.0%	1.3%	0.5%	2.0%	2.4%	2.0%	2.7%	2.3%	1.8%	2.9%
Miscellaneous Organics	6.5%	5.7%	7.4%	9.4%	6.1%	12.6%	7.6%	6.4%	8.8%	7.7%	6.8%	8.7%
Total Organics	**30.8%**			**44.2%**			**36.0%**			**32.6%**		
YARD WASTE												
Grass/Leaves	1.1%	<0.1%	3.2%	2.4%	<0.1%	5.0%	4.0%	<0.1%	9.0%	<0.1%	N/A	N/A
Brush/Pruning	5.2%	2.5%	7.9%	2.7%	<0.1%	6.0%	2.2%	<0.1%	5.3%	2.7%	<0.1%	7.0%
Total Yard Waste	**6.3%**			**5.1%**			**6.2%**			**2.7%**		
WOOD												
Lumber	2.1%	0.3%	4.0%	<0.1%	N/A	N/A	0.8%	<0.1%	2.0%	<0.1%	N/A	N/A
Pallets	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Wood	8.6%	3.6%	13.5%	2.6%	<0.1%	5.8%	3.9%	0.5%	7.4%	4.3%	0.8%	7.7%
Total Wood	**10.7%**			**2.6%**			**4.7%**			**4.3%**		

Exhibit 21.   Seasonal Single-Family Municipal Waste Composition (continued)

	Spring			Summer			Fall			Winter		
	Mean Composition	Confidence Limits		Mean Composition	Confidence Limits		Mean Composition	Confidence Limits		Mean Composition	Confidence Limits	
Material Components		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
FERROUS METAL												
Ferous/Bi-metal Cans	0.5%	0.3%	0.7%	0.3%	<0.1%	0.6%	0.3%	<0.1%	0.5%	0.6%	<0.1%	1.2%
Other Ferrous	3.4%	<0.1%	7.4%	0.6%	0.2%	1.1%	2.0%	<0.1%	4.2%	1.6%	<0.1%	3.9%
Total Ferrous Metals	**3.9%**			**1.0%**			**2.3%**			**2.2%**		
NON-FERROUS METAL												
Aluminum Cans	0.2%	<0.1%	0.4%	0.2%	<0.1%	0.3%	0.7%	0.4%	1.1%	0.3%	0.2%	0.4%
Aluminum Tins/Foil	0.2%	<0.1%	0.3%	0.4%	0.3%	0.6%	0.5%	0.1%	0.8%	0.5%	0.2%	0.8%
Other Aluminum	<0.1%	<0.1%	0.2%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	1.4%	<0.1%	4.0%
Total Non-Ferrous Metals	**0.4%**			**0.6%**			**1.2%**			**2.2%**		
GLASS												
Clear	1.4%	0.6%	2.2%	1.0%	0.3%	1.7%	1.8%	1.0%	2.6%	2.1%	1.5%	2.7%
Brown	1.0%	<0.1%	2.3%	0.3%	<0.1%	0.7%	0.8%	<0.1%	1.7%	0.8%	<0.1%	1.7%
Green	0.9%	<0.1%	1.9%	0.4%	<0.1%	0.8%	0.9%	0.4%	1.4%	0.6%	<0.1%	1.3%
Non-container Glass	0.6%	<0.1%	1.4%	<0.1%	N/A	N/A	0.5%	<0.1%	0.9%	0.6%	<0.1%	1.4%
Total Glass	**4.0%**			**1.7%**			**4.0%**			**4.1%**		
INORGANIC												
Concrete/Brick/Rock	<0.1%	N/A	N/A	1.6%	0.2%	3.0%	0.5%	<0.1%	1.5%	1.4%	<0.1%	3.1%
Sheet Rock	1.7%	<0.1%	3.9%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	0.5%	<0.1%	1.6%
Latex Paints	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Fluorescent Lamps	<0.1%	<0.1%	0.3%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Electronics	1.8%	0.2%	3.5%	1.0%	<0.1%	2.1%	0.8%	0.1%	1.5%	2.7%	0.2%	5.1%
Carpets/Rugs/Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	0.6%	<0.1%	1.8%	2.1%	<0.1%	6.3%
Automobile Tires	<0.1%	N/A	N/A	1.7%	<0.1%	5.0%	<0.1%	N/A	N/A	1.0%	<0.1%	3.0%
Miscellaneous Inorganic	2.7%	1.0%	4.4%	4.9%	0.3%	9.6%	4.8%	0.2%	9.4%	3.7%	<0.1%	7.5%
Total Inorganics	**6.3%**			**9.3%**			**6.7%**			**11.4%**		
HHW												
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	0.1%
HW Containers	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Hazardous	<0.1%	N/A	N/A	<0.1%	<0.1%	0.2%	<0.1%	N/A	N/A	0.5%	<0.1%	1.1%
Total HHW	**<0.1%**			**<0.1%**			**<0.1%**			**0.5%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositions based on 5 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Multi-Family Seasonal Waste Composition

The following exhibits show the Multi-Family waste stream by season. Ten samples were collected from Multi-Family collection vehicles each season.

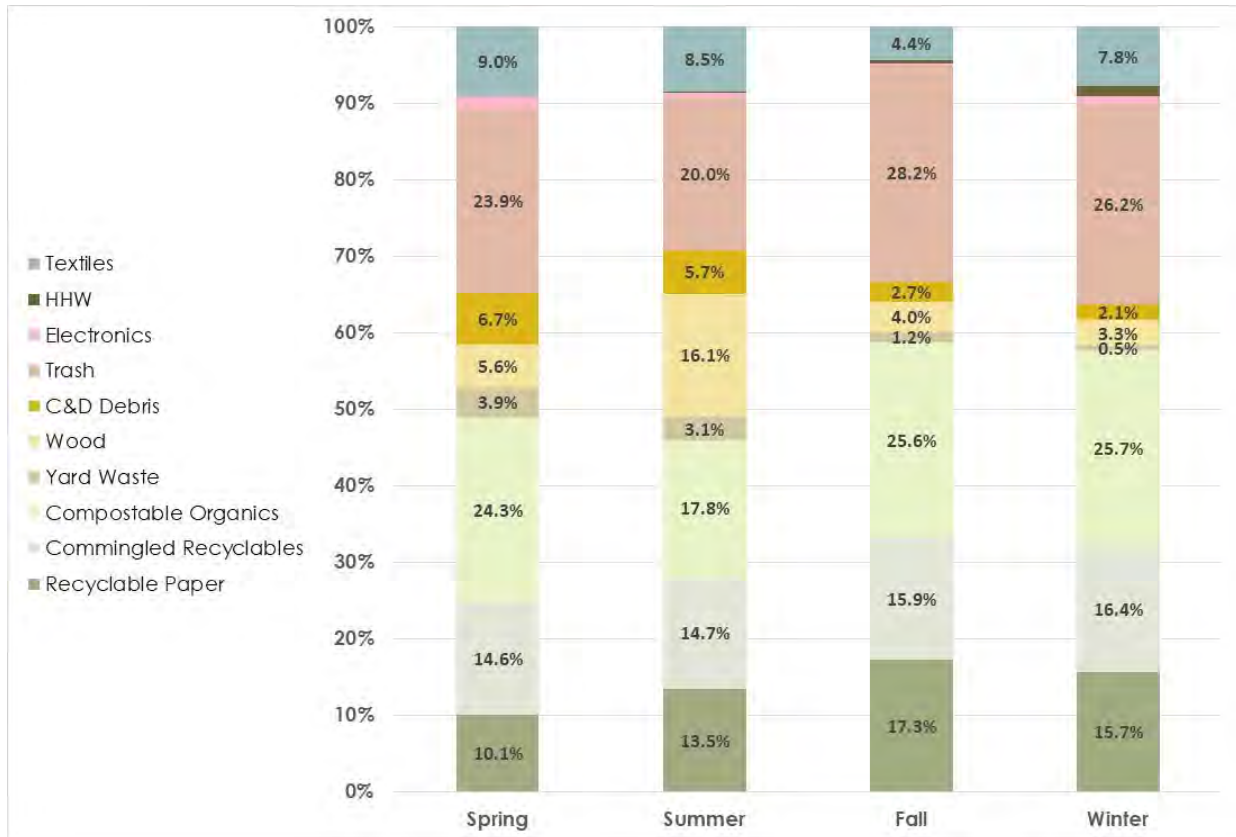Exhibit 22.   Seasonal Multi-Family Waste Composition by Material Type

Exhibit 23. Seasonal Multi-Family Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	0.7%	0.4%	0.9%	1.0%	0.2%	1.8%	1.3%	0.8%	1.8%	1.3%	0.9%	1.8%
Corrugated Cardboard	2.3%	<0.1%	4.9%	4.5%	2.3%	6.8%	6.4%	4.1%	8.6%	3.9%	2.5%	5.4%
Paperboard	2.1%	1.6%	2.6%	0.9%	0.3%	1.5%	2.4%	1.5%	3.3%	2.1%	1.5%	2.6%
Aseptic/Coated Paper Containers	0.8%	0.2%	1.4%	0.8%	0.3%	1.2%	0.4%	0.2%	0.5%	0.7%	0.3%	1.0%
Office Paper	0.8%	0.5%	1.1%	3.7%	<0.1%	8.5%	1.3%	0.8%	1.9%	1.9%	1.2%	2.6%
Carryout Paper Bags	0.6%	0.3%	0.8%	0.2%	0.1%	0.4%	0.3%	0.1%	0.4%	0.6%	0.4%	0.8%
Other Recyclable Mixed Paper	2.9%	1.9%	3.9%	2.3%	1.2%	3.5%	5.3%	4.1%	6.4%	5.2%	3.8%	6.5%
Non-Recyclable Paper	7.4%	6.3%	8.4%	5.7%	2.5%	8.8%	7.9%	5.7%	10.0%	8.9%	6.4%	11.4%
Total Paper	**17.5%**			**19.1%**			**25.2%**			**24.6%**		
PLASTIC												
PET (#1) Bottle Bill Bottles	1.9%	1.5%	2.3%	1.4%	0.9%	1.8%	1.6%	1.3%	1.9%	1.7%	1.2%	2.2%
Other PET (#1) Bottles	0.2%	<0.1%	0.4%	<0.1%	<0.1%	0.2%	0.2%	<0.1%	0.3%	0.3%	0.2%	0.5%
#1 PET Thermoforms	0.7%	0.3%	1.0%	0.3%	0.1%	0.4%	1.0%	0.7%	1.3%	0.9%	0.6%	1.2%
HDPE (#2) Narrow Neck Bottles-Natural	0.2%	<0.1%	0.4%	0.2%	<0.1%	0.2%	0.5%	0.3%	0.7%	0.5%	0.2%	0.7%
HDPE (#2) Narrow Neck Bottles-Colored	0.3%	0.2%	0.5%	0.2%	<0.1%	0.4%	0.5%	0.2%	0.8%	1.4%	0.5%	2.3%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Polysytrene	0.9%	0.6%	1.2%	1.0%	0.3%	1.7%	1.0%	0.8%	1.2%	0.8%	0.6%	1.1%
Plastic Flower Pots	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	0.1%	0.3%	<0.1%	0.7%	0.1%	<0.1%	0.3%
Other Plastic Containers/Tubs	1.9%	1.1%	2.7%	1.3%	0.8%	1.7%	2.1%	1.3%	2.8%	2.4%	1.9%	2.9%
Film Plastic - Shopping Bags	0.5%	0.3%	0.6%	0.5%	0.3%	0.6%	0.5%	0.4%	0.6%	0.4%	0.2%	0.6%
Film Plastic - Other	7.1%	6.0%	8.3%	6.7%	4.6%	8.8%	7.3%	6.4%	8.2%	8.0%	6.1%	10.0%
Other Rigid Plastic	2.4%	0.9%	4.0%	6.3%	3.0%	9.7%	3.9%	2.0%	5.9%	2.1%	0.8%	3.4%
Total Plastic	**16.1%**			**17.8%**			**18.8%**			**18.8%**		
ORGANIC												
Food Waste	16.9%	14.3%	19.4%	12.1%	8.4%	15.8%	17.7%	14.9%	20.5%	16.7%	12.9%	20.6%
Clothing/Linens/Textiles/Leather	9.0%	4.3%	13.7%	8.5%	1.1%	16.0%	4.4%	3.1%	5.6%	7.8%	2.4%	13.1%
Diapers & Sanitary Products	4.6%	2.6%	6.5%	2.3%	1.1%	3.5%	4.2%	3.4%	4.9%	5.6%	3.6%	7.6%
Fines	1.6%	1.2%	1.9%	1.3%	1.0%	1.6%	1.9%	1.5%	2.4%	1.6%	1.2%	1.9%
Miscellaneous Organics	6.5%	5.8%	7.2%	6.5%	5.1%	7.8%	7.1%	6.5%	7.7%	6.5%	5.6%	7.4%
Total Organics	**38.5%**			**30.7%**			**35.3%**			**38.1%**		
YARD WASTE												
Grass/Leaves	1.4%	<0.1%	3.3%	1.7%	<0.1%	3.4%	<0.1%	N/A	N/A	0.3%	<0.1%	0.9%
Brush/Pruning	2.5%	<0.1%	5.4%	1.4%	<0.1%	3.0%	1.2%	0.4%	2.1%	0.2%	<0.1%	0.7%
Total Yard Waste	**3.9%**			**3.1%**			**1.2%**			**0.5%**		
WOOD												
Lumber	0.4%	<0.1%	0.9%	1.8%	<0.1%	3.9%	0.5%	<0.1%	1.0%	0.5%	<0.1%	1.2%
Pallets	<0.1%	N/A	N/A	8.4%	<0.1%	17.0%	<0.1%	N/A	N/A	0.9%	<0.1%	2.6%
Other Wood	5.2%	2.4%	8.0%	5.9%	2.7%	9.1%	3.6%	1.6%	5.6%	2.0%	0.5%	3.4%
Total Wood	**5.6%**			**16.1%**			**4.0%**			**3.3%**		

Exhibit 23.   Seasonal Multi-Family Waste Composition (continued)

Material Components	Spring Mean Composition	Spring Conf. Lower	Spring Conf. Upper	Summer Mean Composition	Summer Conf. Lower	Summer Conf. Upper	Fall Mean Composition	Fall Conf. Lower	Fall Conf. Upper	Winter Mean Composition	Winter Conf. Lower	Winter Conf. Upper
FERROUS METAL												
Ferous/Bi-metal Cans	0.4%	0.2%	0.6%	0.2%	<0.1%	0.3%	0.9%	0.3%	1.6%	0.4%	0.2%	0.6%
Other Ferrous	1.5%	0.6%	2.4%	2.0%	0.1%	4.0%	1.3%	0.1%	2.5%	0.2%	<0.1%	0.5%
Total Ferrous Metals	**1.9%**			**2.2%**			**2.2%**			**0.6%**		
NON-FERROUS METAL												
Aluminum Cans	0.3%	0.1%	0.5%	0.3%	0.2%	0.4%	0.3%	0.2%	0.4%	0.5%	0.4%	0.6%
Aluminum Tins/Foil	0.3%	0.2%	0.3%	0.2%	0.1%	0.3%	0.5%	0.2%	0.9%	0.4%	0.2%	0.5%
Other Aluminum	0.1%	<0.1%	0.3%	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	0.5%	0.2%	<0.1%	0.4%
Total Non-Ferrous Metals	**0.7%**			**0.6%**			**1.1%**			**1.1%**		
GLASS												
Clear	2.2%	1.2%	3.2%	1.0%	0.5%	1.5%	1.0%	0.5%	1.5%	2.2%	1.4%	2.9%
Brown	0.8%	0.3%	1.3%	0.6%	<0.1%	1.5%	0.5%	0.1%	0.8%	1.5%	0.7%	2.3%
Green	0.8%	<0.1%	1.6%	<0.1%	<0.1%	0.1%	0.6%	0.1%	1.1%	1.2%	0.6%	1.8%
Non-container Glass	0.3%	<0.1%	0.5%	0.3%	<0.1%	1.0%	1.5%	0.1%	3.0%	0.1%	<0.1%	0.3%
Total Glass	**4.1%**			**1.9%**			**3.6%**			**5.0%**		
INORGANIC												
Concrete/Brick/Rock	3.0%	<0.1%	6.4%	0.4%	<0.1%	1.3%	0.2%	<0.1%	0.7%	0.8%	<0.1%	1.9%
Sheet Rock	1.6%	<0.1%	3.1%	0.8%	<0.1%	2.3%	1.3%	<0.1%	3.0%	1.0%	<0.1%	2.9%
Latex Paints	0.2%	<0.1%	0.6%	0.4%	<0.1%	1.1%	<0.1%	N/A	N/A	0.3%	<0.1%	1.0%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Electronics	1.8%	0.8%	2.9%	0.6%	<0.1%	1.7%	0.2%	<0.1%	0.5%	0.9%	<0.1%	2.2%
Carpets/Rugs/Carpet Padding	2.0%	0.2%	3.8%	4.1%	0.6%	7.6%	1.2%	<0.1%	2.8%	<0.1%	N/A	N/A
Automobile Tires	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Miscellaneous Inorganic	3.0%	1.8%	4.1%	1.9%	0.4%	3.4%	5.2%	1.7%	8.7%	3.6%	1.7%	5.5%
Total Inorganics	**11.5%**			**8.2%**			**8.1%**			**6.7%**		
HHW												
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	0.2%
Other Hazardous	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	0.4%	<0.1%	1.2%	1.3%	<0.1%	3.0%
Total HHW	**<0.1%**			**<0.1%**			**0.4%**			**1.3%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositiosn based on 10 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Non-Residential Seasonal Waste Composition

The following exhibits show the Non-Residential waste stream by season. Thirty samples were collected from Non-Residential collection vehicles each season.

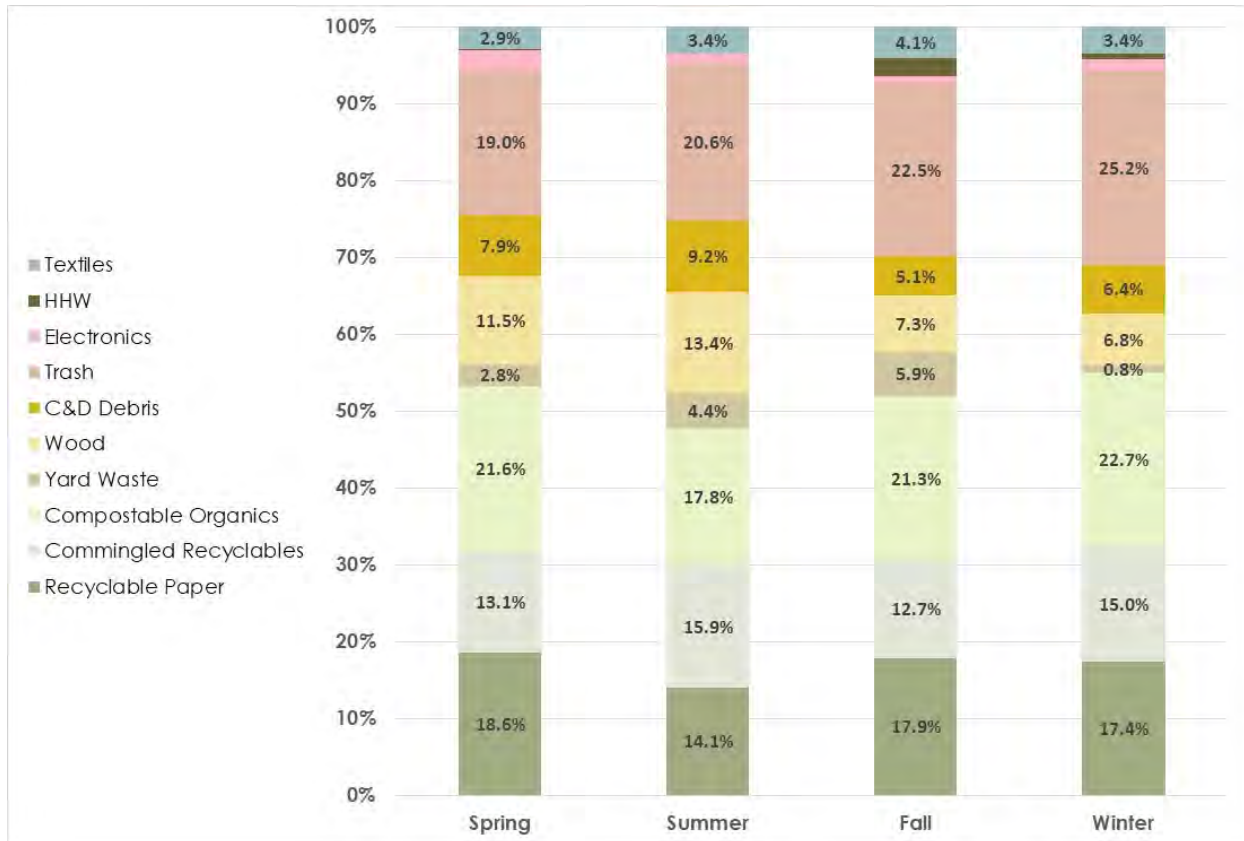Exhibit 24. Seasonal Non-Residential Waste Composition by Material Type

Exhibit 25. Seasonal Non-Residential Waste Composition

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
PAPER												
Newspapers/Magazines/Catalogs/Books	2.1%	<0.1%	4.4%	0.9%	0.6%	1.2%	1.2%	0.7%	1.6%	1.5%	0.8%	2.2%
Corrugated Cardboard	7.9%	5.0%	10.9%	6.2%	4.3%	8.2%	6.7%	3.5%	9.9%	6.0%	3.4%	8.6%
Paperboard	2.2%	1.4%	3.0%	1.5%	1.1%	1.8%	3.2%	1.9%	4.4%	3.0%	0.9%	5.2%
Aseptic/Coated Paper Containers	1.1%	0.7%	1.6%	1.1%	<0.1%	2.3%	0.4%	0.3%	0.5%	0.5%	0.4%	0.7%
Office Paper	1.8%	1.1%	2.6%	1.7%	0.9%	2.4%	2.5%	1.6%	3.3%	1.4%	1.0%	1.8%
Carryout Paper Bags	0.8%	0.5%	1.2%	0.3%	0.2%	0.4%	0.3%	0.2%	0.4%	0.9%	0.6%	1.3%
Other Recyclable Mixed Paper	2.5%	1.7%	3.3%	2.4%	1.8%	3.1%	3.7%	2.8%	4.5%	4.1%	3.2%	5.0%
Non-Recyclable Paper	5.7%	4.5%	6.9%	5.5%	4.1%	6.9%	6.4%	5.3%	7.5%	6.7%	5.9%	7.4%
Total Paper	**24.3%**			**19.6%**			**24.3%**			**24.1%**		
PLASTIC												
PET (#1) Bottle Bill Bottles	1.3%	0.9%	1.7%	1.3%	1.0%	1.7%	1.3%	1.0%	1.6%	1.5%	1.2%	1.8%
Other PET (#1) Bottles	0.2%	<0.1%	0.3%	<0.1%	<0.1%	0.1%	0.2%	0.1%	0.3%	0.4%	0.3%	0.5%
#1 PET Thermoforms	1.5%	<0.1%	2.9%	0.4%	0.3%	0.5%	1.0%	0.7%	1.2%	1.0%	0.8%	1.1%
HDPE (#2) Narrow Neck Bottles-Natural	0.4%	0.1%	0.6%	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%	0.5%	0.4%	0.6%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.2%	0.6%	0.3%	0.1%	0.5%	0.6%	0.4%	0.8%	0.5%	0.4%	0.6%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	0.6%	1.0%	0.8%	0.5%	1.0%	0.9%	0.7%	1.1%	0.7%	0.5%	0.9%
Plastic Flower Pots	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.3%	0.2%	<0.1%	0.5%
Other Plastic Containers/Tubs	1.5%	1.1%	2.0%	1.6%	1.2%	2.0%	1.8%	1.5%	2.2%	1.8%	1.4%	2.1%
Film Plastic - Shopping Bags	0.4%	0.3%	0.6%	0.3%	0.3%	0.4%	0.4%	0.3%	0.6%	0.5%	<0.1%	1.0%
Film Plastic - Other	6.9%	5.6%	8.2%	7.6%	5.2%	10.0%	7.0%	5.8%	8.1%	8.1%	7.1%	9.2%
Other Rigid Plastic	3.6%	2.2%	5.0%	5.6%	3.6%	7.6%	2.7%	1.4%	3.9%	1.7%	1.1%	2.2%
Total Plastic	**16.9%**			**18.3%**			**16.3%**			**16.8%**		
ORGANIC												
Food Waste	15.9%	13.2%	18.6%	12.3%	9.9%	14.7%	14.9%	11.7%	18.1%	16.0%	13.0%	19.0%
Clothing/Linens/Textiles/Leather	2.9%	1.8%	3.9%	3.4%	2.0%	4.7%	4.1%	2.5%	5.7%	3.4%	2.7%	4.2%
Diapers & Sanitary Products	1.3%	0.7%	1.9%	1.7%	1.1%	2.4%	2.4%	1.5%	3.3%	3.2%	2.0%	4.5%
Fines	1.6%	1.3%	1.9%	1.3%	1.0%	1.5%	1.7%	1.4%	2.0%	1.8%	1.4%	2.2%
Miscellaneous Organics	5.8%	5.0%	6.6%	5.2%	4.3%	6.0%	7.4%	6.1%	8.7%	6.4%	5.6%	7.2%
Total Organics	**27.5%**			**23.9%**			**30.5%**			**30.9%**		
YARD WASTE												
Grass/Leaves	0.8%	0.1%	1.4%	1.7%	0.3%	3.1%	3.3%	0.9%	5.7%	<0.1%	<0.1%	0.3%
Brush/Pruning	2.1%	0.2%	3.9%	2.8%	0.7%	4.8%	2.6%	0.7%	4.4%	0.7%	0.2%	1.2%
Total Yard Waste	**2.8%**			**4.4%**			**5.9%**			**0.7%**		
WOOD												
Lumber	3.1%	1.2%	5.1%	2.9%	1.5%	4.3%	3.0%	1.3%	4.8%	1.5%	0.5%	2.5%
Pallets	2.6%	0.9%	4.3%	4.7%	2.1%	7.4%	1.2%	<0.1%	2.5%	1.4%	<0.1%	2.9%
Other Wood	5.8%	3.0%	8.5%	5.7%	3.1%	8.3%	3.0%	1.8%	4.2%	3.9%	1.8%	6.1%
Total Wood	**11.5%**			**13.4%**			**7.3%**			**6.8%**		

Exhibit 25.   Seasonal Non-Residential Waste Composition (continued)

Material Components	Spring Mean Composition	Spring Confidence Limits Lower	Spring Confidence Limits Upper	Summer Mean Composition	Summer Confidence Limits Lower	Summer Confidence Limits Upper	Fall Mean Composition	Fall Confidence Limits Lower	Fall Confidence Limits Upper	Winter Mean Composition	Winter Confidence Limits Lower	Winter Confidence Limits Upper
FERROUS METAL												
Ferous/Bi-metal Cans	0.3%	0.2%	0.5%	0.3%	<0.1%	0.5%	0.5%	0.1%	0.9%	0.6%	0.2%	1.0%
Other Ferrous	0.5%	0.3%	0.8%	1.0%	0.6%	1.4%	0.9%	0.6%	1.3%	1.2%	0.7%	1.7%
Total Ferrous Metals	**0.9%**			**1.3%**			**1.4%**			**1.8%**		
NON-FERROUS METAL												
Aluminum Cans	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%	0.5%	0.3%	0.6%	0.5%	0.4%	0.6%
Aluminum Tins/Foil	0.2%	0.1%	0.4%	0.2%	<0.1%	0.3%	0.4%	0.3%	0.5%	0.4%	0.2%	0.6%
Other Aluminum	<0.1%	<0.1%	<0.1%	1.3%	<0.1%	2.9%	<0.1%	<0.1%	0.2%	0.9%	<0.1%	2.4%
Total Non-Ferrous Metals	**0.6%**			**1.9%**			**0.8%**			**1.7%**		
GLASS												
Clear	1.3%	0.9%	1.7%	1.8%	1.0%	2.6%	1.2%	0.7%	1.6%	1.6%	1.1%	2.2%
Brown	0.4%	0.2%	0.7%	0.5%	<0.1%	1.3%	0.2%	<0.1%	0.3%	1.0%	0.4%	1.6%
Green	0.6%	0.3%	0.9%	0.4%	0.1%	0.6%	0.5%	0.2%	0.8%	0.9%	0.3%	1.4%
Non-container Glass	0.4%	<0.1%	0.8%	0.3%	<0.1%	0.8%	<0.1%	<0.1%	0.2%	0.2%	<0.1%	0.3%
Total Glass	**2.7%**			**3.0%**			**1.9%**			**3.6%**		
INORGANIC												
Concrete/Brick/Rock	0.5%	<0.1%	1.0%	2.1%	0.2%	3.9%	1.1%	<0.1%	2.3%	1.3%	0.3%	2.4%
Sheet Rock	1.0%	0.3%	1.8%	2.8%	0.3%	5.4%	0.7%	<0.1%	1.5%	1.2%	0.1%	2.3%
Latex Paints	0.7%	<0.1%	1.7%	0.3%	<0.1%	0.6%	0.1%	<0.1%	0.3%	0.2%	<0.1%	0.5%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	2.4%	0.6%	4.2%	1.2%	0.4%	2.1%	0.9%	0.3%	1.4%	1.5%	0.8%	2.2%
Carpets/Rugs/Carpet Padding	5.6%	0.9%	10.4%	4.0%	0.8%	7.1%	3.2%	0.6%	5.7%	3.6%	0.9%	6.3%
Automobile Tires	0.3%	<0.1%	1.0%	1.7%	0.2%	3.2%	0.3%	<0.1%	0.8%	0.2%	<0.1%	0.7%
Miscellaneous Inorganic	1.9%	1.0%	2.7%	2.0%	1.0%	3.1%	2.9%	1.3%	4.5%	4.5%	2.7%	6.2%
Total Inorganics	**12.5%**			**14.1%**			**9.1%**			**12.6%**		
HHW												
Lead-Acid Batteries	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A	<0.1%	N/A	N/A	<0.1%	N/A	N/A
HW Containers	0.1%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.2%
Other Hazardous	0.1%	<0.1%	0.3%	<0.1%	N/A	N/A	2.3%	1.1%	3.5%	0.6%	<0.1%	1.2%
Total HHW	**0.2%**			**<0.1%**			**2.3%**			**0.8%**		
TOTALS	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Notes: Compositions based on 30 samples each season.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

COMPARISON TO THE PREVIOUS STUDY

A waste composition study for Montgomery County was conducted in 2016 and 2017 using the same methodology and similar material categories as the current study. Material categories such as Non-Vegetative Food and Vegetative food that were used in the 2016-17 study are collapsed into a single Food Waste category for ease of comparison. The following compositions present a side-by-side comparison with the previous study starting with the weighted overall comparison and then continuing with each generating sector. Materials that comprised a higher proportion with statistical confidence included Office Paper, Film Plastic, and PET Thermoforms. Materials that comprised a lower proportion with statistical confidence included Newspaper/Magazines/Catalogs/Books, PET (#1) Bottle Bill Bottles, Film Plastic Shopping Bags, and Aluminum Cans.

Weighted Overall Waste Composition Comparison

Exhibit 26.   Weighted Overall Waste Composition Comparison with the Previous Study

Material Components	Mean Composition	Standard Deviation	Confidence Limits		Mean Composition	Standard Deviation	Confidence Limits	
			Lower	Upper			Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	2.5%	3.4%	2.1%	2.9%	1.3%	2.4%	1.0%	1.6%
Corrugated Cardboard	3.8%	5.2%	3.2%	4.4%	4.8%	5.6%	4.2%	5.5%
Paperboard	1.9%	1.4%	1.7%	2.0%	2.1%	2.5%	1.9%	2.4%
Aseptic/Coated Paper Containers	1.6%	1.5%	1.4%	1.7%	0.7%	1.2%	0.6%	0.8%
Office Paper	1.2%	1.9%	1.0%	1.5%	1.8%	2.4%	1.6%	2.1%
Carryout Paper Bags	0.6%	1.0%	0.5%	0.7%	0.6%	0.6%	0.5%	0.6%
Other Recyclable Mixed Paper	3.8%	3.2%	3.4%	4.1%	3.3%	2.1%	3.1%	3.6%
Non-Recyclable Paper	7.4%	4.6%	6.9%	7.9%	6.9%	3.2%	6.5%	7.2%
Total Paper	**22.7%**				**21.6%**			
PLASTIC								
PET (#1) Bottle Bill Bottles	1.7%	1.5%	1.5%	1.9%	1.2%	0.8%	1.1%	1.3%
Other PET (#1) Bottles	<0.1%	0.3%	<0.1%	0.1%	0.2%	0.3%	0.2%	0.2%
#1 PET Thermoforms	0.6%	0.7%	0.5%	0.7%	0.9%	1.4%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.5%	0.9%	0.4%	0.6%	0.3%	0.3%	0.3%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.6%	0.3%	0.5%	0.5%	0.6%	0.4%	0.6%
#3-#7 Bottles	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	0.2%	1.0%	0.1%	0.3%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	1.3%	0.7%	0.9%	0.9%	0.6%	0.8%	0.9%
Plastic Flower Pots	0.1%	0.7%	<0.1%	0.2%	0.1%	0.6%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.9%	1.7%	1.7%	2.1%	1.9%	1.1%	1.7%	2.0%
Film Plastic - Shopping Bags	0.7%	0.8%	0.6%	0.8%	0.5%	0.6%	0.4%	0.5%
Film Plastic - Other	5.9%	3.3%	5.5%	6.2%	7.3%	3.5%	6.9%	7.7%
Other Rigid Plastic	3.1%	4.2%	2.6%	3.6%	3.5%	3.8%	3.0%	3.9%
Total Plastic	**15.9%**				**17.2%**			
ORGANIC								
Food Waste	18.2%	11.3%	16.9%	19.5%	16.6%	6.9%	15.8%	17.4%
Clothing/Linens/Textiles/Leather	4.2%	4.2%	3.7%	4.7%	5.1%	4.9%	4.5%	5.6%
Diapers & Sanitary Products	2.5%	2.6%	2.3%	2.8%	3.2%	2.8%	2.9%	3.5%
Fines	2.4%	1.4%	2.2%	2.5%	1.7%	1.0%	1.6%	1.9%
Miscellaneous Organics	7.6%	3.1%	7.2%	7.9%	6.7%	2.1%	6.4%	6.9%
Total Organics	**34.9%**				**33.3%**			
YARD WASTE								
Grass/Leaves	1.7%	3.5%	1.3%	2.1%	1.8%	4.1%	1.3%	2.3%
Brush/Pruning	1.5%	5.6%	0.8%	2.1%	2.4%	4.2%	1.9%	2.8%
Total Yard Waste	**3.2%**				**4.1%**			

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	1.7%	4.7%	1.2%	2.2%	1.9%	3.6%	1.5%	2.3%
Pallets	1.1%	4.2%	0.6%	1.5%	1.7%	4.9%	1.1%	2.2%
Other Wood	3.8%	6.4%	3.1%	4.5%	3.9%	5.1%	3.3%	4.5%
Total Wood	**6.6%**				**7.5%**			
FERROUS METAL								
Ferous/Bi-metal Cans	0.6%	0.8%	0.5%	0.6%	0.5%	0.7%	0.4%	0.6%
Other Ferrous	2.0%	4.4%	1.5%	2.5%	1.2%	1.9%	1.0%	1.4%
Total Ferrous Metals	**2.5%**				**1.6%**			
NON-FERROUS METAL								
Aluminum Cans	0.5%	0.7%	0.4%	0.6%	0.4%	0.3%	0.3%	0.4%
Aluminum Tins/Foil	0.3%	0.5%	0.2%	0.4%	0.4%	0.4%	0.3%	0.4%
Other Aluminum	0.5%	2.5%	0.2%	0.8%	0.4%	2.1%	0.1%	0.6%
Total Non-Ferrous Metals	**1.3%**				**1.1%**			
GLASS								
Clear	1.3%	1.7%	1.1%	1.5%	1.4%	1.4%	1.3%	1.6%
Brown	0.5%	1.4%	0.4%	0.7%	0.6%	1.1%	0.4%	0.7%
Green	0.5%	1.1%	0.3%	0.6%	0.6%	1.0%	0.5%	0.7%
Non-container Glass	0.3%	1.0%	0.2%	0.4%	0.4%	1.1%	0.3%	0.5%
Total Glass	**2.6%**				**3.0%**			
INORGANIC								
Concrete/Brick/Rock	1.1%	3.7%	0.7%	1.5%	1.1%	3.0%	0.7%	1.4%
Sheet Rock	1.0%	4.1%	0.6%	1.5%	1.2%	3.5%	0.8%	1.6%
Latex Paints	<0.1%	0.4%	<0.1%	0.1%	0.4%	1.4%	0.2%	0.5%
Fluorescent Lamps	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%
Electronics	2.3%	5.3%	1.7%	2.9%	1.3%	2.4%	1.0%	1.6%
Carpets/Rugs/Carpet Padding	2.0%	6.3%	1.3%	2.7%	2.7%	6.8%	1.9%	3.4%
Automobile Tires	0.5%	3.8%	0.1%	1.0%	0.3%	1.8%	0.1%	0.5%
Miscellaneous Inorganic	3.0%	6.2%	2.3%	3.7%	3.1%	3.8%	2.6%	3.5%
Total Inorganics	**10.0%**				**10.0%**			
HHW								
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	<0.1%
Other Hazardous	<0.1%	0.5%	<0.1%	0.2%	0.5%	1.6%	0.3%	0.6%
Total HHW	**0.1%**				**0.5%**			
TOTALS	**100.0%**				**100.0%**			

Notes: Compositions based on 300 samples for each study.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict A Waste Composition Comparison

The following Exhibit compares the 2016-17 study side by side with the 2022-23 study for Single-Family Subdistrict A. Materials that comprised a higher proportion with statistical confidence included Office Paper, Film Plastic, and Brush/Pruning. Materials that comprised a lower proportion with statistical confidence included Aseptic Containers, PET (#1) Bottle Bill Bottles, and Banned Polystyrene.

Exhibit 27. Single-Family Subdistrict A Composition Comparison with the Previous Study

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	2.8%	3.3%	2.0%	3.6%	1.6%	2.0%	1.1%	2.1%
Corrugated Cardboard	2.3%	3.3%	1.5%	3.2%	2.5%	2.5%	1.8%	3.1%
Paperboard	1.8%	1.4%	1.5%	2.2%	1.7%	1.1%	1.5%	2.0%
Aseptic/Coated Paper Containers	1.8%	1.5%	1.5%	2.2%	0.6%	0.5%	0.5%	0.7%
Office Paper	0.8%	1.2%	0.5%	1.1%	1.6%	1.3%	1.3%	1.9%
Carryout Paper Bags	0.5%	0.7%	0.3%	0.7%	0.5%	0.4%	0.4%	0.6%
Other Recyclable Mixed Paper	3.6%	3.2%	2.8%	4.4%	3.3%	2.0%	2.8%	3.8%
Non-Recyclable Paper	7.4%	4.1%	6.3%	8.4%	7.7%	2.9%	7.0%	8.4%
Total Paper	**21.1%**				**19.6%**			
PLASTIC								
PET (#1) Bottle Bill Bottles	1.2%	1.2%	0.9%	1.5%	0.7%	0.5%	0.6%	0.9%
Other PET (#1) Bottles	0.1%	0.3%	<0.1%	0.2%	0.2%	0.2%	0.1%	0.3%
#1 PET Thermoforms	0.8%	0.8%	0.6%	1.0%	0.8%	0.6%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.2%	0.4%	0.1%	0.3%	0.3%	0.2%	0.2%	0.3%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.6%	0.3%	0.6%	0.5%	0.6%	0.4%	0.7%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%
Banned Polystyrene	0.1%	0.3%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.9%	1.5%	0.5%	1.3%	0.9%	0.6%	0.7%	1.0%
Plastic Flower Pots	<0.1%	0.1%	<0.1%	<0.1%	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.7%	1.1%	1.4%	1.9%	2.1%	1.3%	1.8%	2.4%
Film Plastic - Shopping Bags	0.8%	0.8%	0.6%	1.0%	0.6%	0.5%	0.5%	0.7%
Film Plastic - Other	5.5%	2.9%	4.8%	6.3%	7.4%	2.7%	6.7%	8.1%
Other Rigid Plastic	3.3%	4.5%	2.2%	4.5%	3.6%	3.4%	2.7%	4.4%
Total Plastic	**15.2%**				**17.2%**			
ORGANIC								
Food Waste	19.6%	8.9%	17.4%	21.9%	19.3%	6.5%	17.7%	21.0%
Clothing/Linens/Textiles/Leather	5.3%	4.0%	4.3%	6.3%	5.6%	3.9%	4.6%	6.5%
Diapers & Sanitary Products	3.3%	2.8%	2.6%	4.0%	3.9%	2.5%	3.2%	4.5%
Fines	2.5%	1.3%	2.2%	2.9%	2.1%	1.9%	1.7%	2.6%
Miscellaneous Organics	8.6%	3.3%	7.8%	9.5%	7.0%	1.5%	6.6%	7.3%
Total Organics	**39.3%**				**37.8%**			
YARD WASTE								
Grass/Leaves	1.9%	3.9%	0.9%	2.9%	3.4%	5.7%	2.0%	4.9%
Brush/Pruning	1.2%	2.3%	0.6%	1.8%	3.1%	4.3%	2.0%	4.2%
Total Yard Waste	**3.1%**				**6.5%**			

Exhibit 27.   Single-Family Subdistrict A Waste Composition Comparison with the Previous Study (continued)

Material Components	*2016-17 Study*				*2022-23 Study*			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	1.4%	3.8%	0.5%	2.4%	1.0%	2.4%	0.4%	1.6%
Pallets	0.2%	1.2%	<0.1%	0.5%	0.5%	2.1%	<0.1%	1.1%
Other Wood	4.3%	7.6%	2.3%	6.2%	2.9%	3.3%	2.1%	3.7%
Total Wood	**5.8%**				**4.4%**			
FERROUS METAL								
Ferous/Bi-metal Cans	0.5%	0.5%	0.4%	0.6%	0.5%	0.5%	0.4%	0.7%
Other Ferrous	1.5%	3.4%	0.7%	2.4%	1.5%	3.2%	0.7%	2.3%
Total Ferrous Metals	**2.0%**				**2.1%**			
NON-FERROUS METAL								
Aluminum Cans	0.4%	0.6%	0.2%	0.5%	0.3%	0.2%	0.2%	0.3%
Aluminum Tins/Foil	0.3%	0.3%	0.2%	0.3%	0.5%	0.4%	0.4%	0.6%
Other Aluminum	1.1%	4.4%	<0.1%	2.2%	0.2%	0.4%	<0.1%	0.3%
Total Non-Ferrous Metals	**1.8%**				**1.0%**			
GLASS								
Clear	1.4%	2.1%	0.8%	1.9%	1.1%	1.3%	0.8%	1.4%
Brown	0.4%	1.1%	<0.1%	0.6%	0.4%	0.6%	0.3%	0.6%
Green	0.4%	1.0%	0.2%	0.7%	0.4%	0.6%	0.3%	0.6%
Non-container Glass	0.2%	0.6%	<0.1%	0.3%	0.4%	0.7%	0.2%	0.6%
Total Glass	**2.4%**				**2.4%**			
INORGANIC								
Concrete/Brick/Rock	0.5%	1.6%	<0.1%	0.9%	1.0%	1.9%	0.5%	1.5%
Sheet Rock	2.1%	5.6%	0.7%	3.5%	1.4%	4.0%	0.4%	2.4%
Latex Paints	0.1%	0.5%	<0.1%	0.2%	0.4%	1.3%	<0.1%	0.7%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.3%	<0.1%	0.1%
Electronics	2.2%	3.2%	1.4%	3.0%	1.3%	2.1%	0.8%	1.8%
Carpets/Rugs/Carpet Padding	1.1%	3.7%	0.2%	2.0%	2.1%	4.5%	0.9%	3.2%
Automobile Tires	<0.1%	<0.1%	N/A	N/A	0.2%	1.1%	<0.1%	0.4%
Miscellaneous Inorganic	3.1%	7.5%	1.2%	5.0%	2.5%	3.1%	1.7%	3.3%
Total Inorganics	**9.1%**				**8.8%**			
HHW								
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	N/A	N/A	<0.1%	0.1%	<0.1%	<0.1%
Other Hazardous	<0.1%	0.3%	<0.1%	0.1%	<0.1%	0.4%	<0.1%	0.2%
Total HHW	**<0.1%**				**0.1%**			
TOTALS	**100.0%**				**100.0%**			

Notes: Compositions based on 60 samples for each study.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Subdistrict B Waste Composition Comparison

The following Exhibit compares the 2016-17 study side by side with the 2022-23 study for Single-Family Subdistrict B. Materials that comprised a higher proportion with statistical confidence included Corrugated Cardboard, Film Plastic, and Brush/Pruning. Materials that comprised a lower proportion with statistical confidence included Newspaper/Magazines/Catalogs/Books, Aseptic Containers, and Banned Polystyrene.

Exhibit 28. Single-Family Subdistrict B Waste Composition Comparison with the Previous Study

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	2.7%	3.2%	1.9%	3.5%	1.0%	0.8%	0.8%	1.2%
Corrugated Cardboard	1.6%	1.3%	1.3%	2.0%	3.2%	3.8%	2.2%	4.1%
Paperboard	2.0%	1.5%	1.6%	2.4%	2.0%	1.1%	1.7%	2.3%
Aseptic/Coated Paper Containers	1.5%	1.4%	1.1%	1.9%	0.6%	0.6%	0.5%	0.8%
Office Paper	1.3%	2.4%	0.6%	1.9%	1.9%	2.0%	1.4%	2.4%
Carryout Paper Bags	0.7%	1.3%	0.4%	1.0%	0.6%	0.5%	0.4%	0.7%
Other Recyclable Mixed Paper	4.5%	3.8%	3.5%	5.5%	3.4%	1.8%	2.9%	3.8%
Non-Recyclable Paper	7.9%	3.5%	7.0%	8.8%	7.3%	2.8%	6.6%	8.0%
Total Paper	**22.3%**				**19.9%**			
PLASTIC								
PET (#1) Bottle Bill Bottles	1.5%	1.6%	1.1%	1.9%	1.0%	0.8%	0.8%	1.2%
Other PET (#1) Bottles	0.1%	0.2%	<0.1%	0.2%	0.2%	0.3%	0.1%	0.3%
#1 PET Thermoforms	0.5%	0.6%	0.4%	0.7%	0.9%	0.5%	0.7%	1.0%
HDPE (#2) Narrow Neck Bottles-Natural	0.3%	0.5%	0.2%	0.4%	0.3%	0.3%	0.2%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.3%	0.3%	0.2%	0.4%	0.5%	0.3%	0.4%	0.6%
#3-#7 Bottles	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	0.2%	0.4%	<0.1%	0.3%	<0.1%	0.1%	<0.1%	<0.1%
Other Polysytrene	0.7%	0.7%	0.5%	0.9%	1.0%	0.6%	0.8%	1.1%
Plastic Flower Pots	0.3%	0.7%	0.1%	0.5%	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.7%	1.3%	1.3%	2.0%	1.9%	0.9%	1.7%	2.2%
Film Plastic - Shopping Bags	0.7%	0.7%	0.5%	0.8%	0.5%	0.5%	0.4%	0.6%
Film Plastic - Other	5.4%	2.3%	4.9%	6.0%	7.2%	2.6%	6.5%	7.9%
Other Rigid Plastic	2.7%	2.7%	2.0%	3.4%	3.2%	3.2%	2.4%	4.0%
Total Plastic	**14.4%**				**16.8%**			
ORGANIC								
Food Waste	18.3%	7.9%	16.3%	20.3%	19.2%	6.3%	17.6%	20.7%
Clothing/Linens/Textiles/Leather	4.5%	4.1%	3.4%	5.5%	6.3%	4.8%	5.1%	7.5%
Diapers & Sanitary Products	3.9%	3.0%	3.2%	4.7%	3.8%	3.0%	3.1%	4.6%
Fines	2.6%	1.5%	2.3%	3.0%	1.9%	0.9%	1.7%	2.1%
Miscellaneous Organics	8.7%	3.1%	7.9%	9.5%	7.3%	1.4%	7.0%	7.7%
Total Organics	**38.1%**				**38.6%**			
YARD WASTE								
Grass/Leaves	1.8%	3.1%	1.0%	2.6%	2.2%	4.0%	1.2%	3.2%
Brush/Pruning	1.2%	2.4%	0.6%	1.8%	3.2%	3.9%	2.2%	4.2%
Total Yard Waste	**3.1%**				**5.4%**			

Exhibit 28.　　Single-Family Subdistrict B Waste Composition Comparison with the Previous Study (continued)

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	1.3%	3.2%	0.5%	2.1%	2.1%	3.8%	1.1%	3.0%
Pallets	1.1%	4.5%	<0.1%	2.3%	0.5%	2.3%	<0.1%	1.1%
Other Wood	1.2%	1.9%	0.7%	1.7%	2.7%	3.7%	1.8%	3.7%
Total Wood	**3.6%**				**5.3%**			
FERROUS METAL								
Ferous/Bi-metal Cans	0.6%	0.6%	0.4%	0.7%	0.6%	0.6%	0.4%	0.7%
Other Ferrous	2.2%	5.9%	0.7%	3.7%	1.2%	2.0%	0.7%	1.7%
Total Ferrous Metals	**2.8%**				**1.8%**			
NON-FERROUS METAL								
Aluminum Cans	0.4%	0.5%	0.2%	0.5%	0.4%	0.3%	0.3%	0.5%
Aluminum Tins/Foil	0.3%	0.6%	0.2%	0.5%	0.5%	0.3%	0.4%	0.5%
Other Aluminum	0.4%	1.6%	<0.1%	0.7%	0.3%	1.0%	<0.1%	0.5%
Total Non-Ferrous Metals	**1.0%**				**1.1%**			
GLASS								
Clear	1.5%	1.5%	1.1%	1.9%	1.4%	1.3%	1.0%	1.7%
Brown	0.5%	1.2%	0.3%	0.8%	0.5%	0.6%	0.3%	0.6%
Green	0.5%	0.8%	0.3%	0.7%	0.6%	1.2%	0.3%	0.9%
Non-container Glass	0.5%	1.2%	0.1%	0.8%	0.5%	1.5%	0.2%	0.9%
Total Glass	**2.9%**				**3.0%**			
INORGANIC								
Concrete/Brick/Rock	1.6%	5.0%	0.3%	2.9%	0.8%	2.3%	0.2%	1.4%
Sheet Rock	1.0%	3.5%	0.1%	1.9%	0.9%	2.3%	0.3%	1.5%
Latex Paints	<0.1%	0.4%	<0.1%	0.2%	0.5%	1.6%	0.1%	0.9%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	2.6%	4.0%	1.6%	3.6%	1.1%	1.5%	0.7%	1.4%
Carpets/Rugs/Carpet Padding	1.5%	5.4%	<0.1%	2.8%	1.2%	3.1%	0.4%	1.9%
Automobile Tires	1.1%	6.6%	<0.1%	2.8%	<0.1%	<0.1%	N/A	N/A
Miscellaneous Inorganic	3.7%	5.5%	2.3%	5.1%	3.4%	3.8%	2.5%	4.4%
Total Inorganics	**11.4%**				**7.9%**			
HHW								
Lead-Acid Batteries	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%
Other Hazardous	0.2%	0.6%	<0.1%	0.3%	0.1%	0.4%	<0.1%	0.2%
Total HHW	**0.2%**				**0.2%**			
TOTALS	**100.0%**				**100.0%**			

Notes:　Compositions based on 60 samples for each study.

　　　Confidence Limits are calculated at the 95% confidence level.

　　　N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Single-Family Municipal Waste Composition Comparison

The following Exhibit compares the 2016-17 study side by side with the 2022-23 study for the Single-Family Municipal generating sector. Brush/Pruning was slightly higher in 2022-23 while Aseptic Container and PET (#1) Bottle Bill bottles comprised lower proportions with statistical confidence when compared to the previous study.

Exhibit 29. Single-Family Municipal Waste Composition Comparison with the Previous Study

Material Components	*2016-17 Study*				*2022-23 Study*			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	4.4%	6.4%	1.6%	7.2%	1.2%	1.0%	0.7%	1.7%
Corrugated Cardboard	4.7%	6.6%	1.8%	7.6%	3.4%	3.2%	2.0%	4.8%
Paperboard	1.8%	1.4%	1.1%	2.4%	1.8%	0.9%	1.4%	2.1%
Aseptic/Coated Paper Containers	1.6%	1.2%	1.1%	2.1%	0.5%	0.3%	0.4%	0.6%
Office Paper	2.2%	2.9%	0.9%	3.5%	2.2%	1.7%	1.4%	2.9%
Carryout Paper Bags	0.5%	0.7%	0.2%	0.8%	0.6%	0.4%	0.4%	0.8%
Other Recyclable Mixed Paper	2.5%	2.1%	1.6%	3.4%	2.7%	1.3%	2.1%	3.2%
Non-Recyclable Paper	8.0%	5.4%	5.6%	10.4%	8.1%	2.5%	7.0%	9.2%
Total Paper	**25.6%**				**20.4%**			
PLASTIC								
PET (#1) Bottle Bill Bottles	2.7%	3.1%	1.3%	4.0%	0.7%	0.4%	0.5%	0.9%
Other PET (#1) Bottles	0.2%	0.5%	<0.1%	0.4%	0.2%	0.3%	0.1%	0.3%
#1 PET Thermoforms	0.9%	1.0%	0.5%	1.3%	0.9%	0.8%	0.6%	1.3%
HDPE (#2) Narrow Neck Bottles-Natural	0.6%	1.2%	<0.1%	1.2%	0.3%	0.3%	0.1%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.5%	0.2%	0.5%	0.3%	0.2%	0.3%	0.4%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%
Banned Polystyrene	0.2%	0.3%	<0.1%	0.4%	<0.1%	0.1%	<0.1%	<0.1%
Other Polysytrene	0.7%	0.5%	0.5%	0.9%	0.8%	0.5%	0.6%	1.1%
Plastic Flower Pots	<0.1%	0.2%	<0.1%	0.2%	0.6%	1.9%	<0.1%	1.4%
Other Plastic Containers/Tubs	2.3%	2.1%	1.4%	3.3%	2.3%	0.9%	1.9%	2.7%
Film Plastic - Shopping Bags	1.0%	2.3%	<0.1%	2.0%	0.4%	0.2%	0.3%	0.5%
Film Plastic - Other	5.4%	3.0%	4.1%	6.7%	6.8%	2.7%	5.6%	8.0%
Other Rigid Plastic	2.0%	2.4%	0.9%	3.1%	4.1%	5.1%	1.8%	6.3%
Total Plastic	**16.5%**				**17.5%**			
ORGANIC								
Food Waste	19.0%	11.6%	14.0%	24.1%	16.4%	4.9%	14.3%	18.6%
Clothing/Linens/Textiles/Leather	4.2%	2.8%	3.0%	5.4%	4.6%	3.0%	3.3%	5.9%
Diapers & Sanitary Products	3.2%	2.7%	2.0%	4.4%	5.2%	4.2%	3.3%	7.0%
Fines	2.4%	1.3%	1.8%	3.0%	1.8%	0.8%	1.5%	2.2%
Miscellaneous Organics	8.6%	5.4%	6.2%	11.0%	7.8%	2.2%	6.8%	8.8%
Total Organics	**37.3%**				**35.9%**			
YARD WASTE								
Grass/Leaves	1.9%	3.9%	0.1%	3.6%	1.9%	3.5%	0.4%	3.4%
Brush/Pruning	0.4%	1.0%	<0.1%	0.8%	3.2%	3.8%	1.5%	4.8%
Total Yard Waste	**2.2%**				**5.1%**			

Exhibit 29.   Single-Family Municipal Waste Composition Comparison with the Previous Study (continued)

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	1.0%	3.0%	<0.1%	2.4%	0.7%	1.5%	<0.1%	1.4%
Pallets	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	N/A	N/A
Other Wood	1.5%	3.8%	<0.1%	3.2%	4.9%	4.6%	2.8%	6.9%
Total Wood	**2.6%**				**5.6%**			
FERROUS METAL								
Ferous/Bi-metal Cans	1.1%	1.8%	0.3%	1.9%	0.4%	0.4%	0.3%	0.6%
Other Ferrous	1.8%	4.5%	<0.1%	3.8%	1.9%	2.9%	0.7%	3.2%
Total Ferrous Metals	**2.9%**				**2.3%**			
NON-FERROUS METAL								
Aluminum Cans	0.9%	0.9%	0.5%	1.3%	0.3%	0.3%	0.2%	0.5%
Aluminum Tins/Foil	0.3%	0.5%	<0.1%	0.6%	0.4%	0.3%	0.3%	0.5%
Other Aluminum	0.2%	0.6%	<0.1%	0.4%	0.4%	1.5%	<0.1%	1.0%
Total Non-Ferrous Metals	**1.4%**				**1.1%**			
GLASS								
Clear	2.0%	3.7%	0.4%	3.7%	1.6%	0.9%	1.2%	2.0%
Brown	1.1%	1.8%	0.4%	1.9%	0.7%	1.0%	0.3%	1.2%
Green	1.1%	2.1%	0.2%	2.1%	0.7%	0.8%	0.4%	1.0%
Non-container Glass	<0.1%	0.3%	<0.1%	0.2%	0.4%	0.7%	0.1%	0.7%
Total Glass	**4.3%**				**3.4%**			
INORGANIC								
Concrete/Brick/Rock	0.6%	1.6%	<0.1%	1.3%	0.9%	1.4%	0.2%	1.5%
Sheet Rock	<0.1%	<0.1%	N/A	N/A	0.6%	1.5%	<0.1%	1.2%
Latex Paints	0.3%	0.9%	<0.1%	0.7%	<0.1%	<0.1%	N/A	N/A
Fluorescent Lamps	<0.1%	<0.1%	N/A	N/A	<0.1%	0.1%	<0.1%	<0.1%
Electronics	1.7%	3.4%	0.2%	3.2%	1.6%	1.8%	0.8%	2.4%
Carpets/Rugs/Carpet Padding	1.0%	2.3%	<0.1%	2.0%	0.7%	2.4%	<0.1%	1.8%
Automobile Tires	<0.1%	<0.1%	N/A	N/A	0.7%	2.2%	<0.1%	1.6%
Miscellaneous Inorganic	3.4%	4.5%	1.4%	5.4%	4.0%	4.2%	2.2%	5.9%
Total Inorganics	**6.9%**				**8.4%**			
HHW								
Lead-Acid Batteries	<0.1%	0.3%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	N/A	N/A
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	N/A	N/A
Other Hazardous	<0.1%	<0.1%	N/A	N/A	0.1%	0.4%	<0.1%	0.3%
Total HHW	**<0.1%**				**0.2%**			
TOTALS	**100.0%**				**100.0%**			

Notes: Compositiond based on 20 samples for each study.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Multi-Family Waste Composition Comparison

The following Exhibit compares the 2016-17 study side by side with the 2022-23 study for the Multi-Family generating sector. No material categories had significantly higher confidence intervals than the previous study. Aseptic/Coated Paper Containers and PET (#1) Bottle Bill Bottles comprised a lower proportion than the previous study with statistical confidence.

Exhibit 30.   Multi-Family Waste Composition Comparison with the Previous Study

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	2.2%	3.1%	1.3%	3.2%	1.1%	0.9%	0.8%	1.3%
Corrugated Cardboard	4.7%	6.0%	2.8%	6.5%	4.3%	3.7%	3.2%	5.4%
Paperboard	2.3%	1.6%	1.8%	2.8%	1.8%	1.2%	1.5%	2.2%
Aseptic/Coated Paper Containers	1.2%	1.1%	0.9%	1.6%	0.6%	0.7%	0.4%	0.9%
Office Paper	1.1%	1.6%	0.6%	1.6%	1.9%	4.0%	0.7%	3.2%
Carryout Paper Bags	0.5%	0.7%	0.3%	0.8%	0.4%	0.3%	0.3%	0.5%
Other Recyclable Mixed Paper	3.3%	2.4%	2.5%	4.1%	3.9%	2.3%	3.2%	4.6%
Non-Recyclable Paper	7.7%	4.5%	6.3%	9.1%	7.5%	3.8%	6.3%	8.6%
Total Paper	**23.1%**				**21.6%**			
PLASTIC								
PET (#1) Bottle Bill Bottles	2.0%	1.4%	1.6%	2.5%	1.6%	0.7%	1.4%	1.8%
Other PET (#1) Bottles	<0.1%	0.3%	<0.1%	0.2%	0.2%	0.2%	0.1%	0.3%
#1 PET Thermoforms	0.7%	1.2%	0.3%	1.1%	0.7%	0.5%	0.6%	0.9%
HDPE (#2) Narrow Neck Bottles-Natural	0.5%	0.6%	0.3%	0.7%	0.3%	0.3%	0.2%	0.4%
HDPE (#2) Narrow Neck Bottles-Colored	0.5%	0.6%	0.3%	0.7%	0.6%	0.9%	0.3%	0.9%
#3-#7 Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	0.1%	0.3%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	1.0%	0.5%	1.1%	0.9%	0.6%	0.7%	1.1%
Plastic Flower Pots	0.1%	0.3%	<0.1%	0.2%	0.1%	0.3%	<0.1%	0.2%
Other Plastic Containers/Tubs	1.7%	1.4%	1.3%	2.2%	1.9%	1.1%	1.6%	2.2%
Film Plastic - Shopping Bags	0.7%	0.8%	0.5%	1.0%	0.5%	0.3%	0.4%	0.5%
Film Plastic - Other	5.7%	3.2%	4.8%	6.7%	7.3%	2.5%	6.5%	8.1%
Other Rigid Plastic	2.8%	3.3%	1.8%	3.8%	3.7%	3.8%	2.5%	4.9%
Total Plastic	**15.8%**				**17.9%**			
ORGANIC								
Food Waste	17.8%	9.4%	14.9%	20.7%	15.9%	5.5%	14.1%	17.6%
Clothing/Linens/Textiles/Leather	4.9%	3.9%	3.7%	6.1%	7.4%	8.2%	4.9%	10.0%
Diapers & Sanitary Products	2.8%	2.8%	1.9%	3.7%	4.2%	2.7%	3.3%	5.0%
Fines	2.1%	1.5%	1.7%	2.6%	1.6%	0.6%	1.4%	1.8%
Miscellaneous Organics	6.9%	3.2%	5.9%	7.9%	6.6%	1.5%	6.2%	7.1%
Total Organics	**34.5%**				**35.7%**			
YARD WASTE								
Grass/Leaves	1.0%	2.4%	0.2%	1.7%	0.8%	2.1%	0.2%	1.5%
Brush/Pruning	1.6%	5.1%	<0.1%	3.2%	1.3%	2.8%	0.5%	2.2%
Total Yard Waste	**2.6%**				**2.2%**			

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	1.6%	4.4%	0.2%	2.9%	0.8%	1.9%	0.2%	1.4%
Pallets	0.9%	3.4%	<0.1%	1.9%	2.3%	7.7%	<0.1%	4.7%
Other Wood	4.3%	6.3%	2.4%	6.3%	4.2%	4.1%	2.9%	5.4%
Total Wood	**6.8%**				**7.3%**			
FERROUS METAL								
Ferous/Bi-metal Cans	0.7%	0.7%	0.4%	0.9%	0.5%	0.6%	0.3%	0.7%
Other Ferrous	2.0%	3.6%	0.9%	3.1%	1.3%	2.0%	0.6%	1.9%
Total Ferrous Metals	**2.7%**				**1.7%**			
NON-FERROUS METAL								
Aluminum Cans	0.5%	0.6%	0.3%	0.7%	0.3%	0.2%	0.3%	0.4%
Aluminum Tins/Foil	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.2%	0.4%
Other Aluminum	0.6%	2.4%	<0.1%	1.3%	0.2%	0.3%	<0.1%	0.2%
Total Non-Ferrous Metals	**1.4%**				**0.9%**			
GLASS								
Clear	1.6%	1.5%	1.1%	2.1%	1.6%	1.3%	1.2%	2.0%
Brown	0.4%	1.1%	<0.1%	0.7%	0.8%	1.1%	0.5%	1.2%
Green	0.4%	0.6%	0.2%	0.6%	0.7%	0.9%	0.4%	1.0%
Non-container Glass	0.5%	1.7%	<0.1%	1.0%	0.6%	1.4%	0.1%	1.0%
Total Glass	**2.9%**				**3.6%**			
INORGANIC								
Concrete/Brick/Rock	1.1%	2.8%	0.3%	2.0%	1.1%	3.1%	0.1%	2.1%
Sheet Rock	1.4%	4.7%	<0.1%	2.9%	1.2%	2.6%	0.3%	2.0%
Latex Paints	0.2%	0.6%	<0.1%	0.4%	0.2%	0.8%	<0.1%	0.5%
Fluorescent Lamps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	2.8%	8.1%	0.3%	5.3%	0.9%	1.6%	0.4%	1.4%
Carpets/Rugs/Carpet Padding	1.0%	4.4%	<0.1%	2.4%	1.8%	3.6%	0.7%	2.9%
Automobile Tires	0.6%	2.3%	<0.1%	1.3%	<0.1%	<0.1%	N/A	N/A
Miscellaneous Inorganic	2.9%	6.7%	0.8%	5.0%	3.4%	3.6%	2.3%	4.5%
Total Inorganics	**10.1%**				**8.6%**			
HHW								
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	<0.1%	<0.1%
Other Hazardous	<0.1%	0.4%	<0.1%	0.2%	0.4%	1.6%	<0.1%	0.9%
Total HHW	**<0.1%**				**0.4%**			
TOTALS	**100.0%**				**100.0%**			

Notes: Compositions based on 40 samples for each study.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Non-Residential Waste Composition Comparison

The following Exhibit compares the 2016-17 study side by side with the 2022-23 study for the Non-Residential generating sector. Please note the "Other Hazardous" category was usually used to categorize medical waste that is considered hazardous to handle. Other PET (#1) Bottles and Other Hazardous comprised a higher proportion than the previous study with statistical confidence. Aseptic/Coated Paper Containers, PET (#1) Bottle Bill Bottles and Banned Polystyrene comprised a lower proportion than the previous study with statistical confidence.

Exhibit 31.   Non-Residential Waste Composition Comparison with the Previous Study

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
PAPER								
Newspapers/Magazines/Catalogs/Books	2.2%	3.5%	1.6%	2.8%	1.4%	3.3%	0.8%	2.0%
Corrugated Cardboard	5.0%	6.4%	3.9%	6.2%	6.7%	7.5%	5.4%	8.1%
Paperboard	1.7%	1.4%	1.4%	1.9%	2.5%	3.6%	1.8%	3.1%
Aseptic/Coated Paper Containers	1.6%	1.6%	1.3%	1.9%	0.8%	1.8%	0.5%	1.1%
Office Paper	1.4%	1.7%	1.1%	1.7%	1.8%	2.0%	1.5%	2.2%
Carryout Paper Bags	0.6%	0.9%	0.5%	0.8%	0.6%	0.7%	0.5%	0.7%
Other Recyclable Mixed Paper	3.6%	3.1%	3.1%	4.2%	3.2%	2.3%	2.8%	3.6%
Non-Recyclable Paper	7.0%	5.2%	6.1%	7.9%	6.1%	3.2%	5.5%	6.6%
Total Paper	23.1%				23.1%			
PLASTIC								
PET (#1) Bottle Bill Bottles	1.8%	1.5%	1.6%	2.1%	1.4%	0.9%	1.2%	1.5%
Other PET (#1) Bottles	<0.1%	0.2%	<0.1%	0.1%	0.2%	0.3%	0.2%	0.3%
#1 PET Thermoforms	0.5%	0.5%	0.4%	0.6%	0.9%	2.0%	0.6%	1.3%
HDPE (#2) Narrow Neck Bottles-Natural	0.6%	1.2%	0.4%	0.8%	0.4%	0.4%	0.3%	0.5%
HDPE (#2) Narrow Neck Bottles-Colored	0.4%	0.7%	0.2%	0.5%	0.4%	0.5%	0.3%	0.5%
#3-#7 Bottles	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Banned Polystyrene	0.3%	1.4%	<0.1%	0.5%	<0.1%	<0.1%	<0.1%	<0.1%
Other Polysytrene	0.8%	1.5%	0.6%	1.1%	0.8%	0.6%	0.7%	0.9%
Plastic Flower Pots	0.1%	0.8%	<0.1%	0.3%	<0.1%	0.5%	<0.1%	0.2%
Other Plastic Containers/Tubs	2.2%	2.1%	1.8%	2.6%	1.7%	1.1%	1.5%	1.9%
Film Plastic - Shopping Bags	0.6%	0.7%	0.5%	0.7%	0.4%	0.8%	0.3%	0.6%
Film Plastic - Other	6.2%	3.9%	5.5%	6.9%	7.4%	4.3%	6.6%	8.2%
Other Rigid Plastic	3.3%	5.0%	2.4%	4.2%	3.4%	4.1%	2.7%	4.1%
Total Plastic	17.0%				17.0%			
ORGANIC								
Food Waste	17.7%	13.5%	15.3%	20.2%	14.8%	8.0%	13.4%	16.2%
Clothing/Linens/Textiles/Leather	3.5%	4.4%	2.8%	4.3%	3.4%	3.5%	2.8%	4.1%
Diapers & Sanitary Products	1.6%	2.3%	1.2%	2.0%	2.2%	2.6%	1.7%	2.6%
Fines	2.2%	1.4%	2.0%	2.5%	1.6%	0.9%	1.4%	1.7%
Miscellaneous Organics	6.9%	2.9%	6.4%	7.4%	6.2%	2.7%	5.7%	6.7%
Total Organics	32.0%				28.2%			
YARD WASTE								
Grass/Leaves	1.8%	3.8%	1.2%	2.5%	1.5%	4.2%	0.7%	2.2%
Brush/Pruning	1.7%	7.3%	0.3%	3.0%	2.0%	4.7%	1.2%	2.9%
Total Yard Waste	3.5%				3.5%			

Exhibit 31.   Non-Residential Waste Composition Comparison with the Previous Study (continued)

Material Components	2016-17 Study				2022-23 Study			
	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper	Mean Composition	Standard Deviation	Confidence Limits Lower	Upper
WOOD								
Lumber	2.1%	5.5%	1.1%	3.1%	2.6%	4.4%	1.9%	3.4%
Pallets	1.4%	4.9%	0.5%	2.3%	2.5%	5.3%	1.5%	3.4%
Other Wood	4.9%	7.4%	3.6%	6.2%	4.6%	6.3%	3.5%	5.7%
Total Wood	**8.4%**				**9.7%**			
FERROUS METAL								
Ferous/Bi-metal Cans	0.5%	0.8%	0.4%	0.7%	0.4%	0.9%	0.3%	0.6%
Other Ferrous	1.9%	4.0%	1.2%	2.7%	0.9%	1.1%	0.7%	1.1%
Total Ferrous Metals	**2.5%**				**1.3%**			
NON-FERROUS METAL								
Aluminum Cans	0.6%	0.8%	0.4%	0.7%	0.4%	0.3%	0.4%	0.5%
Aluminum Tins/Foil	0.3%	0.6%	0.2%	0.4%	0.3%	0.4%	0.2%	0.4%
Other Aluminum	0.3%	2.2%	<0.1%	0.7%	0.6%	3.0%	<0.1%	1.1%
Total Non-Ferrous Metals	**1.2%**				**1.3%**			
GLASS								
Clear	1.1%	1.4%	0.9%	1.4%	1.5%	1.6%	1.2%	1.8%
Brown	0.6%	1.7%	0.3%	0.9%	0.5%	1.4%	0.3%	0.8%
Green	0.4%	1.2%	0.2%	0.7%	0.6%	1.1%	0.4%	0.8%
Non-container Glass	0.1%	0.6%	<0.1%	0.2%	0.2%	0.9%	<0.1%	0.4%
Total Glass	**2.3%**				**2.8%**			
INORGANIC								
Concrete/Brick/Rock	1.0%	3.7%	0.4%	1.7%	1.3%	3.5%	0.6%	1.9%
Sheet Rock	0.7%	3.7%	<0.1%	1.4%	1.4%	4.2%	0.7%	2.2%
Latex Paints	<0.1%	0.3%	<0.1%	0.1%	0.3%	1.6%	<0.1%	0.6%
Fluorescent Lamps	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electronics	2.1%	5.4%	1.1%	3.0%	1.5%	3.1%	1.0%	2.1%
Carpets/Rugs/Carpet Padding	2.9%	7.7%	1.5%	4.3%	4.1%	9.5%	2.4%	5.8%
Automobile Tires	0.4%	2.7%	<0.1%	0.9%	0.6%	2.5%	0.2%	1.1%
Miscellaneous Inorganic	2.7%	5.9%	1.6%	3.7%	2.8%	3.9%	2.1%	3.5%
Total Inorganics	**9.8%**				**12.1%**			
HHW								
Lead-Acid Batteries	<0.1%	<0.1%	N/A	N/A	<0.1%	<0.1%	N/A	N/A
Other Rechargeable Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
HW Containers	<0.1%	0.3%	<0.1%	0.1%	<0.1%	0.3%	<0.1%	0.1%
Other Hazardous	<0.1%	0.6%	<0.1%	0.2%	0.8%	2.1%	0.4%	1.1%
Total HHW	**0.1%**				**0.8%**			
TOTALS	**100.0%**				**100.0%**			

Notes: Compositions based on 120 samples for each study.

Confidence Limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Appendix A

Material Type Categories Used in Exhibits

Recyclable Paper	Newspapers/Magazines/Catalogs/Books	Office Paper
	Corrugated Cardboard	Carryout Paper Bags
	Paperboard	Other Recyclable Mixed Paper
	Aseptic/Coated Paper Containers	
Commingled Recyclables	PET (#1) Bottle Bill Bottles	HDPE (#2) Narrow Neck Bottles-Natural
	Other PET (#1) Bottles	HDPE (#2) Narrow Neck Bottles-Colored
	#1 PET Thermoforms	#3-#7 Bottles
	Plastic Flower Pots	Other Rigid Plastic
	Other Plastic Containers/Tubs	Aluminum Cans
	Ferrous/Bi-metal Cans	Aluminum Pans/Foil
	Other Ferrous	Other Non-Ferrous
	Clear Glass	Green Glass
	Brown Glass	
Compostable Organics	Non-Recyclable Paper	Food Waste
Yard Waste	Grass/Leaves	Brush/Pruning
Wood	Lumber	Other Wood
	Pallets	
C&D Debris	Concrete/Brick/Rock	Latex Paints
	Sheet Rock	Carpets/Rugs/Carpet Padding
Trash	Banned Polystyrene	Film Plastic - Shopping Bags
	Other Polysytrene	Film Plastic - Other
	Diapers & Sanitary Products	Miscellaneous Organics
	Fines	Non-container Glass
	Automobile Tires	Miscellaneous Inorganic
Electronics	Electronics	
HHW	Fluorescent Lamps	Other Batteries
	Lead-Acid Batteries	HW Containers
	Other Rechargeable Batteries	Other Hazardous
Textiles	Clothing/Linens/Textiles/Leather	

Appendix B

Material Category Definitions

Material Category		Definition and Examples
Paper	Newspaper/Magazines/ Catalogs/Books	Consists of all paper products: printed newspapers, books, yellow books, magazines, catalogs, advertising, and other similar items. Includes any glossy, shiny, or other coated paper materials.
	Corrugated Cardboard	Paperboard containers consisting of Kraft (brown) linerboard with corrugated (fluted medium) fillings.
	Paperboard	Non-corrugated boxes and containers typically used for holding dry food products, detergents, shoes, and other similar packaged goods. Outside of box or container can be printed. Inside surface is typically a dull gray, brown, or white color.
	Aseptic/Coated Paper Containers	Consist of plastic- or wax-coated containers such as gable-topped milk and juice cartons, Chinese food take-out boxes, and juice drink boxes.
	Office Paper	High-grade paper products originating from an office environment such as white or colored printing, writing, or copier paper; shredded paper; computer paper (with or without green bars); computer tab cards; file folders.
	Carryout Paper Bags	Carry-out paper bags from retail stores, according to Section 52-102 of the County Code. Exclude bags that are used for prescription drugs, yard waste, and restaurant carry-out.
	Other Recyclable Mixed Paper	Envelopes, junk and unwanted mail, construction paper, wrapping paper, brochures, Kraft paper, and other recyclable papers.
	Non-Recyclable Paper	All paper products not covered by the above categories, including all tissues, paper towels, napkins, cardboard paper, and other non-recyclable paper.

Plastics		
	PET (#1) Bottle Bill Bottles	Rigid clear or colored beverage PET bottles, also known as "Bottle Bill."
	Other PET (#1) Bottles	Other PET bottles not included in the previous category.
	#1 PET Thermoforms	Thermoforming plastics such as clamshell containers, blister packs, and plastic trays.
	HDPE (#2) Narrow Neck Bottles - Natural	Moderately flexible to stiff translucent cylindrical containers, commonly used for shampoos, detergents, motor oils, antifreeze, transmission fluids, cleaning solutions, and syrup, milk, juice, or spring water products.
	HDPE (#2) Narrow Neck Bottles - Colored	Same description as above, but bottles are opaque.
	#3-#7 Bottles	Rigid, narrow-necked bottles with "3," "4," "5," or "7" on bottom.
	Banned Polystyrene	Foam containers, bowls, plates, trays, cartons, cups, egg cartons, etc., based on Council Bill 41-14 enacted on January 20, 2016.
	Other Polystyrene	Other polystyrene plastics, such as polystyrene for packaging and CD cases.
	Plastic Flower Pots	Any shape, size, and color of flower or nursery pot including those marked #2 and #5, but excluding #6.
	Other Plastic Containers/Tubs	Any type of plastic container and tub not covered above: yogurt, margarine containers, etc.
	Film Plastic - Shopping Bags	Translucent and opaque shopping bags.
	Film Plastic - Other	Other translucent and opaque films/bags, such as trash and garbage bags, dry cleaning film.
	Other Rigid Plastic	Rigid plastic items such as pens, toys, and outdoor furniture.

Organic	Food Waste	Putrescible organic materials that are the by-products of growing, preparing, cooking, processing, or consuming food.
	Clothing/Linens/ Textiles/Leather	Apparel and linens made from natural and synthetic fibers, such as clothing, blankets, sheets, towels, curtains, pillows, rags, stuffed toys, etc.
	Diapers & Sanitary Products	Disposable diapers, tampons, and sanitary napkins.
	Fines	Any material left on the sorting table at the end of the sort that cannot be categorized and are less than 0.5 inches in diameter.
	Miscellaneous Organics	All other organic materials not covered above, including fiber, feces, dead animals, and organic items too small to sort.
Yard Waste	Grass/Leaves	Clippings collected from lawns after mowing and the leaves of growing plants and trees.
	Brush/Pruning	Woody plant material derived from bush, hedge, and tree trimmings. Branches up to four inches in diameter are also included.
Wood	Lumber	Painted or unpainted finished lengths of wood from building structures, furniture, or vehicles.
	Pallets	Finished lumber nailed together in a rectangular form to serve as a base for bulk movement by forklift. Includes composite wood such as particle board or plywood.
	Other Wood	Miscellaneous wood products such as housewares (bowls, spoons), decorative objects, small furnishings (lamps, boxes), sawdust, or small animal bedding (cedar shavings).
Ferrous Metal	Ferrous/Bi-metal Cans	Steel and bi-metal (steel and tin) food, beverage, and non-hazardous aerosol cans.
	Other Ferrous	Ferrous scrap metals such as wire coat hangers, household appliances (white goods), nails and screws, auto parts, and other items adhering to a magnet.

Non-Ferrous Metal	Aluminum Cans	Aluminum beverage containers (soda cans).
	Aluminum Pans/Foil	Aluminum food containers, foil wrap, and foil pans.
	Other Non-Ferrous	Non-magnetized metals such as silver, lead, copper, brass, bronze, zinc, stainless steel; aluminum items such as siding, lawn chairs, window frames, rain gutters; allow of copper and zinc such as door locks; pipes or wire.
Glass	Clear	Clear glass food and beverage containers, whole and broken.
	Brown	Brown glass food and beverage containers, whole and broken.
	Green	Green glass food and beverage containers, whole and broken.
	Non-container Glass	Mirrors, leaded crystal, eyeglasses, incandescent light bulbs, auto glass, windows, Pyrex cookware, pottery, drinking glasses.
Inorganic	Concrete/Brick/Rock	Concrete, brick, stones, cut stone, cement, rocks, and gravel.
	Sheet Rock	Wallboard/drywall.
	Latex Paints	Water-based paints.
	Fluorescent Lamps	Lighting tubes and bulbs.
	Electronics	E-waste containing any broken or unwanted electrical or electronic device such as computers, cell phones, printers, routers, digital cameras, TVs, etc.
	Carpets/Rugs/Carpet Padding	Self-explanatory.
	Automobile Tires	Tires with or without rims.
	Miscellaneous Inorganics	Other inorganic items not otherwise classified.
Household Hazardous	Lead-Acid Batteries	Lead-acid batteries from automobiles.
	Other Rechargeable Batteries	All other rechargeable batteries (Ni-Cd, Ni-MH, Li-ion, etc.).
	Other Batteries	Disposable batteries such as household dry cell batteries.
	HW Containers	Empty containers for hazardous materials and chemicals.
	Other Hazardous	Any other hazardous material not otherwise described, including medical waste.