



OKALOOSA COUNTY, FLORIDA
2014 WASTE AND RECYCLABLES COMPOSITION STUDY

September 2014



Prepared for:

Okaloosa County

Public Works

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Okaloosa County, Florida 2014 Waste and Recyclables Composition Study

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Section 1

Introduction and Summary

1.1 Purpose

Okaloosa County (County) contracted Kessler Consulting, Inc. (KCI) to conduct a Waste Composition Study (WCS) of the waste delivered to the County's Fort Walton Beach (FWB) Transfer Station by the County's residents and businesses for disposal. In addition, the County requested KCI to concurrently conduct a Recyclables Composition Study (RCS) of the recyclable materials collected through the County's single stream recycling program.

The purpose of the WCS is to provide the County with more current and accurate information regarding the types of materials that are being disposed in order to improve existing waste diversion programs or develop future resource management programs that target those materials that comprise the greatest percentage of the waste stream. Results of the WCS will also be useful to the County in compiling its annual solid waste management report for the Florida Department of Environmental Protection (FDEP).

The purpose of the RCS is to provide the County with an understanding of the quantities of various types of recyclables that are collected, which in turn enables the County to estimate the value of its single stream recyclables. This information will be useful as the County prepares to conduct a competitive procurement for processing services, which should include revenue to the County for these commodities. The RCS results also provide information on the types and quantity of non-recyclable materials that residents are mixing with the recyclables. This information will be useful when developing future outreach and education materials.

1.2 Background

Okaloosa County has a population of approximately 188,349 (2013). It contains urbanized areas, as well as agricultural and sparsely populated areas. The County contains a cross-section of businesses and industries, including those related to military installations, agriculture, and tourism. Located in the Florida Panhandle, summer is the peak tourist season. All of these factors have the potential to influence the composition of the County's waste.

The County's recycling program also influences the composition of not only the materials that are recycled, but also the waste that is disposed. The County accepts recyclable paper and containers in a single stream program that is available to residents in unincorporated Okaloosa County and municipalities serviced by Waste Management. The County currently accepts the following materials in its recycling program:

- Rigid containers including glass bottles and jars, plastic containers #1-7, aseptic cartons, and aluminum or steel cans.
- All paper and paperboard products including newspaper, junk mail, magazines, cardboard, phone books, paper grocery bags, office paper, and non-food contaminated boxes.

The County has an exclusive franchise agreement with Waste Management for curbside collection of solid waste, recyclables, and yard waste in specified areas of the unincorporated county. Collection service in the non-franchised parts of the unincorporated county is open market on a subscription basis. Commercial waste collection is currently open market in all parts of the unincorporated county, but will become exclusive in the franchise area starting in May 2016.

The nine municipalities located within the County are responsible for their own collection services. Some municipalities or their contracted collection service providers deliver their waste to one of the County's transfer stations, but some have chosen to use other facilities.

1.3 Summary of Results

KCI conducted a six-day sampling and sorting event at the FWB Transfer Station from July 28 through August 2, 2014. Forty loads of waste were sampled and the samples were sorted into 34 defined material categories. Sixteen loads of single stream recyclables were sampled and those samples were sorted into 24 defined material categories. All sampling and sorting activities followed the methodology outlined in Section 2 and a protocol approved by the County prior to conducting the field work.

Table 1.1 provides the composition of the waste disposed by the three waste generator sectors included in the study, as well as the combined composition of the three sectors (Aggregate Waste Stream). The table is organized by the potential for the various material types to be diverted from disposal for recycling or composting. Key findings of the WCS are as follows:

- More than 40 percent of the waste currently disposed consists of fiber, containers, and yard waste that are part of the County's existing recycling program.
- An additional 35 percent of the waste currently disposed consists of materials that could potentially be recycled or composted if programs or facilities were developed to capture these materials and process them.

Table 1.2 presents the composition of the single stream recyclables delivered to the County for transfer and processing. Key findings of the RCS are as follows:

- Nearly 53 percent of the recyclables consist of various types of recyclable paper and approximately 33 percent consists of recyclable containers.
- About 6.4 percent of the recyclables is comprised of various types of plastics and scrap metals that are not included in the County's recycling program, but some of these materials could potentially be recycled by the processor.
- Approximately 7.4 percent consists of non-recyclable materials.

Additional details regarding the results of the study are provided in Section 3. Further discussion regarding use of the study results, comparison with the 2001 Waste Composition Study results, and identification of waste diversion opportunities is provided in Section 4.

Table 1.1: Composition of Residential and Commercial Waste Disposed (% by weight)

Material Categories		Single-Family	Multi-Family	Commercial	Aggregate
1	Newspaper	2.2%	2.4%	0.8%	1.8%
2	Corrugated Containers	4.7%	2.8%	11.1%	6.3%
3	Office Paper	1.1%	1.3%	1.0%	1.1%
4	Other Recyclable Paper	11.3%	13.6%	8.3%	10.8%
6	Aseptic Containers	0.2%	0.3%	0.1%	0.2%
	Accepted Recyclable Fiber	19.4%	20.4%	21.3%	20.2%
7	PET Containers	1.5%	2.9%	1.7%	1.8%
8	HDPE Containers	1.0%	1.0%	0.9%	1.0%
10	Other Plastic Containers (#3-#7)	1.0%	1.6%	0.9%	1.1%
15	Tin/Steel Cans	1.5%	0.9%	1.3%	1.3%
18	Aluminum Cans	0.8%	1.9%	1.0%	1.1%
20	Glass Containers	4.3%	7.3%	2.2%	4.2%
	Accepted Recyclable Containers	10.0%	15.6%	8.0%	10.5%
30	Yard Waste	15.2%	3.2%	5.0%	9.9%
MATERIALS ACCEPTED IN EXISTING PROGRAMS		44.7%	39.2%	34.3%	40.5%
9	Other Non-Bottle Plastics #1 and #2	0.6%	0.7%	0.8%	0.7%
11	Bulky Rigid Plastics	1.2%	1.0%	1.8%	1.4%
12	Non-Rigid Plastic Film	5.3%	5.0%	6.4%	5.6%
13	Expanded Polystyrene	0.9%	1.0%	1.0%	0.9%
14	All Other Plastics	1.6%	1.3%	0.8%	1.3%
16	White Goods/Small Appliances	0.1%	2.1%	0.0%	0.4%
17	Other Ferrous	2.4%	1.6%	0.8%	1.7%
19	Other Non-Ferrous	0.4%	0.4%	0.6%	0.5%
24	Electronics	1.3%	1.1%	1.5%	1.3%
OTHER POTENTIALLY RECYCLABLE MATERIALS		13.8%	14.2%	13.8%	13.9%
5	Low Grade Paper	4.5%	8.6%	6.3%	5.8%
26	Clean Wood Waste	0.3%	0.0%	3.8%	1.3%
31	Food Waste	11.7%	19.3%	14.9%	14.1%
OTHER COMPOSTABLE MATERIALS		16.6%	27.9%	25.0%	21.3%
21	Other Glass	0.5%	1.2%	0.5%	0.6%
22	Textiles	4.9%	0.7%	2.6%	3.5%
23	Special Wastes	0.0%	0.0%	0.3%	0.1%
25	Household Batteries	0.1%	0.1%	0.1%	0.1%
27	Treated Wood Waste	0.6%	1.1%	2.8%	1.4%
28	C&D Debris	7.5%	2.0%	6.6%	6.2%
29	Tires and Rubber	0.4%	0.2%	0.3%	0.3%
32	All Other Garbage	10.2%	11.1%	11.9%	10.9%
33	Liquids	0.7%	2.2%	1.5%	1.2%
34	Grit	0.0%	0.0%	0.3%	0.1%
ALL OTHER MATERIALS		25.0%	18.7%	26.8%	24.3%
TOTALS		100.0%	100.0%	100.0%	100.0%

Table 1.2: Composition of Single Stream Recyclables (% by weight)

Material Category		Weighted Average	90% Confidence Interval	
			Lower Bounds	Upper Bounds
1	Newspaper	14.3%	12.0%	16.6%
2	Corrugated Containers	14.7%	12.0%	17.3%
3	Wax Cardboard	0.0%	0.0%	0.1%
4	Mixed Paper	23.3%	19.6%	27.1%
5	Loose Shredded Paper	0.2%	0.0%	0.5%
6	Aseptic Containers	0.4%	0.3%	0.6%
7	PET Bottles	4.5%	3.9%	5.1%
8	Natural HDPE Bottles	1.8%	1.4%	2.2%
9	Colored HDPE Bottles	1.8%	1.4%	2.1%
10	Non Bottle PET	0.8%	0.7%	1.0%
11	Non Bottle HDPE	0.8%	0.6%	1.0%
12	Polystyrene Containers	0.5%	0.4%	0.7%
13	Mixed Plastic Containers	1.6%	1.3%	1.9%
14	Bulky Rigid Plastic	1.8%	1.0%	2.7%
15	Plastic Film	1.4%	1.1%	1.6%
16	Non Container Polystyrene	0.3%	0.1%	0.5%
17	Glass Containers	19.2%	15.2%	23.2%
18	Aluminum Cans	1.9%	1.7%	2.2%
19	Aluminum Foil and Pie Plates	0.3%	0.1%	0.4%
20	Tin/Steel Cans	2.2%	1.9%	2.5%
21	Scrap Metals	0.8%	0.3%	1.2%
22	Rejects	3.9%	2.7%	5.2%
23	Grit	3.1%	2.3%	3.9%
24	Liquids	0.4%	0.2%	0.6%
TOTAL		100.0%		

Note: Columns might not appear to add correctly due to rounding.

Section 2

Methodology

2.1 Generator Sectors

The WCS focused on residential and commercial waste delivered to the FWB Transfer Station. Three waste generator sectors were evaluated during the study:

- Single-family residential waste
- Multi-family residential waste
- Commercial waste

The RCS had a single generator sector, single stream recyclables.

2.2 Material Categories

KCI worked with County staff to develop a list of 34 material categories into which waste would be sorted (see Appendix A) and a separate, but similar, list of material categories into which recyclables would be sorted (Appendix B). To develop these material category lists, KCI reviewed the following information:

- FDEP Annual Solid Waste Management Report forms – All of the material categories used in the WCS can be correlated to those required by FDEP in the annual reporting by counties.
- Recyclable materials accepted in the County’s curbside program, as well as those that might potentially be added to the recycling program. The study results will help identify additional materials that could potentially be diverted from disposal.

2.3 Locations, Equipment and Labor

Field work was conducted from July 28 through August 2, 2014 at the FWB Transfer Station. KCI provided, all sorting equipment, safety gear, a scale calibrated to 0.02 pounds (and backup scale calibrated to 0.05 pounds), and two staff persons to oversee all sampling, sorting, weighing, and data recording. The County’s transfer station operator, Waste Management, provided a loader and operator to gather samples and to remove waste upon completion of sorting activities. All sort labor was provided by KCI.

KCI prepared and County and Waste Management staff reviewed and approved a site safety plan that was followed throughout the sorting event. KCI worked closely with Waste Management staff to coordinate and set up a sort location that would ensure worker safety. Each morning of the event, sorters were given thorough safety instructions by one of KCI’s Supervisors to ensure safety and proper sorting. No injuries or emergencies occurred during the sorting event.

2.4 Sampling and Sorting Procedures

Sample selection was organized by generator sector to ensure a sufficient number of samples would be sorted for each generator sector to achieve statistically valid results. KCI reviewed tonnage data and worked with the haulers to develop a sampling schedule. Table 2.1 provides the total number and geographic distribution of samples pulled and sorted for each generator. A total of 56 representative samples were sorted.

Table 2.1: Sampling Schedule

Area	Single-Family			Multi-Family	Commercial		Recyclables			
	Tonnage		# Samples	# Samples	Tonnage	# Samples	Tonnage		# Samples	
Unincorporated	35,901	72.8%	9	5	16,510	35.3%	7	4,327	71.2%	10
Destin	5,834	11.8%	2		16,367	35.0%	7	477	7.8%	1
Niceville	4,913	10.0%	2		4,258	9.1%	2	682	11.2%	2
Mary Esther	1,805	3.7%	1		5,065	10.8%	3	147	2.4%	1
Shalimar	459	0.9%	1		238	0.5%	1	54	0.9%	1
Cinco Bayou	301	0.6%			513	1.1%		391	6.4%	1
Laurel Hill	114	0.2%			0	0.0%		0	0.0%	
Eglin Dorado	0	0.0%			3,839	8.2%		0	0.0%	
	49,327	100.0%	15		5	46,790	100.0%	20	6,078	100.0%

KCI’s Study Supervisor interviewed incoming drivers to confirm the generator sector and origin of the waste. Once a load was selected for sampling, the Study Supervisor noted the following information on the data recording form: the recorder’s name, hauler name and area of County, date and time, type of vehicle, sample number, and any visual observations about the load. The vehicle driver was then directed to the sampling area to tip. The load was visually divided into six sections and, based on a die roll, one of the six sections were selected. A representative sample of at least 200 pounds for the WCS or at least 150 pounds for the RCS was pulled. The selected sample was then placed on a tarp, labeled, and stored until sorted.

Selected samples were placed on KCI’s customized sorting table and sorted into the previously defined material categories. Photo 2.1 depicts a sample ready to be sorted. After the entire sample was sorted, the Sorting Supervisor weighed and recorded the weights of each container on a data recording form.

Photo 2.1: Sample Staged for Sorting



2.5 Analytical Procedures

After the field work was completed, KCI calculated the weighted average of each material category for each generator sector. Data analysis followed industry-accepted standards for statistical sampling, as outlined in the *ASTM Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste (D5231-92; reapproved 2008)*. Using a standard statistical t-test, the 90 percent confidence intervals were calculated for each material category.

To obtain the combined composition of waste received at the FWB Transfer Station for disposal, the three waste generator sectors (single-family residential, multi-family residential, and commercial) were combined based on the amount of waste each generator sector contributes to the overall waste stream. To determine the percentage that each contributes, KCI utilized the County's 2013 Annual Report submitted to the FDEP.

- Single-family residential – 50.9 percent
- Multi-family residential – 18.8 percent
- Commercial – 30.3 percent

Section 3

Results

3.1 Introduction to Results

All results presented in this section are expressed in percentage by weight. The percentages included in the tables and figures are the mean values for each material category. Where appropriate, the tables also provide the 90 percent confidence intervals for each material category. The confidence interval indicates that, with a 90 percent level of confidence, the actual arithmetic mean is within the upper and lower limits shown. This provides an understanding of how much variation occurred in the quantity of that material category found in the samples sorted. Generally, the more homogeneous the waste stream and the greater the number of samples sorted, the higher the level of accuracy achieved and the narrower the margin between the upper and lower bounds of the confidence interval.

All tables and figures referenced in this section are provided at the end of the section. The percentages in the tables and figures are rounded to the nearest tenth of a percent; therefore, when added together, they might not appear to total correctly.

3.2 Aggregate Waste Stream

Data for the three waste generator sectors (single-family residential, multi-family residential, and commercial) were combined to calculate the combined composition of waste delivered to the FWB Transfer Station for transfer and disposal. This is collectively referred to as the Aggregate Waste Stream. Figure 3.1 depicts the composition of the Aggregate Waste Stream, and Table 3.1 presents the contribution of the three generator sectors to this composition.

The primary types of potentially recyclable or compostable materials are noted below. Substantial opportunities exist to increase waste diversion, with recyclable fiber and containers included in the County's existing recycling program comprising approximately 30.7 percent of the waste stream. Compostable materials (yard waste, food waste, low-grade paper, and clean wood waste) contribute an additional 31.1 percent.

Material Categories	Percent by Weight
Recyclable Fiber	20.2%
Recyclable Containers	10.5%
Yard Waste	9.9%
Food Waste	14.1%
Other Compostables	7.1%
Subtotal	61.8%

3.3 Single-Family Residential Waste

Figure 3.2 depicts the composition of waste disposed by single-family residents within the County and Table 3.2 provides additional details and the 90 percent confidence intervals for each material category. Individual sample data for the Single-Family Residential sector can be found in Appendix C.

Recyclable fiber and containers accepted in the County's existing recycling program comprise approximately 29.4 percent of the single-family residential waste stream. Compostable materials (yard waste, food waste, low-grade paper, and clean wood waste) contribute an additional 31.7 percent.

Material Categories	Percent by Weight
Recyclable Fiber	19.4%
Recyclable Containers	10.0%
Yard Waste	15.2%
Food Waste	11.7%
Other Compostables	4.9%
Subtotal	61.2%

3.4 Multi-Family Residential Waste

Figure 3.3 depicts the composition of waste disposed of by multi-family residents and Table 3.3 provides additional details and the 90 percent confidence intervals for each material category. Individual sample data for the Multi-Family Residential sector can be found in Appendix D.

Recyclable fiber and containers collected as part of the County's existing recycling program comprise approximately 36.0 percent of the waste stream. Compostable materials (food waste, yard waste, and low-grade paper) contribute an additional 31.1 percent of multi-family waste that is disposed.

Material Categories	Percent by Weight
Recyclable Fiber	20.4%
Recyclable Containers	15.6%
Yard Waste	3.2%
Food Waste	19.3%
Other Compostables	8.6%
Subtotal	67.1%

3.5 Commercial Waste

Figure 3.4 depicts the composition of commercial waste delivered to the County’s facilities for disposal and Table 3.4 provides additional details and the 90 percent confidence intervals for each material category. Individual sample data for the Commercial sector can be found in Appendix E.

Recyclable fiber and containers accepted as part of the County’s existing recycling program comprise 29.3 percent of the commercial waste stream. Compostable materials (food waste, yard waste, low-grade paper, and clean wood waste) contribute an additional 30 percent.

Material Categories	Percent by Weight
Recyclable Fiber	21.3%
Recyclable Containers	8.0%
Yard Waste	5.0%
Food Waste	14.9%
Other Compostables	10.1%
Subtotal	59.3%

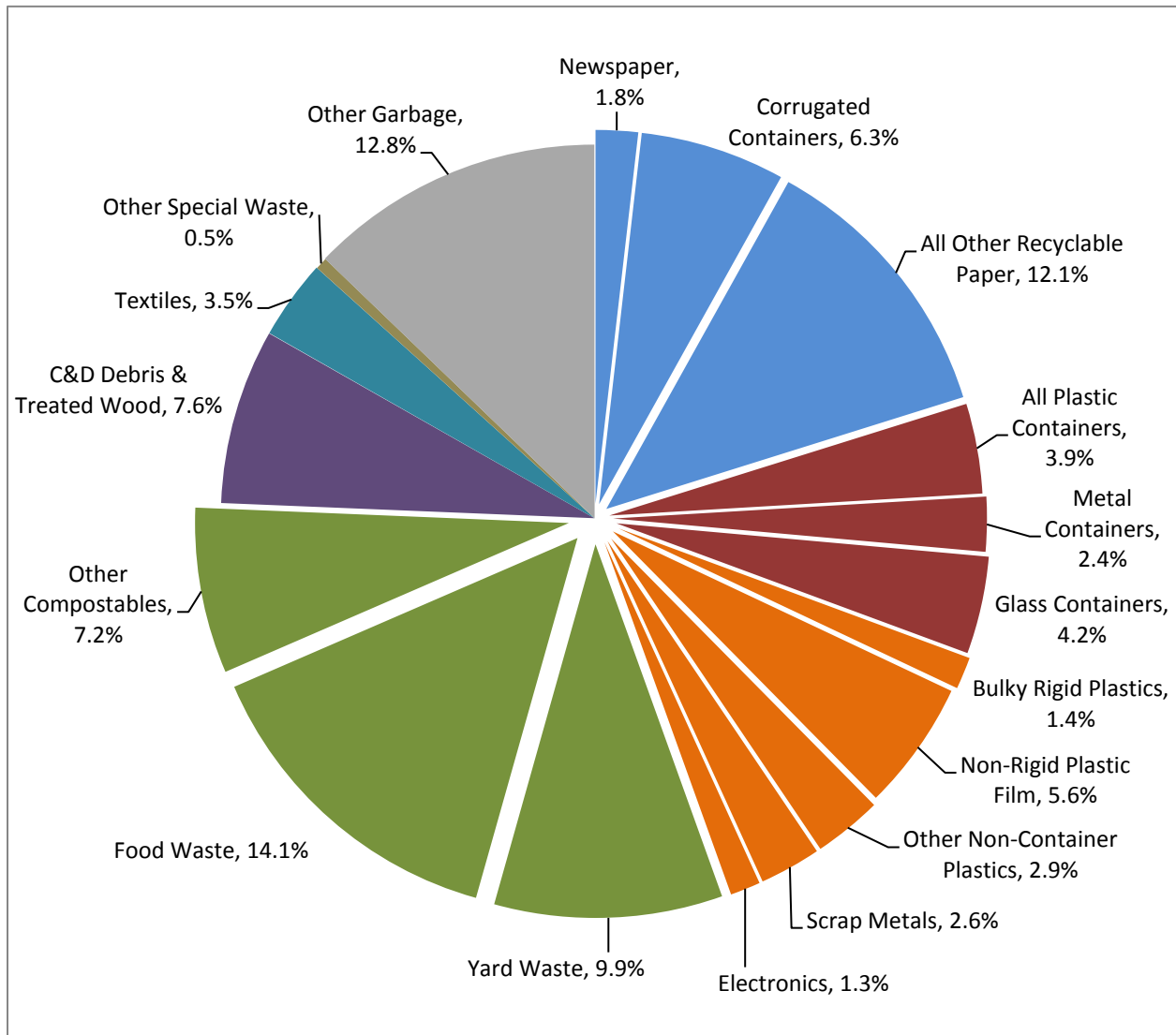
3.6 Single Stream Recyclables

Figure 3.5 depicts the composition of single stream recyclables delivered to the FWB Transfer Station for transfer and processing. Individual sample data for the Single Stream Recyclables sector can be found in Appendix F.

As summarized below, recyclable fiber comprises 52.9 percent of the recyclables stream and containers represent 33.2 percent. Materials not included in the recycling program, including various types of plastics, scrap metals, and other materials) make up the remaining 13.8 percent. Although not specifically included in the recycling program, some of the plastics and scrap metals are likely being recycled by the processor.

Material Categories	Percent by Weight
Recyclable Fiber	52.9%
Recyclable Containers	33.2%
Plastics Not in Program	5.6%
Scrap Metals	0.8%
Non-Recyclable Materials	7.4%
Subtotal	100.0%

Figure 3.1: Composition of Aggregate Waste Stream Disposed (% by weight)



Note: For the purpose of this chart, the following material categories have been combined:

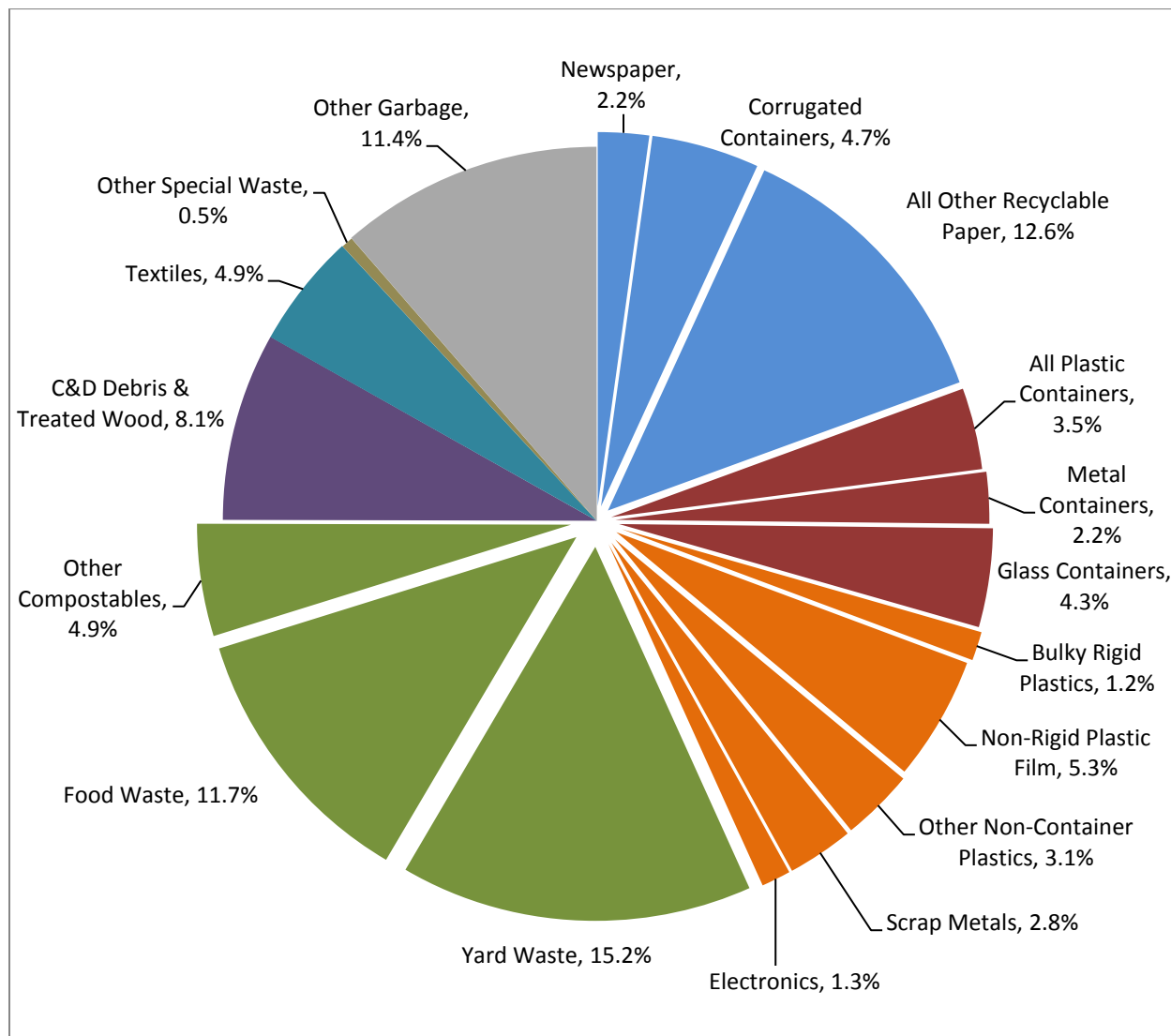
- All Other Recyclable Paper includes Office Paper, Other Recyclable Paper, and Aseptic Containers.
- All Plastic Containers includes PET, HDPE and Other Plastic Containers (#3-#7).
- Metal Containers includes Tin/Steel Cans and Aluminum Cans.
- Other Non-Container Plastics includes Non-Bottle Plastics #1 and #2, Expanded Polystyrene, and All Other Plastics.
- Scrap Metals includes Other Ferrous, Other Non-Ferrous, and White Goods/Small Appliances.
- Other Compostables includes Low-Grade Paper and Clean Wood Waste.
- Other Special Wastes includes Special Wastes, Household Batteries, and Tires and Rubber.
- Other Garbage includes Other Glass, All Other Garbage, Liquids, and Grit.

Table 3.1: Composition of Aggregate Waste Stream, by Generator Sector (% by weight)

	Material Category	Single-Family	Multi-Family	Commercial	Aggregate (Combined)
1	Newspaper	2.2%	2.4%	0.8%	1.8%
2	Corrugated Containers	4.7%	2.8%	11.1%	6.3%
3	Office Paper	1.1%	1.3%	1.0%	1.1%
4	Other Recyclable Paper	11.3%	13.6%	8.3%	10.8%
5	Low Grade Paper	4.5%	8.6%	6.3%	5.8%
6	Aseptic Containers	0.2%	0.3%	0.1%	0.2%
7	PET Containers	1.5%	2.9%	1.7%	1.8%
8	HDPE Containers	1.0%	1.0%	0.9%	1.0%
9	Non-Bottle Plastics #1 and #2	0.6%	0.7%	0.8%	0.7%
10	Other Plastic Containers (#3-#7)	1.0%	1.6%	0.9%	1.1%
11	Bulky Rigid Plastics	1.2%	1.0%	1.8%	1.4%
12	Non-Rigid Plastic Film	5.3%	5.0%	6.4%	5.6%
13	Expanded Polystyrene	0.9%	1.0%	1.0%	0.9%
14	All Other Plastics	1.6%	1.3%	0.8%	1.3%
15	Tin/Steel Cans	1.5%	0.9%	1.3%	1.3%
16	White Goods/Small Appliances	0.1%	2.1%	0.0%	0.4%
17	Other Ferrous	2.4%	1.6%	0.8%	1.7%
18	Aluminum Cans	0.8%	1.9%	1.0%	1.1%
19	Other Non-Ferrous	0.4%	0.4%	0.6%	0.5%
20	Glass Containers	4.3%	7.3%	2.2%	4.2%
21	Other Glass	0.5%	1.2%	0.5%	0.6%
22	Textiles	4.9%	0.7%	2.6%	3.5%
23	Special Wastes	0.0%	0.0%	0.3%	0.1%
24	Electronics	1.3%	1.1%	1.5%	1.3%
25	Household Batteries	0.1%	0.1%	0.1%	0.1%
26	Clean Wood Waste	0.3%	0.0%	3.8%	1.3%
27	Treated Wood Waste	0.6%	1.1%	2.8%	1.4%
28	C&D Debris	7.5%	2.0%	6.6%	6.2%
29	Tires and Rubber	0.4%	0.2%	0.3%	0.3%
30	Yard Waste	15.2%	3.2%	5.0%	9.9%
31	Food Waste	11.7%	19.3%	14.9%	14.1%
32	All Other Garbage	10.2%	11.1%	11.9%	10.9%
33	Liquids	0.7%	2.2%	1.5%	1.2%
34	Grit	0.0%	0.0%	0.3%	0.1%
	Sector Generation Rates	50.9%	18.8%	30.3%	100.0%

Note: Columns might not appear to add correctly due to rounding.

Figure 3.2: Composition of Single-Family Residential Waste Disposed (% by weight)



Note: For the purpose of this chart, the following material categories have been combined:

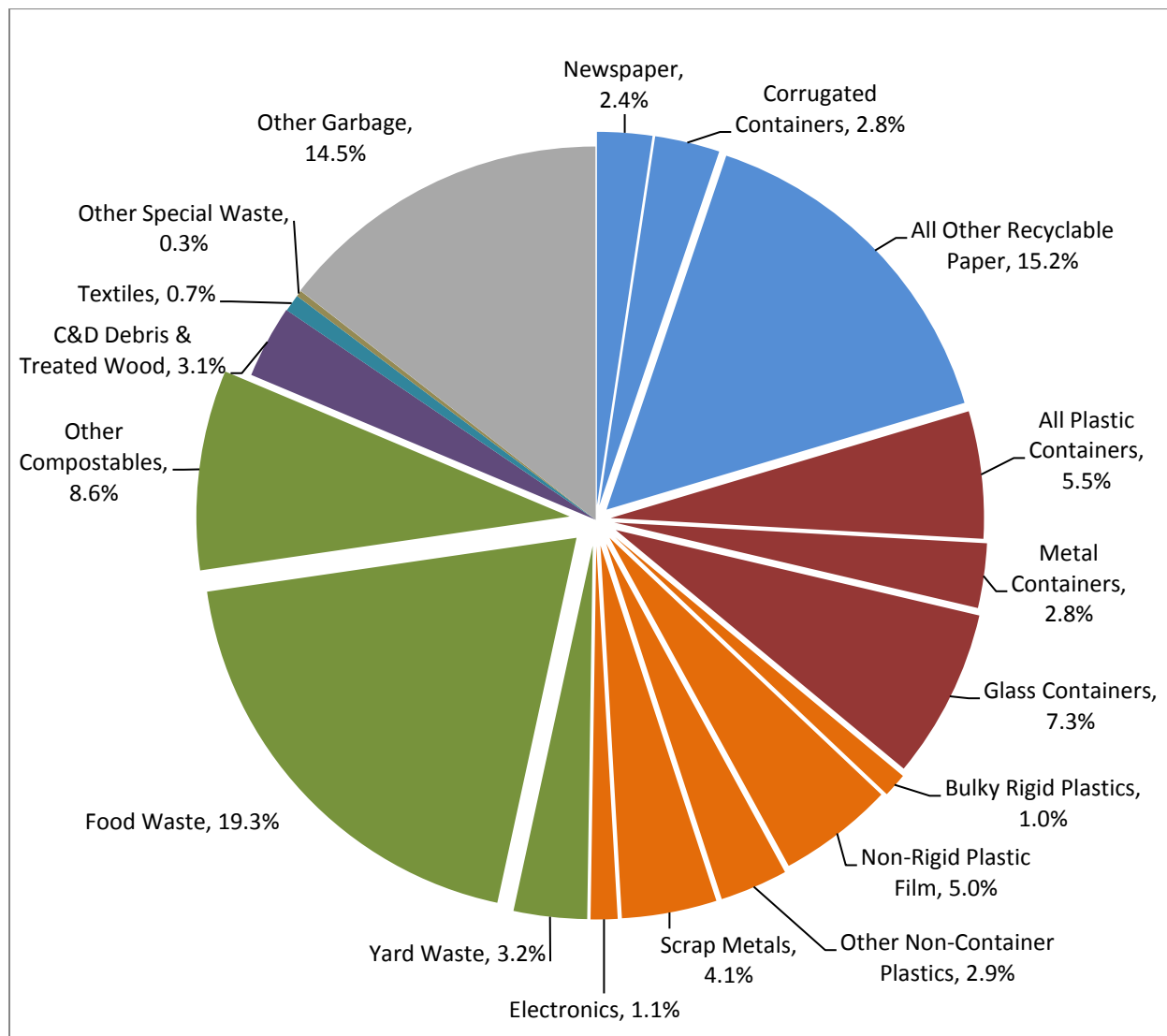
- All Other Recyclable Paper includes Office Paper, Other Recyclable Paper, and Aseptic Containers.
- All Plastic Containers includes PET, HDPE and Other Plastic Containers (#3-#7).
- Metal Containers includes Tin/Steel Cans and Aluminum Cans.
- Other Non-Container Plastics includes Non-Bottle Plastics #1 and #2, Expanded Polystyrene, and All Other Plastics.
- Scrap Metals includes Other Ferrous, Other Non-Ferrous, and White Goods/Small Appliances.
- Other Compostables includes Low-Grade Paper and Clean Wood Waste.
- Other Special Wastes includes Special Wastes, Household Batteries, and Tires and Rubber.
- Other Garbage includes Other Glass, All Other Garbage, Liquids, and Grit.

Table 3.2: Composition of Single-Family Residential Waste Disposed (% by weight)

	Material Category	Weighted Average	90% Confidence Interval	
			Lower Bounds	Upper Bounds
1	Newspaper	2.2%	1.3%	3.1%
2	Corrugated Containers	4.7%	3.3%	6.0%
3	Office Paper	1.1%	0.7%	1.4%
4	Other Recyclable Paper	11.3%	9.5%	13.1%
5	Low Grade Paper	4.5%	3.6%	5.4%
6	Aseptic Containers	0.2%	0.1%	0.3%
7	PET Containers	1.5%	1.2%	1.8%
8	HDPE Containers	1.0%	0.8%	1.2%
9	Non-Bottle Plastics #1 and #2	0.6%	0.3%	1.0%
10	Other Plastic Containers (#3-#7)	1.0%	0.8%	1.3%
11	Bulky Rigid Plastics	1.2%	0.8%	1.7%
12	Non-Rigid Plastic Film	5.3%	4.5%	6.1%
13	Expanded Polystyrene	0.9%	0.7%	1.0%
14	All Other Plastics	1.6%	0.7%	2.5%
15	Tin/Steel Cans	1.5%	1.1%	1.8%
16	White Goods/Small Appliances	0.1%	-0.1%	0.3%
17	Other Ferrous	2.4%	1.4%	3.3%
18	Aluminum Cans	0.8%	0.6%	0.9%
19	Other Non-Ferrous	0.4%	0.3%	0.5%
20	Glass Containers	4.3%	2.7%	5.9%
21	Other Glass	0.5%	0.2%	0.9%
22	Textiles	4.9%	2.7%	7.2%
23	Special Wastes	0.0%	0.0%	0.0%
24	Electronics	1.3%	0.6%	2.0%
25	Household Batteries	0.1%	0.1%	0.2%
26	Clean Wood Waste	0.3%	0.1%	0.6%
27	Treated Wood Waste	0.6%	0.2%	1.0%
28	C&D Debris	7.5%	3.1%	11.9%
29	Tires and Rubber	0.4%	0.0%	0.7%
30	Yard Waste	15.2%	10.2%	20.2%
31	Food Waste	11.7%	8.7%	14.7%
32	All Other Garbage	10.2%	8.5%	11.9%
33	Liquids	0.7%	0.3%	1.0%
34	Grit	0.0%	0.0%	0.0%
TOTAL		100.0%		

Note: Columns might not appear to add correctly due to rounding.

Figure 3.3: Composition of Multi-Family Residential Waste Disposed (% by weight)



Note: For the purpose of this chart, the following material categories have been combined:

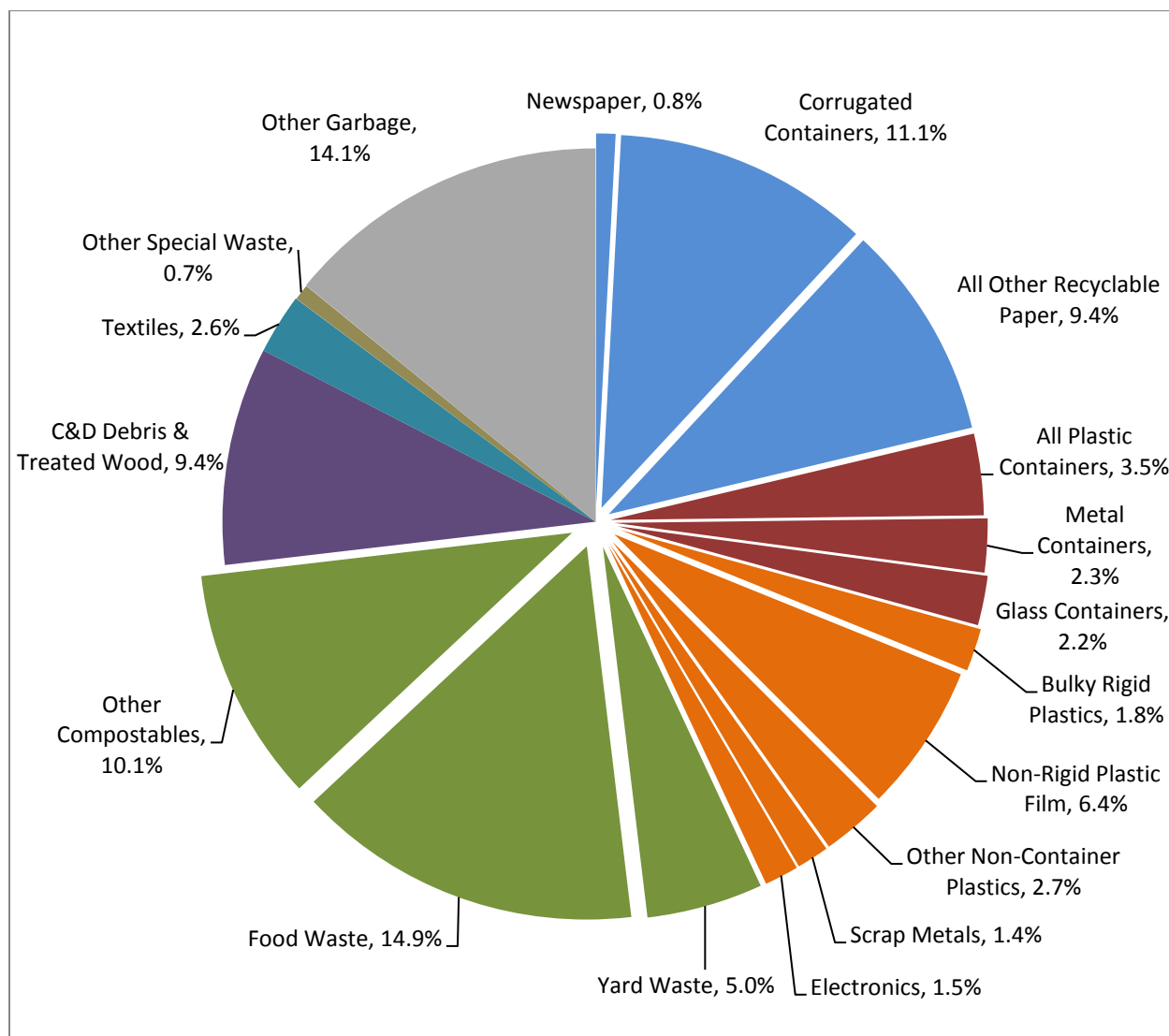
- All Other Recyclable Paper includes Office Paper, Other Recyclable Paper, and Aseptic Containers.
- All Plastic Containers includes PET, HDPE and Other Plastic Containers (#3-#7).
- Metal Containers includes Tin/Steel Cans and Aluminum Cans.
- Other Non-Container Plastics includes Non-Bottle Plastics #1 and #2, Expanded Polystyrene, and All Other Plastics.
- Scrap Metals includes Other Ferrous, Other Non-Ferrous, and White Goods/Small Appliances.
- Other Compostables includes Low-Grade Paper and Clean Wood Waste.
- Other Special Wastes includes Special Wastes, Household Batteries, and Tires and Rubber.
- Other Garbage includes Other Glass, All Other Garbage, Liquids, and Grit.

Table 3.3: Composition of Multi-Family Residential Waste Disposed (% by weight)

	Material Category	Weighted Average	90% Confidence Interval	
			Lower Bounds	Upper Bounds
1	Newspaper	2.4%	0.7%	4.1%
2	Corrugated Containers	2.8%	1.5%	4.1%
3	Office Paper	1.3%	0.4%	2.1%
4	Other Recyclable Paper	13.6%	8.4%	18.9%
5	Low Grade Paper	8.6%	6.6%	10.6%
6	Aseptic Containers	0.3%	0.1%	0.4%
7	PET Containers	2.9%	2.4%	3.4%
8	HDPE Containers	1.0%	0.6%	1.4%
9	Non-Bottle Plastics #1 and #2	0.7%	0.3%	1.0%
10	Other Plastic Containers (#3-#7)	1.6%	0.7%	2.4%
11	Bulky Rigid Plastics	1.0%	0.3%	1.8%
12	Non-Rigid Plastic Film	5.0%	2.5%	7.5%
13	Expanded Polystyrene	1.0%	0.7%	1.2%
14	All Other Plastics	1.3%	0.3%	2.3%
15	Tin/Steel Cans	0.9%	0.6%	1.2%
16	White Goods/Small Appliances	2.1%	-1.9%	6.1%
17	Other Ferrous	1.6%	0.9%	2.4%
18	Aluminum Cans	1.9%	1.5%	2.3%
19	Other Non-Ferrous	0.4%	0.3%	0.5%
20	Glass Containers	7.3%	4.5%	10.2%
21	Other Glass	1.2%	-0.7%	3.2%
22	Textiles	0.7%	0.3%	1.2%
23	Special Wastes	0.0%	0.0%	0.0%
24	Electronics	1.1%	-0.8%	3.1%
25	Household Batteries	0.1%	-0.1%	0.4%
26	Clean Wood Waste	0.0%	0.0%	0.0%
27	Treated Wood Waste	1.1%	-1.3%	3.5%
28	C&D Debris	2.0%	-0.7%	4.7%
29	Tires and Rubber	0.2%	-0.2%	0.5%
30	Yard Waste	3.2%	-0.9%	7.3%
31	Food Waste	19.3%	12.8%	25.8%
32	All Other Garbage	11.1%	4.5%	17.7%
33	Liquids	2.2%	1.2%	3.1%
34	Grit	0.0%	0.0%	0.0%
TOTAL		100.0%		

Note: Columns might not appear to add correctly due to rounding.

Figure 3.4: Composition of Commercial Waste Disposed (% by weight)



Note: For the purpose of this chart, the following material categories have been combined:

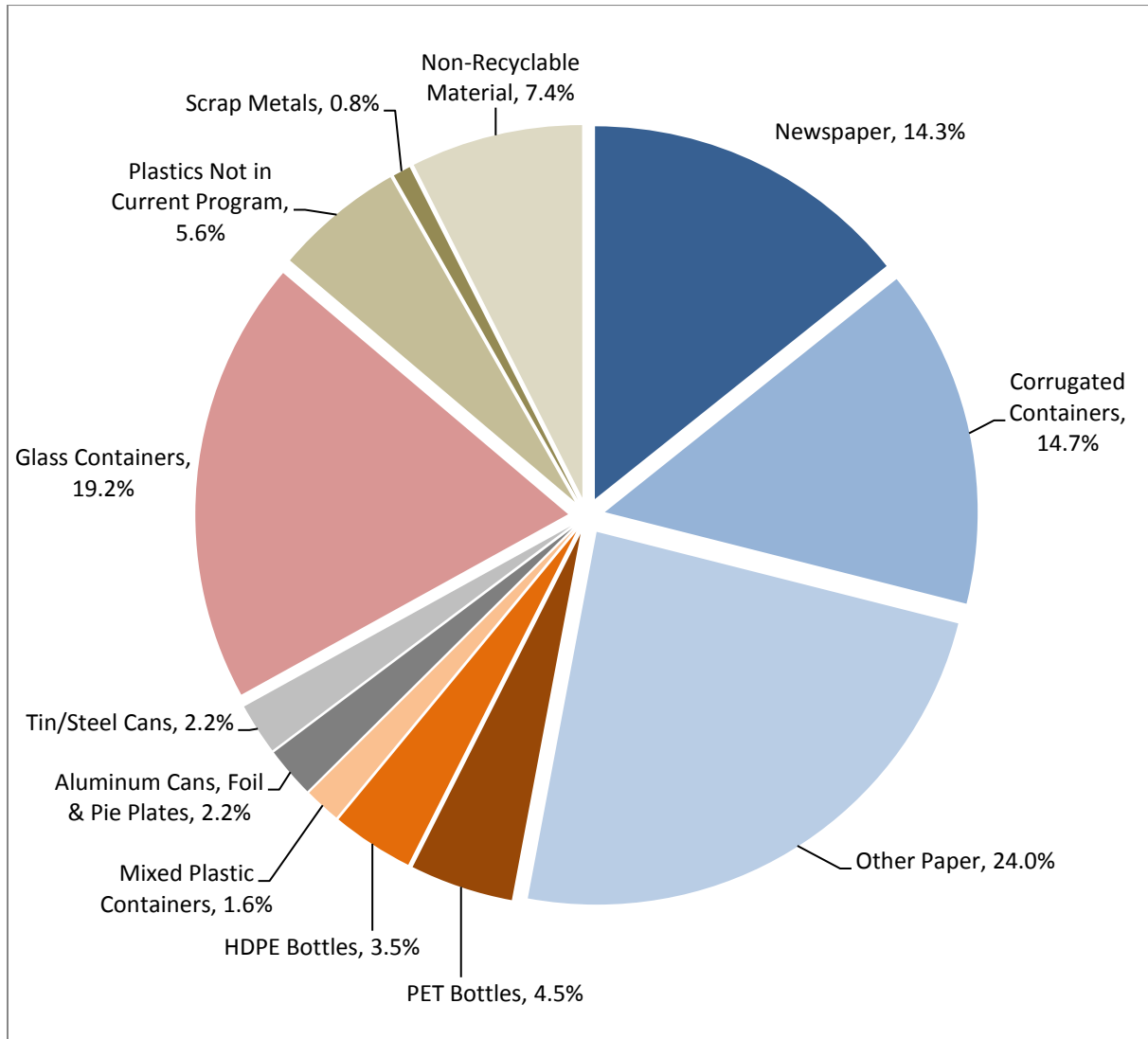
- All Other Recyclable Paper includes Office Paper, Other Recyclable Paper, and Aseptic Containers.
- All Plastic Containers includes PET, HDPE and Other Plastic Containers (#3-#7).
- Metal Containers includes Tin/Steel Cans and Aluminum Cans.
- Other Non-Container Plastics includes Non-Bottle Plastics #1 and #2, Expanded Polystyrene, and All Other Plastics.
- Scrap Metals includes Other Ferrous, Other Non-Ferrous, and White Goods/Small Appliances.
- Other Compostables includes Low-Grade Paper and Clean Wood Waste.
- Other Special Wastes includes Special Wastes, Household Batteries, and Tires and Rubber.
- Other Garbage includes Other Glass, All Other Garbage, Liquids, and Grit.

Table 3.4: Composition of Commercial Waste Disposed (% by weight)

	Material Category	Weighted Average	90% Confidence Interval	
			Lower Bounds	Upper Bounds
1	Newspaper	0.8%	0.3%	1.3%
2	Corrugated Containers	11.1%	9.1%	13.1%
3	Office Paper	1.0%	0.5%	1.5%
4	Other Recyclable Paper	8.3%	6.3%	10.2%
5	Low Grade Paper	6.3%	4.7%	7.9%
6	Aseptic Containers	0.1%	0.1%	0.2%
7	PET Containers	1.7%	1.3%	2.2%
8	HDPE Containers	0.9%	0.7%	1.1%
9	Non-Bottle Plastics #1 and #2	0.8%	0.6%	1.1%
10	Other Plastic Containers (#3-#7)	0.9%	0.7%	1.2%
11	Bulky Rigid Plastics	1.8%	1.0%	2.7%
12	Non-Rigid Plastic Film	6.4%	5.3%	7.5%
13	Expanded Polystyrene	1.0%	0.7%	1.3%
14	All Other Plastics	0.8%	0.5%	1.2%
15	Tin/Steel Cans	1.3%	1.0%	1.7%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%
17	Other Ferrous	0.8%	0.4%	1.1%
18	Aluminum Cans	1.0%	0.6%	1.4%
19	Other Non-Ferrous	0.6%	0.2%	1.1%
20	Glass Containers	2.2%	1.6%	2.7%
21	Other Glass	0.5%	-0.1%	1.0%
22	Textiles	2.6%	1.5%	3.7%
23	Special Wastes	0.3%	0.0%	0.6%
24	Electronics	1.5%	-0.6%	3.6%
25	Household Batteries	0.1%	0.0%	0.2%
26	Clean Wood Waste	3.8%	2.0%	5.6%
27	Treated Wood Waste	2.8%	0.7%	4.9%
28	C&D Debris	6.6%	3.1%	10.1%
29	Tires and Rubber	0.3%	0.0%	0.6%
30	Yard Waste	5.0%	2.5%	7.6%
31	Food Waste	14.9%	10.8%	19.0%
32	All Other Garbage	11.9%	9.1%	14.6%
33	Liquids	1.5%	0.9%	2.1%
34	Grit	0.3%	-0.1%	0.6%
TOTAL		100.0%		

Note: Columns might not appear to add correctly due to rounding.

Figure 3.5: Composition of Single Stream Recyclables (% by weight)



Note: For the purpose of this chart, the following material categories have been combined:

- Other Paper includes Mixed Paper, Loose Shredded Paper, and Aseptic Containers.
- HDPE Bottles includes Natural and Colored HDPE Bottles
- Plastics Not in Current Program includes Non-Bottle PET, Non-Bottle HDPE, Polystyrene Containers, Bulky Rigid Plastics, Plastic Film, and Non-Container Polystyrene.
- Non-Recyclable Material includes Rejects, Grit, and Liquids.

Table 3.5: Composition of Single Stream Recyclables (% by weight)

Material Category		Weighted Average	90% Confidence Interval	
			Lower Bounds	Upper Bounds
1	Newspaper	14.3%	12.0%	16.6%
2	Corrugated Containers	14.7%	12.0%	17.3%
3	Wax Cardboard	0.0%	0.0%	0.1%
4	Mixed Paper	23.3%	19.6%	27.1%
5	Loose Shredded Paper	0.2%	0.0%	0.5%
6	Aseptic Containers	0.4%	0.3%	0.6%
7	PET Bottles	4.5%	3.9%	5.1%
8	Natural HDPE Bottles	1.8%	1.4%	2.2%
9	Colored HDPE Bottles	1.8%	1.4%	2.1%
10	Non Bottle PET	0.8%	0.7%	1.0%
11	Non Bottle HDPE	0.8%	0.6%	1.0%
12	Polystyrene Containers	0.5%	0.4%	0.7%
13	Mixed Plastic Containers	1.6%	1.3%	1.9%
14	Bulky Rigid Plastic	1.8%	1.0%	2.7%
15	Plastic Film	1.4%	1.1%	1.6%
16	Non Container Polystyrene	0.3%	0.1%	0.5%
17	Glass Containers	19.2%	15.2%	23.2%
18	Aluminum Cans	1.9%	1.7%	2.2%
19	Aluminum Foil and Pie Plates	0.3%	0.1%	0.4%
20	Tin/Steel Cans	2.2%	1.9%	2.5%
21	Scrap Metals	0.8%	0.3%	1.2%
22	Rejects	3.9%	2.7%	5.2%
23	Grit	3.1%	2.3%	3.9%
24	Liquids	0.4%	0.2%	0.6%
TOTAL		100.0%		

Note: Columns might not appear to add correctly due to rounding.

Section 4

Discussion of Findings

4.1 Use of Study Results in State Reporting

The WCS results estimate the composition of residential and commercial municipal solid waste received by the County for disposal. The results do not include materials diverted for recycling or composting, bulky or other types of waste received at the County facilities for disposal, or waste materials processed or disposed of at other facilities. To determine the composition of waste generated within the entire County, which is required in annual reports to FDEP, these materials need to be added to the study results.

Attachment G provides instructions, as well as a form, for County staff to utilize when determining the composition of all waste generated within the County. KCI will also provide County staff with an electronic version of this form for use when compiling future FDEP annual reports.

4.2 Comparison with 2001 Study Results

Table 4.1 compares the results of this WCS with the 2001 study data. The following changes are worth noting:

- The percentage of newspaper has dropped substantially in all sectors. This is expected due to the trend toward electronic news media and the commensurate downsizing of many printed newspapers. It also reflects the County's recycling efforts. Most people recognize newspaper as recyclable; therefore, individuals who participate in recycling likely recycle their newspaper.
- The percentage of all other paper grades also declined, most notably office paper. Again, this is possibly due to increased use of electronic communications and data management systems.
- The percentages of most plastic categories, most notably plastic containers #3-#7 and PET containers, have increased. This reflects changes in product packaging and consumer preferences over the past decade, with a trend toward lighter-weight plastic containers.
- The percentage of C&D debris in the single-family residential waste stream has nearly tripled, reflective of more "do-it-yourselfers" making home improvements.
- The percentage of yard waste in the single-family residential waste stream has more than doubled since 2001. Separate yard waste collection is part of basic curbside collection services; however, residents might need to be reminded of the need to separate their yard waste. Additionally, the County should work with its franchised hauler to ensure they are not picking up yard waste with solid waste, and that they are providing non-collection notices when they notice the mixing of the two streams.

Table 4.1: Comparison of 2014 and 2001 Waste Composition Results (% by weight)

Material Category	Single-Family Residential			Multi-Family Residential			Commercial			Aggregate (Combined)		
	2014	2001	% Change	2014	2001	% Change	2014	2001	% Change	2014	2001	% Change
1 Newspaper	2.2%	5.2%	-57.7%	2.4%	5.8%	-58.6%	0.8%	2.8%	-71.4%	1.8%	3.8%	-52.6%
2 Corrugated Containers	4.7%	4.8%	-2.1%	2.8%	7.8%	-64.1%	11.1%	20.5%	-45.9%	6.3%	14.5%	-56.6%
3 Office Paper	1.1%	3.1%	-64.5%	1.3%	2.1%	-38.1%	1.0%	4.4%	-77.3%	1.1%	3.8%	-71.1%
4 Other Recyclable Paper	11.3%	16.2%	-30.2%	13.6%	11.6%	17.2%	8.3%	9.8%	-15.3%	10.8%	12.0%	-10.0%
5 Low Grade Paper	4.5%	8.5%	-47.1%	8.6%	8.4%	2.4%	6.3%	6.5%	-3.1%	5.8%	7.3%	-20.5%
6 Aseptic Containers	0.2%	0.4%	-50.0%	0.3%	0.3%	0.0%	0.1%	1.0%	-90.0%	0.2%	0.8%	-75.0%
7 PET Containers	1.5%	0.9%	66.7%	2.9%	1.0%	190.0%	1.7%	0.9%	88.9%	1.8%	0.9%	100.0%
8 HDPE Containers	1.0%	0.9%	11.1%	1.0%	2.1%	-52.4%	0.9%	0.5%	80.0%	1.0%	0.7%	42.9%
10 Other Plastic Containers (#3-#7)	1.0%	0.2%	400.0%	1.6%	0.1%	1500.0%	0.9%	0.1%	800.0%	1.1%	0.1%	1000.0%
9 Non-Bottle Plastics #1 and #2	0.6%			0.7%			0.8%			0.7%		
11 Bulky Rigid Plastics	1.2%	4.2%	-19.0%	1.0%	2.5%	20.0%	1.8%	4.9%	-30.6%	1.4%	4.5%	-24.4%
14 All Other Plastics	1.6%			1.3%			0.8%			1.3%		
12 Non-Rigid Plastic Film	5.3%	5.8%	-8.6%	5.0%	4.6%	8.7%	6.4%	5.1%	25.5%	5.6%	5.3%	5.7%
13 Expanded Polystyrene	0.9%	0.7%	28.6%	1.0%	0.7%	42.9%	1.0%	0.8%	25.0%	0.9%	0.8%	12.5%
15 Tin/Steel Cans	1.5%	2.5%	-40.0%	0.9%	1.4%	-35.7%	1.3%	0.7%	85.7%	1.3%	1.3%	0.0%
16 White Goods/Small Appliances	0.1%	0.0%	-	2.1%	0.0%	-	0.0%	0.0%	-	0.4%	0.0%	-
17 Other Ferrous	2.4%	1.7%	41.2%	1.6%	1.4%	14.3%	0.8%	1.6%	-50.0%	1.7%	1.6%	6.3%
18 Aluminum Cans	0.8%	1.2%	-33.3%	1.9%	1.1%	72.7%	1.0%	0.8%	25.0%	1.1%	0.9%	22.2%
19 Other Non-Ferrous	0.4%	0.5%	-20.0%	0.4%	0.5%	-20.0%	0.6%	0.1%	500.0%	0.5%	0.3%	66.7%
20 Glass Containers	4.3%	3.6%	19.4%	7.3%	6.8%	7.4%	2.2%	2.3%	-4.3%	4.2%	3.0%	40.0%
21 Other Glass	0.5%	0.1%	400.0%	1.2%	0.5%	140.0%	0.5%	0.2%	150.0%	0.6%	0.2%	200.0%
22 Textiles	4.9%	5.6%	-12.5%	0.7%	3.5%	-80.0%	2.6%	1.4%	85.7%	3.5%	2.9%	20.7%
23 Special Wastes	0.0%	0.3%	-100.0%	0.0%	0.3%	-100.0%	0.3%	0.3%	0.0%	0.1%	0.3%	-66.7%
26 Clean Wood Waste	0.3%			0.0%			3.8%			1.3%		
27 Treated Wood Waste	0.6%	2.4%	-62.5%	1.1%	1.9%	-42.1%	2.8%	6.8%	-2.9%	1.4%	5.0%	-46.0%
28 C&D Debris	7.5%	2.5%	200.0%	2.0%	4.3%	-53.5%	6.6%	7.2%	-8.3%	6.2%	5.5%	12.7%
29 Tires and Rubber	0.4%	0.6%	-33.3%	0.2%	0.6%	-66.7%	0.3%	1.0%	-70.0%	0.3%	0.8%	-62.5%
30 Yard Waste	15.2%	6.3%	141.3%	3.2%	6.4%	-50.0%	5.0%	3.6%	38.9%	9.9%	4.7%	110.6%
31 Food Waste	11.7%	14.3%	-18.2%	19.3%	17.7%	9.0%	14.9%	11.1%	34.2%	14.1%	12.5%	12.8%
24 Electronics	1.3%			1.1%			1.5%			1.3%		
25 Household Batteries	0.1%			0.0%			0.3%			0.1%		
32 All Other Garbage	10.2%	7.6%	61.8%	11.1%	6.5%	121.5%	11.9%	5.8%	167.2%	10.9%	6.4%	112.5%
33 Liquids	0.7%			2.2%			1.5%			1.2%		
34 Grit	0.0%			0.0%			0.3%			0.1%		
Totals	100%	100%		100%	100%		100%	100%		100%	100%	

Note: Columns might not appear to total to 100% due to rounding.

4.3 Waste Diversion Opportunities

Figure 4.1 summarizes the percentage of materials in the waste streams delivered to the County for transfer and disposal that offer the greatest potential for recycling or composting. Table 4.2 provides additional details regarding the specific types and percentages of these recyclable and compostable materials. The data reveals the following potential opportunities for increased waste diversion:

- More than 40 percent of the waste currently disposed consists of fiber, containers, and yard waste that are part of the County’s existing recycling program.
- An additional 35 percent of the waste currently disposed consists of materials that could potentially be recycled or composted if programs or facilities were developed to capture these materials and process them.

Figure 4.1: Potentially Recyclable or Compostable Materials in Waste Disposed (% by weight)

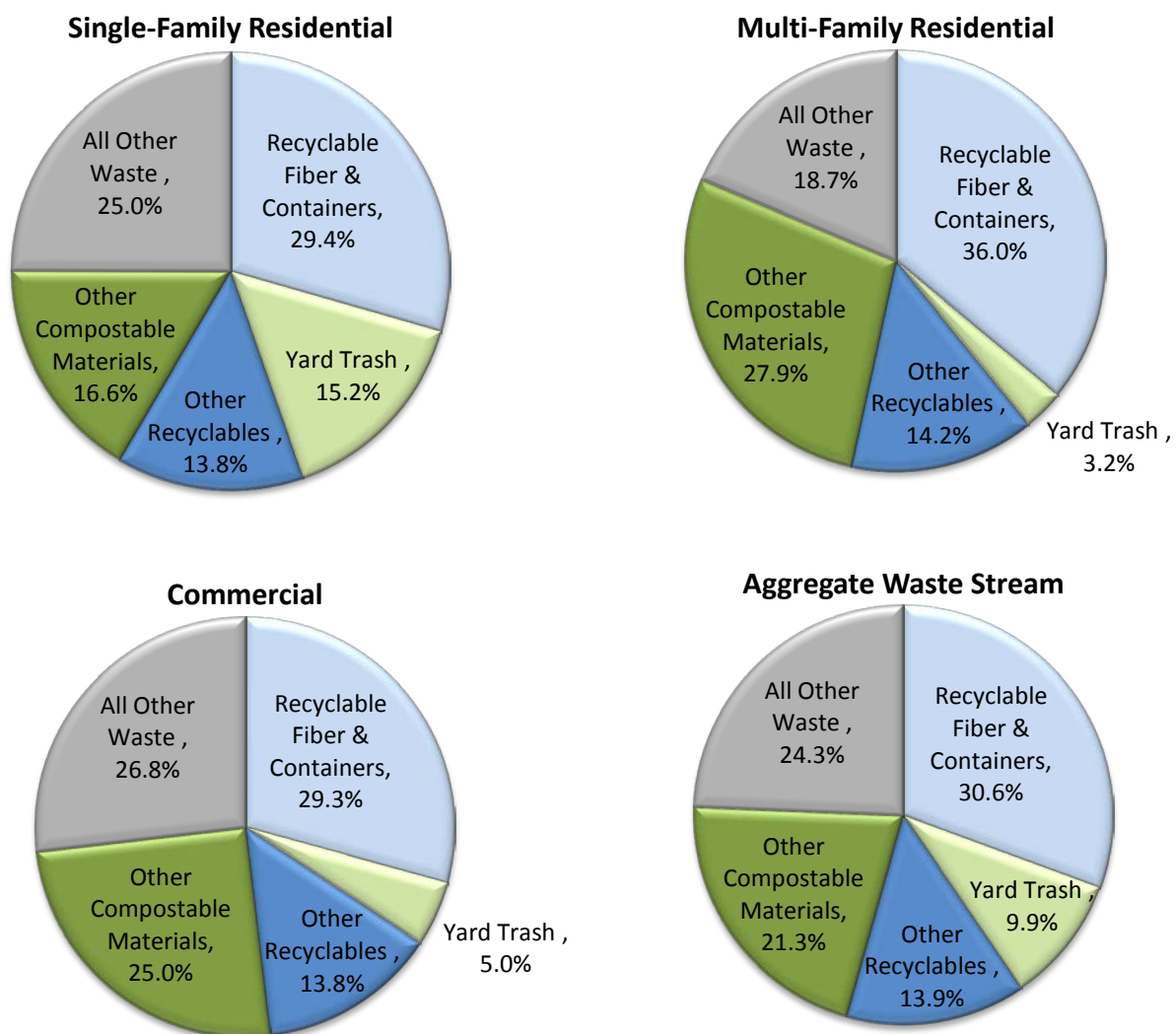


Table 4.2: Potentially Recyclable or Compostable Materials in Waste Disposed (% by weight)

Material Categories		Single-Family	Multi-Family	Commercial	Aggregate
1	Newspaper	2.2%	2.4%	0.8%	1.8%
2	Corrugated Containers	4.7%	2.8%	11.1%	6.3%
3	Office Paper	1.1%	1.3%	1.0%	1.1%
4	Other Recyclable Paper	11.3%	13.6%	8.3%	10.8%
6	Aseptic Containers	0.2%	0.3%	0.1%	0.2%
	Accepted Recyclable Fiber	19.4%	20.4%	21.3%	20.2%
7	PET Containers	1.5%	2.9%	1.7%	1.8%
8	HDPE Containers	1.0%	1.0%	0.9%	1.0%
10	Other Plastic Containers (#3-#7)	1.0%	1.6%	0.9%	1.1%
15	Tin/Steel Cans	1.5%	0.9%	1.3%	1.3%
18	Aluminum Cans	0.8%	1.9%	1.0%	1.1%
20	Glass Containers	4.3%	7.3%	2.2%	4.2%
	Accepted Recyclable Containers	10.0%	15.6%	8.0%	10.5%
30	Yard Waste	15.2%	3.2%	5.0%	9.9%
MATERIALS ACCEPTED IN EXISTING PROGRAMS		44.7%	39.2%	34.3%	40.5%
9	Other Non-Bottle Plastics #1 and #2	0.6%	0.7%	0.8%	0.7%
11	Bulky Rigid Plastics	1.2%	1.0%	1.8%	1.4%
12	Non-Rigid Plastic Film	5.3%	5.0%	6.4%	5.6%
13	Expanded Polystyrene	0.9%	1.0%	1.0%	0.9%
14	All Other Plastics	1.6%	1.3%	0.8%	1.3%
16	White Goods/Small Appliances	0.1%	2.1%	0.0%	0.4%
17	Other Ferrous	2.4%	1.6%	0.8%	1.7%
19	Other Non-Ferrous	0.4%	0.4%	0.6%	0.5%
24	Electronics	1.3%	1.1%	1.5%	1.3%
OTHER POTENTIALLY RECYCLABLE MATERIALS		13.8%	14.2%	13.8%	13.9%
5	Low Grade Paper	4.5%	8.6%	6.3%	5.8%
26	Clean Wood Waste	0.3%	0.0%	3.8%	1.3%
31	Food Waste	11.7%	19.3%	14.9%	14.1%
OTHER COMPOSTABLE MATERIALS		16.6%	27.9%	25.0%	21.3%
21	Other Glass	0.5%	1.2%	0.5%	0.6%
22	Textiles	4.9%	0.7%	2.6%	3.5%
23	Special Wastes	0.0%	0.0%	0.3%	0.1%
25	Household Batteries	0.1%	0.1%	0.1%	0.1%
27	Treated Wood Waste	0.6%	1.1%	2.8%	1.4%
28	C&D Debris	7.5%	2.0%	6.6%	6.2%
29	Tires and Rubber	0.4%	0.2%	0.3%	0.3%
32	All Other Garbage	10.2%	11.1%	11.9%	10.9%
33	Liquids	0.7%	2.2%	1.5%	1.2%
34	Grit	0.0%	0.0%	0.3%	0.1%
ALL OTHER MATERIALS		25.0%	18.7%	26.8%	24.3%
TOTALS		100.0%	100.0%	100.0%	100.0%

As demonstrated by the WCS results, opportunities exist to enhance the County's existing program, as well as to develop programs to divert additional resources from disposal for beneficial use. The following opportunities were identified as a result of this study for further consideration by the County:

- **County Curbside Recycling Program Enhancements:** Changes to the existing recycling program that increase convenience or encourage participation could increase recovery rates. The County has already piloted converting to carts for collection of recyclables and intends to expand this program throughout the franchise area. Recycling carts increase the convenience of recycling and have been shown to increase participation rates and material recovery. Concurrent with switching to single stream carts, additional types of materials could be added to the recycling program, such as non-container plastics, bulky rigid plastics, and scrap metals. Many processors are now able to accept and recycle these materials. In addition, converting to weekly collection of solid waste instead of twice per week further encourages recycling participation. Incentives are another mechanism for increasing recovery. Pay-as-you-throw systems, which offer variable rates to users based on how much is disposed, have had demonstrated success in communities throughout the United States in increasing curbside recycling rates.
- **Municipal Recycling Programs:** The County does not have direct control over municipal waste, but should strive to work cooperatively with municipalities to develop a comprehensive and cohesive countywide recycling program. This would allow for consistent educational and outreach materials.
- **Multi-Family and Commercial Technical Assistance:** Multi-family residences and commercial businesses both offer opportunities for increased materials recovery, but programs to capture recyclables from these generator sectors require a different approach than single-family residential recycling. Direct technical assistance can help educate owners or operators of multi-family complexes and commercial businesses about the availability of recycling services, how to set up a program, and the benefits to the complex or business. The County could target the largest businesses or complexes first, or those that generate the greatest quantities of recyclables.
- **Organics Program:** To strive to achieve the State's 75 percent recycling goal, the County will need to divert more materials from disposal in addition to the traditional recyclables and yard waste. Recovery of these additional materials requires a fundamental change to collection and processing systems. Communities in the United States that claim some of the highest recycling rates include separate collection of organics (including food waste and non-recyclable paper) and true composting systems.
- **Mandates or Bans:** Some communities have turned to recycling mandates or disposal bans if voluntary efforts have not achieved the desired results. For such programs to be effective, residents and businesses must be informed and the mandates or bans must be enforced.
- **Advanced Processing Technologies:** Even the best source-separation programs do not capture 100 percent of the recyclable and compostable materials. Advanced processing technologies, such as mixed waste processing, are being used to remove additional recyclable or compostable materials from the waste stream after it is collected. New developments in processing equipment, increasing waste diversion goals, and the value of

recovered commodities have resulted in the growth of mixed waste MRFs. To date, most of the growth in mixed waste processing has been on the West Coast of the United States; however, with Florida's 75 percent recycling goal, public and private sector interest is increasing within the State.

- **Public Education:** With any recycling and resource management program, ongoing public education is important, not only to increase recycling participation, but also to inform residents of how to properly dispose of certain types of waste.

In conclusion, this study provides the County with extensive information regarding the composition of waste received at County facilities for disposal, as well as the composition of single stream recyclables collected for processing. The results demonstrate the existence of substantial quantities of recyclable or compostable materials in the waste stream. This data will assist the County in developing future solid waste programs, including focused and cost-effective resource management and recycling systems.

Appendix A: Waste Composition Study Material Categories

Table A-1: Waste Composition Study Material Categories

#	Material Categories	Description of Categories
1	Newspaper	Newspaper (loose, tied or shredded) including other paper normally distributed inside newspaper such as ads, flyers, etc.
2	Corrugated Cardboard (OCC)	Uncoated brown "cardboard" boxes with a wavy core (no plastic liners, waxy coatings).
3	Office Paper	Printed or unprinted paper typically generated in an office environment including white, colored, coated and uncoated papers, manila and pastel colored file folders.
4	Other Recyclable Paper	All magazines, catalogs, paperboard, chipboard, brown paper bags, telephone books and other printed material on glossy and non-glossy paper.
5	Low Grade Paper	All remaining paper not categorized in other paper categories, including waxed cardboard and contaminated paper (i.e., napkins, pizza boxes, paper towels, fast-food wrappers, etc.).
6	Aseptic Containers	Gable top milk cartons, juice boxes, and other similar containers.
7	Polyethylene terephthalate (PET) Containers (SPI #1)	Clear and colored bottles or containers coded PET #1 such as soda bottles, water bottles, etc.
8	High-density polyethylene (HDPE) Containers (SPI #2)	Clear/natural and pigmented bottles or containers coded HDPE #2 such as milk jugs, detergent bottles, etc.
9	Non-Bottle Plastics #1 and #2	Clear and colored plastic items labeled PET #1 such as clamshell containers, frozen food trays, disposable cups and other items labeled PET #1. Also includes wide-mouthed tubs and containers labeled HDPE #2 including lids. Examples include yogurt cups, margarine tubs, Cool Whip® tubs and other non-bottle HDPE items.
10	Other Recyclable Plastic Containers (SPI #3-7)	Plastic containers coded 3 through 7, with the triangle label symbol.
11	Bulky Rigid Plastics	Consists of non-container rigid plastic items such as plastic drums, crates, buckets, baskets, toys, refuse totes, and lawn furniture, flower pots, laundry baskets, and other large plastic items. <i>Does not include electronic toys.</i>
12	Non-Rigid Plastic Film	Grocery bags, garbage bags, plastic sheeting, saran wrap, visqueen, etc.
13	Expanded Polystyrene Foam (EPS)	Disposable coffee cups, coolers or packaging material, which are typically white and are made of expanded polystyrene beads. Also includes food service trays and egg cartons.
14	All Other Plastics	Any plastic materials not categorized above, such as deodorant cases, toothpaste tubes, tooth brushes, broom heads, etc.
15	Tin/Steel Cans	Tin-plated steel cans, usually food containers, and aerosol cans.
16	White Goods/Small Appliances	Household appliances such as refrigerators, stoves, and salvageable items such as machinery.

Table A-1: Waste Composition Study Material Categories (continued)

#	Material Categories	Description of Categories
17	Other Ferrous	Steel, clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, and other magnetic metal items.
18	Aluminum Cans	Aluminum soft drink, beer, and some food cans.
19	Other Non-Ferrous	Scrap aluminum, aluminum foil and catering trays, and other non-magnetic metal, copper wiring and tubing, brass fixtures.
20	Glass Containers	Clear, Brown, and Green glass bottles and containers.
21	Other Glass	Window panes, mirrors, ceramics, and drinking glasses.
22	Textiles	Clothing apparel, rags, leather, blankets, curtains, shoes, wallets, purses, belts, and scrap leather.
23	Special Wastes	Cleaners, oil, pool chemicals, fluorescent lights, medical waste, solvents, etc., that are considered household hazardous waste.
24	Electronics (E-waste)	Electronic devices such as televisions, computers, cell phones, cordless telephones, PDA, handheld devices, rechargeable batteries, etc.
25	Household Batteries	Household batteries including AA, AAA, C, D, 9-volt, and button types.
26	Clean Wood Waste	Untreated and unpainted lumber, pallets and dimensional lumber. Also includes untreated/unpainted wood furniture including chairs, cabinets, dressers, etc.
27	Treated Wood Waste	Treated and painted lumber, pallets and dimensional lumber. Also includes untreated/unpainted wood furniture including chairs, cabinets, dressers, etc.
28	C&D Debris	Construction and demolition debris that includes concrete, carpet, drywall, insulation, and roofing materials
29	Tires and Rubber	Small and large tires and other items made of rubber.
30	Yard Waste	Shrub and brush prunings, household bedding plants, weeds, leaves, grass clippings, and other landscaping and gardening wastes.
31	Food Waste	Meat and vegetable waste (includes coffee grinds and tea bags).
32	All Other Garbage	All other wastes not included in the above categories, including diapers and products that are composite of materials such as frozen juice cans, binders, Pringle's can, chip bags, etc.
33	Liquids	All liquids found in containers will be emptied here.
34	Grit	Indistinguishable items less than 1-inch in diameter.

Appendix B: Recyclables Composition Study Material Categories

Table B-1: Recyclables Composition Study Material Categories

#	Material Categories	Description of Categories
1	Newspaper	Newspaper (loose or tied) including other paper normally distributed inside newspaper such as ads, flyers, etc. Newspaper found inside plastic sleeve will be removed from plastic and sorted accordingly.
2A	Corrugated Cardboard (OCC)	Brown “cardboard” boxes with a wavy core (no plastic liners or packaging Styrofoam®). Does not include small pieces of OCC within shrink wrap plastic such as that from a case of bottled water.
2B	Wax Coated OCC	All wax coated OCC will be sorted and weighed separately from non-wax OCC.
3A	Residential Mixed Paper	Printed or unprinted paper including white, colored, coated and uncoated papers, manila and pastel colored file folders, magazines, telephone books, catalogs, paperboard, chipboard, brown paper bags, mail, bagged shredded paper and other printed material on glossy and non-glossy paper.
3B	Loose Shredded Paper	Loose shredded residential mixed paper or newspaper.
4	Aseptic Containers	Gable top milk cartons, juice boxes, and other similar containers.
5	PET Bottles (SPI #1) Polyethylene terephthalate	Clear and colored plastic bottles coded PET #1 such as soda bottles, water bottles label with SPI #1. <i>Does not include loose caps.</i>
6	NATURAL HDPE Bottles (SPI #2) High-density polyethylene	Clear/natural plastic bottles coded HDPE #2 such as milk jugs, vinegar bottles and gallon water bottles. <i>Does not include loose caps and lids.</i>
7	COLORED HDPE Bottles (SPI #2) High-density polyethylene	Pigmented plastic bottles coded HDPE #2 such as detergent, shampoo, and orange juice bottles. <i>Does not include loose caps and lids.</i>
8A	Non-Bottle PET	Clear and colored plastic items labeled PET #1 such as clamshell containers, frozen food trays, disposable cups and other items labeled PET #1.
8B	Non-Bottle HDPE	Wide-mouthed tubs and containers labeled HDPE #2 including lids. Examples include yogurt cups, margarine tubs, Cool Whip® tubs and other non-bottle HDPE items.
8C	Expanded Polystyrene Containers	Styrofoam® containers such as egg cartons and clamshell food containers.
8D	Other Mixed Plastic Containers	All plastic containers coded #3-#7, such as containers, pill bottles, Arizona Iced Tea™ gallon jugs, etc.
9	Bulky Rigid Plastics	Consists of non-container rigid plastic items such as plastic drums, crates, buckets, baskets, toys, refuse totes, and lawn furniture, flower pots, laundry baskets, and other large plastic items. <i>Does not include electronic toys.</i>
10	Plastic Film	Loose and bagged plastic bags, garbage bags, shrink wrap, re-sealable bags, etc.
11	Non-Container Expanded Polystyrene	Non-container Styrofoam® such as packaging peanuts and other packaging.
12	Mixed Glass Containers and Jars	Clear, Green, and Amber glass bottles and jars as well as broken glass pieces larger than ½ square inch.

Table B-1: Recyclables Composition Study Material Categories (continued)

#	Material Categories	Description of Categories
13A	Aluminum Cans	Aluminum soft drink, beer, and some food cans.
13B	Other Aluminum	Aluminum foil, pie plates, and clean catering trays.
14A	Tin/Steel Cans	Tin-plated steel cans, usually food containers, and aerosol cans, including labels. Also includes steel caps.
14B	Scrap Metals	Non-container ferrous scrap metals such as pipes, coat hangers, and miscellaneous scrap metal.
15	Rejects	Materials not included in the other categories, such as bagged garbage, fast food lids and straws, CDs and VHS tapes, composite materials, Christmas lights, hoses, electronics, recyclable items full of food (non-liquid), loose plastic caps and lids, or plastic cutlery and plates.
16	Grit	All items that fall through a half inch mesh.
17	Liquids	All liquids found within recyclable containers.

Appendix C: Single-Family Residential Data

Table C-1: Single-Family Residential Data (% by weight)

Hauler/Location		Shalimar	Niceville	Mary Esther	Destin	Unincorp. County	Destin
Material Categories	sample #	4	5	8	13	15	18
1	Newspaper	0.1%	1.2%	0.0%	1.6%	0.9%	0.5%
2	Corrugated Containers	11.7%	5.5%	0.6%	6.2%	5.6%	7.1%
3	Office Paper	0.0%	1.7%	0.0%	0.0%	1.8%	0.7%
4	Other Recyclable Paper	5.1%	7.5%	12.3%	8.8%	8.0%	12.3%
5	Low Grade Paper	6.5%	8.7%	3.9%	8.0%	4.1%	5.2%
6	Aseptic Containers	0.0%	0.4%	0.0%	0.3%	0.1%	0.3%
7	PET Containers	0.8%	0.7%	0.9%	2.2%	1.0%	1.2%
8	HDPE Containers	0.7%	0.8%	0.3%	1.3%	1.5%	0.8%
9	Other Non-Bottle Plastics #1 and #2	1.0%	0.1%	0.0%	3.4%	1.2%	0.2%
10	Other Plastic Containers (#3-#7)	1.6%	1.1%	1.6%	0.0%	1.2%	1.0%
11	Bulky Rigid Plastics	0.0%	0.8%	0.2%	0.4%	0.9%	0.9%
12	Non-Rigid Plastic Film	4.6%	3.6%	5.5%	6.3%	7.0%	3.8%
13	Expanded Polystyrene (EPS)	1.0%	0.6%	1.1%	1.5%	0.5%	0.5%
14	All Other Plastics	1.7%	1.2%	0.5%	0.2%	0.0%	0.8%
15	Tin/Steel Cans	0.3%	1.0%	0.6%	1.7%	1.3%	1.1%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Other Ferrous	2.0%	1.9%	2.2%	2.7%	0.0%	2.0%
18	Aluminum Cans	0.6%	0.2%	0.9%	0.6%	1.1%	0.7%
19	Other Non-Ferrous	0.1%	0.3%	0.2%	0.4%	0.2%	0.3%
20	Glass Containers	9.7%	7.8%	0.5%	7.2%	6.9%	0.4%
21	Other Glass	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%
22	Textiles	1.7%	1.3%	3.1%	2.9%	1.9%	2.6%
23	Special Wastes	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
24	Electronics	4.3%	2.0%	5.2%	0.9%	1.9%	0.2%
25	Household Batteries	0.0%	0.0%	0.2%	0.5%	0.0%	0.1%
26	Clean Wood Waste	0.0%	1.1%	0.6%	1.1%	0.0%	0.9%
27	Treated Wood Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
28	C&D Debris	8.0%	4.5%	24.8%	0.0%	5.2%	35.7%
29	Tires and Rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	Yard Waste	6.6%	2.0%	11.4%	12.9%	27.1%	6.3%
31	Food Waste	18.0%	25.4%	14.3%	18.7%	15.8%	7.9%
32	All Other Garbage	13.9%	16.1%	8.4%	9.7%	3.3%	6.0%
33	Liquids	0.0%	0.5%	0.4%	0.8%	1.4%	0.0%
34	Grit	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
	TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table C-1: Single-Family Residential Data (continued)

Hauler/Location		Unincorp. County	Unincorp. County	Unincorp. County	Niceville	Unincorp. County	Unincorp. County
Material Categories	sample #	19	20	23	25	26	27
1	Newspaper	1.6%	0.4%	7.1%	2.3%	3.0%	5.3%
2	Corrugated Containers	3.9%	7.6%	1.2%	3.9%	3.0%	2.6%
3	Office Paper	1.5%	1.7%	2.6%	1.6%	1.0%	0.8%
4	Other Recyclable Paper	8.5%	13.2%	8.8%	17.1%	7.0%	16.9%
5	Low Grade Paper	5.9%	3.9%	3.4%	2.5%	5.9%	2.7%
6	Aseptic Containers	0.4%	0.3%	0.0%	0.3%	0.4%	0.1%
7	PET Containers	1.0%	1.9%	2.8%	1.1%	1.1%	1.4%
8	HDPE Containers	1.3%	1.4%	1.1%	1.3%	0.6%	1.3%
9	Other Non-Bottle Plastics #1 and #2	0.6%	1.3%	0.4%	0.6%	0.5%	0.8%
10	Other Plastic Containers (#3-#7)	0.9%	1.0%	0.7%	0.8%	1.2%	1.8%
11	Bulky Rigid Plastics	1.9%	1.4%	0.4%	1.8%	1.6%	0.7%
12	Non-Rigid Plastic Film	4.6%	6.2%	7.8%	1.9%	8.9%	5.2%
13	Expanded Polystyrene (EPS)	0.5%	1.1%	0.8%	1.5%	1.1%	0.6%
14	All Other Plastics	1.2%	0.9%	0.9%	2.4%	1.5%	0.4%
15	Tin/Steel Cans	0.9%	0.9%	1.6%	3.3%	0.7%	2.2%
16	White Goods/Small Appliances	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%
17	Other Ferrous	1.0%	0.8%	9.1%	0.8%	0.3%	2.7%
18	Aluminum Cans	0.6%	0.6%	0.6%	0.7%	1.1%	1.3%
19	Other Non-Ferrous	0.8%	0.2%	0.2%	0.4%	0.5%	0.6%
20	Glass Containers	0.6%	2.0%	7.5%	8.7%	5.6%	1.6%
21	Other Glass	0.0%	0.9%	0.5%	0.0%	2.4%	0.0%
22	Textiles	1.4%	6.2%	3.8%	17.8%	5.9%	3.5%
23	Special Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	Electronics	1.1%	0.0%	0.5%	0.4%	1.4%	0.6%
25	Household Batteries	0.3%	0.2%	0.0%	0.0%	0.5%	0.0%
26	Clean Wood Waste	0.9%	0.8%	0.0%	0.0%	0.0%	0.0%
27	Treated Wood Waste	0.0%	0.0%	0.9%	0.4%	0.6%	3.2%
28	C&D Debris	1.3%	6.7%	5.0%	5.5%	1.9%	1.8%
29	Tires and Rubber	0.0%	0.0%	2.7%	0.1%	0.4%	0.7%
30	Yard Waste	40.4%	9.8%	17.0%	3.5%	19.0%	9.0%
31	Food Waste	6.1%	15.9%	4.5%	6.6%	6.5%	19.0%
32	All Other Garbage	10.4%	10.6%	8.0%	11.9%	16.4%	12.2%
33	Liquids	0.2%	0.2%	0.2%	0.6%	0.0%	1.0%
34	Grit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTALS		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table C-1: Single-Family Residential Data (continued)

Hauler/Location		Unincorp. County	Unincorp. County	Unincorp. County	
Material Categories	sample #	32	34	40	Weighted Average
1	Newspaper	1.3%	1.1%	2.6%	2.2%
2	Corrugated Containers	4.3%	7.3%	2.2%	4.7%
3	Office Paper	0.0%	1.0%	0.4%	1.1%
4	Other Recyclable Paper	10.9%	17.4%	12.1%	11.3%
5	Low Grade Paper	2.8%	4.5%	1.7%	4.5%
6	Aseptic Containers	0.0%	0.2%	0.3%	0.2%
7	PET Containers	1.3%	1.8%	2.5%	1.5%
8	HDPE Containers	0.7%	0.8%	0.9%	1.0%
9	Other Non-Bottle Plastics #1 and #2	0.1%	0.1%	0.0%	0.6%
10	Other Plastic Containers (#3-#7)	1.6%	0.4%	1.1%	1.0%
11	Bulky Rigid Plastics	2.6%	3.6%	1.5%	1.2%
12	Non-Rigid Plastic Film	4.0%	5.1%	5.9%	5.3%
13	Expanded Polystyrene (EPS)	1.3%	0.8%	0.5%	0.9%
14	All Other Plastics	8.7%	2.5%	1.5%	1.6%
15	Tin/Steel Cans	1.3%	1.1%	2.9%	1.5%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%	0.1%
17	Other Ferrous	3.0%	1.6%	1.7%	2.4%
18	Aluminum Cans	0.6%	0.3%	1.5%	0.8%
19	Other Non-Ferrous	0.2%	0.3%	0.9%	0.4%
20	Glass Containers	0.0%	1.3%	2.4%	4.3%
21	Other Glass	1.5%	0.0%	1.0%	0.5%
22	Textiles	15.3%	3.1%	1.9%	4.9%
23	Special Wastes	0.0%	0.0%	0.0%	0.0%
24	Electronics	0.0%	1.4%	0.3%	1.3%
25	Household Batteries	0.2%	0.2%	0.0%	0.1%
26	Clean Wood Waste	0.0%	0.0%	0.0%	0.3%
27	Treated Wood Waste	0.7%	1.4%	0.0%	0.6%
28	C&D Debris	5.8%	6.7%	1.7%	7.5%
29	Tires and Rubber	0.0%	0.1%	0.0%	0.4%
30	Yard Waste	16.2%	19.2%	33.7%	15.2%
31	Food Waste	5.9%	9.9%	4.4%	11.7%
32	All Other Garbage	7.5%	6.3%	12.5%	10.2%
33	Liquids	2.3%	0.4%	2.0%	0.7%
34	Grit	0.0%	0.0%	0.0%	0.0%
TOTALS		100.0%	100.0%	100.0%	100.0%

Appendix D: Multi-Family Residential Data

Table D-1: July 2014 Multi-Family Residential (% by weight)

Hauler/Location		Waterscape	Legacy by the Sea	Destin FEL	Destin FEL	Destin FEL	
Material Categories	sample #	1	6	17	29	36	Weighted Average
1	Newspaper	1.6%	2.4%	5.3%	0.8%	1.5%	2.4%
2	Corrugated Containers	0.8%	2.8%	2.5%	3.7%	4.2%	2.8%
3	Office Paper	1.9%	0.0%	0.8%	1.7%	2.0%	1.3%
4	Other Recyclable Paper	17.2%	7.0%	19.7%	8.6%	15.4%	13.6%
5	Low Grade Paper	11.6%	8.9%	9.3%	6.2%	7.3%	8.6%
6	Aseptic Containers	0.2%	0.3%	0.1%	0.3%	0.5%	0.3%
7	PET Containers	3.3%	2.3%	2.8%	2.8%	3.5%	2.9%
8	HDPE Containers	0.6%	1.3%	1.2%	0.6%	1.5%	1.0%
9	Other Non-Bottle Plastics #1 and #2	0.7%	0.1%	0.6%	0.6%	1.3%	0.7%
10	Other Plastic Containers (#3-#7)	0.5%	1.9%	2.1%	0.7%	2.6%	1.6%
11	Bulky Rigid Plastics	0.9%	0.2%	0.4%	1.6%	2.0%	1.0%
12	Non-Rigid Plastic Film	9.7%	4.1%	3.7%	3.2%	4.7%	5.0%
13	Expanded Polystyrene (EPS)	0.9%	0.6%	1.3%	1.1%	0.9%	1.0%
14	All Other Plastics	2.5%	0.0%	0.8%	2.3%	0.9%	1.3%
15	Tin/Steel Cans	0.6%	0.6%	0.9%	1.1%	1.3%	0.9%
16	White Goods/Small Appliances	0.0%	0.0%	9.4%	0.0%	0.0%	2.1%
17	Other Ferrous	0.5%	2.4%	1.3%	2.2%	1.7%	1.6%
18	Aluminum Cans	2.5%	1.6%	2.3%	1.6%	1.5%	1.9%
19	Other Non-Ferrous	0.5%	0.3%	0.4%	0.4%	0.5%	0.4%
20	Glass Containers	3.9%	6.2%	6.0%	9.2%	11.6%	7.3%
21	Other Glass	0.5%	4.9%	0.4%	0.0%	0.7%	1.2%
22	Textiles	1.0%	0.6%	1.3%	0.0%	0.9%	0.7%
23	Special Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	Electronics	4.7%	1.1%	0.0%	0.2%	0.0%	1.1%
25	Household Batteries	0.0%	0.0%	0.0%	0.0%	0.6%	0.1%
26	Clean Wood Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
27	Treated Wood Waste	5.6%	0.0%	0.0%	0.2%	0.0%	1.1%
28	C&D Debris	0.0%	5.8%	0.0%	4.3%	0.0%	2.0%
29	Tires and Rubber	0.0%	0.0%	0.0%	0.0%	0.8%	0.2%
30	Yard Waste	0.0%	7.2%	0.0%	8.4%	0.0%	3.2%
31	Food Waste	7.9%	22.8%	21.1%	19.2%	25.7%	19.3%
32	All Other Garbage	19.0%	11.5%	4.8%	16.7%	3.4%	11.1%
33	Liquids	0.7%	3.2%	1.7%	2.4%	2.9%	2.2%
34	Grit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTALS		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix E: Commercial Data

Table E-1: Commercial Data (% by weight)

Hauler/Location		Destin	Destin	Mary Esther	Unincorp. County	Destin	Unincorp. County
Material Categories	sample #	2	3	7	9	10	11
1	Newspaper	1.2%	0.1%	0.0%	0.1%	0.0%	0.0%
2	Corrugated Containers	4.9%	13.1%	15.5%	7.7%	16.0%	10.2%
3	Office Paper	1.7%	0.8%	0.0%	0.1%	3.7%	0.6%
4	Other Recyclable Paper	13.8%	2.9%	4.4%	9.3%	1.8%	12.0%
5	Low Grade Paper	6.3%	12.5%	13.2%	3.1%	1.5%	1.7%
6	Aseptic Containers	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
7	PET Containers	3.7%	2.7%	0.3%	0.8%	0.4%	0.4%
8	HDPE Containers	0.9%	0.8%	1.2%	0.4%	0.9%	0.5%
9	Other Non-Bottle Plastics #1 and #2	0.5%	0.3%	0.0%	2.8%	0.5%	0.0%
10	Other Plastic Containers (#3-#7)	2.6%	2.0%	0.2%	0.3%	0.7%	0.3%
11	Bulky Rigid Plastics	1.3%	0.0%	2.3%	0.0%	0.5%	2.7%
12	Non-Rigid Plastic Film	4.7%	3.6%	7.7%	3.4%	7.9%	8.5%
13	Expanded Polystyrene (EPS)	1.5%	0.4%	0.1%	0.4%	1.8%	2.6%
14	All Other Plastics	0.4%	1.1%	0.0%	1.1%	0.8%	0.4%
15	Tin/Steel Cans	0.4%	1.3%	0.2%	2.4%	1.2%	0.1%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Other Ferrous	0.0%	0.8%	0.0%	1.7%	0.0%	3.9%
18	Aluminum Cans	4.3%	1.4%	0.1%	0.4%	0.4%	0.1%
19	Other Non-Ferrous	0.1%	0.2%	0.0%	0.6%	0.0%	5.4%
20	Glass Containers	3.3%	0.6%	1.5%	1.9%	2.7%	0.6%
21	Other Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	Textiles	6.3%	1.8%	0.6%	1.1%	0.4%	0.9%
23	Special Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	Electronics	24.4%	0.0%	0.0%	0.6%	0.0%	0.0%
25	Household Batteries	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
26	Clean Wood Waste	4.1%	0.0%	0.2%	1.1%	8.2%	18.0%
27	Treated Wood Waste	0.0%	0.0%	0.0%	0.0%	0.3%	5.1%
28	C&D Debris	0.0%	0.0%	0.0%	2.7%	27.3%	6.9%
29	Tires and Rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
30	Yard Waste	0.0%	0.0%	0.3%	24.4%	0.0%	11.9%
31	Food Waste	7.3%	33.9%	39.6%	18.5%	14.8%	1.3%
32	All Other Garbage	4.6%	17.3%	12.6%	14.0%	7.4%	1.7%
33	Liquids	0.6%	2.6%	0.0%	0.9%	0.6%	0.0%
34	Grit	0.9%	0.0%	0.0%	0.0%	0.0%	3.8%
	TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table E-1: Commercial Data (continued)

Hauler/Location		Unincorp. County	Mary Esther	Unincorp. County	Destin	Unincorp. County	Niceville
Material Categories	sample #	12	14	16	21	22	24
1	Newspaper	0.0%	0.0%	0.6%	0.8%	1.0%	5.8%
2	Corrugated Containers	7.5%	4.3%	10.5%	2.4%	3.9%	12.6%
3	Office Paper	0.0%	0.7%	0.5%	5.5%	1.0%	0.0%
4	Other Recyclable Paper	17.0%	9.2%	5.7%	11.0%	7.7%	2.1%
5	Low Grade Paper	16.0%	1.8%	6.1%	8.4%	4.0%	3.7%
6	Aseptic Containers	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%
7	PET Containers	4.0%	1.5%	0.4%	2.9%	1.6%	1.0%
8	HDPE Containers	1.5%	0.3%	0.7%	0.8%	1.4%	0.2%
9	Other Non-Bottle Plastics #1 and #2	1.2%	1.8%	0.2%	1.4%	0.8%	2.0%
10	Other Plastic Containers (#3-#7)	1.4%	0.0%	0.4%	1.1%	1.2%	0.6%
11	Bulky Rigid Plastics	0.5%	1.6%	1.4%	2.9%	5.3%	1.2%
12	Non-Rigid Plastic Film	3.6%	4.1%	3.1%	10.4%	11.7%	5.8%
13	Expanded Polystyrene (EPS)	0.5%	1.2%	0.4%	0.9%	0.7%	0.5%
14	All Other Plastics	2.7%	0.0%	0.5%	0.8%	0.0%	0.8%
15	Tin/Steel Cans	0.7%	0.4%	0.3%	0.7%	3.1%	1.8%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Other Ferrous	0.7%	0.6%	0.4%	0.0%	1.9%	0.3%
18	Aluminum Cans	2.0%	0.9%	0.0%	1.0%	0.3%	0.5%
19	Other Non-Ferrous	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%
20	Glass Containers	1.7%	2.4%	4.1%	1.9%	1.6%	1.3%
21	Other Glass	0.0%	0.0%	0.4%	0.0%	0.0%	2.3%
22	Textiles	1.2%	1.5%	3.2%	2.4%	4.0%	4.3%
23	Special Wastes	1.1%	0.0%	0.0%	3.6%	0.0%	0.5%
24	Electronics	1.2%	0.5%	0.0%	0.7%	0.1%	0.5%
25	Household Batteries	0.0%	0.1%	0.0%	0.3%	0.1%	0.0%
26	Clean Wood Waste	0.0%	0.0%	10.4%	0.9%	2.2%	0.0%
27	Treated Wood Waste	0.0%	4.5%	23.0%	0.0%	8.2%	4.0%
28	C&D Debris	2.7%	30.5%	16.6%	2.3%	4.1%	3.8%
29	Tires and Rubber	0.0%	3.1%	0.0%	0.0%	0.0%	1.7%
30	Yard Waste	5.3%	9.4%	2.7%	9.9%	1.4%	12.3%
31	Food Waste	5.5%	9.8%	5.3%	2.8%	22.1%	0.8%
32	All Other Garbage	20.8%	6.8%	1.9%	21.1%	10.0%	29.1%
33	Liquids	1.2%	3.0%	0.0%	2.4%	0.5%	0.4%
34	Grit	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
	TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table E-1: Commercial Data (continued)

Hauler/Location		Niceville	Shalimar	Destin	Mary Esther	Destin	Destin
Material Categories	sample #	28	30	31	33	35	37
1	Newspaper	0.2%	0.0%	0.2%	0.8%	1.5%	1.5%
2	Corrugated Containers	18.0%	19.2%	9.3%	8.7%	17.1%	7.8%
3	Office Paper	0.7%	0.0%	1.2%	0.7%	1.3%	0.0%
4	Other Recyclable Paper	7.0%	9.6%	4.5%	22.0%	5.0%	8.8%
5	Low Grade Paper	9.3%	5.0%	5.0%	5.1%	2.5%	8.8%
6	Aseptic Containers	0.0%	0.2%	0.0%	0.3%	0.4%	0.1%
7	PET Containers	1.2%	2.0%	2.0%	1.4%	1.2%	3.9%
8	HDPE Containers	1.6%	0.7%	0.7%	0.4%	0.4%	0.7%
9	Other Non-Bottle Plastics #1 and #2	0.9%	0.7%	0.4%	0.4%	1.0%	0.4%
10	Other Plastic Containers (#3-#7)	0.6%	0.8%	1.1%	0.3%	1.0%	0.6%
11	Bulky Rigid Plastics	9.3%	0.6%	0.8%	1.4%	0.3%	0.5%
12	Non-Rigid Plastic Film	3.8%	5.1%	4.5%	9.9%	3.6%	9.1%
13	Expanded Polystyrene (EPS)	2.6%	1.5%	1.1%	0.1%	0.7%	1.6%
14	All Other Plastics	0.5%	2.2%	1.1%	0.3%	0.9%	2.7%
15	Tin/Steel Cans	2.0%	1.1%	1.7%	2.2%	1.2%	2.8%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Other Ferrous	0.3%	0.3%	1.8%	0.5%	0.0%	1.0%
18	Aluminum Cans	0.3%	0.5%	1.3%	0.4%	1.4%	3.0%
19	Other Non-Ferrous	0.5%	0.4%	0.7%	1.3%	0.1%	0.6%
20	Glass Containers	0.7%	2.2%	2.5%	0.4%	6.1%	1.5%
21	Other Glass	0.0%	1.5%	5.8%	0.0%	0.0%	0.0%
22	Textiles	2.2%	2.7%	0.1%	0.4%	12.7%	2.5%
23	Special Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	Electronics	0.0%	0.8%	0.5%	0.0%	1.1%	0.0%
25	Household Batteries	0.1%	0.1%	0.1%	0.2%	0.0%	0.0%
26	Clean Wood Waste	5.3%	2.5%	3.8%	0.0%	10.2%	4.5%
27	Treated Wood Waste	0.0%	0.0%	2.1%	1.7%	0.8%	0.0%
28	C&D Debris	0.0%	11.2%	15.4%	7.8%	1.2%	0.0%
29	Tires and Rubber	0.0%	0.0%	0.1%	0.4%	0.0%	0.0%
30	Yard Waste	0.2%	0.1%	8.4%	13.8%	1.9%	0.3%
31	Food Waste	19.5%	10.2%	12.3%	6.4%	17.9%	25.6%
32	All Other Garbage	12.8%	16.4%	5.0%	11.1%	6.3%	8.0%
33	Liquids	0.3%	2.3%	6.3%	1.9%	2.3%	3.8%
34	Grit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table E-1: Commercial Data (continued)

Hauler/Location		Unincorp. County	Unincorp. County	
Material Categories	sample #	38	39	Weighted Average
1	Newspaper	1.3%	1.2%	0.8%
2	Corrugated Containers	17.5%	16.3%	11.1%
3	Office Paper	0.1%	0.3%	1.0%
4	Other Recyclable Paper	4.8%	7.2%	8.3%
5	Low Grade Paper	4.7%	7.2%	6.3%
6	Aseptic Containers	0.2%	0.2%	0.1%
7	PET Containers	2.0%	1.6%	1.7%
8	HDPE Containers	1.6%	1.8%	0.9%
9	Other Non-Bottle Plastics #1 and #2	0.5%	1.5%	0.8%
10	Other Plastic Containers (#3-#7)	1.1%	1.6%	0.9%
11	Bulky Rigid Plastics	2.1%	0.8%	1.8%
12	Non-Rigid Plastic Film	5.3%	9.0%	6.4%
13	Expanded Polystyrene (EPS)	0.4%	0.8%	1.0%
14	All Other Plastics	0.8%	0.5%	0.8%
15	Tin/Steel Cans	0.7%	1.5%	1.3%
16	White Goods/Small Appliances	0.0%	0.0%	0.0%
17	Other Ferrous	1.4%	0.1%	0.8%
18	Aluminum Cans	1.0%	0.7%	1.0%
19	Other Non-Ferrous	0.8%	1.6%	0.6%
20	Glass Containers	4.6%	2.7%	2.2%
21	Other Glass	0.3%	0.0%	0.5%
22	Textiles	3.6%	0.5%	2.6%
23	Special Wastes	0.0%	0.0%	0.3%
24	Electronics	0.7%	0.0%	1.5%
25	Household Batteries	1.1%	0.3%	0.1%
26	Clean Wood Waste	4.6%	2.2%	3.8%
27	Treated Wood Waste	0.6%	6.6%	2.8%
28	C&D Debris	1.9%	0.0%	6.6%
29	Tires and Rubber	0.4%	0.0%	0.3%
30	Yard Waste	0.4%	0.1%	5.0%
31	Food Waste	17.3%	23.8%	14.9%
32	All Other Garbage	17.6%	9.1%	11.9%
33	Liquids	0.5%	0.8%	1.5%
34	Grit	0.0%	0.0%	0.3%
TOTALS		100.0%	100.0%	100.0%

Appendix F: Single Stream Recyclables Data

Table F-1: Single Stream Recyclables Data (% by weight)

Hauler/Location		Unincorp. County (Crestview)	Niceville	Unincorp. County	Unincorp. County	Niceville	Unincorp. County (Blue Water Bay)
Material Categories	sample #	1	2	3	4	5	6
1	Newspaper	14.8%	6.8%	9.9%	19.4%	24.7%	16.4%
2A	Corrugated Containers	7.8%	29.3%	13.5%	8.7%	14.8%	19.4%
2B	Wax Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3A	Mixed Paper	44.3%	13.8%	16.6%	25.9%	22.0%	21.0%
3B	Loose Shredded Paper	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%
4	Aseptic Containers	0.8%	0.2%	0.4%	0.4%	0.3%	0.1%
5	PET Bottles	2.9%	4.1%	3.4%	4.7%	4.5%	4.3%
6	Natural HDPE Bottles	0.9%	2.3%	2.4%	3.3%	1.6%	0.9%
7	Colored HDPE Bottles	1.6%	0.6%	1.7%	1.2%	1.4%	1.9%
8A	Non Bottle PET	0.7%	0.2%	0.7%	0.8%	1.1%	0.9%
8B	Non Bottle HDPE	0.6%	0.4%	1.2%	0.8%	0.0%	0.3%
8C	Polystyrene Containers	0.1%	0.5%	0.5%	0.7%	0.7%	0.3%
8D	Mixed Plastic Containers	2.7%	1.3%	1.7%	1.4%	0.8%	0.5%
9	Bulky Rigid Plastic	0.0%	0.4%	2.7%	5.7%	0.0%	0.9%
10	Plastic Film	0.7%	0.6%	2.6%	1.4%	1.5%	0.7%
11	Non Container Polystyrene	0.0%	0.4%	1.0%	0.0%	0.0%	0.0%
12	Glass Containers	12.8%	27.3%	24.9%	10.6%	17.0%	18.8%
13A	Aluminum Cans	1.3%	1.8%	1.8%	0.8%	1.3%	1.4%
13B	Aluminum Foil and Pie Plates	0.0%	0.4%	0.2%	0.2%	0.2%	0.1%
14A	Tin/Steel Cans	1.9%	2.5%	1.9%	2.2%	1.9%	2.7%
14B	Scrap Metals	0.0%	0.7%	3.3%	0.0%	0.0%	0.5%
15	Rejects	2.1%	0.7%	0.8%	8.4%	4.9%	6.2%
16	Grit	4.0%	4.7%	6.4%	3.1%	1.2%	1.9%
17	Liquids	0.0%	1.0%	0.7%	0.4%	0.0%	0.6%
TOTALS		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table F-1: Single Stream Recyclables Data (continued)

Hauler/Location		Destin	Unincorp. County (Blue Water Bay)	Unincorp. County (Crestview)	Unincorp. County (Crestview)	Unincorp. County (FWB)	Shalimar
Material Categories	sample #	7	8	9	10	11	12
1	Newspaper	10.4%	14.9%	7.6%	12.9%	21.0%	18.5%
2A	Corrugated Containers	18.2%	12.1%	11.8%	10.2%	3.7%	10.2%
2B	Wax Cardboard	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
3A	Mixed Paper	26.9%	14.3%	23.5%	15.8%	18.9%	14.1%
3B	Loose Shredded Paper	0.6%	0.0%	0.0%	1.3%	0.0%	0.0%
4	Aseptic Containers	0.6%	0.4%	0.9%	0.9%	0.3%	0.5%
5	PET Bottles	5.8%	5.0%	7.0%	6.3%	7.2%	2.5%
6	Natural HDPE Bottles	1.9%	2.2%	3.7%	1.8%	2.0%	0.7%
7	Colored HDPE Bottles	2.5%	2.5%	4.1%	1.5%	1.5%	1.3%
8A	Non Bottle PET	1.2%	1.1%	1.6%	1.0%	1.1%	0.7%
8B	Non Bottle HDPE	1.2%	1.9%	1.7%	1.0%	1.5%	0.6%
8C	Polystyrene Containers	0.7%	0.8%	1.7%	0.2%	0.5%	0.5%
8D	Mixed Plastic Containers	0.8%	1.6%	3.1%	2.0%	2.0%	1.1%
9	Bulky Rigid Plastic	1.1%	2.3%	6.5%	2.4%	0.6%	0.9%
10	Plastic Film	1.7%	0.8%	1.2%	1.3%	1.0%	1.8%
11	Non Container Polystyrene	0.0%	1.2%	1.4%	0.0%	0.0%	0.5%
12	Glass Containers	18.6%	22.4%	4.8%	24.7%	24.7%	37.0%
13A	Aluminum Cans	2.4%	2.2%	2.4%	2.8%	2.4%	1.6%
13B	Aluminum Foil and Pie Plates	0.1%	1.4%	0.4%	0.2%	0.2%	0.6%
14A	Tin/Steel Cans	2.2%	1.6%	3.0%	3.4%	3.1%	2.6%
14B	Scrap Metals	0.4%	1.8%	2.2%	0.4%	0.0%	1.9%
15	Rejects	1.1%	6.7%	9.4%	6.5%	1.5%	0.5%
16	Grit	1.2%	1.4%	2.1%	2.6%	6.8%	0.8%
17	Liquids	0.4%	1.3%	0.0%	0.3%	0.0%	1.0%
TOTALS		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table F-1: July 2014 Single Stream Recyclables Data (continued)

Hauler/Location		Niceville	Mary Esther	Cinco Bayou	Niceville	
Material Categories	sample #	13	14	15	16	Weighted Average
1	Newspaper	16.7%	8.1%	17.6%	10.2%	14.3%
2A	Corrugated Containers	15.9%	18.4%	14.8%	19.8%	14.7%
2B	Wax Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%
3A	Mixed Paper	29.7%	20.5%	18.0%	36.7%	23.3%
3B	Loose Shredded Paper	0.3%	0.0%	0.0%	0.0%	0.2%
4	Aseptic Containers	0.2%	0.4%	0.3%	0.7%	0.4%
5	PET Bottles	3.3%	2.7%	4.3%	4.9%	4.5%
6	Natural HDPE Bottles	1.2%	1.3%	1.7%	1.0%	1.8%
7	Colored HDPE Bottles	1.6%	1.6%	2.4%	1.5%	1.8%
8A	Non Bottle PET	0.4%	0.5%	0.5%	1.2%	0.8%
8B	Non Bottle HDPE	0.8%	0.4%	0.6%	0.2%	0.8%
8C	Polystyrene Containers	0.5%	0.3%	0.3%	0.3%	0.5%
8D	Mixed Plastic Containers	2.2%	1.4%	1.4%	0.9%	1.6%
9	Bulky Rigid Plastic	1.0%	3.6%	1.1%	0.7%	1.8%
10	Plastic Film	2.1%	1.3%	0.7%	2.5%	1.4%
11	Non Container Polystyrene	0.0%	0.0%	0.0%	0.4%	0.3%
12	Glass Containers	9.2%	27.9%	30.1%	7.2%	19.2%
13A	Aluminum Cans	3.1%	2.0%	1.8%	1.6%	1.9%
13B	Aluminum Foil and Pie Plates	0.0%	0.2%	0.1%	0.4%	0.3%
14A	Tin/Steel Cans	2.2%	0.9%	2.0%	1.5%	2.2%
14B	Scrap Metals	1.0%	0.2%	0.0%	0.6%	0.8%
15	Rejects	4.6%	4.8%	1.6%	2.5%	3.9%
16	Grit	3.7%	2.7%	0.7%	5.0%	3.1%
17	Liquids	0.2%	0.7%	0.0%	0.0%	0.4%
TOTALS		100.0%	100.0%	100.0%	100.0%	100.0%

Appendix G: Instructions to Calculate Waste Generation

APPENDIX G – INSTRUCTIONS TO CALCULATE WASTE GENERATION

The WCS estimates the composition of residential and commercial waste delivered to the County for transfer and disposal. The results do not include materials diverted for recycling or composting, bulky or other types of waste received at the County facilities for disposal, or waste materials processed or disposed of at other facilities. To determine the composition of waste generated within the entire County, which is required in annual reports to FDEP, these materials need to be added to the study results.

Table G-1 provides a form for County staff to utilize when determining the composition of all waste generated in the County. KCI will also provide County staff with an electronic version of this form for use when compiling future FDEP annual reports. In the form, KCI has converted the 34 material categories utilized in the WCS into the 19 categories required in the state report as outlined below. These percentages have been inserted in Column A of the form.

- Plastic Bottles –WCS categories of PET Containers, HDPE Containers, and Other Plastic Containers #3-#7.
- Other Plastics –WCS categories of Non-Bottle Plastics #1 and #2, Bulky Rigid Plastics, Non-Rigid Plastic Film, Expanded Polystyrene, and All Other Plastics.
- Other Paper –WCS categories of Other Recyclable Paper, Low Grade Paper, and Aseptic Containers.
- C&D Debris – WCS categories of C&D Debris, and Treated and Untreated Wood Waste.
- Miscellaneous - WCS categories of Other Glass, Special Wastes, Electronics, Household Batteries, All Other Garbage, Liquids, and Grit.

Provided below is an explanation of the columns in Table G-1 and the steps the County will need to take to calculate the total composition of waste generated in the County.

1. **Column A, 2014 WCS Results**, provides the Countywide Waste composition data from the 2014 WCS.
2. **Column B, Tons of MSW Disposed** – Enter the total tons of residential and commercial waste received at the County’s transfer stations during the year (excluding bulky waste, C&D debris, segregated waste loads, or special wastes) in the yellow-highlighted cell. Formulas in the other cells will automatically calculate the tons of each material disposed by multiplying the percentage of each material category in Column A by the total amount of waste disposed.
3. **Column C, Other Tons Generated** – Enter the tons, by material category, of other waste generated in the County, whether it is recycled, composted, or disposed. This will include other wastes received at the County’s transfer stations, data from the County’s Certified Tonnage Reports received from FDEP, and other sources that might not report to FEP.
4. **Column D, Tons Recycled** – Enter the tons, by material type, of materials recycled, composted, or otherwise diverted from disposal. This will include materials listed on the state’s Certified Recovered Materials Dealer Reports, as well as any additional recycling tonnages identified by County staff.
5. **Column E, Total Tons Generated** – Formulas in this column will automatically calculate the total tons of each material generated by adding the tons in Columns B and C.
6. **Column F, Recycling Rate** – Formulas in this column will automatically calculate the recycling rate for each material category and the overall County recycling rate by dividing the figures in Column D by the figures in Column E.
7. **Column G, Composition of Waste Generated** – Formulas in this column will automatically calculate the percentage each material contributes to the total composition of all waste generated within the County by dividing the figures in Column E by the total of Column E.

Table G-1: Form for Determining Total Waste Generation in County

DEP CATEGORIES	A	B	C	D	E	F	G
	2014 WCS Results	Tons of MSW Disposed ¹ A * (B total)	Other Tons Generated ²	Tons Recycled ³	Total Tons Generated B+C	Recycling Rate (percent) D / E	Composition of Waste Generated (percent) E / (E total)
a. Newspaper	1.8%	0			0		
b. Glass	4.2%	0			0		
c. Aluminum cans	1.1%	0			0		
d. Plastic bottles	3.9%	0			0		
e. Steel cans	1.3%	0			0		
f. Corrugated paper	6.3%	0			0		
g. Office paper	1.1%	0			0		
h. Yard trash	9.9%	0			0		
a. Other plastics	9.9%	0			0		
b. Ferrous metals	1.7%	0			0		
c. White goods	0.4%	0			0		
d. Non-ferrous metals	0.5%	0			0		
e. Other paper	16.8%	0			0		
f. Textiles	3.5%	0			0		
a. C&D debris	8.9%	0			0		
b. Food	14.1%	0			0		
c. Miscellaneous	14.3%	0			0		
d. Tires	0.3%	0			0		
e. Process fuel	0.0%	0			0		
	100.0%		0	0	0		0.0%

¹ Insert total tons of residential and commercial waste received at County's transfer stations into yellow cell in column B.
² Insert tons of other waste (by material type) generated in Okaloosa County that were recycled, composted, or disposed.
³ Insert tons of materials (by material type) generated in Okaloosa County that were recycled or composted.