CHATHAM COUNTY, NORTH CAROLINA
2017 WASTE COMPOSITION STUDY

June 2017

Prepared for:

Chatham County
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Section 1
Introduction

1.1 Purpose and Scope

Chatham County (County) contracted Kessler Consulting, Inc. (KCI) to conduct a Waste Composition Study (WCS) of Class I municipal solid waste (MSW) and Class III bulky wastes to determine the composition of solid waste received at the County's Collection Centers and delivered to Waste Management, Inc.'s (WMI) Siler City Transfer Station for disposal.

The WCS consisted of sampling and sorting materials from the County's solid waste compactors and pre-crushers from each of the County's 12 collection centers. The WCS also included a visual audit of bulky wastes collected in roll-offs at each collection center.

1.2 Background

Chatham County operates 12 collection centers that receive MSW and bulky waste from residents in the unincorporated areas of the County. Each center has a compactor for MSW collection and a bulky waste roll-off container and two of the centers have additional pre-crushers for bulky waste.

Each of the collection centers also has receptacles for collecting single stream recyclables, which includes the following materials:

- Aluminum cans
- Steel cans
- Mixed paper
- Corrugated cardboard
- Aseptic cartons
- Plastic bottles, tubs, and to-go containers
- Bulky rigid plastics

In addition to MSW and single stream recyclables, each collection center also collects the following materials for recycling:

- Glass (brown, green, and clear)
- Scrap metal (including white goods)
- Electronics
- Household batteries
- Oil filters and used motor oil
- Lead acid batteries
- Tires

Yard waste and inert debris (brick, concrete, rock, dirt, soil, sand) are also collected at the County's Main Facility.

The goal of the WCS was to analyze the materials that are being placed in the MSW receptacles to determine if recyclable materials are being managed properly. Results of this WCS will help the County to better focus their education and enforcement efforts.

The 2017 WCS was conducted to evaluate changes in the waste stream since similar studies were conducted in 2014 and 2011. Comparisons of the results from these previous WCSs are provided herein.

Section 2
Methodology

2.1 Generator Sectors

The WCS focused on all MSW generated at the County's 12 collection centers. Three generator sectors (i.e., collection container types) were evaluated during the WCS:

- MSW Compactors (manually sorted)
- Bulky Waste Pre-Crushers (manually sorted)
- Bulky Waste Roll-Offs (visually characterized)

2.2 Material Categories

KCI worked with County staff to develop a list of 49 material categories into which the manually sorted waste was placed. To develop this list of material categories, KCI provided a list of suggested material categories to the County for review and approval. KCI worked to ensure that all results from the 2017 WCS were comparable to the County's previous WCSs. The final list of material categories and descriptions are provided in Appendix A.

Similar categories were used in the visual audit of bulky waste, as discussed in Section 2.5.

2.3 Locations, Equipment and Labor

The two-day sorting event was conducted on May 31 and June 1, 2017. KCI provided a Study Supervisor, Sorting Supervisor, all sorting equipment, and safety gear. WMI provided a loader and operator to gather samples at the direction of KCI's Study Supervisor. The County provided 95-gallon roll carts for collecting and holding samples and removing waste upon completion of the sort activities. All sort labor was provided by KCI through an agreement with Labor Ready of Greensboro.

KCI prepared and County staff reviewed and approved a site safety plan that was followed throughout the sorting event. KCI worked closely with County and WMI 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

All sampling and sorting procedures were conducted in accordance with the Sampling and Sorting Protocol developed by KCI and approved by the County before the fieldwork was initiated.

Per the County's direction, all of the compactors, pre-crushers, and bulky waste roll-offs at each of the County's 12 collection centers were included in this WCS. In total, 14 samples from the

County's 12 compactors and two pre-crushers were manually sorted, and 12 bulky waste roll-offs were visually characterized during the two-day sorting event.

Upon entering the transfer station, County vehicle drivers were asked for the name of the collection center from which the waste originated. On the data recording form, the Study Supervisor noted the following information: truck number, date and time, generator sector, and collection center location. Once the materials in each compactor and pre-crusher vehicle were tipped, a representative sample of more than 200 pounds was selected from each load and placed in the roll carts, where they were staged until sorted. Figure 2-1 depicts a typical sample ready for sorting. For bulky waste roll-offs, the materials were tipped on the tip floor, where they were carefully inspected and visually characterized by the Study Supervisor.

Figure 2-1: Material in Roll Carts Staged for Hand Sorting

All samples were transferred onto the sort table where they were hand-sorted into the previously defined material categories using labeled containers of various sizes. Figure 2-2 shows the sorting activities. After the entire sample was sorted, the Sorting Supervisor weighed and recorded the weights of material within each container using a tablet. Throughout and at the end of the sorting of each sample, the Sorting Supervisor and Sampling Supervisor verified that material within each category's container was correctly sorted.

Figure 2-2: Sorting Activities

2.5 Visual Audit Procedures

Because bulky wastes are not conducive to manual sorting, KCI visually characterized the waste generated in each of the collection center roll-offs to estimate the composition of incoming bulky wastes.

Upon arrival at the Transfer Station, the Sort Supervisor asked the County vehicle driver to estimate how full each roll-off was with material. Each of the roll-offs were determined to be between 50 and 100 percent full at the time of arrival. On the visual audit recording form, the Sort Supervisor recorded the truck number, date and time, generator sector, and collection center location. Once tipped, the load was inspected to determine the presence (by volume) of various material types starting with the most abundant (major) materials. Following the determination of the major material categories, the percent by volume of each minor material type was then recorded on the visual audit data form. Photographs were taken of each load. Figure 2-3 depicts the typical contents of a bulky waste roll-off. A sample visual audit data form is provided in Appendix B.

Figure 2-3: Example of Bulky Waste for Visual Audit

2.6 Analytical Procedures

After the sorting event, KCI calculated the weighted average of each material category for each generator sector following the industry-accepted standards outlined in the *ASTM Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste (D5231-92; reapproved 2008)*. Where possible, confidence intervals were also calculated for each material category using a standard statistical t-test.

To assist the County in further quantifying the bulky waste stream, KCI utilized industry-accepted conversion factors to convert the visual audit results (percent by volume) into percent by weight. While not an exact determination, it will help the County conduct further comparisons and weight-based analyses.

Section 3
Results

3.1 Introduction to Results

All results presented in this section are expressed in percentage by weight or volume (bulky waste). The percentages included in the tables and figures are the mean values for each material category. Where appropriate, the tables also provide the 90% confidence intervals for each material category. The confidence interval indicates that, with a 90% level of confidence, the actual arithmetic mean (the arithmetic mean obtained if an infinite number of samples were sorted) 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. Because this is a statistical analysis, the lower end of the confidence interval may be a negative number. Capitalized materials in the section refer to material categories as defined in Appendix A.

For the purposes of discussion and analysis, materials were grouped into six broad categories based on diversion potential:

- Recyclable paper: These are paper materials that are currently accepted in the County's single stream recycling collection containers at its collection centers.
- Recyclable containers: These are plastic and metal containers accepted in the County's single stream recycling collection containers at its collection centers. This also includes Glass Containers accepted at the collection centers in separate collection containers.
- Other County-accepted recyclables: These are other materials accepted for recycling at the Main Facility and/or collection centers.
- Compostable organics: These are materials that potentially could be compostable in a commercial composting facility if properly source-separated. However, not all Low-Grade Paper would be compostable, such as paper to-go cups, which often have a plastic liner. Segregating compostable paper from non-compostable paper was not within the scope of this WCS.
- Potential recyclables: These are materials that have the potential to be recycled, but are not currently collected for recycling at the County collection centers. This includes Construction and Demolition (C&D) Debris, which may be able to be recycled with C&D processing technology.
- Other materials: These are any materials not classified above.

3.2 Collection Center Compactor MSW

Figure 3-1 depicts the composition of MSW collected within the compactors located at the County's collection centers, and Table 3-1 compares these results with the 2014 and 2011 WCSs. Individual sample data for the compactor samples can be found in Appendix C.

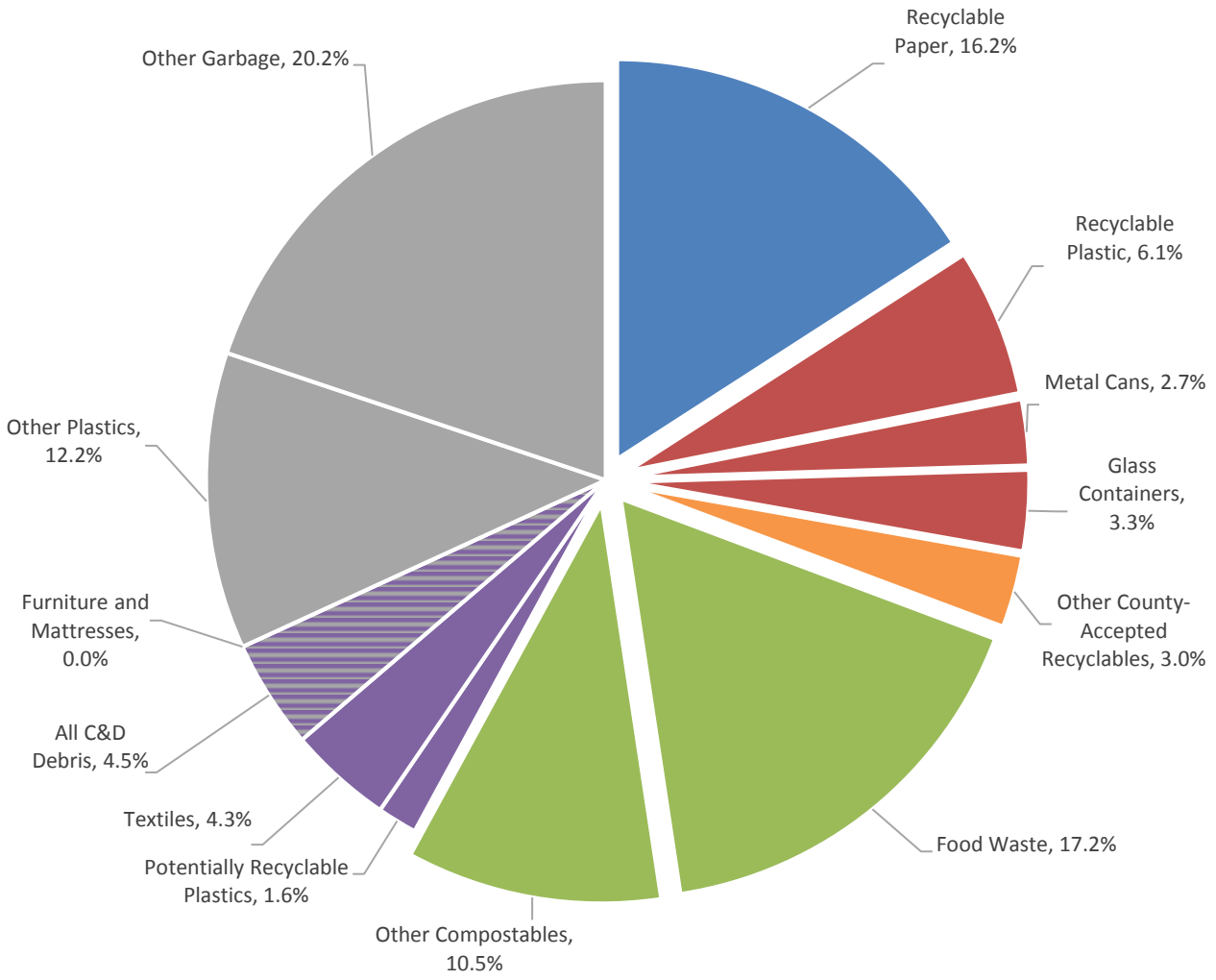
Key findings from the compactor data include:

- Recyclable paper and recyclable containers comprised 16% and 12% of the compactor MSW, respectively. This is lower than both the 2014 and 2011 data.
- Approximately 3% of the compactor MSW was other County-accepted recyclables. This was only slightly lower than in previous studies. Other E-Waste and Technotrash was significantly lower than in 2014.
- In total over 30% of materials in the compactor MSW were accepted recyclables at the collection centers.
- Nearly 28% of compactor MSW was potentially compostable material. This was slightly higher than in previous studies. Almost two-thirds of this was Food Waste and another third was Low-Grade Paper.
- Over 8% of the compactor MSW was potentially recyclable materials. These materials were about the same as in 2014, but slightly lower than in 2011. The most significant potentially recyclable material in all studies was Textiles.
- Other materials comprised nearly 33% of the compactor MSW. This was higher than in previous studies. Plastic Film represents about a quarter of other materials. While some of this film could be recycled (such as retail bags at supermarkets), the majority of film was garbage bags and other contaminated film that would not be recyclable. Pet Waste, which was primarily cat litter, also represented a significant portion of other materials. A number of samples had an exceptionally high amount of cat litter.

Overall, the County's single stream recycling program seems to be making progress in reducing the recyclables disposed in the MSW stream as evidenced by the reduced percentages of accepted recyclable materials in the 2017 WCS compared to previous studies. This is based on comparing the mean values; however, for several of the individual recyclable materials, the mean in the 2014 WCS is within the confidence interval of the 2017 WCS, indicating these specific materials might not be significantly different. In addition, 30% of the compactor MSW still consists of recyclables accepted at the collection centers, indicating room for further recycling improvement.

Compostable organics, especially food waste, represented a major portion of the MSW stream. Implementing an organics diversion program could significantly reduce the amount of MSW disposed within the County.

Figure 3-1: Composition of Compactor MSW



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

- Recyclable paper includes the categories of Newspaper, Corrugated Cardboard, Magazines, Recyclable Paper, and Aseptic Containers.
- Recyclable plastic includes the categories of PET #1 Bottles, HDPE #2 Bottles, Non-Bottle PET #1, Other Narrow-Neck Bottles, #2 & #5 Plastic Cups and Tubs, and Bulky Rigid Plastics.
- Metal cans includes the categories of Tin/Steel Cans, Aerosol Cans, and Aluminum Cans.
- Other County-accepted recyclables includes the categories of White Goods/Small Appliances, Other Ferrous, Other Non-Ferrous, Oil Filters, Lead Acid Batteries, Computers, Televisions, Other E-Waste and Technotrash, Household Batteries, Pallets, Brick and Concrete, and Tires and Rubber.
- Other compostables includes the categories of Untreated Wood Waste, Yard Waste, and Food Waste.
- Potentially recyclable plastics includes the categories of Bottles That Held Toxics and Expanded Polystyrene Foam,
- Other plastics includes the categories of Plastic Film and All Other Plastics.
- All C&D debris includes the categories of Carpet, Treated/Painted Wood Waste, and C&D Debris.
- Other garbage includes the categories of Shredded Paper, Other Glass, Special Waste, All Other Garbage, Pet Waste, Diapers, Liquids, and Grit.

Table 3-1: Composition of Compactor MSW

	Material Category	2017 WCS			2014 WCS	2011 WCS
			90% Confidence Interval			
		Weighted Average	Lower Bounds	Upper Bounds	Weighted Average	Weighted Average
1	Newspaper	2.3%	1.04%	3.46%	3.4%	3.1%
2	Corrugated Cardboard	3.8%	2.45%	5.15%	4.3%	1.5%
3	Magazines	1.3%	0.80%	1.74%	1.2%	2.5%
4a	Recyclable Paper	8.5%	7.26%	9.76%	13.2%	<12.8
6	Aseptic Containers	0.3%	0.25%	0.41%	0.3%	0.3%
	Total Recyclable Paper	**16.2%**			**22.5%**	**<20.2%**
7	PET #1 Bottles	2.3%	2.00%	2.64%	2.2%	3.4%
8	HDPE #2 Bottles	1.2%	1.01%	1.38%	1.1%	1.7%
10	Non-Bottle PET #1	0.3%	0.15%	0.36%	0.7%	0.3%
11	Other Narrow-Neck Bottles	0.1%	0.08%	0.21%	0.5%	1.0%
12	#2 & 5 Plastic Cups and Tubs	0.6%	0.40%	0.78%	0.8%	1.1%
15	Bulky Rigid Plastics	1.6%	0.24%	2.90%	2.2%	3.3%
17	Tin/Steel Cans	1.5%	1.07%	1.93%	1.6%	1.4%
18	Aerosol Cans	0.4%	0.20%	0.54%	0.4%	0.6%
21	Aluminum Cans	0.8%	0.55%	1.12%	0.9%	0.8%
23	Glass Containers	3.3%	2.36%	4.28%	6.1%	4.5%
	Total Recyclable Containers	**12.1%**			**16.5%**	**18.1%**
19	White Goods/Small Appliances	0.0%	0.00%	0.00%	0.1%	<0.6%
20	Other Ferrous	0.6%	0.06%	1.10%	0.5%	1.1%
22	Other Non-Ferrous	0.6%	0.47%	0.66%	0.7%	0.7%
27	Oil Filters	0.3%	-0.08%	0.64%	0.0%	0.3%
28	Lead Acid Batteries	0.0%	0.00%	0.00%	0.0%	<0.1%
30	Computers	0.0%	0.00%	0.00%	0.0%	<0.1%
31	Televisions	0.0%	0.00%	0.00%	0.0%	<0.1%
32	Other E-Waste and Technotrash	0.6%	0.19%	0.94%	1.6%	<0.6%
33	Household Batteries	0.2%	0.07%	0.25%	0.2%	<0.1%
36	Pallets	0.0%	0.00%	0.00%	0.0%	<0.1%
37	Brick And Concrete	0.1%	-0.02%	0.17%	0.1%	<0.1%
41	Tires and Rubber	0.7%	-0.13%	1.61%	0.1%	0.1%
	Total Other County-Accepted Recyclables	**3.0%**			**3.3%**	**<4.0%**

Note: Columns may not appear to calculate correctly due to rounding.

Table 3-1: Composition of Compactor MSW (continued)

	Material Category	2017 WCS			2014 WCS	2011 WCS
			90% Confidence Interval			
		Weighted Average	Lower Bounds	Upper Bounds	Weighted Average	Weighted Average
5	Low-Grade Paper	9.2%	7.95%	10.42%	9.4%	8.8%
34	Untreated Wood Waste	0.4%	-0.11%	0.81%	1.3%	1.0%
42	Yard Waste	1.0%	0.00%	1.92%	0.1%	<1.2%
43	Food Waste	17.2%	14.45%	19.92%	16.6%	14.5%
	Total Compostable Organics	**27.7%**			**27.4%**	**<25.5%**
4b	Shredded Paper	0.0%	0.0%	0.1%	n/a	n/a
9	Bottles that held toxics	0.2%	0.1%	0.3%	0.2%	0.2%
14	Expanded Polystyrene Foam	1.4%	1.2%	1.6%	1.2%	2.1%
25	Textiles	4.3%	3.0%	5.5%	3.8%	<6.7%
26	Carpet	0.4%	0.0%	0.9%	1.4%	<0.1%
38	C&D Debris	1.9%	0.3%	3.6%	1.0%	<0.3%
39	Furniture	0.0%	0.0%	0.0%	0.9%	0.5%
40	Mattresses	0.0%	0.0%	0.0%	0.0%	<0.1%
	Total Potential Recyclables	**8.3%**			**8.5%**	**<9.8%**
13	Plastic Film	7.9%	6.6%	9.2%	5.7%	<9.4%
16	All Other Plastics	2.7%	2.0%	3.4%	1.5%	n/a
24	Other Glass	1.1%	0.3%	1.9%	0.8%	<0.4%
29	Special Wastes	0.4%	0.1%	0.8%	0.1%	<0.1%
35	Treated/Painted Wood Waste	2.1%	0.6%	3.6%	0.8%	0.1%
44a	All Other Garbage	6.8%	4.6%	9.1%	9.4%	7.1%
44b	Pet Waste	6.1%	1.9%	10.3%		<0.1
44c	Diapers	3.9%	2.9%	4.8%		3.3%
45	Liquids	1.0%	0.7%	1.4%	0.7%	n/a
46	Grit	0.8%	-0.2%	1.7%	2.8%	3.1%
	Total Other Materials	**32.8%**			**21.8%**	**<23.5%**
	Total	**100.0%**			**100.0%**	**100.0%**

Note: Columns may not appear to calculate correctly due to rounding.

3.3 Collection Center Pre-Crusher Bulky Waste

Figure 3-2 depicts the composition of bulky waste disposed within the pre-crushers located at the Pittsboro and Cole Park collection centers. Table 3-3 presents the results of each sample and the weighted average and compares these results with the 2014 and 2011 WCSs.

Due to the limited number of samples from pre-crushers, caution should be taken in drawing conclusions from these data and comparing to previous WCSs. The two samples measured in this WCS had significant differences in their composition, as described below, which is indicative of the high heterogeneity of material placed in the pre-crusher:

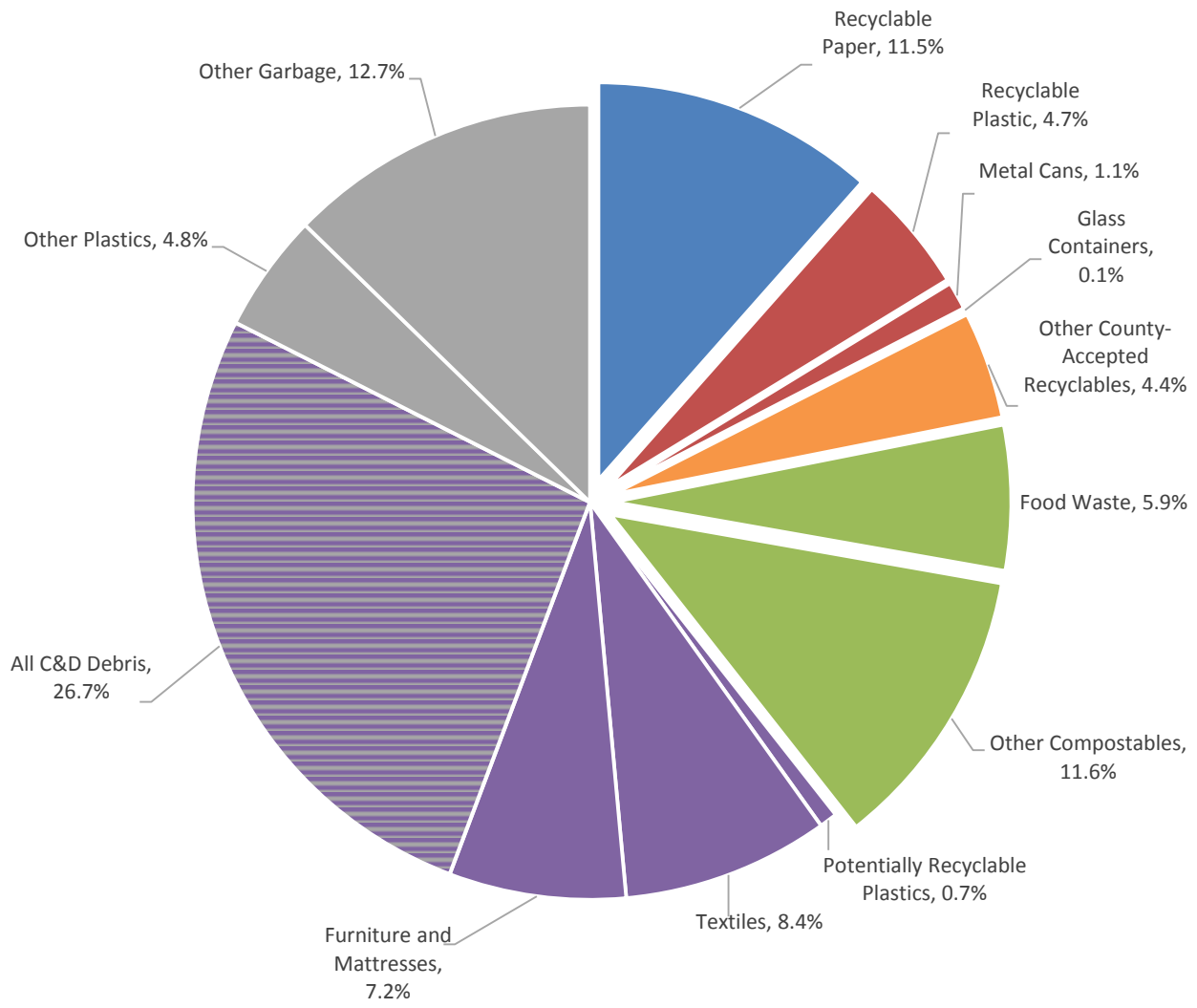
- The Pittsboro sample was predominantly Corrugated Cardboard (17.5%), Textiles (12.6%), Food Waste (11.6%), All Other Garbage (9.7%), and Yard Waste (9.6%).
- The Cole Park sample was predominantly Treated/Painted Wood Waste (46.9%), Mattresses (13.5%), Pet Waste (8.0%), and Low-Grade Paper (6.7%).

Below are key results comparing the weighted average of these two samples to previous studies:

- While Corrugated Cardboard was much higher in the 2017 WCS than in 2014 or 2011, the total recyclable paper was lower than in 2014, but about the same as in 2011. Total Recyclable Containers showed similar trends.
- Total other County-accepted recyclables was lower than in 2014 and 2011. This was mostly Rubber and E-Waste, both of which were found in higher percentages in the Pittsboro sample.
- Less than 20% of the pre-crusher waste was compostable organics, most of this was Yard Waste and Food Waste in the Pittsboro sample. This was lower than either 2014 or 2011.
- Other potential recyclables was about 18% of the pre-crusher bulky waste, higher than both 2014 and 2011. Textiles were a significant component of this. A mattress in the Cole Park sample was also a major component of other potentially recyclable materials.
- Other materials was higher than in 2014, but about the same as 2011. Over half of this was treated/painted wood waste, which was a major component of the Cole Park sample. The high amount of Pet Waste in the Cole Park sample also contributed to the high percentage of other waste.

While the combined mean value of all recyclable materials accepted at County collection centers was lower than in the previous two WCSs, reaching definitive conclusions is cautioned because (1) only two samples were measured and (2) the pre-crusher waste stream is highly variable.

Figure 3-2: Composition of Pre-Crusher Bulky Waste



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

- Recyclable paper includes the categories of Newspaper, Corrugated Cardboard, Magazines, Recyclable Paper, and Aseptic Containers.
- Recyclable plastic includes the categories of PET #1 Bottles, HDPE #2 Bottles, Non-Bottle PET #1, Other Narrow-Neck Bottles, #2 & #5 Plastic Cups and Tubs, and Bulky Rigid Plastics.
- Metal cans includes the categories of Tin/Steel Cans, Aerosol Cans, and Aluminum Cans.
- Other County-accepted recyclables includes the categories of White Goods/Small Appliances, Other Ferrous, Other Non-Ferrous, Oil Filters, Lead Acid Batteries, Computers, Televisions, Other E-Waste and Technotrash, Household Batteries, Pallets, Brick and Concrete, and Tires and Rubber.
- Other compostables includes the categories of Untreated Wood Waste, Yard Waste, and Food Waste.
- Potentially recyclable plastics includes the categories of Bottles That Held Toxics and Expanded Polystyrene Foam,
- Other plastics includes the categories of Plastic Film and All Other Plastics.
- All C&D debris includes the categories of Carpet, Treated/Painted Wood Waste, and C&D Debris.
- Other garbage includes the categories of Shredded Paper, Other Glass, Special Waste, All Other Garbage, Pet Waste, Diapers, Liquids, and Grit.

Table 3-2: Composition of Pre-Crusher Bulky Waste

	Material Category	2017 WCS			2014 WCS	2011 WCS
		Pittsboro	Cole Park	Weighted Average	Weighted Average	Weighted Average
1	Newspaper	0.0%	0.5%	0.3%	4.0%	3.1%
2	Corrugated Cardboard	17.5%	0.3%	8.3%	3.2%	2.5%
3	Magazines	0.3%	0.3%	0.3%	2.0%	<0.1%
4a	Recyclable Paper	3.2%	1.6%	2.3%	5.6%	<6.0%
6	Aseptic Containers	0.5%	0.2%	0.3%	0.3%	<0.1%
	Total Recyclable Paper	**21.4%**	**2.9%**	**11.5%**	**15.1%**	**<11.7%**
7	PET #1 Bottles	0.9%	0.4%	0.6%	1.0%	1.6%
8	HDPE #2 Bottles	0.2%	0.2%	0.2%	1.7%	0.4%
10	Non-Bottle PET #1	0.0%	0.3%	0.2%	0.2%	<0.1%
11	Other Narrow-Neck Bottles	0.0%	0.0%	0.0%	0.5%	<0.1%
12	#2 & 5 Plastic Cups and Tubs	0.4%	0.1%	0.3%	0.5%	0.2%
15	Bulky Rigid Plastics	2.6%	4.2%	3.4%	2.4%	2.5%
17	Tin/Steel Cans	1.2%	0.0%	0.6%	1.7%	0.5%
18	Aerosol Cans	0.1%	0.4%	0.3%	1.0%	<0.1%
21	Aluminum Cans	0.5%	0.1%	0.3%	1.1%	0.3%
23	Glass Containers	0.2%	0.0%	0.1%	4.1%	<0.5%
	Total Recyclable Containers	**6.3%**	**5.7%**	**6.0%**	**14.2%**	**<6.1%**
19	White Goods/Small Appliances	0.0%	0.0%	0.0%	2.9%	<0.1%
20	Other Ferrous	0.5%	0.5%	0.5%	2.7%	0.3%
22	Other Non-Ferrous	0.5%	0.1%	0.3%	0.3%	<0.5%
27	Oil Filters	0.0%	0.0%	0.0%	0.0%	0.2%
28	Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	<0.1%
30	Computers	0.0%	0.0%	0.0%	0.0%	1.5%
31	Televisions	0.0%	0.0%	0.0%	0.0%	<0.1%
32	Other E-Waste and Technotrash	3.0%	0.4%	1.6%	3.7%	<0.2%
33	Household Batteries	0.0%	0.0%	0.0%	0.0%	<0.1%
36	Pallets	0.0%	0.0%	0.0%	1.3%	<0.1%
37	Brick And Concrete	0.0%	0.0%	0.0%	0.0%	<1.8%
41	Tires and Rubber	3.8%	0.4%	2.0%	0.0%	1.6%
	Total Other County-Accepted Recyclables	**7.7%**	**1.5%**	**4.4%**	**10.9%**	**<6.6%**

Note: Columns may not appear to calculate correctly due to rounding.

Table 3-2: Composition of Pre-Crusher Bulky Waste (continued)

	Material Category	2017 WCS Pittsboro	2017 WCS Cole Park	2017 WCS Weighted Average	2014 WCS Weighted Average	2011 WCS Weighted Average
5	Low-Grade Paper	4.1%	6.7%	5.5%	8.4%	2.8%
34	Untreated Wood Waste	3.4%	0.1%	1.6%	9.4%	17.8%
42	Yard Waste	9.6%	0.0%	4.5%	0.0%	<1.2%
43	Food Waste	11.6%	0.9%	5.9%	6.3%	6.7%
	Total Compostable Organics	**28.7%**	**7.8%**	**17.5%**	**24.1%**	**<28.5%**
4b	Shredded Paper	0.0%	0.2%	0.1%	n/a	n/a
9	Bottles that held toxics	0.1%	0.0%	0.1%	0.6%	0.4%
14	Expanded Polystyrene Foam	1.2%	0.2%	0.7%	1.7%	0.5%
25	Textiles	12.6%	4.7%	8.4%	5.1%	2.2%
26	Carpet	0.0%	0.0%	0.0%	3.2%	<0.1%
38	C&D Debris	3.2%	0.0%	1.5%	2.0%	<2.2%
39	Furniture	0.0%	0.0%	0.0%	0.0%	3.7%
40	Mattresses	0.0%	13.5%	7.2%	0.0%	<0.1%
	Total Potential Recyclables	**17.2%**	**18.6%**	**17.9%**	**12.6%**	**<9.4%**
13	Plastic Film	3.8%	3.2%	3.5%	5.4%	<3.3%
16	All Other Plastics	1.0%	1.6%	1.3%	0.7%	n/a
24	Other Glass	0.2%	0.6%	0.4%	0.0%	<0.1%
29	Special Wastes	0.8%	0.0%	0.4%	0.0%	<0.2%
35	Treated/Painted Wood Waste	0.4%	46.9%	25.2%	9.8%	20.0%
44a	All Other Garbage	9.7%	2.4%	5.8%	1.8%	7.7%
44b	Pet Waste	0.0%	8.0%	4.3%		<0.1%
44c	Diapers	0.3%	0.2%	0.2%		4.1%
45	Liquids	0.0%	0.0%	0.0%	0.0%	n/a
46	Grit	2.6%	0.7%	1.6%	5.3%	3.9%
	Total Other Materials	**18.7%**	**63.6%**	**42.7%**	**23.1%**	**<39.3%**
	Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Columns may not appear to calculate correctly due to rounding.

3.4 Bulky Waste Visual Audit

Figure 3-3 depicts the composition of waste by volume collected within the roll-offs located at the County's collection centers and Table 3-3 compares these results with the 2011 and 2014 WCSs. Table 3-4 estimates the results of the 2017 visual audit in terms of percent by weight by utilizing industry-accepted conversion factors. Individual data for the bulk waste loads can be found in Appendix D. Photographs of each bulky waste load can be found in Appendix E.

Caution is advised when using quantified data from visual audits. They are a subjective estimate based on what could be observed during the audit. Also, the types and quantities of materials within bulky waste can change dramatically from day to day. Furthermore, applying a standard industry density to calculate the percent by weight has its own inherent inaccuracies and it does not necessarily represent the specific density of the material observed during the audit.

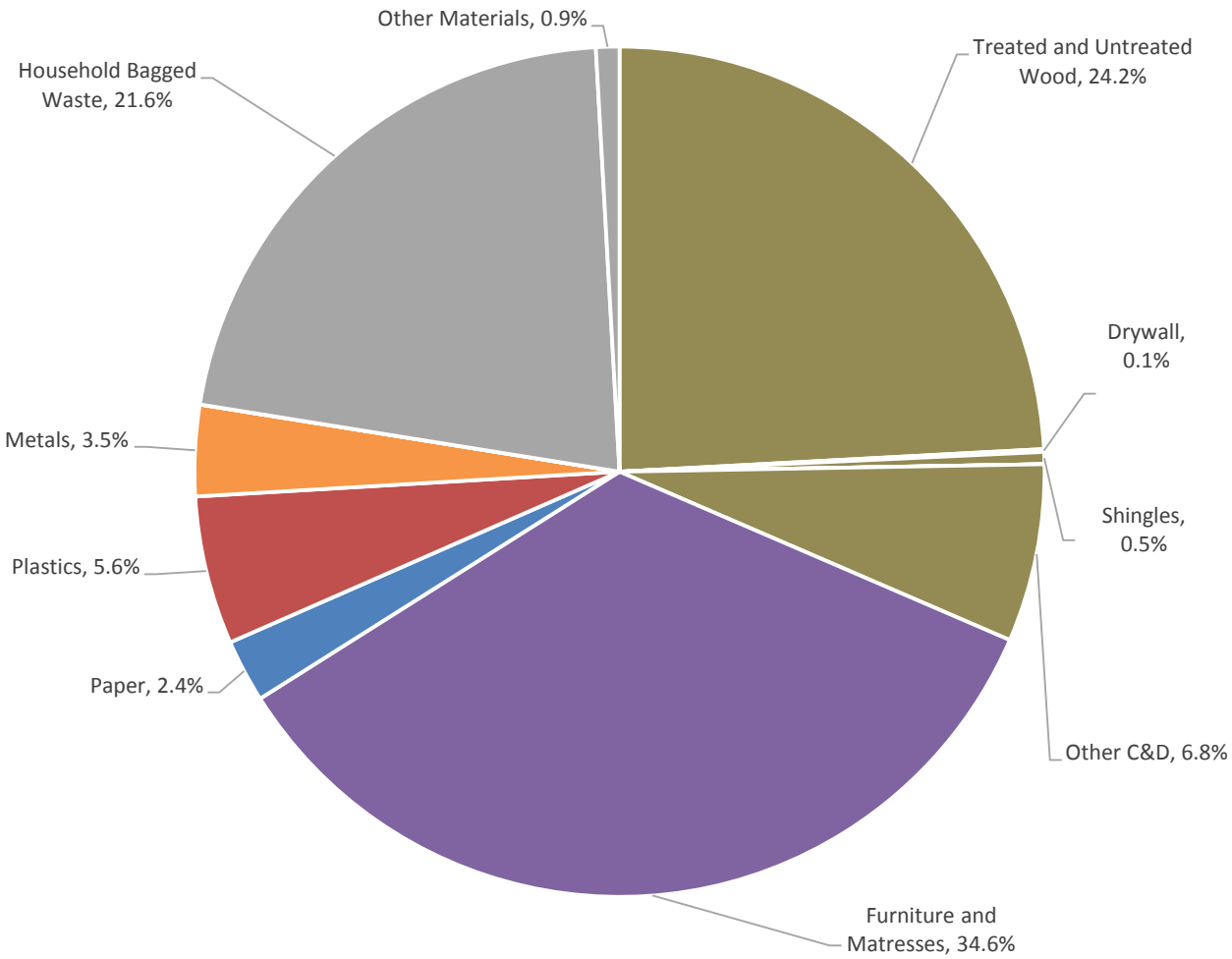
Some of the key observations made during the visual audit of bulky waste include:

- Nearly one-third by volume (nearly half by weight) of the bulky waste was C&D debris, predominantly wood waste. This was lower than was observed in 2014, but higher than in 2011. Much less carpet and padding was observed than in 2014.
- Over one-third of the bulky waste was furniture and mattresses, somewhat higher than in 2014 and 2011.
- More bagged household waste was observed than in the 2014 visual audit, but less than in 2011.

C&D debris is a large portion of this bulky waste (as well as in the pre-crusher waste discussed above). More than half of the C&D debris consisted of treated wood, which is difficult to recycle. However, other C&D materials, such as untreated wood, carpet and padding could potentially be recycled.

A high percentage of the bulky waste stream was comprised of bagged household waste. KCI understands that the bulky waste container is sometimes used as an overflow for bagged waste when the compactor is full or when it is in transit for disposal. The high percentage of bagged waste found during this study may be due to sampling on a Wednesday and Thursday after a holiday weekend when the compactors were more likely to be full. Bagged household waste in the bulky waste container is not an issue for the County because bulky waste and compactor garbage are disposed of at the same location; however, if the County were to deliver its bulky waste to a designated C&D Debris landfill, these materials would need to be free of household garbage.

Figure 3-3: Composition of Bulky Waste (percent by volume)



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

- Other C&D includes the categories of carpet and padding, bagged C&D debris, and other C&D.
- Paper includes the categories of corrugated cardboard and other paper.
- Metals includes the categories of major appliances, HVAC ducting, other non-ferrous, and other ferrous.
- Plastics includes the categories of plastic film, expanded polystyrene/insulation, and rigid plastics.
- Other Materials includes the categories of glass, textiles, mixed residue, rubber and tires, and E-waste.

Table 3-4: Composition of Bulky Waste (percent by volume)

Material Category	2017 WCS Weighted Average	2017 WCS 90% Confidence Interval Lower Bounds	2017 WCS 90% Confidence Interval Upper Bounds	2014 WCS Weighted Average	2011 WCS Weighted Average
Treated Wood	16.1%	10.2%	22.0%	13.4%	3.8%
Untreated Wood	8.0%	3.9%	12.2%	11.6%	15.4%
Carpet and Padding	4.2%	1.1%	7.3%	13.6%	2.6%
Drywall	0.1%	-0.1%	0.3%	2.8%	<0.1%
Roofing Shingles	0.5%	-0.3%	1.2%	<0.1%	3.5%
Rock/Gravel/Grit	0.0%	0.0%	0.0%	0.6%	<0.1%
Bagged C&D Debris	0.5%	0.0%	1.1%	3.8%	<0.1%
Other C&D	2.0%	-1.1%	5.1%	<0.1%	<0.1%
Total C&D Debris	**31.5%**			**45.9%**	**25.3%**
Furniture	16.8%	8.7%	24.9%	20.1%	17.8%
Mattresses	17.7%	8.4%	27.1%	7.8%	6.7%
Total Furniture	**34.6%**			**27.9%**	**24.5%**
Corrugated Cardboard	2.4%	1.1%	3.7%	5.1%	4.2%
Other Paper	0.0%	0.0%	0.0%	<0.1%	<0.1%
Total Paper	**2.4%**			**5.1%**	**4.2%**
Plastic Film	0.0%	0.0%	0.1%	<0.1%	<0.1%
EPS/Insulation	0.0%	0.0%	0.0%	0.3%	<0.1%
Rigid Plastics	5.6%	3.7%	7.5%	5.7%	6.3%
Total Plastics	**5.6%**			**6.0%**	**6.3%**
Major Appliances	0.0%	0.0%	0.0%	<0.1%	<0.1%
HVAC Ducting	0.6%	-0.2%	1.3%	<0.1%	<0.1%
Steel Cans	0.0%	0.0%	0.0%	<0.1%	0.40%
Other Non-Ferrous	0.0%	0.0%	0.0%	<0.1%	0.4%
Other Ferrous	2.9%	1.2%	4.7%	0.3%	0.7%
Total Metals	**3.5%**			**0.3%**	**1.5%**
Yard Waste	0.0%	0.0%	0.0%	0.3%	0.4%
Household Bagged Waste	21.6%	10.8%	32.4%	11.1%	28.2%
Glass	0.0%	0.0%	0.0%	0.2%	5.4%
Textiles	0.8%	-0.2%	1.8%	1.5%	3.9%
Mixed Residue	0.0%	0.0%	0.0%	0.5%	<0.1%
Rubber and Tires	0.1%	0.0%	0.3%	0.6%	<0.1%
Computers	0.0%	0.0%	0.0%	<0.1%	0.2%
Televisions	0.0%	0.0%	0.0%	<0.1%	0.3%
E-Waste	0.0%	0.0%	0.0%	0.5%	<0.1%
Total Other Materials	**22.5%**			**14.7%**	**38.4%**
	100.0%			**100.0%**	**100.0%**

Note: Columns may not appear to calculate correctly due to rounding.

Table 3-5: Composition of Bulky Waste (conversion to percent by weight)

Material Category	Weighted Average (% by volume)	Average Density (lbs/cy)	Weighted Average (% by weight)
Treated Wood	16.1%	220	**24.9%**
Untreated Wood	8.0%	220	**12.4%**
Carpet and Padding	4.2%	84	**2.5%**
Drywall	0.1%	600	**0.5%**
Roofing Shingles	0.5%	731	**2.4%**
Rock/Gravel/Grit	0.0%	1500	**0.0%**
Bagged C&D Debris	0.5%	150	**0.6%**
Other C&D	2.0%	150	**2.1%**
Total C&D Debris	**31.5%**		**45.3%**
Furniture	16.8%	145	**17.1%**
Mattresses	17.7%	55	**6.9%**
Total Furniture	**34.6%**		**24.0%**
Corrugated Cardboard	2.4%	50	**0.8%**
Other Paper	0.0%	364	**0.0%**
Total Paper	**2.4%**		**0.8%**
Plastic Film	0.0%	23	**0.0%**
EPS/Insulation	0.0%	17	**0.0%**
Rigid Plastics	5.6%	50	**2.0%**
Total Plastics	**5.6%**		**2.0%**
Major Appliances	0.0%	145	**0.0%**
HVAC Ducting	0.6%	47	**0.2%**
Steel Cans	0.0%	125	**0.0%**
Other Non-Ferrous	0.0%	150	**0.0%**
Other Ferrous	2.9%	150	**3.1%**
Total Metals	**3.5%**		**3.2%**
Yard Waste	0.0%	300	**0.0%**
Household Bagged Waste	21.6%	150	**22.7%**
Glass	0.0%	1000	**0.0%**
Textiles	0.8%	175	**1.0%**
Mixed Residue	0.0%	225	**0.0%**
Rubber and Tires	0.1%	1350	**1.0%**
Computers	0.0%	763	**0.0%**
Televisions	0.0%	405	**0.0%**
E-Waste	0.0%	763	**0.0%**
Total Other Materials	**22.5%**	220	**24.7%**
	100.0%		**100.0%**

Note: Columns may not appear to calculate correctly due to rounding.

Appendix A:
2017 Waste Composition Study
Material Categories

Table A: Waste Composition Study Material Categories

2017 and 2014 KCI Categories		KCI Category Definition
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 or waxy coatings), including clean pizza boxes.
3	Magazines	All magazines, catalogs and other materials printed on glossy paper.
4a	Recyclable Paper	Includes chipboard, brown paper bags, telephone books, hard cover books, and other printed or unprinted paper typically generated in an office environment including white, colored, coated, and uncoated papers, manila and pastel colored file folders, and materials printed on non-glossy paper. Also includes waxy cardboard.
4b	Shredded Paper (2017 only)	
5	Low-Grade Paper	All remaining paper not categorized in other paper categories, including contaminated paper (i.e., napkins, paper towels, fast-food wrappers, etc.).
6	Aseptic Containers	Gable top milk cartons, juice boxes, and other similar containers, such as ice cream boxes.
7	Polyethylene terephthalate (PET) Containers (SPI #1)	Clear and colored plastic bottles coded PET #1 such as soda bottles and water bottles.
8	High-density polyethylene (HDPE) Containers (SPI #2)	Clear/natural and pigmented plastic bottles coded HDPE #2 such as milk jugs, vinegar bottles, and detergent bottles.
9	Bottles that held toxics	Empty pesticide, oil, and other empty bottles that held toxic chemicals.
10	PET #1 Non-Bottles	Clear and colored plastic items labeled PET #1, such as clamshell containers, frozen food trays, disposable cups, and other items labeled PET #1.
11	Other Narrow-Neck Bottles	All narrow-neck plastic containers coded #3-#7, such as vitamin bottles, Arizona Iced Tea™ gallon jugs, etc.
12	Plastic Cups and Tubs	Wide-mouthed tubs and containers labeled #2 or #5 including lids. Examples include yogurt cups, margarine tubs, Cool Whip® tubs, and other non-bottle dairy items.
13	Non-rigid Plastic Film	Loose and bagged plastic bags such as garbage bags, shrink wrap, re-sealable bags, grocery bags, bread bags, AG film, etc.
14	Expanded Polystyrene Foam (EPS) (Styrofoam®)	Styrofoam® containers and packaging such as egg cartons, clamshell food containers, packaging peanuts, etc.
15	Rigid Plastics	Consists of non-container rigid plastic items such as plastic drums, crates, buckets, baskets, toys, refuse totes, lawn furniture, laundry baskets, and other large plastic items.
16	All Other Plastics	Any plastic materials not categorized above, such as deodorant cases, toothpaste tubes, tooth brushes, broom heads, flower pots, etc.
17	Tin/Steel Cans	Tin-plated steel cans, usually food containers.
18	Aerosol Cans	Empty aerosol cans. Full aerosol cans will be sorted into All Other Waste or Special Wastes depending upon the substance within.
19	White Goods and Small Appliances	Large and small household appliances such as refrigerators, blenders, hair dryers, microwaves, etc.
20	Other Ferrous	Steel, clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, and other magnetic metal items.

Table A: Waste Composition Study Material Categories (continued)

2017 and 2014 KCI Categories		KCI Category Definition
21	Aluminum Cans	Aluminum soft drink, beer, and some food cans.
22	Other Non-Ferrous	Scrap aluminum, aluminum foil, catering trays, copper wiring and tubing, brass fixtures, and other non-magnetic metals.
23	Glass Containers	Clear, brown/amber, and green glass bottles and jars as well as broken glass pieces larger than ½ square inch.
24	Other Glass	Non-container glass such as window panes, mirrors, ceramics, and drinking glasses.
25	Textiles	Clothing apparel, rags, leather, blankets, curtains, shoes, wallets, purses, belts, scrap leather.
26	Carpet	Carpet
27	Oil Filters	Oil Filters
28	Lead-Acid Batteries	Lead-Acid Batteries
29	Special Wastes	Cleaners, paint, oil, pool chemicals, fluorescent lights, medical waste, solvents, etc., that are considered household hazardous waste.
30	Computers	Computers, monitors, printers, scanners and peripherals.
31	Televisions	Televisions of all sizes and types.
32	Other E-Waste and Technotrash	Electronic devices such as DVD players, VCRs, cell phones, cordless telephones, PDAs, handheld devices, rechargeable batteries, as well as media items such as CDs, DVDs, tapes, etc.
33	Household Batteries	Household batteries including AA, AAA, C, D, 9-volt, and button types.
34	Untreated Wood Waste	Untreated wood waste, free of paints, lacquers, and varnishes.
35	Treated/Painted Wood Waste	Treated or painted wood waste.
36	Pallets	Pallets and pallet pieces.
37	Brick and Concrete	Brick and concrete of all sizes.
38	C&D Debris	Construction and demolition debris such as drywall, insulation, and roofing materials.
39	Furniture	Metal, wood, and composite furniture, in whole or in part.
40	Mattresses	Mattresses and box springs.
41	Tires and Rubber	Small and large tires and other items made of rubber.
42	Yard Waste	Shrub and brush prunings, household bedding plants, weeds, leaves, grass clippings, and other landscaping and gardening wastes.
43	Food Waste	Meat and vegetable waste (includes coffee grinds and tea bags).
44a	All Other Garbage	All other wastes not included in the above categories, including products that are a composite of materials such as frozen juice cans, binders, Pringle's cans, chip bags, etc.
44b	Pet Waste (2017 only)	Cat litter, feces, hair
44c	Diapers (2017 only)	All child and adult diapers and incontinence aids. Feminine hygiene products.
45	Liquids	All containers containing liquids will be emptied into this category prior to sorting the container into the appropriate category.
46	Grit	All items that fall through the half inch mesh of the sort table.

Appendix B:
2017 Waste Composition Study
Sample Bulky Waste Visual Audit Form

Figure B: Sample Bulky Waste Visual Audit Form

Step 1:
Site:
Date & Time:
Sample No:
Recorder:

Step 2: Measure and Record Load Volume
Cubic Yard Capacity: _____
Trailer Dimensions (if applicable):
_____ X _____ X _____ = _____ (l)
_____ X _____ X _____ = _____ (t)
(L) (H) (W)
Percent full:

Step 3: Identify and record all main material classes that appear in the load.
Step 4: Estimate composition of load by volume for each main material class.

Step 5: For each material class, estimate composition by volume of each specific material component.
Step 6: Make sure main material class estimates AND material component estimates EACH total 100%.

___ PAPER	_____%
	Unwaxed OCC
	Other Paper
	Subtotal (must = 100%)

___ METAL	_____%
	Major Appliances
	HVAC Ducting
	Steel Cans
	Other Ferrous
	Other Non-Ferrous
	Subtotal (must = 100%)

___ PLASTIC	_____%
	Film
	Polystyrene Packaging/Insulation
	Rigid Plastics
	Other Plastic
	Subtotal (must = 100%)

___ GLASS CONT. _____%
___ OTHER GLASS _____%
___ COMPUTERS _____%
___ TELEVISIONS _____%
___ OTHER E-WASTE _____%
___ HHW _____%
___ TIRES _____%
___ TEXTILES _____%

___ YARD WASTE	_____%

___ C&D DEBRIS	_____%
	Treated Wood
	Untreated Wood
	Carpet and Carpet Padding
	Drywall
	Asphalt Paving
	Roofing Shingles
	Rock, Gravel, and Grit
	Subtotal (must = 100%)

___ FURNITURE	_____%
	Furniture
	Mattresses
	Subtotal (must = 100%)

___ BAGGED WASTE	_____%
	Household Garbage
	C&D Debris
	Other _____
	Subtotal (must = 100%)

___ _____ _____%
___ _____ _____%
___ _____ _____%
___ _____ _____%
___ _____ _____%

___ MIXED RESIDUE AND SMALL AMOUNTS OF MSW _____%

GRAND TOTAL _____% (must equal 100%)

NOTES:
Number and type of appliances: _____
Number of HDPE Buckets: _____
Number of Pallets: _____
Types of HHW: _____

Appendix C:
2017 Waste Composition Study
Compactor MSW – Individual Results

Table C: Compactor MSW Results (% by weight)

	Location	Goldston	Martha's Chapel	Crutchfield Crossroads	Moncure	Harper's Crossroads	Hadley
	Material Categories sample #	**1**	**3**	**4**	**5**	**6**	**7**
1	Newspaper	1.93%	0.26%	0.81%	8.06%	2.40%	5.65%
2	Corrugated Cardboard	4.87%	2.79%	1.32%	1.79%	8.69%	2.43%
3	Magazines	0.66%	0.77%	1.88%	0.10%	0.67%	1.29%
4a	Recyclable Paper	6.11%	4.77%	6.23%	7.19%	8.85%	10.05%
4b	Shredded Paper	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5	Low Grade Paper	8.80%	6.97%	7.39%	10.14%	8.67%	11.08%
6	Aseptic Containers	0.30%	0.44%	0.32%	0.21%	0.09%	0.17%
7	PET #1 Bottles	2.44%	1.79%	2.48%	2.55%	2.44%	1.60%
8	HDPE #2 Bottles	1.28%	0.79%	1.05%	2.12%	0.97%	0.94%
9	Bottles that held toxics	0.13%	0.00%	0.00%	0.12%	0.00%	0.04%
10	Non-Bottle PET #1	0.26%	0.50%	0.57%	0.16%	0.24%	0.12%
11	Other Narrow-Neck Bottles	0.43%	0.00%	0.09%	0.18%	0.12%	0.00%
12	#2 & 5 Plastic Cups and Tubs	0.00%	0.70%	0.29%	0.33%	0.73%	0.43%
13	Plastic Film	14.83%	5.72%	5.79%	7.82%	6.66%	7.30%
14	Expanded Polystyrene Foam	1.49%	0.73%	1.17%	1.45%	1.71%	1.18%
15	Bulky Rigid Plastics	0.37%	0.72%	0.37%	2.13%	0.21%	0.53%
16	All Other Plastics	3.71%	1.34%	1.36%	3.98%	1.42%	2.47%
17	Tin/Steel Cans	2.03%	0.27%	2.85%	1.45%	2.95%	0.88%
18	Aerosol Cans	0.22%	1.16%	0.14%	0.09%	0.35%	0.20%
19	White Goods/Small Appliances	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
20	Other Ferrous	1.52%	0.48%	0.08%	0.72%	0.00%	0.14%
21	Aluminum Cans	0.85%	0.14%	0.47%	0.38%	0.65%	0.41%
22	Other Non-Ferrous	0.29%	0.61%	0.41%	0.41%	0.41%	0.43%
23	Glass Containers	6.59%	1.34%	3.27%	1.98%	4.95%	2.41%
24	Other Glass	0.00%	0.09%	0.00%	0.70%	0.36%	1.14%
25	Textiles	2.43%	4.11%	5.93%	10.88%	1.72%	4.88%
26	Carpet	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%
27	Oil Filters	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
28	Lead Acid Batteries	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
29	Special Wastes	2.22%	0.34%	0.00%	0.00%	1.62%	0.00%
30	Computers	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
31	Televisions	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
32	Other E-Waste and Technotrash	1.44%	0.13%	0.00%	2.25%	0.05%	0.59%
33	Household Batteries	0.19%	0.51%	0.06%	0.00%	0.06%	0.12%
34	Untreated Wood Waste	0.00%	0.00%	0.00%	1.02%	0.00%	3.03%
35	Treated/Painted Wood Waste	2.99%	1.10%	0.00%	0.00%	1.11%	8.77%
36	Pallets	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
37	Brick And Concrete	0.00%	0.00%	0.00%	0.00%	0.00%	0.28%
38	C&D Debris	2.00%	9.61%	0.00%	7.06%	0.00%	1.85%
39	Furniture	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
40	Mattresses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
41	Tires and Rubber	0.58%	0.10%	0.00%	0.00%	5.74%	0.09%
42	Yard Waste	0.25%	0.00%	2.95%	0.00%	6.20%	0.00%
43	Food Waste	10.10%	15.47%	16.78%	10.88%	20.42%	14.71%
44a	All Other Garbage	7.89%	5.87%	16.30%	6.35%	3.04%	3.16%
44b	Pet Waste	4.71%	28.56%	13.30%	2.05%	1.21%	0.31%
44c	Diapers	3.85%	0.00%	6.10%	5.20%	4.43%	3.48%
45	Liquids	1.55%	1.29%	0.24%	0.00%	0.88%	1.73%
46	Grit	0.00%	0.52%	0.00%	0.25%	0.00%	6.12%
	TOTALS	**100.0%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table C: Compactor MSW Results (% by weight) (continued)

	Location	Siler City	Asbury	Cole Park	Bennett	Bonlee	Pittsboro
	Material Categories sample #	**8**	**9**	**10**	**11**	**12**	**13**
1	Newspaper	1.16%	0.00%	1.37%	1.54%	1.55%	2.93%
2	Corrugated Cardboard	7.58%	3.15%	0.69%	2.11%	3.36%	6.79%
3	Magazines	2.95%	1.57%	0.60%	1.18%	2.79%	0.48%
4a	Recyclable Paper	9.88%	12.36%	8.32%	7.24%	9.00%	12.53%
4b	Shredded Paper	0.00%	0.00%	0.00%	0.00%	0.00%	0.52%
5	Low Grade Paper	7.66%	5.00%	11.96%	9.78%	9.39%	13.84%
6	Aseptic Containers	0.33%	0.42%	0.12%	0.53%	0.37%	0.58%
7	PET #1 Bottles	3.80%	2.25%	1.33%	2.39%	2.52%	2.16%
8	HDPE #2 Bottles	1.25%	1.20%	1.19%	1.56%	1.07%	1.01%
9	Bottles that held toxics	0.72%	0.42%	0.50%	0.00%	0.19%	0.40%
10	Non-Bottle PET #1	0.61%	0.00%	0.18%	0.09%	0.07%	0.14%
11	Other Narrow-Neck Bottles	0.23%	0.13%	0.14%	0.22%	0.19%	0.00%
12	#2 & 5 Plastic Cups and Tubs	0.72%	0.07%	0.80%	0.86%	1.25%	0.87%
13	Plastic Film	8.70%	7.27%	9.75%	6.32%	6.88%	8.49%
14	Expanded Polystyrene Foam	1.46%	1.60%	1.89%	1.44%	2.05%	1.13%
15	Bulky Rigid Plastics	2.03%	9.47%	0.31%	1.05%	1.62%	0.50%
16	All Other Plastics	4.65%	3.09%	2.57%	1.47%	1.32%	4.79%
17	Tin/Steel Cans	1.14%	2.06%	0.82%	1.53%	0.94%	1.03%
18	Aerosol Cans	0.42%	0.21%	0.45%	0.00%	0.84%	0.31%
19	White Goods/Small Appliances	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
20	Other Ferrous	0.26%	0.13%	3.49%	0.13%	0.21%	0.10%
21	Aluminum Cans	0.98%	1.99%	1.59%	0.79%	1.36%	0.58%
22	Other Non-Ferrous	0.84%	0.68%	0.48%	0.81%	0.71%	0.64%
23	Glass Containers	3.17%	0.61%	4.11%	4.57%	5.65%	1.55%
24	Other Glass	5.27%	1.08%	2.13%	0.62%	1.80%	0.00%
25	Textiles	2.45%	3.67%	3.66%	3.49%	5.46%	2.74%
26	Carpet	0.03%	0.00%	0.00%	0.00%	2.17%	2.46%
27	Oil Filters	0.00%	0.00%	0.00%	2.39%	0.72%	0.23%
28	Lead Acid Batteries	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
29	Special Wastes	0.58%	0.00%	0.00%	0.02%	0.75%	0.00%
30	Computers	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
31	Televisions	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
32	Other E-Waste and Technotrash	0.86%	0.17%	0.18%	0.09%	0.00%	1.18%
33	Household Batteries	0.13%	0.00%	0.00%	0.10%	0.17%	0.54%
34	Untreated Wood Waste	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%
35	Treated/Painted Wood Waste	0.02%	6.73%	0.01%	0.53%	0.97%	3.80%
36	Pallets	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
37	Brick And Concrete	0.00%	0.00%	0.00%	0.00%	0.00%	0.59%
38	C&D Debris	1.88%	0.00%	0.00%	0.41%	0.00%	0.00%
39	Furniture	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
40	Mattresses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
41	Tires and Rubber	0.00%	0.38%	0.00%	2.14%	0.00%	0.08%
42	Yard Waste	0.16%	0.00%	0.44%	0.17%	0.10%	1.02%
43	Food Waste	21.28%	24.64%	27.26%	16.88%	14.03%	13.53%
44a	All Other Garbage	2.29%	5.75%	2.96%	13.03%	9.56%	4.36%
44b	Pet Waste	0.00%	0.56%	5.60%	8.94%	1.99%	2.64%
44c	Diapers	3.56%	3.07%	4.45%	1.94%	6.94%	3.62%
45	Liquids	0.98%	0.00%	0.65%	1.12%	2.00%	1.83%
46	Grit	0.00%	0.00%	0.00%	2.55%	0.00%	0.00%
	TOTALS	**100.0%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Appendix D:
2017 Waste Composition Study
Bulky Waste Visual Audit – Individual Results

Table D: Bulky Waste Visual Audit Results

Sample Number	1	2	3	4	5	6
Location	Martha's Chapel	Goldston	Harper's Crossing	Moncure	Cole Park	Crutchfield Crossing
Date	5/31/2017	5/31/2017	5/31/2017	5/31/2017	5/31/2017	5/31/2017
Time of Day	10:00	11:00	11:30	11:45	12:25	1:00
County Vehicle#	14990	04573	13432	08290	14990	13432
Container Size	40	40	40	30	30	30
Percent Full	40	40	40	30	30	30
Cubic Yards (present)	90%	100%	50%	100%	100%	100%
Net Weight (tons)	36	40	20	30	30	30
Corrugated Cardboard	5.0%	5.0%	5.0%	5.0%	0.0%	5.0%
HVAC Ducting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Ferrous	5.0%	5.0%	0.0%	0.0%	5.0%	0.0%
Plastic Film	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
Rigid Plastics	5.0%	5.0%	0.0%	10.0%	4.5%	5.0%
Treated Wood	40.0%	18.0%	9.0%	5.0%	20.0%	1.0%
Untreated Wood	10.0%	18.0%	21.0%	0.0%	0.0%	0.0%
Carpet and Padding	0.0%	4.0%	0.0%	0.0%	20.0%	6.0%
Drywall	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Roofing Shingles	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%
Other C&D	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%
Furniture	20.0%	5.0%	22.5%	8.0%	17.5%	8.0%
Mattresses	0.0%	0.0%	22.5%	32.0%	7.5%	2.0%
Household Bagged Waste	8.0%	40.0%	20.0%	31.5%	25.0%	70.0%
C&D Debris Bagged Waste	2.0%	0.0%	0.0%	3.5%	0.0%	0.0%
Tires	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table D: Bulky Waste Visual Audit Sample Results (continued)

Sample Number	7	8	9	10	11	12
Location	**Bennett**	**Pittsboro**	**Bonlee**	**Asbury**	**Siler City**	**Hadley**
Date	**5/31/2017**	**5/31/2017**	**6/1/2017**	**6/1/2017**	**6/1/2017**	**6/1/2017**
Time of Day	**1:00**	**1:30**	**10:00**	**10:25**	**11:05**	**12:55**
County Vehicle#	**04573**	**08290**	**13432**	**08290**	**13432**	**08290**
Container Size	**30**	**40**	**40**	**30**	**30**	**30**
Percent Full	**50%**	**90%**	**100%**	**75%**	**100%**	**90%**
Cubic Yards (present)	**15**	**36**	**40**	**22.5**	**30**	**27**
Net Weight (tons)	**0.68**	**2.79**	**1.68**	**0.76**	**2.28**	**2.58**
Corrugated Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HVAC Ducting	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%
Other Ferrous	0.0%	0.0%	0.0%	0.0%	5.0%	10.0%
Plastic Film	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rigid Plastics	0.0%	5.0%	0.0%	5.0%	10.0%	10.0%
Treated Wood	2.0%	14.5%	8.0%	15.0%	12.0%	30.0%
Untreated Wood	0.0%	14.5%	1.0%	0.0%	9.0%	12.0%
Carpet and Padding	0.0%	0.0%	0.5%	0.0%	9.0%	6.0%
Drywall	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
Roofing Shingles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other C&D	18.0%	0.0%	0.0%	0.0%	0.0%	12.0%
Furniture	45.0%	6.0%	32.0%	52.5%	15.0%	10.0%
Mattresses	30.0%	54.0%	48.0%	22.5%	15.0%	10.0%
Household Bagged Waste	0.0%	0.0%	10.0%	5.0%	25.0%	0.0%
C&D Debris Bagged Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tires	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
Textiles	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Appendix E:
2017 Waste Composition Study
Bulky Waste Visual Audit – Individual Photos

Table E: Bulky Waste Photographs

Martha's Chapel

Goldston

Harper's Crossroads

Moncure

Cole Park

Crutchfield Crossroads

Table E: Bulky Waste Photographs (continued)

Bennett

Pittsboro

Bonlee

Asbury

Siler City

Hadley