SCS ENGINEERS







FINAL

2017 IOWA STATEWIDE WASTE CHARACTERIZATION STUDY

Prepared for:

Iowa Department of Natural Resources
Land Quality Bureau
502 E. 9th Street
Des Moines, Iowa 50319-0034

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December 28, 2017
File No. 02217015.00

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ACKNOWLEDGEMENTS

The SCS Engineers project team would like to thank the Iowa Department of Natural Resources, including Mr. Tom Anderson and his team, for their support and guidance throughout the execution of the 2017 Iowa Statewide Waste Characterization Study. Additionally, SCS Engineers could not have completed this study without the support of the staff at the 10 host facilities and five transfer stations that participated in this study. Staff at these facilities provided detailed information on their waste acceptance data and made available equipment and staff resources to aid in obtaining and sorting samples. This included staff at the following sites:

- Cedar Rapids/Linn County Solid Waste Agency Site #2
- City of Cedar Falls Transfer Station
- Dubuque Metropolitan Area Solid Waste Agency Landfill
- Iowa City Landfill and Recycling Center
- Landfill of North Iowa
- Metro Waste Authority – Metro Park East Landfill
    - Central Transfer Station
    - Northwest Transfer Station
- Newton Sanitary Landfill
- South Central Iowa Solid Waste Agency Landfill
    - Poweshiek County Transfer Station
    - Rathbun Area Solid Waste Management Commission Transfer Station
- Waste Commission of Scott County Landfill
- West Central Iowa Solid Waste Landfill
    - Crawford County Transfer Station

1.0 EXECUTIVE SUMMARY

The Iowa Department of Natural Resources (IDNR) contracted with SCS Engineers (SCS) in April 2017 to conduct the 2017 Iowa Statewide Waste Characterization Study (Study). This study continued IDNR's decades long history of tracking the types and quantities of waste disposed of in Iowa. It was designed to mirror previous statewide waste characterization studies to facilitate the comparison and tracking of waste disposal trends. This study provides meaningful data to help IDNR and local governments make program and policy decisions to expand waste diversion initiatives and improve existing program efficiencies. This study will help IDNR identify efforts needed to meet state and local waste reduction and recycling goals, strengthen economic development efforts, and improve Iowa's overall quality of life.

The 2017 study was conducted May through July at 10 host facilities. These facilities represent the diversity of solid waste facilities in the State of Iowa with respect to geography and size. The objectives of the 2017 Iowa Statewide Waste Characterization Study are as follows:

1) Develop statewide waste composition data by weight for the residential, institutional/commercial/industrial, and overall waste generating sectors for 61 different material components;

2) Provide local detailed waste composition data to each of the host facilities that participated in the 2017 study;

3) Perform standard statistical analyses of the waste composition data and calculate the 90 percent confidence internals for each material component;

4) Use field collection methods that statistically measure waste composition data for municipal solid waste (MSW) generated in Iowa and disposed of at permitted solid waste facilities in the state;

5) Estimate the proportion of MSW currently disposed of in the State of Iowa that can be diverted through new or expanded reuse, recycling, and composting programs;

6) Design the 2017 study so that it can be compared to previous waste characterization studies and for ease of replication in future studies the IDNR might commission;

7) Estimate the economic and environmental impact of diverting materials for recycling that are currently disposed.

This study provides waste composition data for the following waste generating sectors:

- **Residential –** Encompasses waste generated from single family and multi-family residential properties.

- **Institutional/Commercial/Industrial (ICI) –** Includes waste generated at commercial, institutional, and industrial facilities.

- **Overall MSW –** This segment aggregates the waste composition data from both the residential and ICI sectors to reflect the overall MSW composition disposed of in Iowa.

Exhibit 1 summarizes the overall composition of waste materials disposed of in Iowa. **Table 1** provides a more detailed breakdown of the waste characterization results for all 61 specific material components measured. The data presented in the exhibit and table are aggregated from the residential and ICI waste streams and represents the overall MSW waste stream. **Exhibit 2** and **Exhibit 3** summarize the waste composition data for the residential and ICI waste streams, respectively. Detailed waste composition profiles for these individual generating sectors are provided in the results section of this report. **Appendix B** contains the individual host facility waste composition data. SCS used ASTM International Method D 5231-92 (Reapproved 2003) *Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste* as a guide for completing the project work.

Exhibit 1. Overall Statewide Waste Composition

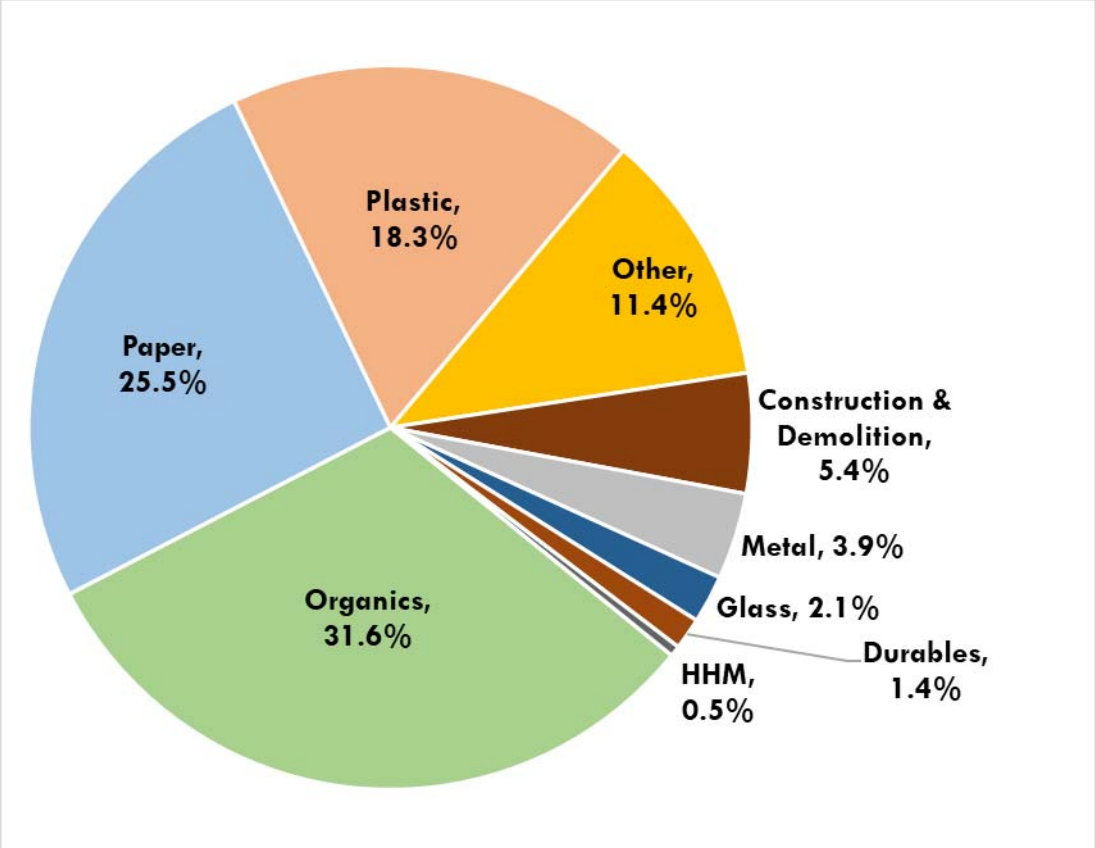


Table 1. Overall Statewide Waste Composition – Detailed

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.6%	4.2%	7.3%	7.9%
High Grade Office Paper	0.9%	1.3%	0.8%	1.0%
Magazines/Catalogs	1.5%	1.7%	1.4%	1.6%
Mixed Recyclable Paper	6.1%	3.6%	5.8%	6.3%
Newsprint	1.3%	1.5%	1.2%	1.4%
Non-Recyclable Paper	2.9%	3.6%	2.7%	3.2%
OCC and Kraft Paper	4.6%	6.1%	4.1%	5.0%
Aseptic/Gable Top Containers	0.6%	0.9%	0.5%	0.7%
Total Paper	**25.5%**	**9.3%**	**24.8%**	**26.2%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.6%	0.3%	0.4%
#1 PET Beverage Containers	1.1%	1.0%	1.1%	1.2%
#2 HDPE Containers Natural	0.5%	0.7%	0.4%	0.5%
#2 HDPE Containers Colored	0.6%	0.7%	0.6%	0.7%
Retail Shopping Bags	0.9%	0.6%	0.8%	0.9%
Other Plastic Film	7.8%	4.9%	7.4%	8.1%
Other #1 PET Containers	0.5%	1.1%	0.4%	0.5%
Plastic Containers #3-#7	2.2%	1.5%	2.1%	2.3%
Other Plastic Containers	0.5%	0.7%	0.5%	0.6%
Expanded Polystyrene	0.8%	1.0%	0.7%	0.9%
Other Plastic Products	3.1%	10.5%	2.3%	3.8%
Total Plastic	**18.3%**	**11.1%**	**17.5%**	**19.0%**
METAL				
Aluminum Beverage Containers	<0.1%	0.4%	<0.1%	0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.6%	0.4%	0.5%
Ferrous Food and Beverage Containers	0.8%	0.9%	0.7%	0.9%
Other Aluminum Containers	0.4%	0.7%	0.3%	0.4%
Other Ferrous Scrap Metals	1.9%	3.3%	1.7%	2.1%
Other Non-Ferrous Scrap Metals	0.3%	1.6%	0.2%	0.4%
Total Metals	**3.9%**	**3.8%**	**3.6%**	**4.1%**
GLASS				
Blue Glass	<0.1%	0.2%	<0.1%	<0.1%
Brown Glass	<0.1%	1.4%	<0.1%	0.2%
Clear Glass	0.8%	1.0%	0.7%	0.9%
Glass IA Deposit Containers	0.8%	1.5%	0.7%	1.0%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	2.9%	0.2%	0.6%
Total Glass	**2.1%**	**3.9%**	**1.9%**	**2.4%**

Table 1. Overall Statewide Waste Composition – Detailed (Continued)

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
ORGANICS				
Yard Waste	2.9%	4.7%	2.6%	3.2%
Food Waste - Loose	13.3%	8.8%	12.7%	14.0%
Food Waste - Packaged	6.7%	7.6%	6.2%	7.2%
Textiles and Leather	4.1%	5.3%	3.7%	4.5%
Diapers	3.5%	4.6%	3.2%	3.9%
Rubber	1.0%	2.8%	0.8%	1.2%
Total Organics	**31.6%**	**13.8%**	**30.6%**	**32.5%**
DURABLE				
Cell Phones and Chargers	0.1%	0.6%	<0.1%	0.2%
Central Processing Units/Peripherals	0.2%	1.4%	<0.1%	0.3%
Computer Monitors/TVs	<0.1%	0.5%	<0.1%	0.1%
Electrical and Household Appliances	1.0%	2.4%	0.9%	1.2%
Total Durable	**1.4%**	**2.9%**	**1.2%**	**1.6%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.9%	4.0%	0.7%	1.2%
Wood - Treated	2.2%	5.5%	1.8%	2.6%
Asphalt Pavement, Brick, Rock, and Concre	0.6%	1.9%	0.5%	0.8%
Asphalt Roofing	0.2%	2.1%	<0.1%	0.4%
Drywall/Gypsum Board	0.3%	1.4%	0.2%	0.4%
Carpet and Carpet Padding	1.1%	4.1%	0.8%	1.4%
Total Construction & Demolition	**5.4%**	**9.0%**	**4.7%**	**6.0%**
HOUSEHOLD HAZARDOUS MATERIALS				
Chemicals	0.2%	1.0%	0.2%	0.3%
Lead-Acid Batteries	<0.1%	0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	0.3%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	<0.1%
Sharps	<0.1%	0.4%	<0.1%	0.1%
Prescription Medications	<0.1%	0.2%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.5%**	**1.3%**	**0.4%**	**0.6%**
OTHER				
Other Organics	4.1%	6.5%	3.6%	4.6%
Other Inorganics	0.7%	1.9%	0.6%	0.8%
Other Construction & Demolition	0.6%	3.9%	0.4%	0.9%
Other Durables	0.7%	5.6%	0.3%	1.1%
Other HHM	0.4%	5.5%	<0.1%	0.8%
Fines	4.8%	3.0%	4.6%	5.1%
Other	0.1%	1.7%	<0.1%	0.2%
Total Other	**11.4%**	**10.4%**	**10.7%**	**12.2%**
TOTALS	**100.0%**			

Note: Composition based on 524 samples

Exhibit 2. Residential Statewide Waste Composition

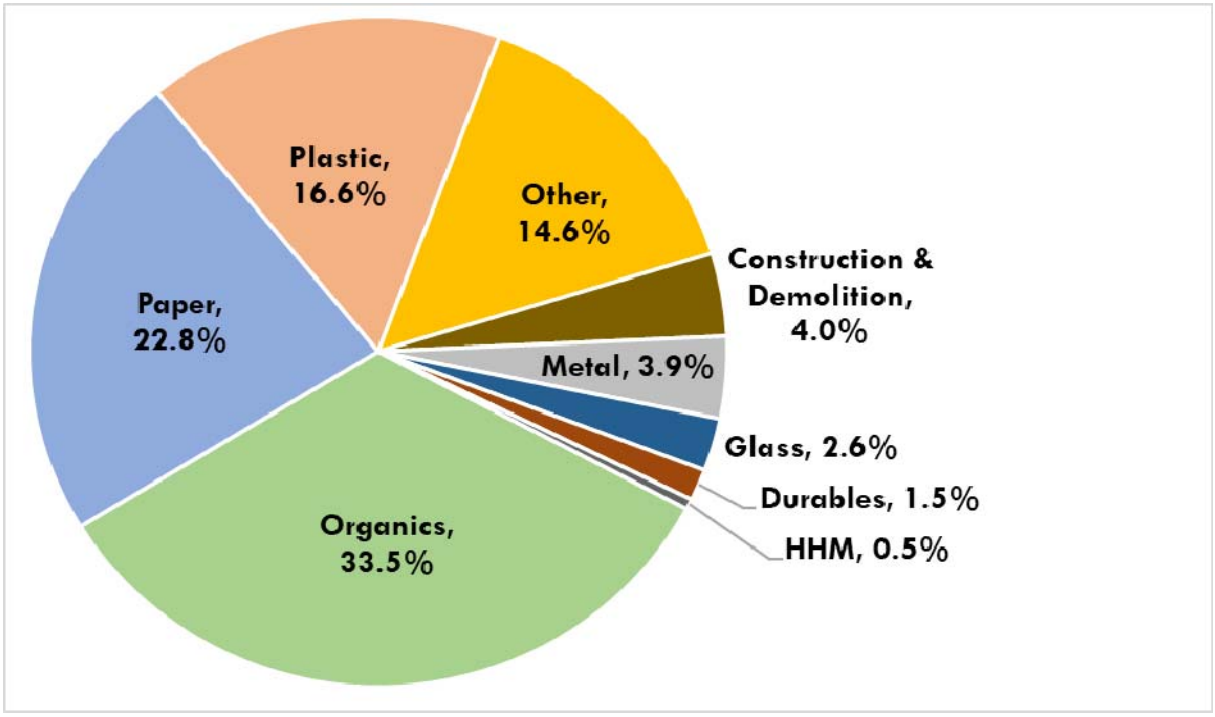


Exhibit 3. ICI Statewide Waste Composition

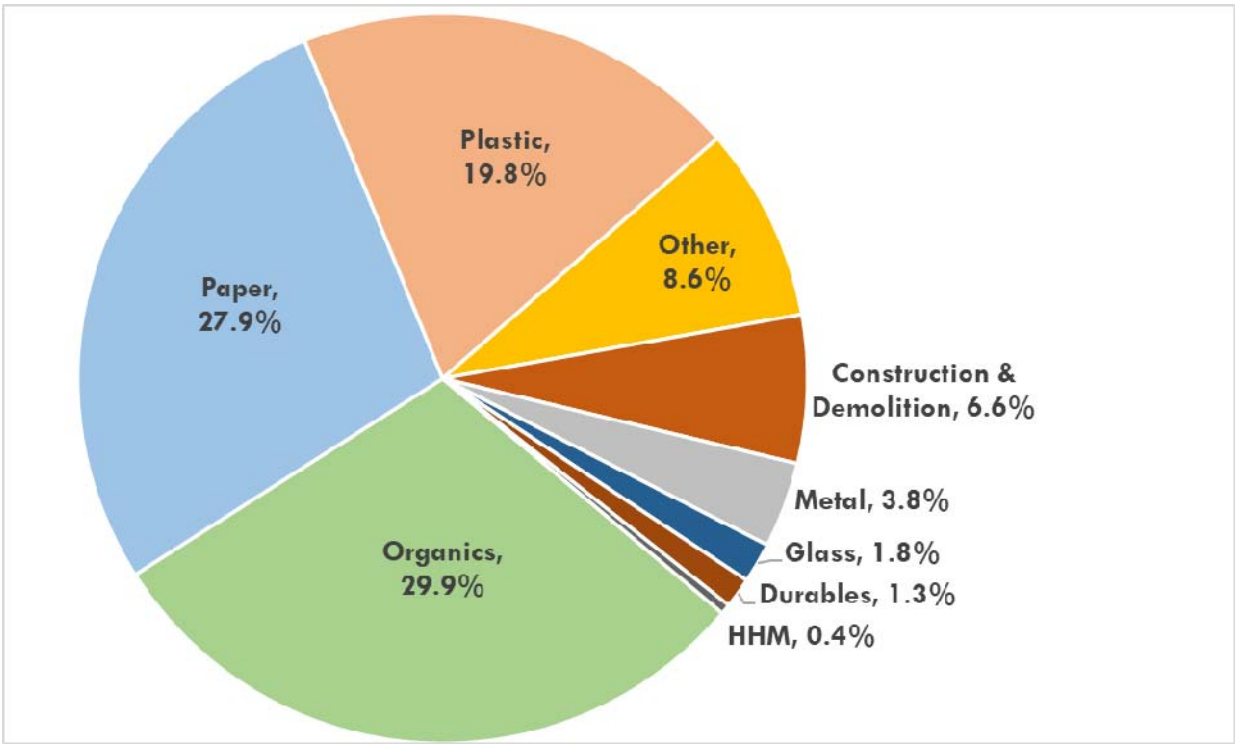


Table 2 summarizes the top five materials components that comprise the largest portions of the aggregated overall MSW waste stream, as well as for the residential and ICI waste generating sectors separately. The total of each column represents the portion of the waste stream that is comprised of the top five materials.

Table 2. Top Five Material Components Comprising Waste Disposed

No.	Overall MSW	Residential	ICI
1	**Food Waste**[1] 20.0% (C)	**Food Waste**[1] 17.9% (C)	**Food Waste**[1] 21.9% (C)
2	**Plastic Film**[2] 8.6% (R, NM)	**Plastic Film**[2] 7.6% (R, NM)	**Plastic Film**[2] 9.5% (R, NM)
3	**Compostable Paper** 7.6% (C)	**Compostable Paper** 6.8% (C)	**Compostable Paper** 8.4% (C)
4	**Mixed Recyclable Paper** 6.1% (R)	**Mixed Recyclable Paper** 6.5% (R)	**OCC & Kraft Paper** 5.9% (R)
5	**OCC and Kraft Paper**[3] 4.6% (R)	**Other Organics**[4] 5.6% (NM)	**Mixed Recyclable Paper** 5.7% (R)
TOTAL	**46.9%**	**44.4%**	**51.4%**

[1] Includes both "loose" food and "packaged" food categories
[2] Includes "other plastic film" and plastic "retail bags" categories
[3] Fines comprised 4.8 percent of the Overall MSW waste stream
[4] Fines comprised 6.4 percent of the residential waste stream

Section 6 of this report provides analysis on the fraction of the waste stream that can be diverted through new and expanded reuse, recycling, and composting programs. **Exhibit 4** provides a graphical representation of the overall waste stream disposed in Iowa and classifies each material component as either reusable, recyclable, compostable, bottle bill, or non-marketable according to the following descriptions:

- **Reusable –** Materials that have the potential be donated and reused in their original or similar form; includes construction/demolition debris and textiles and leather;

- **Recyclable –** Includes materials that are traditionally accepted in curbside or drop-off recycling programs such as aluminum cans, plastic bottles, glass containers, corrugated cardboard, and mixed paper;

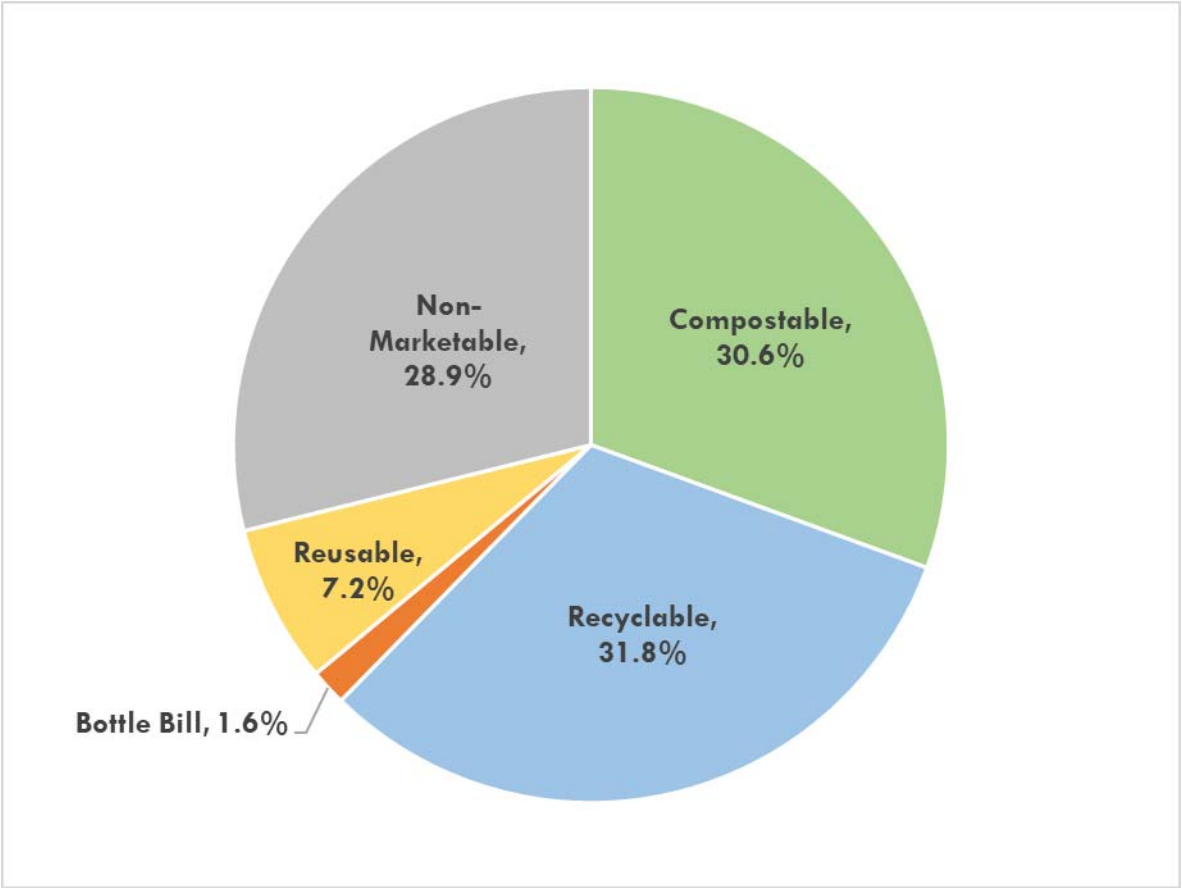
- **Compostable –** Encompasses materials that could be diverted for composting operations and includes materials such as food waste, yard waste, and compostable paper;

- **Bottle Bill –** Includes aluminum, plastic, and glass containers that are covered under Iowa's container deposit redemption law (Bottle Bill);

- **Non-Marketable** – Includes materials that are typically not easily recyclable, markets are extremely limited, or are incapable of be recycled at this time including plastic film, other organics, fines, and diapers.

Exhibit 4 illustrates that over 70 percent of the disposed waste stream in Iowa could potentially be diverted.

Exhibit 4. Classifications of the Overall Waste Stream



1.1 BACKGROUND

The IDNR has a long history of tracking the amount and components of MSW disposed of at landfills across the State of Iowa. For the last two decades, IDNR has commissioned waste characterization studies to quantitatively and qualitatively measure the waste disposed. This 2017 study aimed to mirror previous studies completed in 1998, 2005, and 2011 in terms of documenting MSW disposal. The results of this study will be used by IDNR and local governments to make decisions on waste diversion programs that can be expanded and implemented to further divert material from disposal. The following are the guiding principles for carrying out the waste characterization study activities:

1) Develop a 2017 statewide waste characterization profile by weight for materials currently disposed of at Iowa disposal facilities, including obtaining information on the residential and ICI waste streams and how they differ;

2) Randomly select waste samples that are statistically representative of the MSW disposed of in Iowa;

3) Estimate the types and quantities of materials currently disposed of in Iowa that could be reused, recycled, or recovered;

4) Provide information that IDNR and local governments can use to make decisions on expanding existing and implementing new programs and policies for diverting waste materials; and

5) Mirror previous waste characterization studies to facilitate ease of comparison and duplication in the future.

This study was completed by SCS with the assistance of IDNR and the staff at each of the host facilities.

1.2 COMPARISON WITH PRIOR STATEWIDE STUDIES

As stated above, one of the important guiding principles for this study was to mirror previous waste characterization studies to facilitate the comparison of results and to track trends and how the disposed waste stream in Iowa is changing. This section summarizes the similarities and differences between the 2017 study and methods of conducting fieldwork used in previous Iowa statewide waste characterization studies.

1.2.1 Similarities

- **Waste Generating Sectors:** As in prior studies, the 2017 study separately analyzed the composition of residential and ICI wastes. The data was aggregated to calculate an overall waste characterization profile for each host facility and the state as a whole.

- **In-State Wastes:** Like previous studies, the 2017 study targeted wastes that were both generated and disposed of at facilities in Iowa. Wastes that were imported or exported out of the state were not included.

- **Host Facility Sort Duration:** The fieldwork at each host facility was confined to a one-week period, Monday-Friday, with the target of sampling 50 samples at each site[1].

- **Targeted Waste from Transfer Stations:** Three host facilities receive significant quantities of waste materials from transfer stations. Waste originating from targeted transfer stations were sampled in proportion to the total amount of waste received at each host facility. Sampling and sorting of the transfer station waste occurred at the host facilities (unlike for the 2011 study where the sampling and sorting occurred at the transfer station). Transfer station staff would segregate residential and ICI waste in the transfer trailers to distinguish the study's two generating sectors.

- **Development of Site-Specific Sampling Plans:** For sampling and sorting events at each host facility, the SCS team obtained waste disposal data (in many cases by hauler) from facility staff. This data was used to develop a sampling plan specific to each facility that proportioned out the number of residential and ICI samples based on the amount of each waste type received at the site. Note that source-separated loads of construction/demolition debris and special wastes were excluded from this study similar to past studies. This study did characterize these materials if they were found mixed with residential and ICI samples that were obtained.

- **Seasonal Sampling and Sorting Events:** The fieldwork for the 2017 study was completed in May, June, and July, which was a similar timeframe to when the fieldwork from the 2011 study was completed (in April, May, and June). Fieldwork for the 1998 and 2005 study was completed in the fall months of September, October, and November.

1.2.2 Differences

- **Material Categories:** The material categories and components sorted as part of the 2017 studies were nearly identical to previous studies, with only a few modification being made:

    - **Food Waste –** For the 2017 study, food waste was separated into two components: Food Waste – Loose and Food Waste – Packaged;

    - **Batteries –** An additional lithium battery waste component category was added to the 2017 study;

    - **Chemicals –** The following household hazardous material component categories were consolidated into one component category called "chemicals": automotive

[1] The project team sampled 50 or more samples at each host facility with the exception of the City of Cedar Falls Transfer Station where 49 samples were analyzed. This was due to the site being a small facility with a reduced number of waste deliveries in addition to the fact that the first day of the study (Monday) the facility only accepted yard waste.

products, household cleaners, paints and solvents, and pesticides, herbicides, fungicides.

- **Number of Host Facilities:** The fieldwork for the 2017 study occurred at 10 different host facilities – nine landfills and one transfer station. The number of host facilities increased in 2017 from nine in 2011, six in 2005, and five in 1998. Included in the waste sampled at three host facilities were samples that originated at five transfer stations.

- **Number of Samples:** Due to the increased number of host facilities the number of samples obtained and sorted in 2017 increased. Since the number of data points is higher for the 2017 study, the precision of the results increases as confidence intervals will be narrower.

- **Visual Characterization of Bulky Wastes:** Although construction and demolition waste was excluded from this study, several host sites receive significant quantities of bulky waste that is classified as residential or ICI. At facilities where it was important to characterize these types of residential and ICI wastes, SCS visually characterized those wastes and obtained the weight of each sample from the scalehouse operator.

1.3 REPORT ORGANIZATION

The remainder of this report provides the results of the 2017 study as well as the methods used to obtain the data contained in this report. The report is organized in the following sections.

- **Methods:** This section contains information on the generating sectors analyzed, the number of sampling targets and how it was stratified, material categories and components, host facilities and schedule for field activities, and well as information on field sampling and sorting protocols.

- **Results:** Provides detailed results about the composition of waste disposed of in the State of Iowa. Results are presented graphically as well as in tables for a more detailed presentation of the data. Results are presented by the residential and ICI sectors as well as aggregated overall for the state. The results are compared with previous studies for ease in comparison to note changes in the waste stream.

- **Comparison to Previous Studies:** This section compares the results from the 2017 study to previous statewide waste characterization studies. This discussion includes notes on how portions of the waste stream have changed over the last 20 years and summarizes the top 10 material components for each of the statewide studies.

- **Recoverability Analysis:** This section classifies each waste component as either reusable, recyclable, compostable, bottle bill, or non-marketable. Definitions of these classifications are provided along with what portions of the overall, residential, and ICI waste generating sectors fall into each category.

- **Economic Impacts of Increased Diversion:** This section estimates the economic and environmental impacts that could be realized if the divertible portions of the waste stream

were recovered for recycling and composting instead of disposed. Estimates of revenue projects, job creation, and greenhouse gas emission reductions are summarized.

- **Conclusions:** This section provides SCS' conclusions on how the 2017 study achieved the desired objectives.

- **Recommendations:** This section outlines our observations on the composition of waste disposed of in the state. SCS's recommendations on existing programs and studies that could be undertaken by IDNR, local governments, or other recycling stakeholders to further divert materials are outlined in this section.

- **Appendices:** The appendices include supplemental materials relevant to the 2017 study. Examples of information included are individual host facility waste compositions and a detailed description of each material waste category and component.

2.0 METHODS

2.1 GENERATING SECTORS

The 2017 study focused on two waste generating sectors:

- **Residential:** This waste generating sector includes materials generated from single-family homes and multi-family dwellings such as apartments and condos;
- **ICI:** This waste generating sector includes waste materials originating from industrial, commercial, and institutional facilities such as universities and colleges, businesses, and manufacturing facilities.

Waste samples obtained and sorted as part of this study were classified as either residential or ICI. Previous studies included a separate category for mixed waste. SCS took a number of steps in order to avoid the sampling of mixed waste. This included interviews with host facility staff and scalehouse attendants to stratify incoming loads by hauler and truck type. Additional measures to avoid the sampling of mixed waste included interviews with truck drivers and the visual inspection of the loads by the SCS sorting manager and experienced SCS field manager who is well versed in the characteristics of residential and ICI samples. When there was uncertainty about whether or not a sample should be considered residential or ICI, that sample was discarded and a new sample was obtained.

Similar to previous studies, the 2017 study avoided the sampling and sorting of non-MSW waste such as construction and demolition waste and special waste.

2.2 MATERIAL CATEGORIES AND COMPONENTS

The material category and component list used for the 2017 study closely mirrored the list used for the 2011 study. Waste was sorted into 61 material components for the 2017 study. The following provides a listing of the changes to the material component list from 2011:

- **Food Waste –** For the 2017 study, food waste was separated into two components: food waste – loose and food waste – packaged;
- **Batteries –** An additional lithium battery waste component category was added to the 2017 study;
- **Chemicals –** The following household hazardous material component categories were consolidated into one component category called “chemicals”: automotive products, household cleaners, paints and solvents, and pesticides, herbicides, fungicides.

Table 3 lists the full waste category and component list. Detailed descriptions of each of these components is included in **Appendix A**.

Table 3. 2017 Waste Material Categories and Component List

Category	No.	Material Component	Category	No.	Material Component
Paper	1	Compostable Paper	Organics	32	Yard Waste
	2	High Grade Office Paper		33	Food Waste - Loose
	3	Magazines/Catalogs		34	Food Waste - Packaged
	4	Mixed Recyclable Paper		35	Textiles and Leather
	5	Newsprint		36	Diapers
	6	Non-Recyclable Paper		37	Rubber
	7	OCC and Kraft Paper	Durables	38	Cell Phones and Chargers
	8	Aseptic/Gable Top Containers		39	Central Processing Units/Peripherals
Plastic	9	#1 PET IA Deposit Beverage Containers		40	Computer Monitors/TVs
	10	#1 PET Beverage Containers		41	Electrical and Household Appliances
	11	#2 HDPE Containers Natural	Construction & Demolition	42	Wood - Untreated
	12	#2 HDPE Containers Colored		43	Wood - Treated
	13	Retail Shopping Bags		44	Asphalt Pavement, Brick, Rock, and Concrete
	14	Other Plastic Film		45	Asphalt Roofing
	15	Other #1 PET Containers		46	Drywall/Gypsum Board
	16	Plastic Containers #3-#7		47	Carpet and Carpet Padding
	17	Other Plastic Containers	Household Hazardous Materials	48	Chemicals
	18	Expanded Polystyrene		49	Lead-Acid Batteries
	19	Other Plastic Products		50	Mercury Containing Products
Metal	20	Aluminum Beverage Containers		51	Lithium Batteries
	21	Aluminum IA Deposit Beverage Containers		52	Other Batteries
	22	Ferrous Food and Beverage Containers		53	Sharps
	23	Other Aluminum Containers		54	Prescription Medications
	24	Other Ferrous Scrap Metals	Other	55	Other Organics
	25	Other Non-Ferrous Scrap Metals		56	Other Inorganics
Glass	26	Blue Glass		57	Other Construction & Demolition
	27	Brown Glass		58	Other Durables
	28	Clear Glass		59	Other HHM
	29	Glass IA Deposit Containers		60	Fines
	30	Green Glass		61	Other
	31	Other Mixed Cullet			

2.3 HOST FACILITIES AND DISPOSAL QUANTITIES

Fieldwork for the 2017 waste characterization study were conducted at 10 host facilities that included nine landfills and one transfer station. Additionally, waste sampled from three of the host landfills included samples collected from transfer trailers originating at transfer stations that bring waste to the landfill. The number of host facilities in 2017 marks an increase from nine host facilities in 2011, six in 2005, and five in 1998. **Exhibit 5** is a map showing the geographic location of the 10 host facilities.

Exhibit 5. Location of 2017 Study Host Facilities

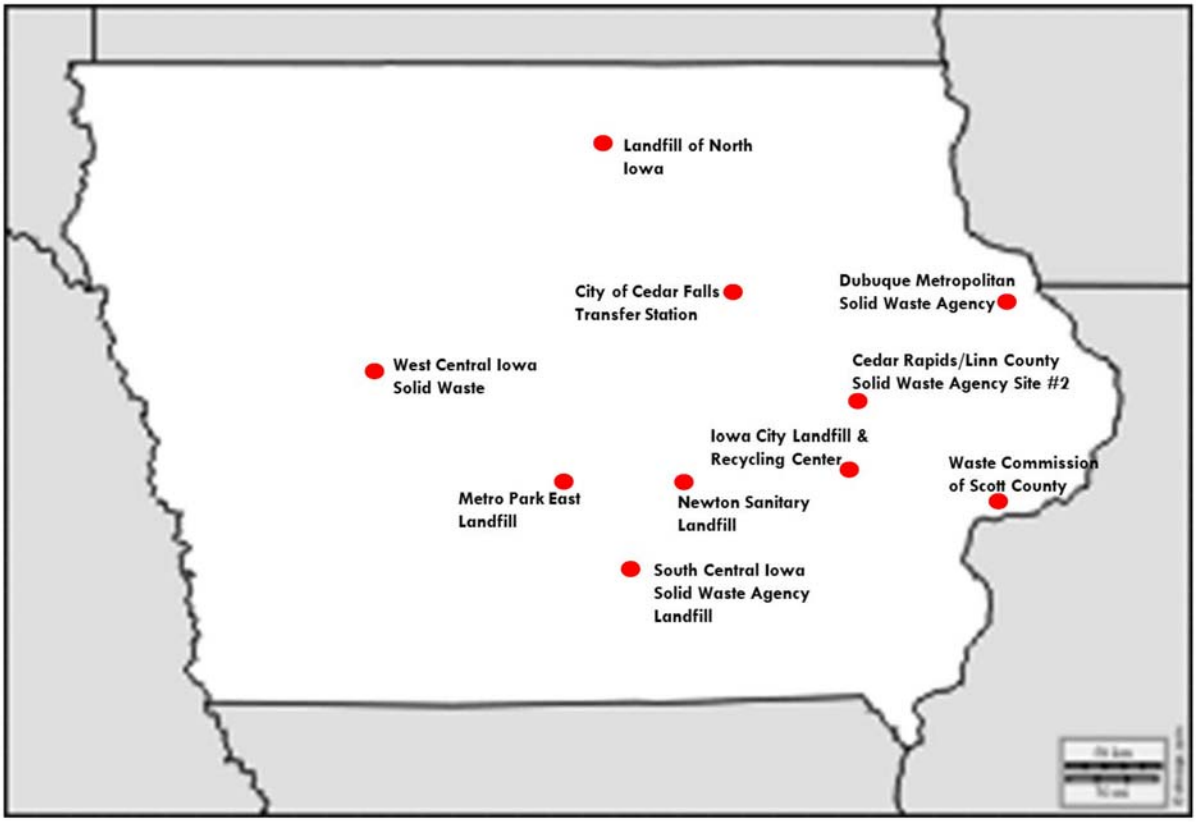


Table 4 provides a history of the 2017 host facilities' participation in previous IDNR waste characterizations studies. Three of the 2017 host facilities have participated in three of four IDNR studies (Dubuque, Iowa City, and South Central Iowa Solid Waste Agency). Participating in these studies provides these facilities with data that allows them to track waste stream changes at a local level. Three host facilities participated in an IDNR waste characterization study for the first time in 2017(City of Cedar Falls, Landfill of North Iowa, City of Newton).

Table 4. 2017 Host Facilities Participation

Host Facility	Study Year			
	2017	2011	2005	1998
City of Cedar Falls	X			
Cedar Rapids/Linn County Solid Waste Agency	X		X	
Dubuque Metropolitan Area Solid Waste Agency	X	X	X	
Iowa City Landfill and Recycling Center	X	X		X
Landfill of North Iowa	X			
Metro Waste Authority	X	X	X	
City of Newton	X			
South Central Iowa Solid Waste Agency Landfill	X	X		X
Waste Commission of Scott County	X	X		
West Central Iowa Solid Waste	X	X		

Table 5 provides the waste acceptance data for each of the individual host facilities by waste type. This waste data is for 2016 and includes tonnage data for residential, ICI, and total MSW (sum of residential and ICI). Quantities of other waste received at the host facilities is noted; however, that material was not included as part of this study's analysis. Other waste includes source-separated construction and demolition debris, sludge, asbestos containing material, and special waste.

Table 5. 2016 Host Facility Disposal Quantities (Tons)

Host Facility	Residential	ICI	Total MSW	Other Waste
City of Cedar Falls	7,488	1,826[1]	9,314	2,594
Cedar Rapids/Linn County Solid Waste Agency	33,543	83,207	116,750	62,982
Dubuque Metropolitan Area Solid Waste Agency	16,925	65,036	81,961	52,591
Iowa City Landfill and Recycling Center	61,499[2]	50,912[2]	112,411[2]	14,260
Landfill of North Iowa	43,168[3]	34,626[3]	77,794[3]	33,185
Metro Waste Authority	194,072	239,486	433,558	254,350
City of Newton	12,276	11,468	23,744	9,047
South Central Iowa Solid Waste Agency Landfill	34,239	22,094	56,333	17,632
Waste Commission of Scott County	58,427	14,332	72,759	98,214
West Central Iowa Solid Waste	27,042	27,042	54,084	21,070
Total Waste Represented by Sampling & Sorting Program	**488,679**	**550,029**	**1,038,708**	**565,925**

[1] Direct hauled waste is estimated to be 40 percent ICI and 60 percent other waste
[2] Includes 94,454 tons of waste that is mixed, which is split 50/50 between residential and ICI
[3] Includes 69,251 tons of waste that is mixed, which is split 50/50 between residential and ICI

2.4 SAMPLING PLAN DEVELOPMENT

SCS developed detailed sampling plans for each field activity so that the waste characterization study accurately represented the waste disposed of in Iowa, This included interviewing the host facility staff to obtain information on the waste generating sectors and quantities received for disposal at their facility from the previous fiscal year (2016). Using this data, SCS stratified the waste receipts between residential and ICI waste streams to provide for a target number of samples from each of the waste generating sectors. Further information was gathered on haulers that included the quantities and waste generating sectors each major hauler brings to the site. This allowed SCS to put together a sampling plan that specified the number of loads to be targeted by hauler which was in proportion to the quantity of residential and ICI waste they deliver to the site.

As discussed in the **Generator Sectors** section of this report, SCS avoided the sampling and sorting of mixed solid waste for the 2017 study. Host facility staff were able to provide information on which haulers collect residential and ICI waste in the same trucks and what the ratio of residential to ICI is for each hauler. When host facility staff were not able to make reasonable estimates for a hauler, SCS assumed a 50/50 split of residential/ICI waste receipts (see footnotes in **Table 5**). **Table 6** provides a summary of the number of samples obtained and sorted at each host facility.

Table 6. Number of Samples Obtained from Each Host Facility

Facility	Residential	ICI	Total
City of Cedar Falls	39	10	49
Cedar Rapids/Linn County Solid Waste Agency	24	30	54
Dubuque Metropolitan Area Solid Waste Agency	11	39	50
Iowa City Landfill and Recycling Center	25	25	50
Landfill of North Iowa	26	24	50
Metro Waste Authority	22	28	50
City of Newton	29	30	59
South Central Iowa Solid Waste Agency Landfill	30	27	57
Waste Commission of Scott County	44	11	55
West Central Iowa Solid Waste	25	25	50
Total Samples	**275**	**249**	**524**

Some host facilities received a significant portion of their disposed waste from transfer stations. This waste was incorporated into the sampling plan developed for the host facility that receives the transfer station waste. SCS collected information on the amount of residential and ICI waste brought to the transfer station. Transfer station personnel agreed to segregate residential and ICI waste at the transfer station and move the material to the host landfill separately. Transfer station personnel also agreed to conduct minimal compaction of the waste so that samples taken from the transfer trailers would remain in as-disposed conditions to facilitate ease of sorting.

Below is a summary of the host facilities that accepted transfer station waste that was sampled and sorted as part of the 2017 statewide waste characterization study:

- Metro Park East Landfill (Mitchellville, IA)
    - Northwest Transfer Station
    - Central Transfer Station
- South Central Iowa Solid Waste Agency Landfill (Tracy, IA)
    - Poweshiek Transfer Station
    - Rathbun Area Transfer Station
- West Central Iowa Solid Waste Landfill (Carroll, IA)
    - Crawford County Transfer Station

2.5 FIELDWORK SCHEDULE

Fieldwork was completed at each host facility over a one-week period Monday - Friday during normal facility operating hours. Fieldwork commenced the second week of May and continued through the last week of July. The seasonal timeframe for the 2017 fieldwork was similar to the 2011 study. Fieldwork at each host facility was scheduled in order to sample and sort waste for a typical week and as such avoided special events or activities that could impact the normal waste received at a facility. **Table 7** summarizes the field schedule for the 2017 Iowa Statewide Waste Characterization Study.

Table 7. 2017 Fieldwork Schedule

Facility	Fieldwork Dates
Metro Park East Landfill • Central Transfer Station • Northwest Transfer Station	May 8-12
South Central Iowa Solid Waste Agency Landfill • Poweshiek Transfer Station • Rathbun Area Transfer Station	May 15-19
Scott Area Landfill	May 22-26
Memorial Day Week – NO FIELD WORK	May 29-June 2
Iowa City Landfill and Recycling Center	June 5-9
Landfill of North Iowa	June 12-16
West Central Iowa Solid Waste Landfill • Crawford County Transfer Station	June 19-23
Cedar Rapids/Linn County Solid Waste Agency Site #2	June 26-30
July 4th Week – NO FIELD WORK	July 3-7
City of Cedar Falls Transfer Station	July 10-14
Dubuque Metropolitan Area Solid Waste Agency Landfill	July 17-21
Newton Sanitary Landfill	July 24-28

2.6 FIELDWORK COLLECTION METHODS

This section details the methods used by the Project Team to sample and sort waste at each of the host facilities. The procedures described in this section were repeated throughout the fieldwork at each host facility for each sample of waste.

2.6.1 Equipment

The equipment used to carry out the fieldwork at each of the host facilities was the same or similar throughout the project. Equipment used to carry out this study is as follows:

- **Containers –** Approximately 70 containers were used for the field work; containers were a mix of 30-gallon trash cans and 18-gallon totes and used for weighing out waste samples and placing of sorted waste components; each container was tare-weighted at the start of each new field sampling and sorting event and a unique number identifier was spray painted on the container prior to the start of field activities.

- **Sort Table –** Each host facility provided a sort "table" for which materials were sorted into their designated categories; the sort table was a simply piece of plywood that was impermeable and capable of supporting 150 pounds of waste materials; the plywood was mounted on steel drums or similar about four feet from the ground.

- **Scales –**EAS factory-calibrated scales were used to weigh waste samples and sorted waste components; scales recorded weight to the nearest 0.1 pound.

- **Personnel Protective Equipment (PPE) –** Protecting the health and safety of all project staff was the number one priority of the project; field staff were required to wear steel/composite toe shoes or boots, safety glasses, reflective safety vests, and puncture resistant gloves at all times when participating in fieldwork; additional safety equipment was made available for personnel needing additional equipment, including ear plugs, dust masks, and coveralls.

- **Data Forms –** SCS created a separate data collection form for each waste sample sorted during the project; the form contained fields to capture information on the waste sample, including the waste generating sector and hauler information; this form was also used to record waste component weights.

2.6.2 Sample Selection

The integrity of this project started with selecting the right samples for sorting. SCS employed a number of procedures and quality control measures to confirm that the samples obtained for sorting were representative of the residential and ICI waste streams disposed of at each of the host facilities.

SCS appointed a Sampling Manager (from SCS staff) to oversee selection and collection of each waste sample. This individual utilized the site-specific sampling plan to identify which trucks to stop for further waste screening. The Sampling Manager monitored trucks entering each facility.

Based on the sampling plan, the Sampling Manager randomly stopped trucks and interviewed the driver to obtain details on the waste contained in the vehicle. The driver was asked whether the waste contained in the truck was residential, ICI, or a mixture of the two. If the driver indicated that the waste in the truck was a mixture, follow-up questions were asked with the intent to estimate the percentage of waste from residential vs. ICI waste sources. In most cases, SCS was able to sample from waste loads that were at least 80 percent or higher residential or ICI waste.

The Sampling Manager would direct the driver of a truck selected for sampling to a designated area where the waste load would be discharged. The SCS Sampling Manager would then visually inspect the waste to confirm the waste load should be sampled. If there was uncertainty as to whether the waste was residential or ICI, the sample was discarded and another sample was obtained.

As discussed earlier in this report, three host facilities received residential and ICI waste from transfer stations that were incorporated into this study. SCS staff worked with operators of these transfer stations to have residential and ICI waste segregated at the transfer stations and transferred to the host facility landfill separately. It was requested that transfer station personnel minimize the compaction of the waste in order to keep it in as close to the same condition as it was direct-hauled to the transfer station to facilitate the separation of the materials into distinct material components. Once a transfer trailer of segregated residential and ICI waste was received at the host landfill, the waste was discharged and inspected by the SCS Sampling Manager. Between two and four samples were obtained from transfer trailer loads. The transfer trailered waste pile was visually divided into eight sections and samples were pulled from the different areas.

2.6.3 Sample Gathering

At the direction of the Sampling Manager, a host facility heavy equipment operator would obtain a sample of waste from a randomly selected "section" of the waste pile[2]. Depending on the type of equipment used (i.e. Bobcat, front-end loader, etc.), the operator would scoop up or grab a sample of the waste and transport it over to the sorting area. The waste sample would be placed in tared 32-gallon trash containers and the weight of the sample would be recorded. Consistent with ASTM International's Standard Test Method of Characterizing Unprocessed Solid Waste,[3] each sample was weighed until approximately 220 pounds of waste materials were obtained. Each waste sample was labeled and assigned a unique color code (using spray paint) for identification.

2.6.4 Manual Sorting

The manual sorting of solid waste followed a four-step process that is summarized below. Waste materials were sorted into the 61 different material components summarized below:

[2] The waste pile was visually divided into six sections (1-6) and samples were obtained from a randomly selected section.
[3] ASTM International: Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste; D 5231-92 (reapproved 2003)

1. The work crew hand-sorted all the materials directly off the sort table. Large, heavy, or bulky waste items, such as cardboard, drywall, or wood were examined and placed directly into the appropriate container for subsequent weighing.

2. Plastic bags of trash were opened and the work crew manually segregated each item of waste and placed it in the appropriate container. Each sample was sorted until all the identifiable components were properly sorted. The remaining materials left on the table (typically materials 2-inch or less in size) were visually characterized by the SCS Sorting Manager and the percentage of each observable waste material was noted – most often a combination of food waste – loose, compostable paper, and other organics. The materials were placed in an empty container and the weight was recorded.

3. After sorting each waste sample, the containers with the sorted materials were brought to a calibrated scale for weighing. The SCS Sorting Manager weighed each container of sorted materials and recorded the net weight and the corresponding unique container number on the waste sample record. Weights were recorded to the 0.1 pound.

4. After the weight of each container of sorted materials was recorded, the materials were disposed of in a roll-off container.

This four-step process was repeated until all of the samples were characterized. Waste samples were maintained in as-disposed conditions or as close to this as possible until the actual sorting began. Factors that might affect the conditions of the waste materials, such as compaction or rainfall, were mitigated so that the composition or condition of the sample did not change.

2.6.5 Visual Characterization

A number of host facilities receive a significant amount of residential or ICI waste that is bulky in nature. These waste materials are not conducive to manual sorting and obtaining a 220-pound sample of this waste material would skew the waste characterization results due to the size and weight of much of this material. As a result this material was visually characterized.

As part of each host facility's sampling plan, the number of bulky residential or ICI waste samples needed and hauler name(s) was known in advance. The SCS Sampling Manager would select bulky waste loads and conduct interviews with the truck drivers using the same protocol as for the hand-sort samples. When a bulky waste load was identified for sampling, the driver would be directed to a separate area near the working face to discharge the entire waste load. The driver would be directed to spread the load out as much as possible so a complete and comprehensive visual inspection could be performed. The SCS Sampling Manager would walk around the entire discharged waste load and make notes on the materials present in the sample. Based on each material's weight, the SCS Sampling Manager would estimate the percent composition of each of the material components in the sample. The gross weight of each visually characterized waste load was obtained from scalehouse record data, which would be partitioned out by material component based on the estimated percentage. This information would be recorded on the waste sample form.

2.6.6 Data Recording

The SCS field managers were responsible for the recording of all data related to this project. Each of the 517 waste samples analyzed as part of this study had its own unique waste sample form where all information and data about the sample was recorded. Sample information and weight data were recorded immediately after it was obtained and the waste components were weighed. In addition, a separate waste sample tracker document was maintained by SCS field managers to serve as an additional check on the number and source of samples obtained and sorted. At the end of each day of fieldwork, the SCS Sorting Manager would review all the data and match the individual data sheets to the waste sample tracker document to confirm accurate and consistent tracking of the data.

2.7 STATISTICAL METHODS

Using standard statistical procedures, SCS developed detailed estimates of mean composition and standard deviations for each of the 61 material components evaluated for this study. The composition was developed for the residential and ICI waste generating sectors separately, which were then aggregated to develop the overall statewide waste composition. 90 percent confidence intervals were calculated for each material component.

Composition estimates represent the ratio of a material components' weight to the weight of the total material. This was done by summing each components weight across all relevant samples and dividing it by the total weight of all applicable samples.

2.7.1 Sample Weighting

Data analysis for the 2017 Waste Characterization Study consisted of calculating straight and weighted average compositions for material categories and components. For the residential and ICI waste compositions at individual host facilities, straight averages were calculated based on the data from each sample obtained from the residential and ICI waste generating sectors, respectively. The overall MSW composition for the individual host facilities was weighted based on the amount of residential and ICI waste received at the host facility. For example, the Waste Commission of Scott County receives 80 percent residential waste and 20 percent ICI waste at their Scott Area Landfill. To obtain the overall MSW waste composition, the residential composition for each material category and component is multiplied by 80 percent and the ICI waste composition for each material category and component is multiplied by 20 percent. These two weighted compositions are added together to obtain the overall MSW composition for each material category and component.

To calculate the statewide composition of overall MSW, residential, and ICI waste streams, the weighted compositions of the material categories and components were used. For the residential and ICI waste streams, the material category and component waste compositions are weighted in proportion to how much of each type of waste is received at the individual host facilities. The weighted compositions are added together to obtain the overall statewide residential and ICI waste composition. In calculating the overall statewide waste composition, the residential and ICI compositions are weighted in proportion to the total amount of residential (47 percent) and ICI (53 percent) waste received at all study host facilities.

3.0 RESULTS

This section provides the detailed results of the 2017 Iowa Statewide Waste Characterization Study. The results presented in this chapter include the composition for the residential and ICI generating sectors individually. This data was aggregated to calculate the overall statewide waste characterization. The results of the data is illustrated in the following way:

- **Pie Chart –** Pie charts are used to show the portion of the waste stream that comprises each of the nine waste categories evaluated.

- **Table –** Detailed tables provide the specific waste composition percentages of each of the 61 material components sorted as part of the 2017 study. The tables also include the calculated standard deviations and 90 percent confidence intervals for each material category and component.

Consistent with previous studies, the results presented represent waste from the following generator sectors:

- **Overall MSW –** This data represents the aggregated waste composition profiles for the residential and ICI waste generating sectors that were disposed of at the 10 host facilities.

- **Residential –** The residential waste composition is the portion of MSW that is generated at residential dwellings, including both single-family and multi-family residences.

- **Institutional, Commercial, and Industrial (ICI) –** The ICI waste stream represents materials generated from non-residential facilities such as businesses, schools, hospitals, and manufacturing facilities to name a few.

It is important to note that construction and demolition debris and special waste disposed of in Iowa was excluded from the sampling and sorting program.

3.1 OVERALL STATEWIDE WASTE COMPOSITION

Exhibit 6 provides a summary of the nine material categories that comprise the overall waste delivered to the 10 host facilities. Data is provided for each category as a percentage of the total. Note that the overall waste composition includes waste from the residential and ICI waste generating sectors only. Other source-separated types of waste, such as construction and demolition debris and special waste, are not included in this data. As indicated, organic waste comprises the largest portion of the waste stream at 31.6 percent, followed by paper at 25.5 percent, and plastic at 18.3 percent. This data include all types of material components that comprise the broader categories regardless if the material is considered reusable, recyclable, compostable, or non-marketable.

Exhibit 6. Overall Statewide Waste Composition

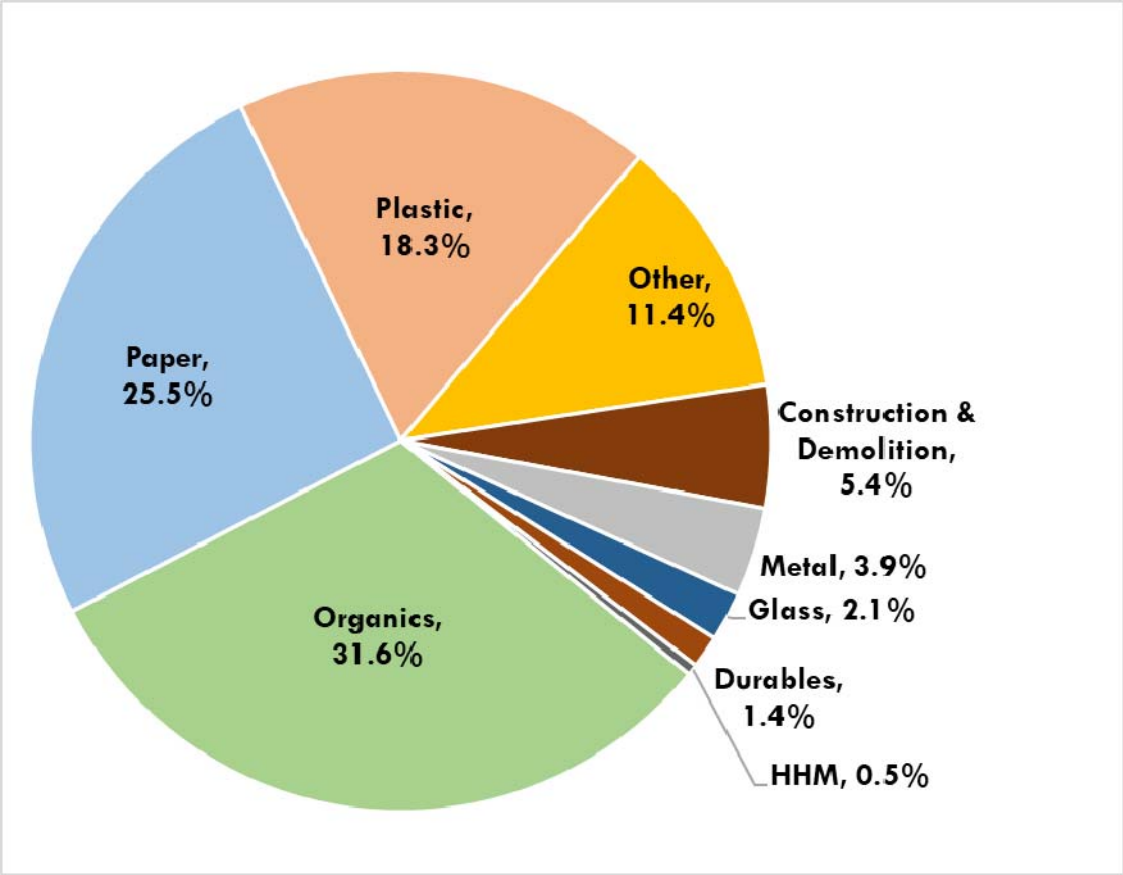


Table 8 provides a detailed profile of the overall MSW component that includes the percentage contribution of all 61 material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 8. Overall Statewide Waste Composition - Detailed

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.6%	4.2%	7.3%	7.9%
High Grade Office Paper	0.9%	1.3%	0.8%	1.0%
Magazines/Catalogs	1.5%	1.7%	1.4%	1.6%
Mixed Recyclable Paper	6.1%	3.6%	5.8%	6.3%
Newsprint	1.3%	1.5%	1.2%	1.4%
Non-Recyclable Paper	2.9%	3.6%	2.7%	3.2%
OCC and Kraft Paper	4.6%	6.1%	4.1%	5.0%
Aseptic/Gable Top Containers	0.6%	0.9%	0.5%	0.7%
Total Paper	**25.5%**	**9.3%**	**24.8%**	**26.2%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.6%	0.3%	0.4%
#1 PET Beverage Containers	1.1%	1.0%	1.1%	1.2%
#2 HDPE Containers Natural	0.5%	0.7%	0.4%	0.5%
#2 HDPE Containers Colored	0.6%	0.7%	0.6%	0.7%
Retail Shopping Bags	0.9%	0.6%	0.8%	0.9%
Other Plastic Film	7.8%	4.9%	7.4%	8.1%
Other #1 PET Containers	0.5%	1.1%	0.4%	0.5%
Plastic Containers #3-#7	2.2%	1.5%	2.1%	2.3%
Other Plastic Containers	0.5%	0.7%	0.5%	0.6%
Expanded Polystyrene	0.8%	1.0%	0.7%	0.9%
Other Plastic Products	3.1%	10.5%	2.3%	3.8%
Total Plastic	**18.3%**	**11.1%**	**17.5%**	**19.0%**
METAL				
Aluminum Beverage Containers	<0.1%	0.4%	<0.1%	0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.6%	0.4%	0.5%
Ferrous Food and Beverage Containers	0.8%	0.9%	0.7%	0.9%
Other Aluminum Containers	0.4%	0.7%	0.3%	0.4%
Other Ferrous Scrap Metals	1.9%	3.3%	1.7%	2.1%
Other Non-Ferrous Scrap Metals	0.3%	1.6%	0.2%	0.4%
Total Metals	**3.9%**	**3.8%**	**3.6%**	**4.1%**
GLASS				
Blue Glass	<0.1%	0.2%	<0.1%	<0.1%
Brown Glass	<0.1%	1.4%	<0.1%	0.2%
Clear Glass	0.8%	1.0%	0.7%	0.9%
Glass IA Deposit Containers	0.8%	1.5%	0.7%	1.0%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	2.9%	0.2%	0.6%
Total Glass	**2.1%**	**3.9%**	**1.9%**	**2.4%**

Table 8. Overall Statewide Waste Composition – Detailed (Continued)

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
ORGANICS				
Yard Waste	2.9%	4.7%	2.6%	3.2%
Food Waste - Loose	13.3%	8.8%	12.7%	14.0%
Food Waste - Packaged	6.7%	7.6%	6.2%	7.2%
Textiles and Leather	4.1%	5.3%	3.7%	4.5%
Diapers	3.5%	4.6%	3.2%	3.9%
Rubber	1.0%	2.8%	0.8%	1.2%
Total Organics	**31.6%**	**13.8%**	**30.6%**	**32.5%**
DURABLE				
Cell Phones and Chargers	0.1%	0.6%	<0.1%	0.2%
Central Processing Units/Peripherals	0.2%	1.4%	<0.1%	0.3%
Computer Monitors/TVs	<0.1%	0.5%	<0.1%	0.1%
Electrical and Household Appliances	1.0%	2.4%	0.9%	1.2%
Total Durable	**1.4%**	**2.9%**	**1.2%**	**1.6%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.9%	4.0%	0.7%	1.2%
Wood - Treated	2.2%	5.5%	1.8%	2.6%
Asphalt Pavement, Brick, Rock, and Concre	0.6%	1.9%	0.5%	0.8%
Asphalt Roofing	0.2%	2.1%	<0.1%	0.4%
Drywall/Gypsum Board	0.3%	1.4%	0.2%	0.4%
Carpet and Carpet Padding	1.1%	4.1%	0.8%	1.4%
Total Construction & Demolition	**5.4%**	**9.0%**	**4.7%**	**6.0%**
HOUSEHOLD HAZARDOUS MATERIALS				
Chemicals	0.2%	1.0%	0.2%	0.3%
Lead-Acid Batteries	<0.1%	0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	0.3%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	<0.1%
Sharps	<0.1%	0.4%	<0.1%	0.1%
Prescription Medications	<0.1%	0.2%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.5%**	**1.3%**	**0.4%**	**0.6%**
OTHER				
Other Organics	4.1%	6.5%	3.6%	4.6%
Other Inorganics	0.7%	1.9%	0.6%	0.8%
Other Construction & Demolition	0.6%	3.9%	0.4%	0.9%
Other Durables	0.7%	5.6%	0.3%	1.1%
Other HHM	0.4%	5.5%	<0.1%	0.8%
Fines	4.8%	3.0%	4.6%	5.1%
Other	0.1%	1.7%	<0.1%	0.2%
Total Other	**11.4%**	**10.4%**	**10.7%**	**12.2%**
TOTALS	**100.0%**			

Note: Composition based on 524 samples

3.2 RESIDENTIAL STATEWIDE WASTE COMPOSITION

Exhibit 7 provides a summary of the nine material categories that comprise the statewide residential waste composition delivered to the 10 host facilities. The largest material categories represented in the residential waste stream are as follows:

- Organics – 33.5 percent
- Paper – 22.8 percent
- Plastic – 16.6 percent
- Other – 14.6 percent; this category of waste includes miscellaneous waste components that cannot be classified into other categories. Examples of such materials include cat litter, bath products (hand soap, shampoo, lotion), and small in-distinguishable materials that were classified as "fines"

Table 9 provides a detailed profile of the statewide residential waste composition that includes the percentage contribution of all 61 material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included.

Exhibit 7. Residential Statewide Waste Composition

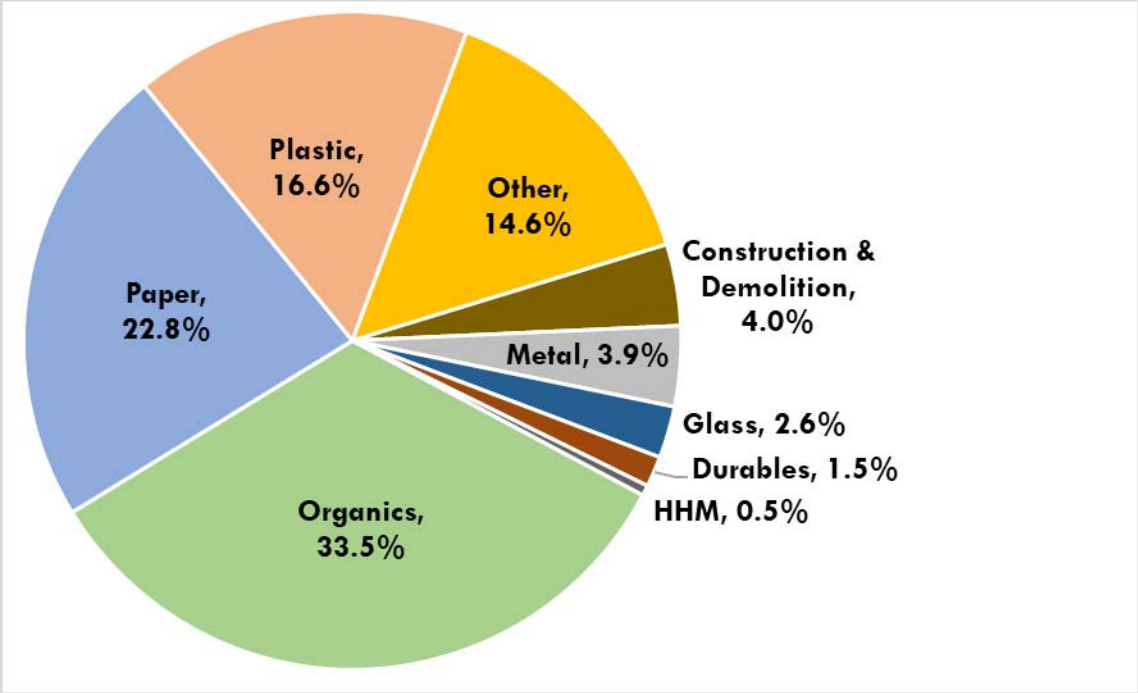


Table 9. Residential Statewide Waste Composition – Detailed

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	6.8%	3.0%	6.5%	7.1%
High Grade Office Paper	0.8%	1.0%	0.7%	0.9%
Magazines/Catalogs	1.7%	1.6%	1.5%	1.9%
Mixed Recyclable Paper	6.5%	3.5%	6.1%	6.8%
Newsprint	1.4%	1.5%	1.3%	1.6%
Non-Recyclable Paper	2.2%	2.1%	2.0%	2.5%
OCC and Kraft Paper	3.0%	2.2%	2.8%	3.3%
Aseptic/Gable Top Containers	0.4%	0.5%	0.4%	0.5%
Total Paper	**22.8%**	**7.1%**	**22.1%**	**23.5%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.8%	0.3%	0.4%
#1 PET Beverage Containers	1.0%	0.7%	0.9%	1.0%
#2 HDPE Containers Natural	0.4%	0.4%	0.4%	0.4%
#2 HDPE Containers Colored	0.6%	0.6%	0.6%	0.7%
Retail Shopping Bags	1.1%	0.6%	1.1%	1.2%
Other Plastic Film	6.4%	2.1%	6.2%	6.6%
Other #1 PET Containers	0.5%	0.3%	0.4%	0.5%
Plastic Containers #3-#7	2.1%	1.0%	2.0%	2.2%
Other Plastic Containers	0.5%	0.6%	0.5%	0.6%
Expanded Polystyrene	0.8%	0.8%	0.7%	0.9%
Other Plastic Products	2.8%	3.0%	2.5%	3.1%
Total Plastic	**16.6%**	**4.3%**	**16.1%**	**17.0%**
METAL				
Aluminum Beverage Containers	0.1%	0.5%	<0.1%	0.2%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.3%	0.4%
Ferrous Food and Beverage Containers	0.9%	1.0%	0.8%	1.0%
Other Aluminum Containers	0.5%	0.6%	0.4%	0.5%
Other Ferrous Scrap Metals	1.9%	2.3%	1.7%	2.1%
Other Non-Ferrous Scrap Metals	0.2%	1.1%	<0.1%	0.3%
Total Metals	**3.9%**	**3.0%**	**3.6%**	**4.2%**
GLASS				
Blue Glass	<0.1%	0.2%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	<0.1%
Clear Glass	1.0%	0.9%	0.9%	1.1%
Glass IA Deposit Containers	1.1%	1.7%	0.9%	1.2%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	1.3%	0.2%	0.5%
Total Glass	**2.6%**	**2.4%**	**2.3%**	**2.8%**

Table 9. Residential Statewide Waste Composition – Detailed (Continued)

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
ORGANICS				
Yard Waste	4.7%	5.4%	4.2%	5.2%
Food Waste - Loose	11.0%	6.5%	10.3%	11.6%
Food Waste - Packaged	6.9%	4.1%	6.5%	7.3%
Textiles and Leather	5.3%	4.1%	4.9%	5.8%
Diapers	4.8%	4.1%	4.4%	5.2%
Rubber	0.7%	1.1%	0.6%	0.8%
Total Organics	**33.5%**	**10.8%**	**32.4%**	**34.6%**
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.1%	1.2%	<0.1%	0.3%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.3%	2.4%	1.1%	1.6%
Total Durable	**1.5%**	**2.7%**	**1.2%**	**1.8%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.1%	2.6%	0.9%	1.4%
Wood - Treated	1.5%	2.2%	1.3%	1.7%
Asphalt Pavement, Brick, Rock, and Concre	0.3%	0.9%	0.2%	0.4%
Asphalt Roofing	0.1%	0.9%	<0.1%	0.2%
Drywall/Gypsum Board	0.1%	0.8%	<0.1%	0.2%
Carpet and Carpet Padding	0.8%	1.9%	0.6%	1.0%
Total Construction & Demolition	**4.0%**	**4.4%**	**3.6%**	**4.4%**
HOUSEHOLD HAZARDOUS MATERIALS				
Chemicals	0.3%	1.0%	0.2%	0.3%
Lead-Acid Batteries	<0.1%	0.2%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.2%	0.1%	0.1%
Sharps	<0.1%	0.5%	<0.1%	0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.5%**	**1.3%**	**0.4%**	**0.6%**
OTHER				
Other Organics	5.6%	6.9%	4.9%	6.3%
Other Inorganics	0.8%	1.3%	0.6%	0.9%
Other Construction & Demolition	0.3%	1.7%	0.2%	0.5%
Other Durables	0.8%	6.9%	<0.1%	1.4%
Other HHM	0.7%	7.6%	<0.1%	1.5%
Fines	6.4%	2.9%	6.1%	6.7%
Other	<0.1%	0.2%	<0.1%	<0.1%
Total Other	**14.6%**	**11.4%**	**13.5%**	**15.8%**
TOTALS	**100.0%**			

Note: Composition based on 275 samples

3.3 ICI STATEWIDE WASTE COMPOSITION

Exhibit 8 provides a summary of the nine material categories that comprise the statewide ICI waste composition delivered to the 10 host facilities. The largest material categories represented in the ICI waste stream are as follows:

- Organics – 29.9 percent
- Paper – 27.9 percent
- Plastic – 19.8 percent
- Other – 8.6 percent; this category of waste includes miscellaneous waste components that cannot be classified into other categories. Examples of such materials include unclassified construction/demolition debris, cat litter, bath products (hand soap, shampoo, lotion), and small in-distinguishable materials that were classified as "fines"
- Construction & demolition – 6.6 percent; note: this percentage does not include source separated construction and demolition debris disposed of at the host facilities)

Table 10 provides a detailed profile of the statewide ICI waste composition that includes the percentage contribution of all 61 material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included.

Exhibit 8. ICI Statewide Waste Composition

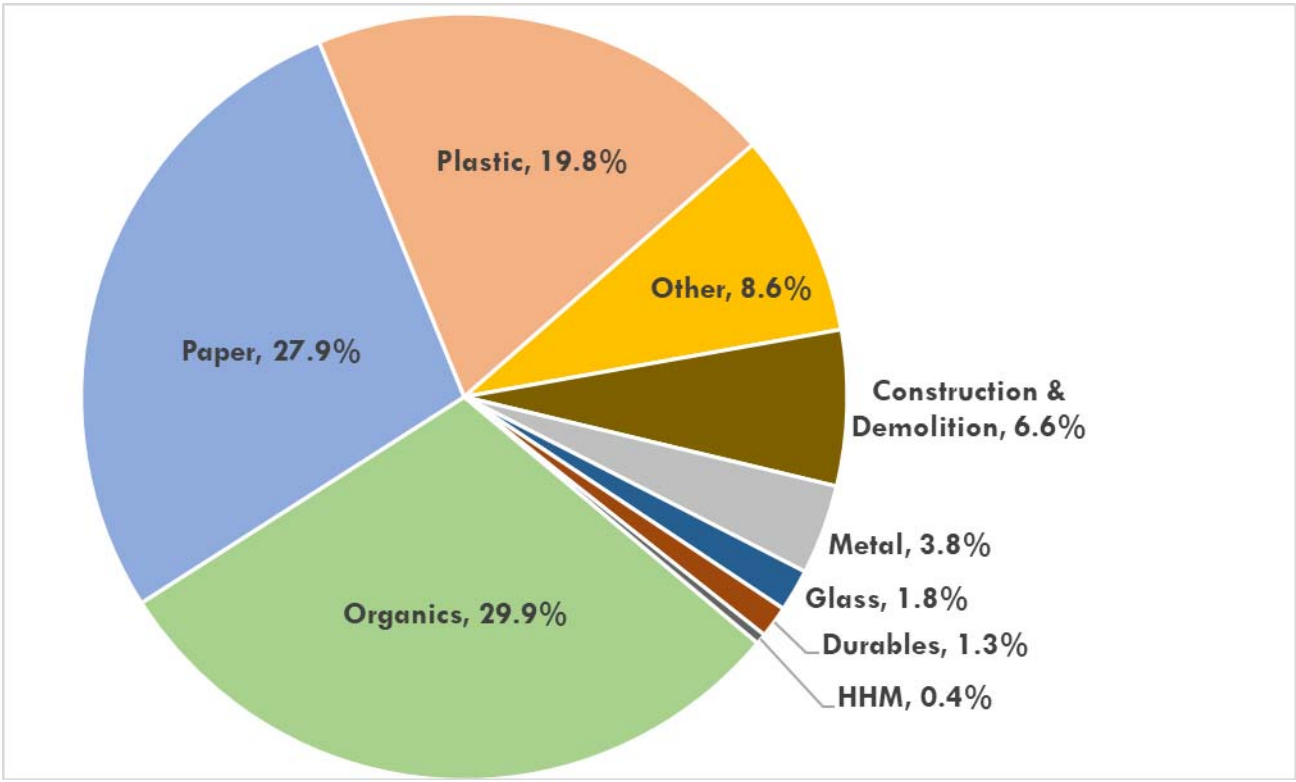


Table 10. ICI Statewide Waste Composition - Detailed

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	8.4%	5.2%	7.9%	9.0%
High Grade Office Paper	1.0%	1.6%	0.8%	1.2%
Magazines/Catalogs	1.3%	1.9%	1.1%	1.5%
Mixed Recyclable Paper	5.7%	3.8%	5.3%	6.1%
Newsprint	1.2%	1.5%	1.0%	1.3%
Non-Recyclable Paper	3.5%	4.7%	3.0%	4.0%
OCC and Kraft Paper	5.9%	8.6%	5.0%	6.8%
Aseptic/Gable Top Containers	0.7%	1.2%	0.6%	0.9%
Total Paper	**27.9%**	**11.2%**	**26.7%**	**29.0%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.3%	0.4%	0.4%
#1 PET Beverage Containers	1.3%	1.2%	1.2%	1.4%
#2 HDPE Containers Natural	0.5%	1.0%	0.4%	0.6%
#2 HDPE Containers Colored	0.6%	0.9%	0.5%	0.7%
Retail Shopping Bags	0.6%	0.6%	0.5%	0.7%
Other Plastic Film	8.9%	6.7%	8.2%	9.6%
Other #1 PET Containers	0.5%	1.6%	0.3%	0.6%
Plastic Containers #3-#7	2.4%	1.9%	2.2%	2.6%
Other Plastic Containers	0.5%	0.8%	0.4%	0.6%
Expanded Polystyrene	0.8%	1.1%	0.7%	0.9%
Other Plastic Products	3.3%	14.8%	1.8%	4.8%
Total Plastic	**19.8%**	**15.5%**	**18.1%**	**21.4%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.5%	0.9%	0.4%	0.6%
Ferrous Food and Beverage Containers	0.7%	0.8%	0.6%	0.8%
Other Aluminum Containers	0.3%	0.8%	0.2%	0.4%
Other Ferrous Scrap Metals	1.9%	4.1%	1.5%	2.4%
Other Non-Ferrous Scrap Metals	0.3%	2.1%	0.1%	0.5%
Total Metals	**3.8%**	**4.6%**	**3.3%**	**4.3%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	0.1%	2.0%	<0.1%	0.3%
Clear Glass	0.6%	1.1%	0.5%	0.7%
Glass IA Deposit Containers	0.7%	1.3%	0.5%	0.8%
Green Glass	<0.1%	0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	3.9%	<0.1%	0.8%
Total Glass	**1.8%**	**5.0%**	**1.3%**	**2.3%**

Table 10. ICI Statewide Waste Composition – Detailed (Continued)

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
ORGANICS				
Yard Waste	1.3%	3.7%	0.9%	1.7%
Food Waste - Loose	15.5%	10.7%	14.3%	16.6%
Food Waste - Packaged	6.5%	10.1%	5.4%	7.5%
Textiles and Leather	3.0%	6.4%	2.4%	3.7%
Diapers	2.4%	5.2%	1.9%	2.9%
Rubber	1.2%	3.9%	0.8%	1.6%
Total Organics	**29.9%**	**16.5%**	**28.1%**	**31.6%**
DURABLE				
Cell Phones and Chargers	0.2%	0.9%	0.1%	0.3%
Central Processing Units/Peripherals	0.2%	1.5%	<0.1%	0.3%
Computer Monitors/TVs	0.2%	0.7%	<0.1%	0.2%
Electrical and Household Appliances	0.8%	2.3%	0.6%	1.0%
Total Durable	**1.3%**	**3.1%**	**1.0%**	**1.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.8%	5.2%	0.2%	1.3%
Wood - Treated	2.9%	7.7%	2.1%	3.7%
Asphalt Pavement, Brick, Rock, and Concre	0.9%	2.6%	0.6%	1.2%
Asphalt Roofing	0.3%	3.0%	<0.1%	0.6%
Drywall/Gypsum Board	0.4%	1.9%	0.2%	0.6%
Carpet and Carpet Padding	1.4%	5.5%	0.8%	1.9%
Total Construction & Demolition	**6.6%**	**12.2%**	**5.3%**	**7.8%**
HOUSEHOLD HAZARDOUS MATERIALS				
Chemicals	0.2%	1.1%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	0.4%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	<0.1%
Sharps	<0.1%	0.3%	<0.1%	0.1%
Prescription Medications	<0.1%	0.3%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.4%**	**1.4%**	**0.3%**	**0.6%**
OTHER				
Other Organics	2.8%	6.0%	2.2%	3.4%
Other Inorganics	0.7%	2.3%	0.4%	0.9%
Other Construction & Demolition	0.9%	5.5%	0.3%	1.5%
Other Durables	0.6%	3.7%	0.2%	1.0%
Other HHM	<0.1%	0.4%	<0.1%	<0.1%
Fines	3.4%	3.1%	3.1%	3.8%
Other	0.2%	2.4%	<0.1%	0.5%
Total Other	**8.6%**	**9.2%**	**7.7%**	**9.6%**
TOTALS	**100.0%**			

Note: Composition based on 249 samples

3.4 COMPARISON BY GENERATING SECTOR

Table 11 presents the mean percent waste composition by generating sector.

Table 11. Comparison of Composition by Generating Sector

Material Components	Residential Comp.	ICI Comp.	Overall Comp.
PAPER			
Compostable Paper	6.8%	8.4%	7.6%
High Grade Office Paper	0.8%	1.0%	0.9%
Magazines/Catalogs	1.7%	1.3%	1.5%
Mixed Recyclable Paper	6.5%	5.7%	6.1%
Newsprint	1.4%	1.2%	1.3%
Non-Recyclable Paper	2.2%	3.5%	2.9%
OCC and Kraft Paper	3.0%	5.9%	4.6%
Aseptic/Gable Top Containers	0.4%	0.7%	0.6%
Total Paper	**22.8%**	**27.9%**	**25.5%**
PLASTIC			
#1 PET IA Deposit Beverage Containers	0.3%	0.4%	0.4%
#1 PET Beverage Containers	1.0%	1.3%	1.1%
#2 HDPE Containers Natural	0.4%	0.5%	0.5%
#2 HDPE Containers Colored	0.6%	0.6%	0.6%
Retail Shopping Bags	1.1%	0.6%	0.9%
Other Plastic Film	6.4%	8.9%	7.8%
Other #1 PET Containers	0.5%	0.5%	0.5%
Plastic Containers #3-#7	2.1%	2.4%	2.2%
Other Plastic Containers	0.5%	0.5%	0.5%
Expanded Polystyrene	0.8%	0.8%	0.8%
Other Plastic Products	2.8%	3.3%	3.1%
Total Plastic	**16.6%**	**19.8%**	**18.3%**
METAL			
Aluminum Beverage Containers	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.5%	0.4%
Ferrous Food and Beverage Containers	0.9%	0.7%	0.8%
Other Aluminum Containers	0.5%	0.3%	0.4%
Other Ferrous Scrap Metals	1.9%	1.9%	1.9%
Other Non-Ferrous Scrap Metals	0.2%	0.3%	0.3%
Total Metals	**3.9%**	**3.8%**	**3.9%**
GLASS			
Blue Glass	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%
Clear Glass	1.0%	0.6%	0.8%
Glass IA Deposit Containers	1.1%	0.7%	0.8%
Green Glass	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	0.4%	0.4%
Total Glass	**2.6%**	**1.8%**	**2.1%**

Table 11. Comparison of Composition by Generating Sector (Continued)

Material Components	Residential Comp.	ICI Comp.	Overall Comp.
ORGANICS			
Yard Waste	4.7%	1.3%	2.9%
Food Waste - Loose	11.0%	15.5%	13.3%
Food Waste - Packaged	6.9%	6.5%	6.7%
Textiles and Leather	5.3%	3.0%	4.1%
Diapers	4.8%	2.4%	3.5%
Rubber	0.7%	1.2%	1.0%
Total Organics	**33.5%**	**29.9%**	**31.6%**
DURABLE			
Cell Phones and Chargers	<0.1%	0.2%	0.1%
Central Processing Units/Peripherals	0.1%	0.2%	0.2%
Computer Monitors/TVs	<0.1%	0.2%	<0.1%
Electrical and Household Appliances	1.3%	0.8%	1.0%
Total Durable	**1.5%**	**1.3%**	**1.4%**
CONSTRUCTION & DEMOLITION			
Wood - Untreated	1.1%	0.8%	0.9%
Wood - Treated	1.5%	2.9%	2.2%
Asphalt Pavement, Brick, Rock, and Concre	0.3%	0.9%	0.6%
Asphalt Roofing	0.1%	0.3%	0.2%
Drywall/Gypsum Board	0.1%	0.4%	0.3%
Carpet and Carpet Padding	0.8%	1.4%	1.1%
Total Construction & Demolition	**4.0%**	**6.6%**	**5.4%**
HOUSEHOLD HAZARDOUS MATERIALS			
Chemicals	0.3%	0.2%	0.2%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	<0.1%	<0.1%
Sharps	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.5%**	**0.4%**	**0.5%**
OTHER			
Other Organics	5.6%	2.8%	4.1%
Other Inorganics	0.8%	0.7%	0.7%
Other Construction & Demolition	0.3%	0.9%	0.6%
Other Durables	0.8%	0.6%	0.7%
Other HHM	0.7%	<0.1%	0.4%
Fines	6.4%	3.4%	4.8%
Other	<0.1%	0.2%	0.1%
Total Other	**14.6%**	**8.6%**	**11.4%**
TOTALS	**100.0%**	**100.0%**	**100.0%**

In comparing the residential and ICI waste composition profiles, a number of observations can be made:

- **Paper –** Paper materials comprise a larger portion of the ICI waste stream. Material components that contribute to this include compostable paper (8.4 percent), non-recyclable paper (3.5 percent) and OCC and Kraft paper (5.9%). Mixed recyclable paper (6.5 percent), magazines/catalogs (1.7 percent), and newsprint (1.4 percent) were found to comprise a larger portion of the residential waste stream when compared to ICI.

- **Plastic –** Plastic materials represent a larger portion of the ICI waste stream. Material components found to be in larger quantities in the ICI waste stream include other plastic film (8.9 percent) and other plastic products (3.3 percent). Only retail shopping bags (1.1 percent) were calculated to comprise a larger portion of the residential waste stream compared to the ICI waste stream.

- **Glass –** Glass materials comprise 2.6 percent of the residential waste stream in comparison to 1.8 percent of the ICI waste stream. The increased amounts of glass in the residential waste stream result from more clear glass containers (1.0 percent) and glass IA deposit containers (1.1 percent).

- **Organics –** A greater portion of the residential waste stream consists of organic waste. This is driven by the quantity of yard waste (4.7 percent), textiles and leather (5.3 percent), and diapers (4.8 percent) found to be in the residential waste stream. The increased amounts of these materials more than offset the increased amount of food waste – loose (15.5 percent) found to be in the ICI waste stream compared to only 11 percent of the residential waste stream.

- **Construction and Demolition -** This material was observed to comprise 6.6 percent of the ICI waste stream compared to 4.0 percent of the residential waste stream. Increased amounts of treated wood (2.9 percent), asphalt pavement/brick/rock/concrete (0.9 percent), and carpet/carpet padding (1.4 percent) in the ICI waste stream contributed to the increase.

- **Other –** The "other" portion of the waste stream is significantly higher in the residential sector (14.6 percent) than in the ICI sector (8.6 percent). Material components that contribute to this disparity come from other organics such as cat litter, dirt, and dog waste (5.6 percent) and "fines" (6.4 percent), which is small indistinguishable material that does not fit other waste component definitions.

The proportion of the waste stream for material categories metal, durable, and household hazardous materials (HHMs) are similar for both the residential and ICI waste streams, respectively.

3.5 COMPARISON BY HOST FACILITY

Table 12 presents the waste composition data for each of the 10 host facilities where field activities occurred in 2017. Note that only the mean percent composition for each waste component is presented. **Appendix B** contains the detailed composition for each of the host facilities that includes the standard deviations and 90 percent confidence interval calculations. A detailed comparison of the results from individual host facilities should include consideration of the confidence intervals.

Table 12. Comparison of Overall MSW Composition by Host Facility

Material Components	Cedar Falls	Cedar Rapids	Dubuque	Iowa City	Landfill of North Iowa	Metro Waste Authority	Newton	South Central	Scott County	West Central
PAPER										
Compostable Paper	7.4%	9.3%	7.2%	7.3%	7.1%	7.9%	3.9%	6.9%	7.7%	6.4%
High Grade Office Paper	1.2%	0.8%	0.6%	1.7%	0.2%	0.9%	1.5%	0.3%	0.8%	0.7%
Magazines/Catalogs	1.4%	1.1%	1.1%	1.4%	1.9%	1.7%	1.2%	1.4%	1.4%	1.1%
Mixed Recyclable Paper	6.2%	4.2%	4.7%	4.5%	6.1%	7.3%	4.8%	8.5%	4.0%	6.2%
Newsprint	2.2%	1.0%	1.3%	1.2%	1.4%	1.2%	1.3%	1.5%	1.8%	1.9%
Non-Recyclable Paper	4.1%	4.6%	4.9%	5.6%	4.2%	1.5%	3.2%	1.8%	1.5%	3.3%
OCC and Kraft Paper	3.1%	3.4%	5.9%	3.2%	3.0%	5.2%	7.1%	3.6%	4.1%	6.3%
Aseptic/Gable Top Containers	0.3%	0.1%	0.2%	0.5%	0.5%	1.0%	0.2%	0.6%	0.2%	0.2%
Total Paper	**26.0%**	**24.5%**	**25.9%**	**25.5%**	**24.4%**	**26.7%**	**23.2%**	**24.7%**	**21.6%**	**26.1%**
PLASTIC										
#1 PET IA Deposit Beverage Containers	0.3%	0.5%	0.3%	0.4%	0.3%	0.4%	0.2%	0.2%	0.5%	0.2%
#1 PET Beverage Containers	1.6%	1.2%	1.2%	1.3%	1.0%	1.1%	1.0%	1.0%	0.9%	1.1%
#2 HDPE Containers Natural	0.4%	0.5%	0.3%	0.7%	0.5%	0.4%	0.5%	0.6%	0.3%	0.5%
#2 HDPE Containers Colored	0.7%	0.6%	0.4%	0.6%	0.6%	0.6%	0.5%	0.6%	0.5%	0.9%
Retail Shopping Bags	0.9%	0.8%	0.5%	0.6%	0.7%	1.0%	0.8%	0.8%	1.1%	0.8%
Other Plastic Film	4.9%	8.6%	8.5%	7.2%	9.4%	7.9%	4.1%	8.9%	5.2%	7.4%
Other #1 PET Containers	0.5%	0.4%	1.1%	0.5%	0.5%	0.3%	0.5%	0.5%	0.5%	0.6%
Plastic Containers #3-#7	2.0%	2.4%	1.8%	2.5%	1.7%	2.4%	1.4%	2.2%	2.0%	2.0%
Other Plastic Containers	0.2%	0.3%	0.2%	0.8%	0.6%	0.6%	0.3%	0.3%	0.5%	0.4%
Expanded Polystyrene	0.7%	0.9%	0.8%	0.5%	0.7%	0.8%	0.6%	1.0%	1.0%	1.0%
Other Plastic Products	2.1%	2.9%	2.4%	2.0%	3.1%	2.5%	17.5%	4.1%	4.0%	2.3%
Total Plastic	**14.5%**	**19.0%**	**17.5%**	**17.2%**	**19.2%**	**18.1%**	**27.5%**	**20.2%**	**16.7%**	**17.3%**
METAL										
Aluminum Beverage Containers	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.8%	0.5%	0.4%	0.4%	0.3%	0.2%	0.6%	0.3%
Ferrous Food and Beverage Containers	0.8%	0.8%	0.6%	0.5%	1.0%	0.8%	0.8%	0.9%	1.0%	1.0%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%	0.5%	0.3%	0.6%	0.4%
Other Ferrous Scrap Metals	1.6%	1.2%	2.3%	2.7%	1.9%	1.9%	1.3%	1.8%	1.6%	2.5%
Other Non-Ferrous Scrap Metals	0.2%	0.7%	0.2%	<0.1%	0.3%	0.2%	0.2%	0.5%	<0.1%	0.4%
Total Metals	**3.4%**	**3.4%**	**4.2%**	**4.2%**	**4.1%**	**3.8%**	**3.2%**	**3.8%**	**3.9%**	**4.5%**

Table 12. Comparison of Overall MSW Composition by Host Facility (Continued)

Material Components	Cedar Falls	Cedar Rapids	Dubuque	Iowa City	Landfill of North Iowa	Metro Waste Authority	Newton	South Central	Scott County	West Central
GLASS										
Blue Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Brown Glass	0.0%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.7%
Clear Glass	1.5%	0.9%	0.9%	0.8%	0.8%	0.6%	1.1%	0.7%	1.2%	1.0%
Glass IA Deposit Containers	1.9%	0.6%	1.2%	1.6%	0.8%	0.6%	0.9%	0.5%	1.2%	0.7%
Green Glass	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.6%	0.3%	0.3%	0.5%	0.2%	0.4%	1.1%	0.6%	0.4%
Total Glass	**3.7%**	**2.2%**	**2.5%**	**2.8%**	**2.1%**	**1.6%**	**2.5%**	**2.4%**	**3.0%**	**2.8%**
ORGANICS										
Yard Waste	0.9%	1.0%	2.3%	1.9%	2.4%	4.1%	0.8%	1.8%	2.9%	3.6%
Food Waste - Loose	13.4%	15.4%	10.4%	16.7%	13.4%	13.5%	11.2%	14.1%	12.0%	8.2%
Food Waste - Packaged	10.6%	6.8%	7.4%	8.5%	8.2%	5.6%	7.1%	5.0%	6.2%	9.5%
Textiles and Leather	3.3%	2.9%	4.3%	3.4%	3.8%	4.8%	2.7%	3.5%	3.6%	4.6%
Diapers	4.5%	2.9%	2.6%	4.3%	5.2%	2.7%	3.1%	4.3%	4.7%	5.9%
Rubber	0.6%	2.4%	1.5%	0.7%	1.2%	0.5%	0.7%	0.8%	0.4%	1.9%
Total Organics	**33.3%**	**31.4%**	**28.4%**	**35.5%**	**34.1%**	**31.2%**	**25.5%**	**29.3%**	**29.7%**	**33.8%**
DURABLE										
Cell Phones and Chargers	0.0%	0.0%	0.0%	0.0%	0.2%	0.3%	0.0%	0.0%	0.0%	0.1%
Central Processing Units/Peripherals	0.5%	0.3%	0.1%	0.4%	0.2%	<0.1%	<0.1%	0.2%	<0.1%	0.6%
Computer Monitors/TVs	0.0%	0.2%	0.1%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.4%	0.9%	1.6%	0.7%	1.3%	1.1%	1.4%	0.6%	1.0%	0.8%
Total Durable	**0.9%**	**1.4%**	**1.9%**	**1.1%**	**1.7%**	**1.5%**	**1.4%**	**0.8%**	**1.1%**	**1.6%**
CONSTRUCTION & DEMOLITION										
Wood - Untreated	0.1%	0.3%	0.0%	0.6%	0.4%	1.3%	1.1%	2.5%	1.4%	0.4%
Wood - Treated	0.7%	5.4%	2.5%	2.1%	2.3%	1.4%	1.3%	2.1%	2.8%	2.4%
Asphalt Pavement, Brick, Rock, and Concre	0.2%	<0.1%	0.8%	0.2%	0.3%	1.1%	<0.1%	<0.1%	0.3%	0.3%
Asphalt Roofing	0.0%	<0.1%	0.9%	0.3%	0.8%	<0.1%	<0.1%	0.3%	<0.1%	0.7%
Drywall/Gypsum Board	0.4%	<0.1%	0.7%	0.2%	0.8%	0.2%	0.4%	0.3%	0.1%	0.1%
Carpet and Carpet Padding	0.8%	1.3%	3.9%	0.2%	1.0%	0.8%	0.5%	0.4%	1.9%	0.8%
Total Construction & Demolition	**2.3%**	**7.1%**	**8.7%**	**3.6%**	**5.6%**	**4.9%**	**3.4%**	**5.6%**	**6.5%**	**4.7%**

Table 12. Comparison of Overall Composition by Host Facility (Continued)

Material Components	Cedar Falls	Cedar Rapids	Dubuque	Iowa City	Landfill of North Iowa	Metro Waste Authority	Newton	South Central	Scott County	West Central
HOUSEHOLD HAZARDOUS MATERIALS										
Chemicals	0.4%	0.5%	0.2%	0.4%	0.2%	0.1%	0.4%	0.3%	0.2%	0.4%
Lead-Acid Batteries	0.0%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	0.0%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	0.0%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%
Sharps	0.0%	<0.1%	<0.1%	0.2%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	0.0%	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total Household Hazardous Materials	**0.6%**	**0.8%**	**0.3%**	**0.8%**	**0.3%**	**0.3%**	**0.6%**	**0.5%**	**0.4%**	**0.6%**
OTHER										
Other Organics	7.5%	4.4%	1.6%	6.9%	4.0%	3.4%	6.8%	3.9%	6.4%	2.7%
Other Inorganics	0.6%	1.2%	0.7%	0.7%	0.9%	0.7%	0.9%	0.5%	0.3%	0.4%
Other Construction & Demolition	0.2%	1.1%	1.4%	0.2%	0.3%	0.2%	0.7%	2.9%	1.1%	0.8%
Other Durables	4.2%	1.3%	2.1%	0.3%	0.4%	0.3%	2.1%	0.6%	0.1%	0.8%
Other HHM	0.0%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	4.8%	<0.1%
Fines	2.7%	1.6%	4.6%	1.8%	3.4%	7.3%	1.9%	4.4%	3.8%	4.0%
Other	0.0%	0.3%	0.1%	<0.1%	<0.1%	<0.1%	0.3%	0.3%	0.5%	<0.1%
Total Other	**15.3%**	**10.1%**	**10.6%**	**9.5%**	**8.6%**	**11.9%**	**12.8%**	**12.7%**	**17.1%**	**8.6%**
TOTALS	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

4.0 COMPARISON TO PREVIOUS STUDIES

4.1 INTRODUCTION

The 2017 waste characterization study continues IDNR's effort to track solid waste disposal in the State of Iowa. Previous waste characterizations studies have occurred in 2011, 2005, and 1998. This section compares the results from the 2017 study to the results in the previous studies in order to understand how the waste stream has changed over the last 20 years. Also included in this section is a listing of the most prevalent disposed wastes in 2017.

4.2 COMPARISON WITH PRIOR STUDIES

Since the first statewide waste composition study in 1998, all studies have estimated the mean percent composition as well as calculated the 90 percent confidence intervals. This helps facilitate comparison of the studies in order to track waste disposal trends over a period of time.

Table 13, **Table 14**, and **Table 15** compare the waste compositions for the overall MSW, residential, and ICI waste generating sectors across all four IDNR studies – 2017, 2011, 2005, 1998. The tables include the mean percent composition for each material category and component as well as the upper and lower confidence intervals. The second column, labeled "statistically significant increase/decrease," in each table indicates if there has been a statistically significant change in the composition from 2011 to 2017 and whether the statistically significant result is an increase or decrease. The results are deemed to be statistically significant if the calculated mean composition for 2017 falls significantly outside the lower and upper confidence intervals calculated from the 2011 study.

For example, compostable paper is estimated to have increased in 2017 at a statistically significant level over 2011 because the calculate mean in 2017 (7.6 percent) do not overlap with the confidence internals calculated for 2011 (5.4 percent to 6.8 percent - **Table 13**).

Conversely, the proportion of high-grade office paper in the overall MSW waste stream remained the same from 2011 to 2017 at 0.9 percent (**Table 13**). This mean composition in 2017 is within the confidence internals calculated for 2011 (0.6 percent to 1.2 percent).

The mean percentage for each material category (i.e. paper, plastic, metal, etc.) equals the sum of the mean percentages for the individual material components. This is not true for the confidence intervals, which are calculated individually for each material component. The confidence intervals for material categories are calculated from the mean percentage of that category and thus will not equal the sum of the corresponding individual waste components.

Table 13. Comparison of 2017 Study Results to Prior Studies – Overall MSW

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Paper		**25.5%**	**24.8%**	**26.2%**	**25.2%**	**23.5%**	**26.9%**	**33.1%**	**30.5%**	**35.7%**	**32.3%**	**30.5%**	**34.0%**
Compostable Paper	Increase	7.6%	7.3%	7.9%	6.1%	5.4%	6.8%	6.5%	5.7%	7.4%	N/A	N/A	N/A
High Grade Office Paper		0.9%	0.8%	1.0%	0.9%	0.6%	1.2%	2.5%	1.9%	3.1%	2.3%	2.0%	2.5%
Magazines/Catalogs		1.5%	1.4%	1.6%	1.2%	1.0%	1.4%	1.8%	1.6%	2.1%	2.5%	2.2%	2.8%
Mixed Recyclable Paper	Increase	6.1%	5.8%	6.3%	3.7%	3.4%	4.0%	7.0%	6.3%	7.7%	5.4%	5.0%	5.9%
Newsprint		1.3%	1.2%	1.4%	1.6%	1.4%	1.9%	4.0%	3.4%	4.7%	3.3%	2.9%	3.6%
Non-Recyclable Paper		2.9%	2.7%	3.2%	2.4%	1.8%	2.9%	2.8%	2.3%	3.3%	10.3%	9.4%	11.2%
OCC and Kraft Paper	Decrease	4.6%	4.1%	5.0%	9.0%	7.5%	10.5%	8.5%	7.2%	10.1%	8.5%	7.7%	10.1%
Aseptic/Gable Top Paper Containers	Increase	0.6%	0.5%	0.7%	0.2%	0.2%	0.3%	N/A	N/A	N/A	N/A	N/A	N/A
Metal		**3.9%**	**3.6%**	**4.1%**	**5.0%**	**3.7%**	**6.2%**	**4.7%**	**4.1%**	**5.5%**	**6.0%**	**5.5%**	**6.6%**
Aluminum Beverage Containers		<0.1%	<0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%
Aluminum IA Deposit Beverage Containers	Increase	0.4%	0.4%	0.5%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.2%
Ferrous Food and Beverage Containers		0.8%	0.7%	0.9%	0.7%	0.5%	0.9%	1.0%	0.8%	1.2%	1.7%	1.5%	1.9%
Other Aluminum Containers		0.4%	0.3%	0.4%	0.3%	0.2%	0.4%	0.1%	0.1%	0.2%	N/A	N/A	N/A
Other Ferrous Scrap Metals		1.9%	1.7%	2.1%	2.2%	1.7%	2.6%	2.8%	2.3%	3.5%	3.4%	3.0%	3.8%
Other Non-Ferrous Scrap Metals		0.3%	0.2%	0.4%	1.6%	0.4%	2.7%	0.5%	0.4%	0.6%	0.7%	0.6%	0.8%
Glass	**Increase**	**2.1%**	**1.9%**	**2.4%**	**1.5%**	**1.3%**	**1.7%**	**1.6%**	**1.5%**	**2.0%**	**2.7%**	**2.2%**	**2.9%**
Blue Glass		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Brown Glass		<0.1%	<0.1%	0.2%	0.1%	0.1%	0.2%	0.0%	0.0%	0.1%	0.2%	0.1%	0.2%
Clear Glass	Increase	0.8%	0.7%	0.9%	0.5%	0.5%	0.6%	0.7%	0.6%	0.9%	1.0%	0.9%	1.1%
Glass Deposit Containers	Increase	0.8%	0.7%	1.0%	0.2%	0.2%	0.3%	0.3%	0.2%	0.4%	0.3%	0.3%	0.4%
Green Glass		<0.1%	<0.1%	<0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%
Other Mixed Cullet		0.4%	0.2%	0.6%	0.6%	0.4%	0.7%	0.5%	0.4%	0.7%	1.1%	0.9%	1.3%
Organic	**Increase**	**31.6%**	**30.6%**	**32.5%**	**25.5%**	**23.8%**	**27.1%**	**20.1%**			**19.7%**		
Pumpkins		N/A	N/A	N/A	N/A	N/A	N/A	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%
Yard Waste	Decrease	2.9%	2.6%	3.2%	4.6%	3.9%	5.2%	1.4%	1.0%	1.9%	1.3%	1.1%	1.5%
Food Waste - Loose[1]	Increase	13.3%	12.7%	14.0%	13.3%	11.9%	14.8%	10.6%	9.3%	12.2%	10.7%	9.6%	11.8%
Food Waste - Packaged[1]	Increase	6.7%	6.2%	7.2%									
Textiles and Leather		4.1%	3.7%	4.5%	4.1%	3.5%	4.7%	4.9%	4.0%	6.1%	4.2%	3.7%	4.7%
Diapers	Increase	3.5%	3.2%	3.9%	2.5%	2.1%	2.8%	2.4%	2.0%	2.8%	2.3%	2.0%	2.7%
Rubber		1.0%	0.8%	1.2%	1.0%	0.6%	1.5%	0.5%	0.3%	0.6%	0.8%	0.7%	0.9%

Table 13. Comparison of 2017 Study Results to Prior Studies – Overall MSW (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Construction and Demolition	**Decrease**	**5.4%**	**4.7%**	**6.0%**	**13.5%**	**11.3%**	**15.7%**	**13.5%**			**11.2%**		
Wood - Untreated	Decrease	0.9%	0.7%	1.2%	5.4%	3.7%	7.1%	3.4%	2.7%	4.4%	2.8%	2.3%	3.2%
Wood - Treated	Decrease	2.2%	1.8%	2.6%	3.8%	3.1%	4.5%	4.6%	3.6%	6.0%	3.6%	3.0%	4.2%
Asphalt Pavement, Brick, Rock, and Concrete[2]		0.6%	0.5%	0.8%	0.7%	0.5%	0.9%	5.5%	4.1%	7.6%	4.8%	4.0%	5.7%
Asphalt Roofing[2]		0.2%	<0.1%	0.4%	0.8%	0.0%	1.6%						
Drywall/Gypsum Board[2]	Decrease	0.3%	0.2%	0.4%	1.0%	0.5%	1.5%						
Carpet and Carpet Padding[2]		1.1%	0.8%	1.4%	1.8%	1.2%	2.5%						
Plastic		**18.3%**	**17.5%**	**19.0%**	**16.7%**	**15.0%**	**18.3%**	**14.9%**	**13.4%**	**16.6%**	**14.4%**	**13.3%**	**15.6%**
#1 PET IA Deposit Beverage Containers	Increase	0.4%	0.3%	0.4%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%	0.2%
#1 PET Beverage Containers	Increase	1.1%	1.1%	1.2%	0.5%	0.4%	0.5%	0.4%	0.4%	0.5%	0.2%	0.2%	0.3%
#2 HDPE Containers Natural[3]	Increase	0.5%	0.4%	0.5%	0.3%	0.2%	0.3%	1.0%	0.9%	1.2%	1.0%	0.9%	1.1%
#2 HDPE Containers Colored[3]	Increase	0.6%	0.6%	0.7%	0.4%	0.3%	0.4%						
Plastic Retail Shopping Bags[4]	Increase	0.9%	0.8%	0.9%	0.3%	0.2%	0.3%	6.6%	5.7%	7.5%	4.8%	4.3%	5.2%
Other Film Plastic[4]	Increase	7.8%	7.4%	8.1%	6.4%	5.6%	7.1%						
Other #1 PET Containers	Increase	0.5%	0.4%	0.5%	0.3%	0.2%	0.3%	0.3%	0.2%	0.3%	N/A	N/A	N/A
#3-#7 Plastic Containers	Increase	2.2%	2.1%	2.3%	0.7%	0.6%	0.7%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Containers		0.5%	0.5%	0.6%	1.1%	0.1%	2.0%	0.4%	0.3%	0.5%	0.8%	0.7%	0.9%
Expanded Polystyrene		0.8%	0.7%	0.9%	1.5%	0.3%	2.7%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Products	Decrease	3.1%	2.3%	3.8%	5.3%	4.3%	6.3%	6.0%	5.3%	6.9%	7.5%	6.7%	8.4%
Durable		**1.4%**	**1.2%**	**1.6%**	**2.3%**	**1.5%**	**3.1%**	**2.4%**			**1.6%**		
Cell Phones and Chargers		0.1%	<0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Central Processing Units/Peripherals		0.2%	<0.1%	0.3%	0.4%	0.1%	0.6%	0.2%	0.1%	0.3%	N/A	N/A	N/A
Computer Monitors/TVs		<0.1%	<0.1%	0.1%	0.3%	0.1%	0.5%	0.1%	0.0%	0.1%	N/A	N/A	N/A
Electrical and Household Applications		1.0%	0.9%	1.2%	1.6%	0.9%	2.3%	2.1%	1.6%	2.9%	1.6%	1.3%	1.9%

Table 13. Comparison of 2017 Study Results to Prior Studies – Overall MSW (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Household Hazardous Materials	**Increase**	**0.5%**	**0.4%**	**0.6%**	**0.2%**	**0.2%**	**0.3%**	**0.3%**			**1.4%**		
Automotive Products[5]		0.2%	0.2%	0.3%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.3%	0.2%	0.3%
Household Cleaners[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Paints and Solvents[5]					0.0%	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
Pesticides, Herbicides, Fungicides[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead Acid Batteries		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercury Containing Products		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Lithium Batteries		<0.1%	<0.1%	<0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Batteries		<0.1%	<0.1%	<0.1%	0.1%	0.0%	0.1%	0.2%	0.2%	0.3%	0.1%	0.1%	0.1%
Sharps		<0.1%	<0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	0.8%
Prescription Medications		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A	N/A	N/A
Other	**Increase**	**11.4%**	**10.7%**	**12.2%**	**10.1%**	**9.2%**	**11.1%**	**9.6%**			**10.9%**		
Other Organic	Increase	4.1%	3.6%	4.6%	3.2%	2.7%	3.7%	1.5%	1.2%	1.8%	1.7%	1.5%	2.0%
Other Inorganic	Increase	0.7%	0.6%	0.8%	0.3%	0.1%	0.4%	2.4%	1.9%	3.0%	1.7%	1.4%	2.1%
Other C&D [2]	Decrease	0.6%	0.4%	0.9%	1.1%	0.8%	1.4%	N/A	N/A	N/A	N/A	N/A	N/A
Other Durable	Decrease	0.7%	0.3%	1.1%	2.1%	1.4%	2.8%	2.7%	1.9%	3.8%	2.2%	1.8%	2.7%
Other HHM	Increase	0.4%	<0.1%	0.8%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Fines	Increase	4.8%	4.6%	5.1%	3.1%	2.6%	3.5%	2.4%	2.1%	2.8%	5.2%	4.6%	5.6%
Other		0.1%	<0.1%	0.2%	0.5%	0.1%	0.8%	0.5%	0.3%	0.8%	N/A	N/A	N/A
Total		**100.0%**			**100.0%**			**100.0%**			**100.0%**		

[1] Food Waste was split into two categories in 2017; Loose Food and Packaged Food

[2] The material Demolition/Renovation/Construction (2005) has been split into Asphalt Pavement, Brick, Rock, and Concrete; Asphalt Roofing; Drywall/Gypsum Board; Carpet and Carpet Padding, and Other C&D for the 2011 and 2017 studies.

[3] The material #2 HDPE Containers (2005) has been split into #2 HDPE Containers Natural and #2 HDPE Containers Colored for the 2011 and 2017 studies.

[4] The material Film/Wrap/Bags (2005) has been split into Retail Shopping Bags and Other Film Plastic for the 2011 and 2017 studies.

[5] The material components Automotive Products, Household Cleaners, Paints and Solvents, Pesticides, Herbicides, Fungicides have been merged into one Chemicals category for 2017.

Table 14. Comparison of 2017 Study Results to Prior Studies – Residential

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Paper	**Increase**	**22.8%**	**22.1%**	**23.5%**	**20.2%**	**19.0%**	**21.3%**	**31.1%**	**27.5%**	**34.8%**	**29.0%**	**26.2%**	**31.7%**
Compostable Paper		6.8%	6.5%	7.1%	6.2%	5.7%	6.7%	7.9%	6.4%	9.7%	N/A	N/A	N/A
High Grade Office Paper		0.8%	0.7%	0.9%	0.5%	0.4%	0.7%	1.5%	1.2%	2.0%	1.8%	1.4%	2.1%
Magazines/Catalogs		1.7%	1.5%	1.9%	1.6%	1.4%	1.9%	2.4%	1.9%	3.0%	3.2%	2.7%	3.7%
Mixed Recyclable Paper	Increase	6.5%	6.1%	6.8%	4.5%	4.1%	4.8%	7.9%	6.7%	9.2%	6.1%	5.4%	6.9%
Newsprint	Decrease	1.4%	1.3%	1.6%	1.9%	1.7%	2.1%	5.7%	4.3%	7.3%	4.2%	3.5%	4.9%
Non-Recyclable Paper	Increase	2.2%	2.0%	2.5%	1.5%	1.2%	1.7%	1.9%	1.5%	2.3%	9.6%	8.4%	10.8%
OCC and Kraft Paper	Decrease	3.0%	2.8%	3.3%	3.8%	3.2%	4.4%	3.8%	2.8%	4.9%	4.1%	3.5%	4.8%
Aseptic/Gable Top Paper Containers	Increase	0.4%	0.4%	0.5%	0.2%	0.1%	0.2%	N/A	N/A	N/A	N/A	N/A	N/A
Metal		**3.9%**	**3.6%**	**4.2%**	**5.0%**	**4.1%**	**6.0%**	**4.2%**	**3.3%**	**5.3%**	**7.2%**	**6.1%**	**8.3%**
Aluminum Beverage Containers		0.1%	<0.1%	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
Aluminum IA Deposit Beverage Containers		0.3%	0.3%	0.4%	0.3%	0.2%	0.3%	0.2%	0.1%	0.3%	0.2%	0.1%	0.2%
Ferrous Food and Beverage Containers		0.9%	0.8%	1.0%	0.8%	0.7%	0.9%	1.2%	1.0%	1.5%	1.3%	1.1%	1.6%
Other Aluminum Containers		0.5%	0.4%	0.5%	0.3%	0.2%	0.4%	0.1%	0.1%	0.1%	N/A	N/A	N/A
Other Ferrous Scrap Metals		1.9%	1.7%	2.1%	2.8%	1.9%	3.7%	2.0%	1.4%	2.7%	4.6%	3.6%	5.7%
Other Non-Ferrous Scrap Metals	Decrease	0.2%	<0.1%	0.3%	0.8%	0.6%	1.1%	0.7%	0.5%	0.9%	1.0%	0.8%	1.3%
Glass	**Increase**	**2.6%**	**2.3%**	**2.8%**	**2.0%**	**1.8%**	**2.3%**	**2.5%**	**1.9%**	**3.1%**	**2.5%**	**2.2%**	**2.9%**
Blue Glass		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%
Brown Glass		<0.1%	<0.1%	<0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	0.2%	0.2%	0.3%
Clear Glass	Increase	1.0%	0.9%	1.1%	0.7%	0.6%	0.8%	1.0%	0.8%	1.3%	1.4%	1.2%	1.7%
Glass Deposit Containers	Increase	1.1%	0.9%	1.2%	0.3%	0.2%	0.4%	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%
Green Glass		<0.1%	<0.1%	<0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%
Other Mixed Cullet		0.4%	0.2%	0.5%	0.8%	0.5%	1.0%	0.9%	0.5%	1.4%	0.4%	0.3%	0.5%
Organic		**33.5%**	**32.4%**	**34.6%**	**31.7%**	**29.6%**	**33.9%**	**22.5%**			**23.5%**		
Pumpkins		N/A	N/A	N/A	N/A	N/A	N/A	0.1%	0.1%	0.2%	0.9%	0.6%	1.3%
Yard Waste	Decrease	4.7%	4.2%	5.2%	7.8%	6.6%	9.0%	1.6%	0.9%	2.5%	1.9%	1.4%	2.5%
Food Waste - Loose [1]	Increase	11.0%	10.3%	11.6%	13.6%	11.9%	15.2%	11.2%	9.2%	3.6%	10.8%	9.2%	12.4%
Food Waste - Packaged [1]	Increase	6.9%	6.5%	7.3%									
Textiles and Leather		5.3%	4.9%	5.8%	5.9%	5.2%	6.6%	5.4%	4.0%	7.1%	5.5%	4.6%	6.4%
Diapers	Increase	4.8%	4.4%	5.2%	3.8%	3.2%	4.5%	4.1%	3.1%	5.4%	3.7%	3.0%	4.5%
Rubber		0.7%	0.6%	0.8%	0.7%	0.4%	0.9%	0.1%	0.1%	0.1%	0.7%	0.5%	0.9%

Table 14. Comparison of 2017 Study Results to Prior Studies – Residential (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Construction and Demolition	**Decrease**	**4.0%**	**3.6%**	**4.4%**	**11.0%**	**8.7%**	**13.2%**	**12.5%**			**10.4%**		
Wood - Untreated	Decrease	1.1%	0.9%	1.4%	2.4%	1.7%	3.1%	2.2%	1.1%	3.8%	1.4%	1.0%	1.8%
Wood - Treated	Decrease	1.5%	1.3%	1.7%	4.5%	3.4%	5.6%	4.9%	2.9%	7.8%	5.0%	3.7%	6.5%
Asphalt Pavement, Brick, Rock, and Concrete [2]	Decrease	0.3%	0.2%	0.4%	1.1%	0.7%	1.6%						
Asphalt Roofing [2]		0.1%	<0.1%	0.2%	0.2%	0.0%	0.4%	5.4%	2.5%	10.0%	4.0%	2.9%	5.3%
Drywall/Gypsum Board [2]		0.1%	<0.1%	0.2%	0.5%	0.1%	0.8%						
Carpet and Carpet Padding [2]	Decrease	0.8%	0.6%	1.0%	2.3%	1.5%	3.1%						
Plastic	**Increase**	**16.6%**	**16.1%**	**17.0%**	**14.5%**	**13.5%**	**15.4%**	**13.2%**	**10.9%**	**15.8%**	**10.4%**	**9.3%**	**11.4%**
#1 PET IA Deposit Beverage Containers	Increase	0.3%	0.3%	0.4%	0.1%	0.1%	0.1%	0.2%	0.2%	0.3%	0.2%	0.1%	0.2%
#1 PET Beverage Containers	Increase	1.0%	0.9%	1.0%	0.6%	0.6%	0.7%	0.5%	0.4%	0.6%	0.3%	0.2%	0.4%
#2 HDPE Containers Natural [3]		0.4%	0.4%	0.4%	0.3%	0.2%	0.3%						
#2 HDPE Containers Colored [3]		0.6%	0.6%	0.7%	0.5%	0.4%	0.6%	1.3%	1.0%	1.6%	0.9%	0.8%	1.0%
Plastic Retail Shopping Bags [4]	Increase	1.1%	1.1%	1.2%	0.4%	0.3%	0.5%						
Other Film Plastic [4]	Increase	6.4%	6.2%	6.6%	5.4%	4.9%	6.0%	5.3%	4.3%	6.5%	3.9%	3.4%	4.5%
Other #1 PET Containers		0.5%	0.4%	0.5%	0.3%	0.3%	0.4%	0.4%	0.3%	0.6%	N/A	N/A	N/A
#3-#7 Plastic Containers	Increase	2.1%	2.0%	2.2%	0.9%	0.8%	1.0%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Containers		0.5%	0.5%	0.6%	0.7%	0.5%	0.8%	0.5%	0.4%	0.6%	0.7%	0.6%	0.9%
Expanded Polystyrene		0.8%	0.7%	0.9%	0.7%	0.5%	0.9%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Products	Decrease	2.8%	2.5%	3.1%	4.5%	4.0%	5.0%	5.0%	4.0%	6.2%	4.4%	3.9%	5.0%
Durable		**1.5%**	**1.2%**	**1.8%**	**2.8%**	**1.4%**	**4.2%**	**2.0%**			**2.3%**		
Cell Phones and Chargers		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Central Processing Units/Peripherals		0.1%	<0.1%	0.3%	0.6%	0.1%	1.1%	0.0%	0.0%	0.1%	N/A	N/A	N/A
Computer Monitors/T.V.s		<0.1%	<0.1%	<0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Electrical and Household Applications		1.3%	1.1%	1.6%	2.1%	1.0%	3.2%	2.0%	1.1%	3.4%	2.3%	1.7%	3.0%

Table 14. Comparison of 2017 Study Results to Prior Studies – Residential (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Household Hazardous Materials		**0.5%**	**0.4%**	**0.6%**	**0.4%**	**0.2%**	**0.5%**	**0.5%**			**1.1%**		
Automotive Products[5]		0.3%	0.2%	0.3%	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.2%	0.4%
Household Cleaners[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Paints and Solvents[5]					0.0%	0.0%	0.1%	0.2%	0.1%	0.4%	0.2%	0.1%	0.2%
Pesticides, Herbicides, Fungicides[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead Acid Batteries		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercury Containing Products		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Lithium Batteries		<0.1%	<0.1%	<0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Batteries		0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.5%	0.1%	0.1%	0.2%
Sharps		<0.1%	<0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.6%
Prescription Medications		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A	N/A	N/A
Other	**Increase**	**14.6%**	**13.5%**	**15.8%**	**12.4%**	**11.1%**	**13.8%**	**11.3%**			**13.7%**		
Other Organic	Increase	5.6%	4.9%	6.3%	4.6%	3.9%	5.2%	2.2%	1.6%	3.0%	1.8%	1.4%	2.3%
Other Inorganic	Increase	0.8%	0.6%	0.9%	0.2%	0.1%	0.4%	3.9%	2.8%	5.4%	1.9%	1.4%	2.4%
Other C&D[2]	Decrease	0.3%	0.2%	0.5%	0.9%	0.6%	1.3%	N/A	N/A	N/A	N/A	N/A	N/A
Other Durable	Decrease	0.8%	<0.1%	1.4%	3.1%	1.7%	4.5%	1.6%	1.0%	2.7%	4.1%	2.8%	5.7%
Other HHM	Increase	0.7%	<0.1%	1.5%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%
Fines	Increase	6.4%	6.1%	6.7%	3.5%	3.2%	3.8%	3.6%	2.8%	4.6%	5.8%	5.0%	6.6%
Other		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Total		**100.0%**			**100.0%**			**100.0%**			**100.0%**		

[1] Food Waste was split into two categories in 2017; Loose Food and Packaged Food

[2] The material Demolition/Renovation/Construction (2005) has been split into Asphalt Pavement, Brick, Rock, and Concrete; Asphalt Roofing; Drywall/Gypsum Board; Carpet and Carpet Padding; and Other C&D for the 2011 and 2017 studies.

[3] The material #2 HDPE Containers (2005) has been split into #2 HDPE Containers Natural and #2 HDPE Containers Colored for the 2011 and 2017 studies.

[4] The material Film/Wrap/Bags (2005) has been split into Retail Shopping Bags and Other Film Plastic for the 2011 and 2017 studies.

[5] The material components Automotive Products, Household Cleaners, Paints and Solvents, Pesticides, Herbicides, Fungicides have been merged into one Chemicals category for 2017.

Table 15. Comparison of 2017 Study Results to Prior Studies – ICI

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Paper		**27.9%**	**26.7%**	**29.0%**	**29.3%**	**26.3%**	**32.3%**	**34.0%**	**29.6%**	**38.8%**	**32.5%**	**28.8%**	**36.1%**
Compostable Paper	Increase	8.4%	7.9%	9.0%	6.1%	4.8%	7.3%	5.4%	4.3%	6.8%	N/A	N/A	N/A
High Grade Office Paper		1.0%	0.8%	1.2%	1.2%	0.7%	1.7%	3.4%	2.4%	4.6%	1.9%	1.5%	2.3%
Magazines/Catalogs		1.3%	1.1%	1.5%	0.9%	0.6%	1.2%	1.1%	0.8%	1.5%	1.2%	0.9%	1.5%
Mixed Recyclable Paper	Increase	5.7%	5.3%	6.1%	3.1%	2.6%	3.6%	6.0%	5.0%	7.2%	4.0%	3.2%	4.8%
Newsprint		1.2%	1.0%	1.3%	1.4%	1.0%	1.8%	2.3%	1.7%	3.2%	1.5%	1.1%	1.8%
Non-Recyclable Paper		3.5%	3.0%	4.0%	3.1%	2.1%	4.1%	3.4%	2.7%	4.5%	10.7%	8.7%	12.8%
OCC and Kraft Paper	Decrease	5.9%	5.0%	6.8%	13.2%	10.5%	15.9%	12.4%	9.8%	15.3%	13.2%	11.0%	15.5%
Aseptic/Gable Top Paper Containers	Increase	0.7%	0.6%	0.9%	0.3%	0.2%	0.4%	N/A	N/A	N/A	N/A	N/A	N/A
Metal		**3.8%**	**3.3%**	**4.3%**	**4.9%**	**2.7%**	**7.0%**	**4.9%**	**3.8%**	**6.2%**	**5.2%**	**4.3%**	**6.5%**
Aluminum Beverage Containers		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
Aluminum IA Deposit Beverage Containers	Increase	0.5%	0.4%	0.6%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%
Ferrous Food and Beverage Containers		0.7%	0.6%	0.8%	0.7%	0.4%	0.9%	0.8%	0.5%	1.2%	2.0%	1.5%	2.6%
Other Aluminum Containers		0.3%	0.2%	0.4%	0.3%	0.1%	0.4%	0.1%	0.0%	0.1%	N/A	N/A	N/A
Other Ferrous Scrap Metals		1.9%	1.5%	2.4%	1.7%	1.2%	2.1%	3.4%	2.4%	4.6%	2.4%	1.8%	3.1%
Other Non-Ferrous Scrap Metals		0.3%	0.1%	0.5%	2.2%	0.0%	4.3%	0.4%	0.3%	0.5%	0.7%	0.5%	0.9%
Glass	**Increase**	**1.8%**	**1.3%**	**2.3%**	**1.1%**	**0.8%**	**1.4%**	**1.0%**	**0.8%**	**1.4%**	**3.3%**	**2.3%**	**4.3%**
Blue Glass		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Brown Glass		0.1%	<0.1%	0.3%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%
Clear Glass		0.6%	0.5%	0.7%	0.4%	0.3%	0.5%	0.4%	0.3%	0.6%	0.6%	0.4%	0.7%
Glass Deposit Containers	Increase	0.7%	0.5%	0.8%	0.1%	0.1%	0.2%	0.2%	0.1%	0.3%	0.3%	0.2%	0.4%
Green Glass		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Other Mixed Cullet		0.4%	<0.1%	0.8%	0.4%	0.2%	0.6%	0.3%	0.2%	0.5%	2.3%	1.5%	3.1%
Organic	**Increase**	**29.9%**	**28.1%**	**31.6%**	**20.4%**	**17.9%**	**22.8%**	**17.8%**			**15.4%**		
Pumpkins		N/A	N/A	N/A	N/A	N/A	N/A	0.4%	0.2%	0.8%	0.1%	0.0%	0.1%
Yard Waste		1.3%	0.9%	1.7%	1.9%	1.3%	2.6%	0.7%	0.4%	1.1%	0.8%	0.5%	1.0%
Food Waste - Loose [1]	Increase	15.5%	14.3%	16.6%	13.1%	10.9%	15.4%	10.3%	8.1%	13.1%	10.2%	8.2%	12.5%
Food Waste - Packaged [1]	Increase	6.5%	5.4%	7.5%									
Textiles and Leather		3.0%	2.4%	3.7%	2.7%	1.8%	3.6%	4.8%	3.2%	6.8%	2.5%	1.9%	3.2%
Diapers	Increase	2.4%	1.9%	2.9%	1.3%	0.9%	1.7%	0.9%	0.6%	1.2%	0.8%	0.6%	1.0%
Rubber		1.2%	0.8%	1.6%	1.3%	0.6%	2.1%	0.7%	0.5%	1.0%	1.0%	0.8%	1.4%

Table 15. Comparison of 2017 Study Results to Prior Studies – ICI (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Construction and Demolition	**Decrease**	**6.6%**	**5.3%**	**7.8%**	**15.6%**	**12.1%**	**19.1%**	**14.9%**			**14.6%**		
Wood - Untreated	Decrease	0.8%	0.2%	1.3%	7.9%	4.8%	10.9%	4.7%	3.4%	6.3%	4.7%	3.5%	6.1%
Wood - Treated		2.9%	2.1%	3.7%	3.3%	2.4%	4.1%	4.6%	3.2%	6.6%	3.8%	2.7%	5.0%
Asphalt Pavement, Brick, Rock, and Concrete [2]	Increase	0.9%	0.6%	1.2%	0.4%	0.2%	0.5%						
Asphalt Roofing [2]		0.3%	<0.1%	0.6%	1.3%	0.0%	2.6%	5.6%	3.7%	8.2%	6.1%	4.4%	8.2%
Drywall/Gypsum Board [2]		0.4%	0.2%	0.6%	1.4%	0.5%	2.4%						
Carpet and Carpet Padding [2]		1.4%	0.8%	1.9%	1.4%	0.5%	2.4%						
Plastic		**19.8%**	**18.1%**	**21.4%**	**18.4%**	**15.6%**	**21.3%**	**16.1%**	**13.5%**	**19.1%**	**18.6%**	**15.5%**	**21.7%**
#1 PET IA Deposit Beverage Containers	Increase	0.4%	0.4%	0.4%	0.2%	0.1%	0.2%	0.2%	0.1%	0.3%	0.1%	0.1%	0.1%
#1 PET Beverage Containers	Increase	1.3%	1.2%	1.4%	0.3%	0.3%	0.4%	0.4%	0.3%	0.5%	0.2%	0.1%	0.2%
#2 HDPE Containers Natural [3]	Increase	0.5%	0.4%	0.6%	0.3%	0.2%	0.3%						
#2 HDPE Containers Colored [3]	Increase	0.6%	0.5%	0.7%	0.3%	0.2%	0.3%	0.8%	0.6%	1.0%	1.1%	0.8%	1.3%
Plastic Retail Shopping Bags [4]	Increase	0.6%	0.5%	0.7%	0.2%	0.1%	0.2%						
Other Film Plastic [4]	Increase	8.9%	8.2%	9.6%	7.1%	5.9%	8.4%	7.6%	6.0%	9.4%	4.6%	3.8%	5.5%
Other #1 PET Containers	Increase	0.5%	0.3%	0.6%	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
#3-#7 Plastic Containers	Increase	2.4%	2.2%	2.6%	0.5%	0.4%	0.6%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Containers		0.5%	0.4%	0.6%	1.4%	0.0%	3.1%	0.2%	0.2%	0.3%	1.1%	0.8%	1.4%
Expanded Polystyrene		0.8%	0.7%	0.9%	2.1%	0.0%	4.3%	N/A	N/A	N/A	N/A	N/A	N/A
Other Plastic Products	Decrease	3.3%	1.8%	4.8%	5.9%	4.1%	7.7%	6.8%	5.5%	8.4%	11.5%	9.0%	14.2%
Durable		**1.3%**	**1.0%**	**1.7%**	**1.9%**	**0.9%**	**2.9%**	**2.5%**			**1.3%**		
Cell Phones and Chargers	Increase	0.2%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Central Processing Units/Peripherals		0.2%	<0.1%	0.3%	0.1%	0.0%	0.3%	0.1%	0.0%	0.1%	N/A	N/A	N/A
Computer Monitors/TVs		0.2%	<0.1%	0.2%	0.5%	0.1%	0.8%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Electrical and Household Applications		0.8%	0.6%	1.0%	1.2%	0.4%	2.0%	2.4%	1.4%	3.6%	1.3%	0.9%	1.7%

Table 15. Comparison of 2017 Study Results to Prior Studies – ICI (Continued)

Material Categories and Components	Statistically Significant Increase/ Decrease	2017 Results			2011 Results			2005 Results			1998 Results		
		Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit
Household Hazardous Materials	**Increase**	**0.4%**	**0.3%**	**0.6%**	**0.2%**	**0.1%**	**0.2%**	**0.1%**			**1.4%**		
Automotive Products[5]		0.2%	<0.1%	0.3%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.3%	0.2%	0.3%
Household Cleaners[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Paints and Solvents[5]					0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.3%	0.2%	0.3%
Pesticides, Herbicides, Fungicides[5]					0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead Acid Batteries		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercury Containing Products		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A
Lithium Batteries		<0.1%	<0.1%	<0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Batteries		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
Sharps		<0.1%	<0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.6%	1.1%
Prescription Medications		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A	N/A	N/A
Other		**8.6%**	**7.7%**	**9.6%**	**8.3%**	**7.0%**	**9.6%**	**8.5%**			**8.0%**		
Other Organic		2.8%	2.2%	3.4%	2.1%	1.5%	2.7%	0.9%	0.6%	1.3%	1.7%	1.2%	2.2%
Other Inorganic	Increase	0.7%	0.4%	0.9%	0.3%	0.1%	0.4%	1.3%	0.9%	2.0%	1.9%	1.2%	2.6%
Other C&D[2]		0.9%	0.3%	1.5%	1.2%	0.7%	1.6%	N/A	N/A	N/A	0.0%	0.0%	0.0%
Other Durable	Decrease	0.6%	0.2%	1.0%	1.2%	0.8%	1.7%	4.0%	2.5%	6.1%	1.4%	0.9%	1.9%
Other HHM		<0.1%	<0.1%	<0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%
Fines		3.4%	3.1%	3.8%	2.7%	2.0%	3.4%	1.4%	1.2%	1.8%	2.9%	2.2%	3.5%
Other		0.2%	<0.1%	0.5%	0.8%	0.1%	1.5%	0.8%	0.4%	1.3%	N/A	N/A	N/A
Total		**100.0%**			**100.0%**			**100.0%**			**100.0%**		

[1] Food Waste was split into two categories in 2017; Loose Food and Packaged Food.

[2] The material Demolition/Renovation/Construction (2005) has been split into Asphalt Pavement, Brick, Rock, and Concrete; Asphalt Roofing; Drywall/Gypsum Board; Carpet and Carpet Padding; and Other C&D for the 2011 and 2017 studies.

[3] The material #2 HDPE Containers (2005) has been split into #2 HDPE Containers Natural and #2 HDPE Containers Colored for the 2011 and 2017 studies.

[4] The material Film/Wrap/Bags (2005) has been split into Retail Shopping Bags and Other Film Plastic for the 2011 and 2017 studies.

[5] The material components Automotive Products, Household Cleaners, Paints and Solvents, Pesticides, Herbicides, Fungicides have been merged into one Chemicals category for 2017.

4.3 TOP 10 PREVALENT MATERIAL COMPONENTS

This section provides a comparison of the top 10 material components that were calculated to comprise the largest portions of the disposed waste stream by weight.

4.3.1 Overall MSW

Table 16 provides a listing of the top 10 most predominant material components as calculated for each of the IDNR statewide waste characterization studies for the overall MSW waste stream. The mean percentages are shown in the table along with the cumulative percent of these 10 material components. These materials have consistently accounted for about two-thirds of the waste disposed of in Iowa.

Table 16. Predominant Material Components - Overall MSW

2017		2011		2005		1998	
Percent	Material	Percent	Material	Percent	Material	Percent	Material
20.0	Food Waste[1]	13.3	Food Waste	10.6	Food Waste	10.7	Food Waste
8.7	Plastic Film[2]	9.0	OCC and Kraft Paper	8.5	OCC and Kraft Paper	10.3	Non-Rec. Paper
7.6	Compostable Paper	6.7	Plastic Film[2]	7.0	Mixed Rec. Paper	8.5	OCC and Kraft Paper
6.1	Mixed Rec. Paper	6.1	Compostable Paper	6.6	Plastic Film[2]	7.5	Other Plastic Products
4.8	Fines	5.4	Untreated Wood	6.5	Compostable Paper	5.4	Mixed Rec. Paper
4.6	OCC and Kraft Paper	5.4	Construction/ Demolition[3]	6.0	Other Plastic Products	5.2	Fines
4.1	Other Organic	5.3	Other Plastic Products	5.5	Construction/ Demolition[3]	4.8	Construction/ Demolition[3]
4.1	Textiles and Leather	4.6	Yard Waste	4.9	Textiles and Leather	4.8	Plastic Film[2]
3.5	Diapers	4.1	Textiles and Leather	4.6	Wood - Treated	4.2	Textiles and Leather
3.1	Other Plastic Products	3.8	Wood - Treated	4.0	Newsprint	3.6	Wood - Treated
66.6%	**2017 Cumulative Percent**	**63.7%**	**2011 Cumulative Percent**	**68.4%**	**2005 Cumulative Percent**	**65.0%**	**1998 Cumulative Percent**

[1] Food Waste was divided into food waste - loose and food waste - packaged in 2017.

[2] Film/Wrap/Bags was split into retail shopping bags and other film plastic in 2011 and 2017.

[3] Demolition/Renovation/Construction material category was divided into asphalt pavement; brick, rock, and concrete; asphalt roofing; drywall/gypsum board; carpet and carpet padding; and other C&D in 2011 and 2017.

Five material components have ranked in the top 10 for each of the four statewide waste characterization studies, including:

- Food waste
- Plastic film
- OCC and Kraft paper
- Textiles and leather
- Other plastic products

Most of these materials, with the exception of plastic film, could potentially be diverted for reuse, recycling, and composting.

Two material components made the top 10 list for the first time in 2017: Other organics and diapers. These materials are not readily marketable and recoverable from the waste stream and it is difficult to understand why these materials are now making this list.

One factor likely to have an impact on these materials and the waste composition in general is that waste disposal tonnages have increased in 2017 to the highest level since waste characterization studies were commissioned by IDNR. Also, it appears that certain recyclable materials (i.e. OCC and Kraft paper) appear to be diverted in higher quantities in 2017 than in the past. This means the remaining waste components not being diverted at higher levels comprise a larger portion of the disposed waste stream.

4.3.2 Residential

Table 17 provides a listing of the top 10 most predominant material components as calculated for each of the IDNR statewide waste characterization studies for the residential waste stream. The mean percentages are shown in the table along with the cumulative percent of these 10 material components. In 2017, the cumulative proportion of the residential waste stream these materials comprised is nearly seven percentage points higher than in 2011.

Table 17. Predominant Material Components – Residential

2017		2011		2005		1998	
Percent	Material	Percent	Material	Percent	Material	Percent	Material
17.9	Food Waste[1]	13.6	Food Waste	11.2	Food Waste	10.8	Food Waste
7.6	Plastic Film[2]	7.8	Yard Waste	7.9	Mixed Recyclable Paper	9.6	Non-Recyclable Paper
6.8	Compostable Paper	6.2	Compostable Paper	5.7	Newsprint	6.1	Mixed Recyclable Paper
6.5	Mixed Rec. Paper	5.9	Textiles and Leather	5.4	Textiles and Leather	5.8	Fines
6.4	Fines	5.4	Plastic Film[2]	5.4	Construction/ Demolition	5.5	Textiles and Leather
5.6	Other Organics	5.0	Construction/ Demolition[3]	5.3	Plastic Film[2]	5.0	Wood - Treated
5.3	Textiles and Leather	4.6	Other Organic	5.0	Other Plastic Products	4.6	Other Ferrous Scrap Metals
4.8	Diapers	4.5	Mixed Rec. Paper	4.9	Wood - Treated	4.4	Other Plastic Products
4.7	Yard Waste	4.5	Wood - Treated	4.1	Diapers	4.2	Newsprint
3.0	OCC and Kraft Paper	4.5	Other Plastic Products	3.9	Other Inorganic	4.1	OCC and Kraft Paper
68.6%	**2017 Cumulative Percent**	**62.0%**	**2011 Cumulative Percent**	**58.8%**	**2005 Cumulative Percent**	**60.1%**	**1998 Cumulative Percent**

[1] Food Waste was divided into food waste - loose and food waste - packaged in 2017.

[2] Film/Wrap/Bags was split into retail shopping bags and other film plastic in 2011 and 2017.

[3] Demolition/Renovation/Construction material category was divided into asphalt pavement; brick, rock, and concrete; asphalt roofing; drywall/gypsum board; carpet and carpet padding; and other C&D in 2011 and 2017.

Three material components have made the top 10 list for the residential waste stream, including food waste, mixed recyclable paper, and textiles and leather, for all four studies. The proportion of the waste stream that includes food has been increasing since the 1998 study, although for 2017 an over four percent increase was observed (faster than previous rates). Much like with the overall waste stream, factors such as an increase in the amount of waste disposed and increased diversion of key recyclable materials may be impacting this observed increase.

A couple of other interesting notes on the residential waste stream include:

- **Wood – Treated –** This material component no longer made the top 10 list for the first time in 2017; its calculated composition of 1.5 percent in 2017 is significantly below what was observed in 2011, 2005, and 1998;

- **Yard Waste –** Yard waste made the top 10 list in 2011 for the first time when it comprised 7.8 percent of the waste stream. Although still on the list in 2017, its proportion is significantly decreased at 4.7 percent. Yard waste has been banned from disposal in Iowa since 1991;

- **Construction/Demolition –** these materials, which in 2011 and 2017 included asphalt pavement, brick, rock, concrete; asphalt roofing; drywall/gypsum board; carpet and carpet padding; and other construction/demolition, comprise a far less proportion of the waste stream in 2017 (1.7 percent) compared to 2011 and 2005 when this material component made the top 10 list.

4.3.3 ICI

Table 18 provides a listing of the top 10 most predominant material components as calculated for each of the IDNR statewide waste characterization studies for the ICI waste stream. The mean percentages are shown in the table along with the cumulative percent of these 10 material components. For the ICI waste stream, the cumulative proportion of the top 10 materials has consistently comprised of just over two-thirds of the waste stream since the first study in 1998.

Table 18. Predominant Material Components – ICI

2017		2011		2005		1998	
Percent	Material	Percent	Material	Percent	Material	Percent	Material
21.9	Food Waste[1]	13.2	OCC and Kraft Paper	12.4	OCC and Kraft Paper	13.2	OCC and Kraft Paper
9.5	Plastic Film[2]	13.1	Food Waste	10.3	Food Waste	11.5	Other Plastic Products
8.4	Compostable Paper	7.9	Wood - Untreated	7.6	Plastic Film	10.7	Non-Rec. Paper
5.9	OCC and Kraft Paper	7.3	Plastic Film[2]	6.8	Other Plastic Products	10.2	Food Waste
5.7	Mixed Rec. Paper	6.1	Compostable Paper	6.0	Mixed Rec. Paper	6.1	Construction/ Demolition
3.8	Construction/ Demolition[3]	5.9	Other Plastic Products	5.6	Construction/ Demolition	4.7	Wood - Untreated
3.5	Non-Rec. Paper	5.7	Construction/ Demolition[3]	5.4	Compostable Paper	4.6	Plastic Film
3.4	Fines	3.3	Wood - Treated	4.8	Textiles and Leather	4.0	Mixed Rec. Paper
3.3	Other Plastic Products	3.1	Mixed Rec. Paper	4.7	Wood - Untreated	3.8	Wood - Treated
3.0	Textiles and Leather	3.1	Non-Rec. Paper	4.6	Wood - Treated	2.9	Fines
68.4%	**2017 Cumulative Percent**	**68.7%**	**2011 Cumulative Percent**	**68.2%**	**2005 Cumulative Percent**	**71.7%**	**1998 Cumulative Percent**

[1] Food Waste was divided into food waste - loose and food waste - packaged in 2017.

[2] Film/Wrap/Bags was split into retail shopping bags and other film plastic in 2011 and 2017.

[3] Demolition/Renovation/Construction material category was divided into asphalt pavement; brick, rock, and concrete; asphalt roofing; drywall/gypsum board; carpet and carpet padding; and other C&D in 2011 and 2017.

Six of the material components listed in the top 10 for the 2017 study have made the list for each of the previous three studies. These include food waste, plastic film, OCC and Kraft paper, mixed recyclable paper, construction/demolition, and other plastic products. All 10 materials on the list in 2017 have made a least one of the previous study's top 10 list.

The most significant difference in comparing the ICI waste stream composition across the four studies is that OCC and Kraft paper has changed from being the largest proportion of the waste stream in each of the previous studies to number four in 2017. Conversely, food waste, which has comprised no more than about 13 percent of the waste stream in previous studies, accounts for nearly 22 percent of the ICI waste stream.

Other top 10 material components that comprise a smaller portion of the ICI waste stream in 2017 compared to 2011 include other plastic products and construction/demolition.

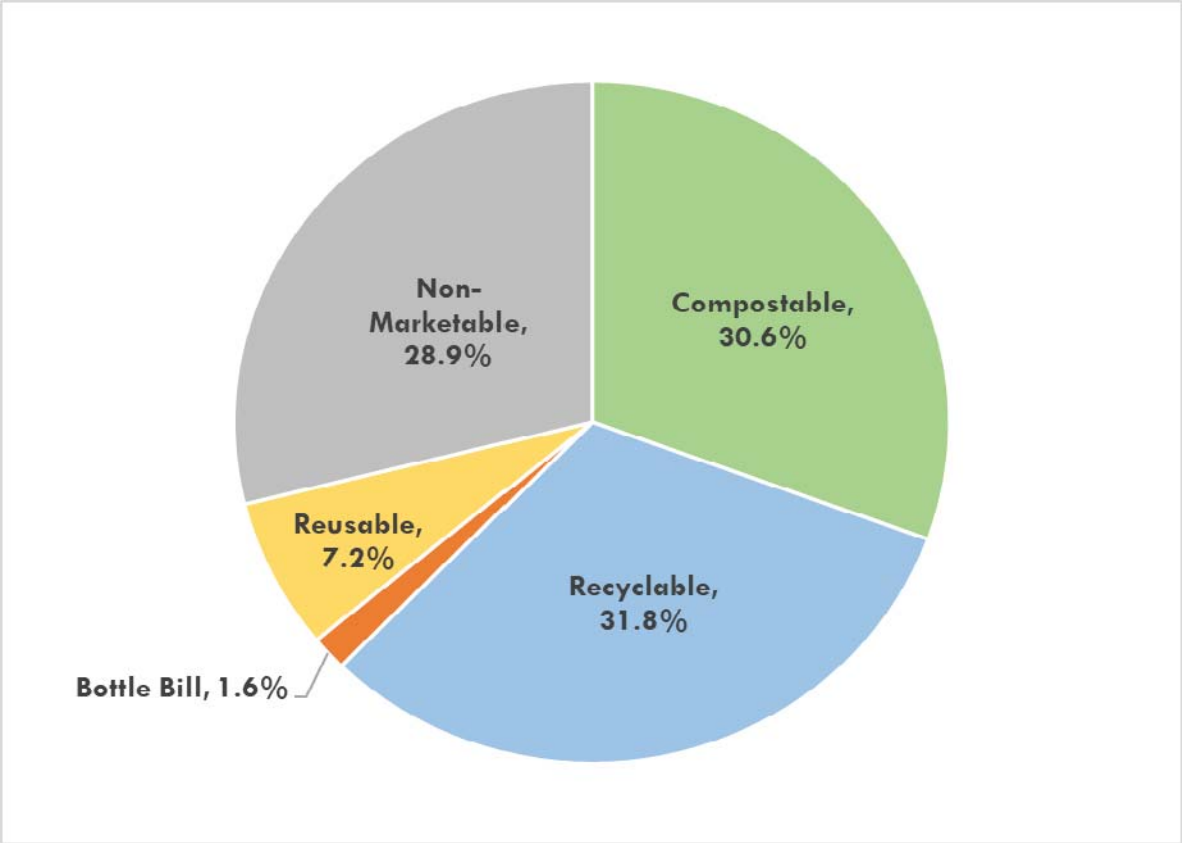
5.0 RECOVERABILITY ANALYSIS

This section analyzes the recoverability of the waste disposed of in Iowa for 2017. **Exhibit 9** provides a graphical representation of the overall waste stream disposed in Iowa. The 61 material components were classified as either reusable, recyclable, compostable, or non-marketable according to the following descriptions:

- **Reusable –** Materials that have the potential be donated and reused in their original or similar form; includes construction/demolition debris and textiles and leather
- **Recyclable –** Includes materials that are traditionally accepted in curbside or drop-off recycling programs such as aluminum cans, plastic bottles, glass containers, corrugated cardboard, and mixed paper
- **Compostable –** Encompasses materials that could be diverted for composting operations and includes materials such as food waste, yard waste, and compostable paper
- **Bottle Bill –** Includes aluminum, plastic, and glass containers that are covered under Iowa's container deposit redemption law (Bottle Bill)
- **Non-Marketable** – Includes materials that are typically not easily recyclable, markets are extremely limited, or are incapable of be recycled at this time including plastic film, other organics, fines, and diapers

Overall, the results of the 2017 study estimate that nearly 70 percent of the MSW disposed of in Iowa is divertible through increased reuse, recycling, and composting. The following sections provide more details on each of these segments of the waste stream.

Exhibit 9. Classifications of the Overall Waste Stream



5.1 REUSEABLE MATERIALS

Overall, 7.2 percent of the waste disposed of in Iowa are defined as reusable. **Table 19** summarizes the material components that are classified as reusable. **Exhibit 10** provides graphical representations of how each of the reusable material components comprise the overall, residential, ICI waste streams, respectively.

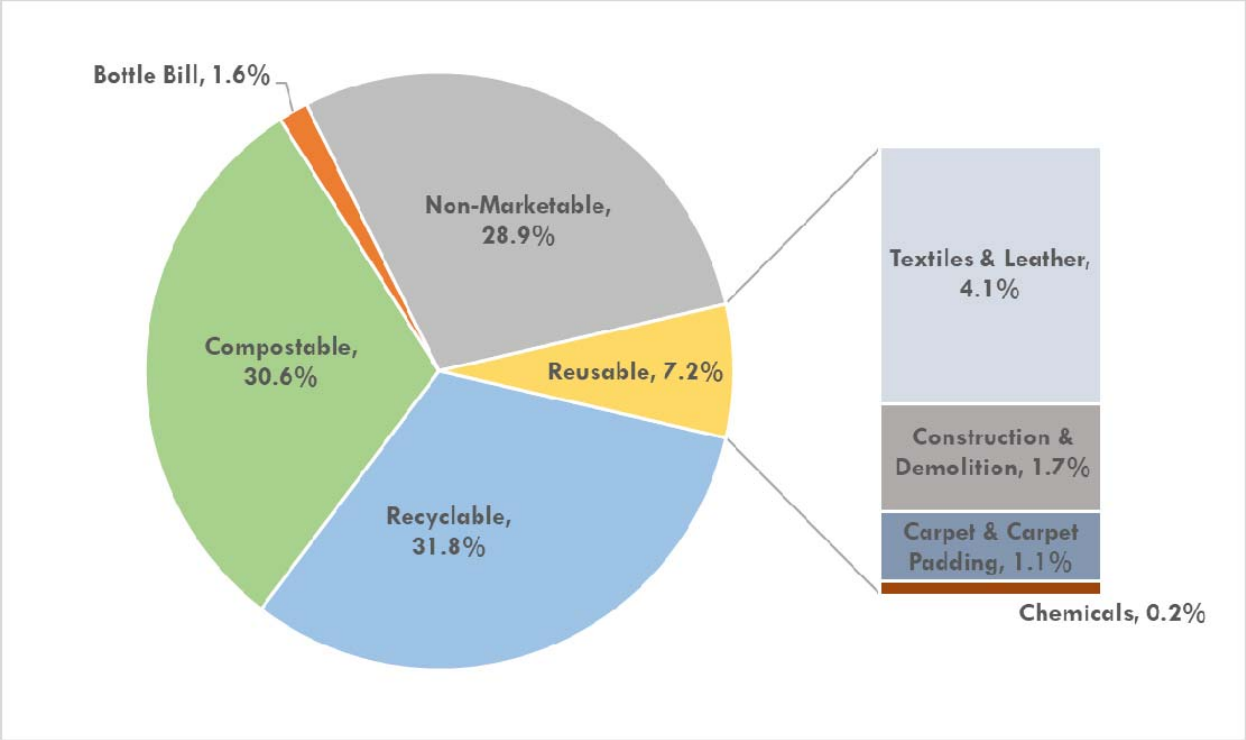
Table 19. Material Components Classified as Reusable

Material Components	
Textiles & Leather	Construction & Demolition Debris*
Carpet and Carpet Padding	Chemicals

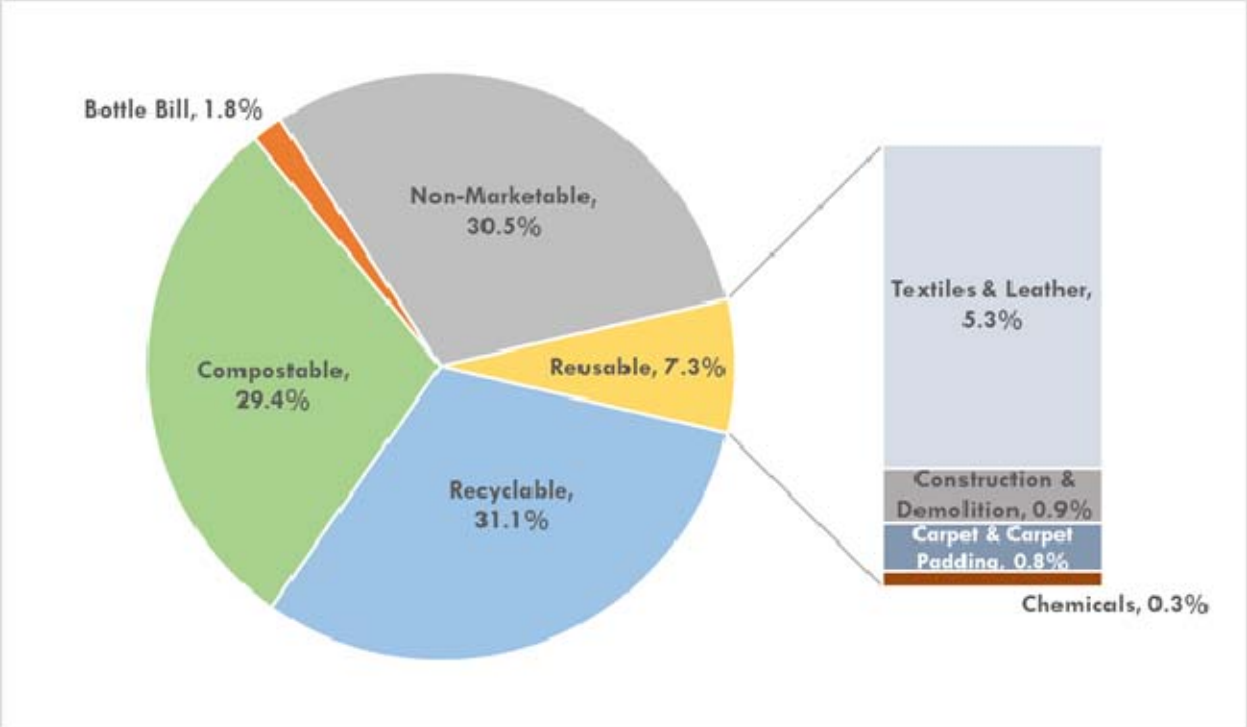
*Includes construction and demolition debris mixed with MSW waste samples; does not include source-separated construction and demolition debris; material categories included are asphalt pavement, brick, rock and concrete; asphalt roofing, drywall-gypsum board; and other construction and demolition debris

Exhibit 10. Reusable Portion of the Overall, Residential, and ICI Waste Stream

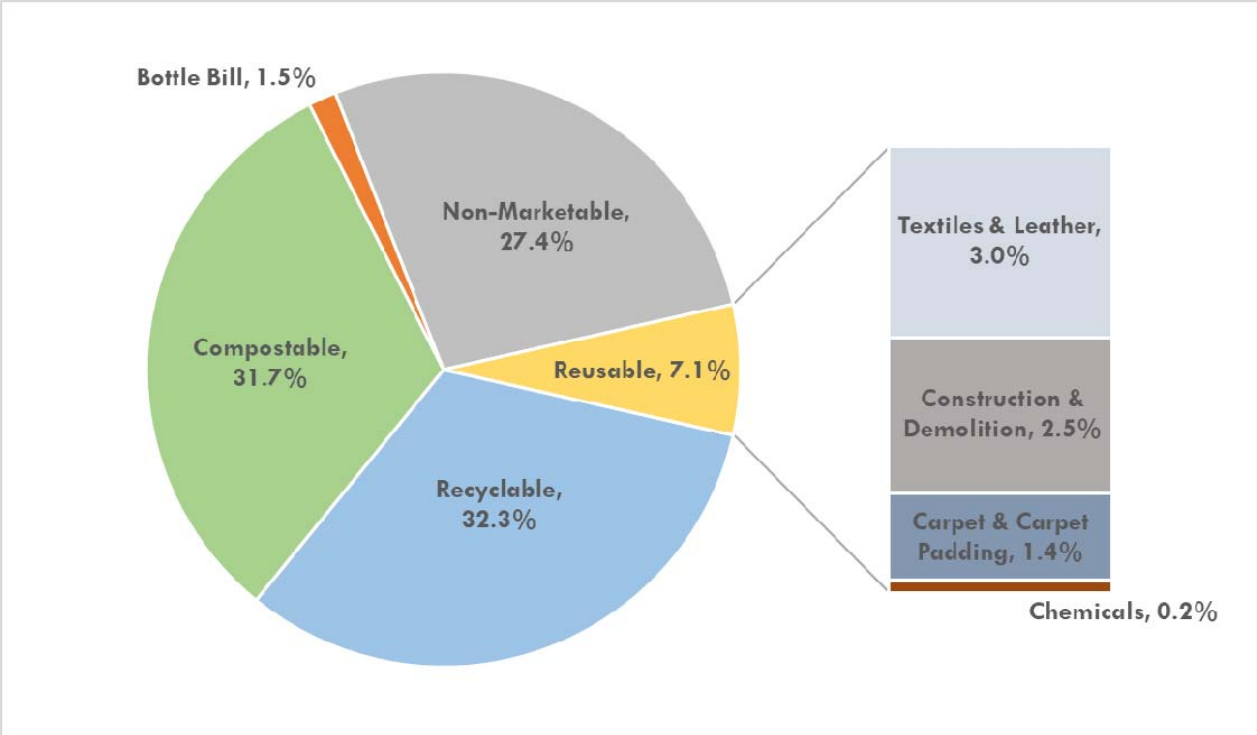
OVERALL



RESIDENTIAL



ICI



Note that the material components that are considered reusable is somewhat subjective. It is unlikely that all materials included in these categories would be in a condition for being reused. The overall takeaway is that materials disposed of in Iowa have the potential for reuse and existing and new reuse programs should be evaluated when considering opportunities for increasing waste diversion.

The total reusable portion of the waste stream is similar for both the residential and ICI generating sectors. However, the materials that comprise the portion of the reusable waste stream are different. For example, textiles and leather comprise 5.3 percent of the reusable residential waste stream whereas it only encompasses three percent of the ICI waste stream. The ICI waste stream includes 2.5 percent construction and demolition material and 1.4 percent for carpet and carpet padding, respectively. These amounts are higher than what was calculated for the residential waste stream (construction & demolition – 0.9 percent, carpet and carpet padding – 0.8 percent).

5.2 RECYCLABLE MATERIALS

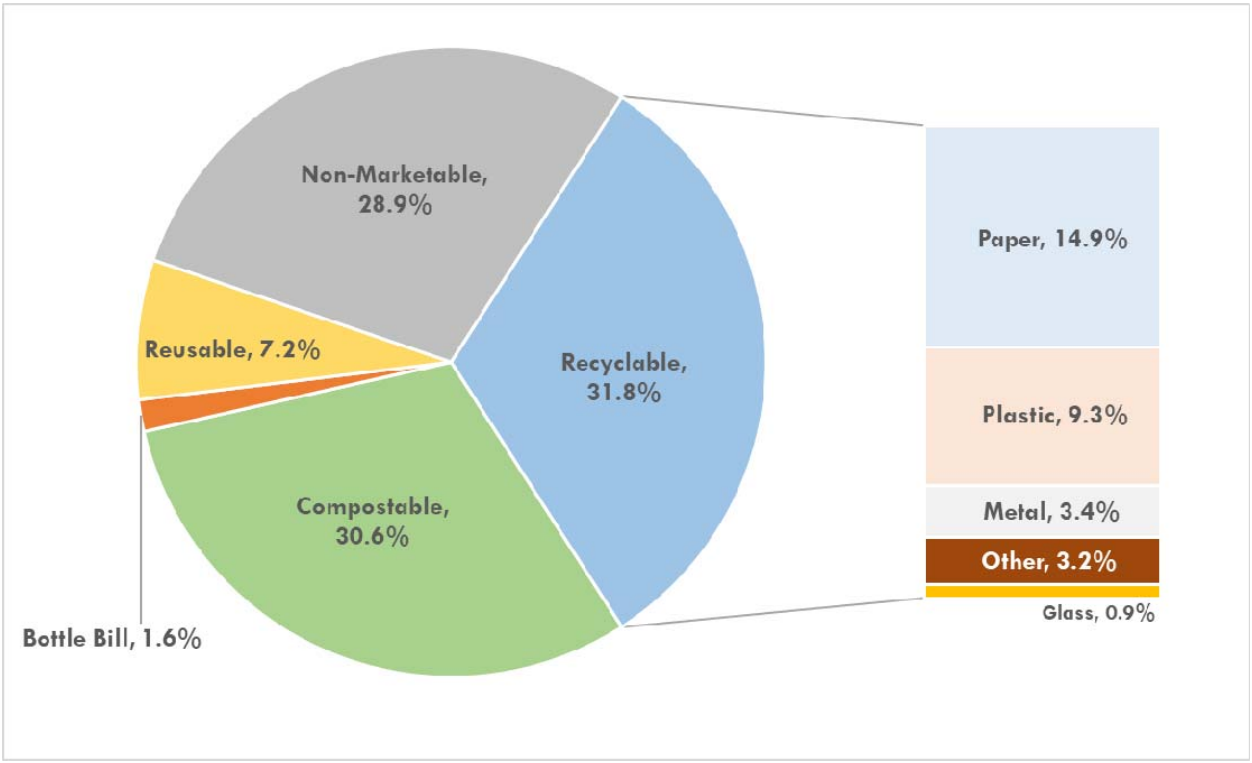
Overall, 31.8 percent of the waste disposed of in Iowa is identified as recyclable. **Table 20** lists the material components that are classified as recyclable. **Exhibit 11** provides graphical representations of how each of the recyclable material components comprise the overall, residential, and ICI waste streams, respectively. Most of the materials classified as recyclable are included in typical curbside and drop-off recycling programs. The materials classified as "other" recyclables are typically recycled as part of special waste recycling programs (i.e. durables, batteries, mercury containing products).

Table 20. Material Components Classified as Recyclable

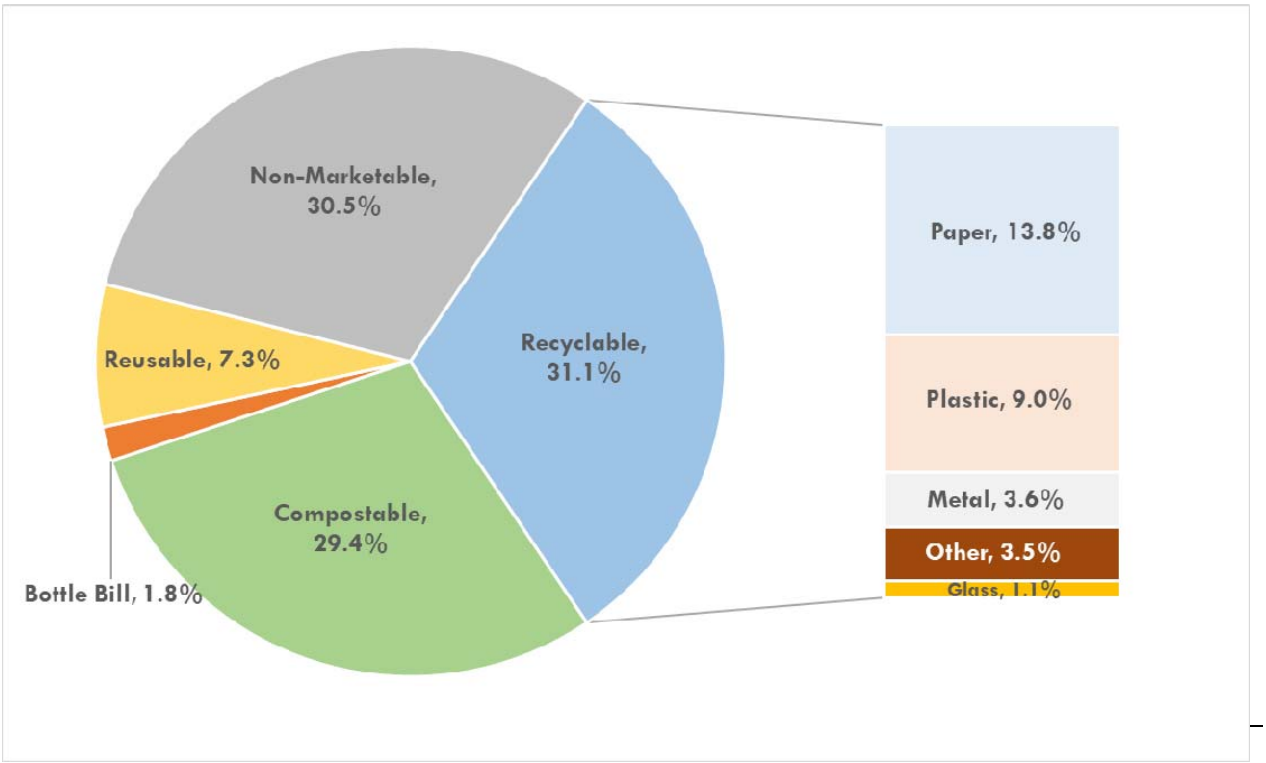
Material Components	
High grade office paper	Plastic containers #3-#7
Magazines/catalogs	Other plastic containers
Mixed recyclable paper	Other plastic products
Newsprint	Aluminum beverage containers
OCC and Kraft paper	Ferrous food and beverage containers
Aseptic/gable top containers	Other aluminum containers
#1 PET beverage containers	Other ferrous scrap metals
#2 HDPE containers natural	Other non-ferrous scrap metals
#2 HDPE containers colored	Durables
Retail shopping bags	Wood – untreated
Other #1 PET containers	Lead-acid batteries
Blue glass	Mercury containing products
Brown glass	Lithium batteries
Clear glass	Other batteries
Green glass	

Exhibit 11. Recyclable Portion of the Overall, Residential, and ICI Waste Stream

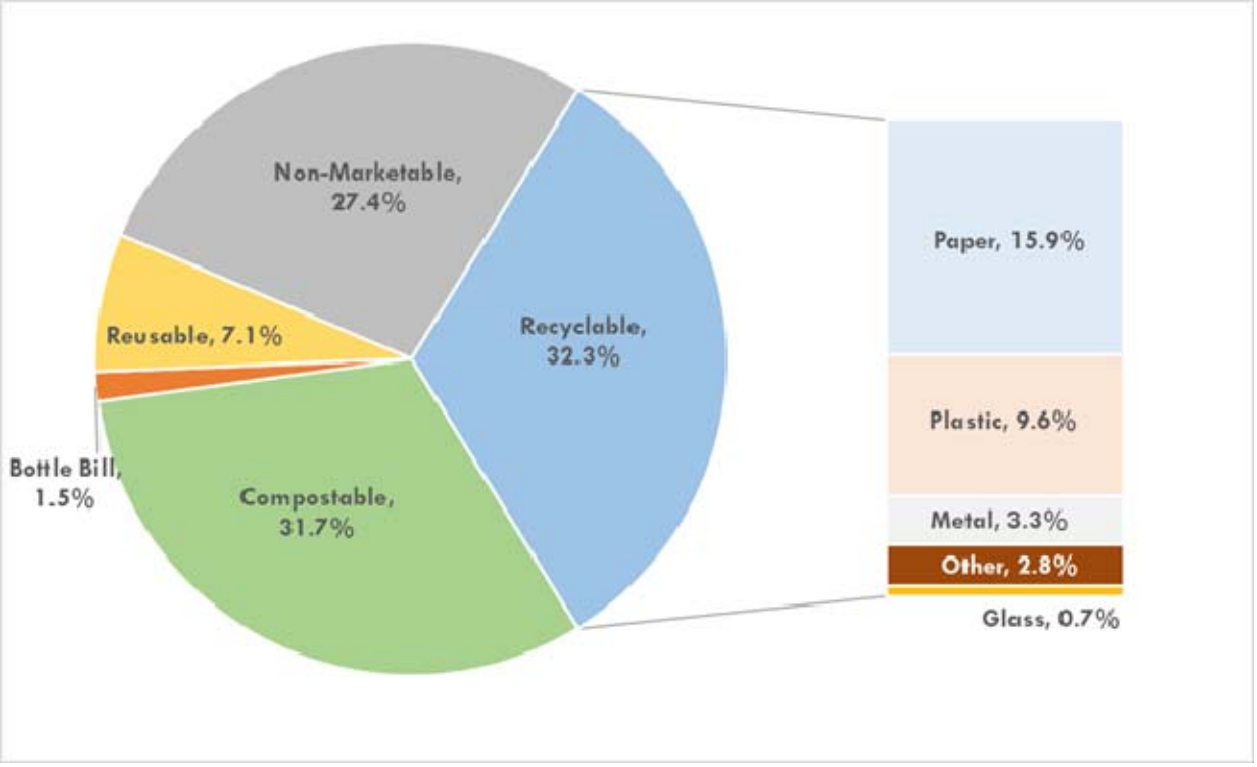
OVERALL



RESIDENTIAL



ICI



In comparing the residential and ICI waste streams, one finds that there is not a significant difference in the proportion of materials that comprise the recyclable segment of the waste stream (31.1 percent in residential and 32.3 percent in ICI). The biggest difference between the recyclable portion of the waste stream for the residential and ICI generating sectors is paper. Recyclable paper comprises about two percent more of the ICI waste stream than residential (15.9 percent vs. 13.8%). The increased amount of old corrugated cardboard (OCC) and Kraft paper is a large contributor to this discrepancy (5.9 percent of ICI vs. 3.0 percent of residential).

Recyclable plastic materials comprise slightly more of the ICI waste stream (9.6 percent) than residential (9.0 percent), whereas glass encompasses 1.1 percent of the recyclable residential waste stream compared to only 0.7 percent of the ICI waste stream.

5.3 COMPOSTABLE MATERIALS

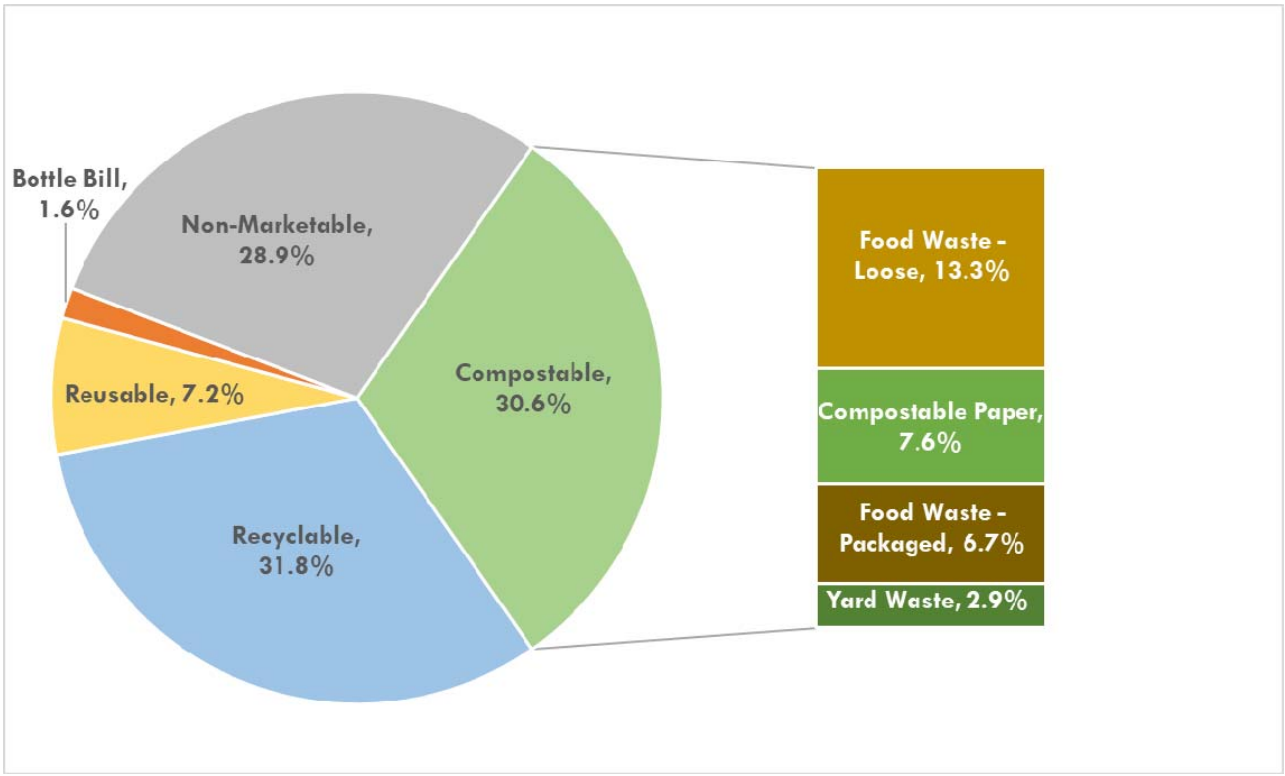
Overall, 30.6 percent of the waste disposed of in Iowa is identified as compostable. **Table 21** summarizes the material components that are classified as compostable. **Exhibit 12** provides graphical representations of how each of the compostable material components comprise the overall, residential, and ICI waste streams, respectively. Food waste – loose comprises the largest portion of the compostable waste stream at 13.3 percent followed by compostable paper at 7.6 percent, and food waste – packaged at 6.7 percent.

Table 21. Material Components Classified as Compostable

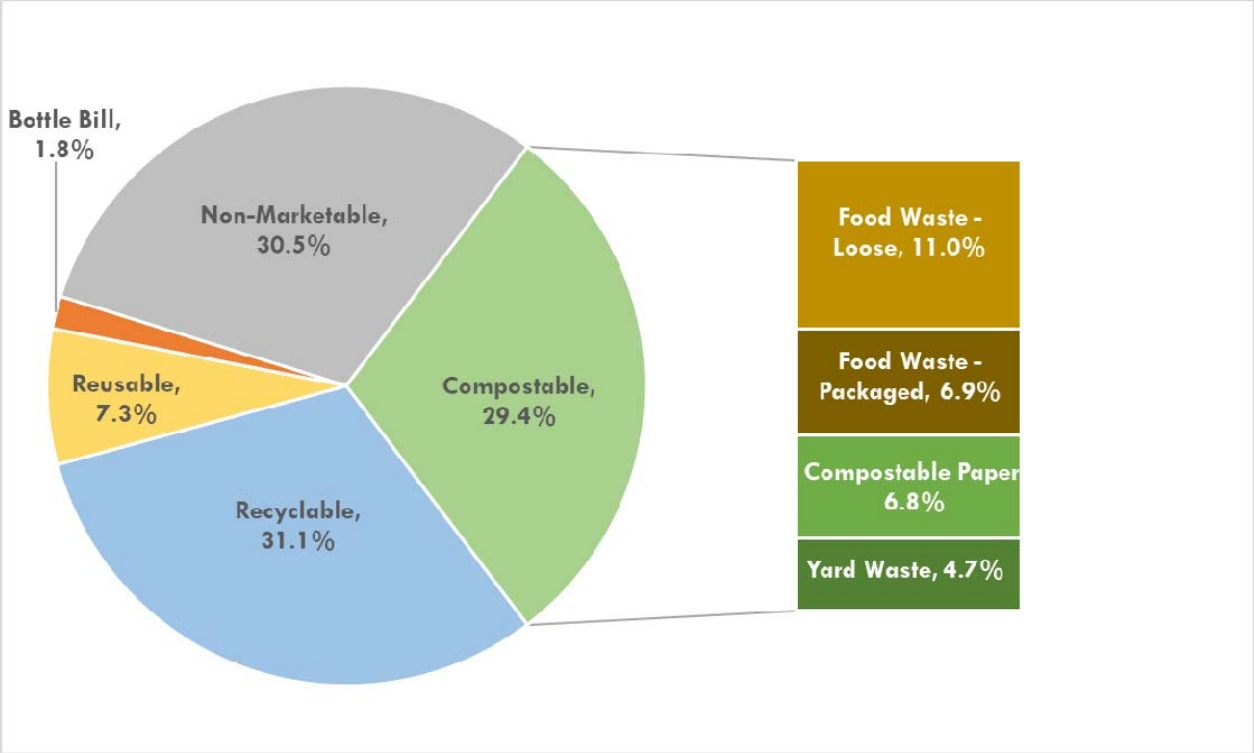
Material Components	
Compostable paper	Yard waste
Food waste – loose	Food waste – packaged

Exhibit 12. Compostable Portion of the Overall, Residential, and ICI Waste Stream

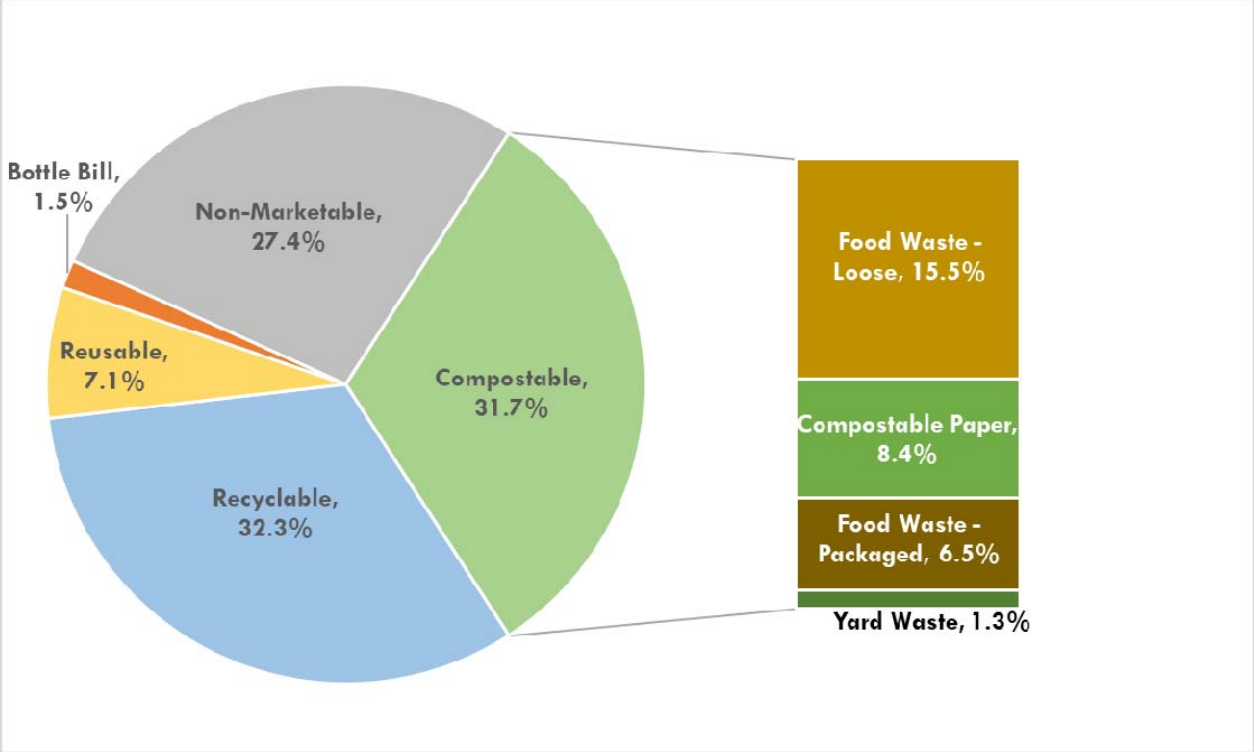
OVERALL



RESIDENTIAL



ICI



The majority of the compostable fraction of the waste stream for both the residential and ICI generating sectors is food waste – both packaged and loose. It is estimated that food waste comprises about four percent more of the ICI waste stream (22 percent, includes both loose and packaged) than residential (17.9 percent, includes both loose and packaged). Loose food waste encompasses the largest portion of the compostable fraction of the waste stream for both generating sectors (15.5 percent for ICI and 11 percent for residential). Packaged food, that is food contained in its original manufacturers packaging, comprises 6.9 percent of the residential waste stream and 6.5 percent of the ICI waste stream. Compostable paper comprises 8.4 percent of the ICI waste stream making it a larger portion of the ICI compostable waste stream than food waste packaged. Compostable paper encompasses 6.8 percent of the residential waste stream, making it very similar to the proportion of packaged food waste disposed of by the residential generating sector.

Finally, yard waste comprises 4.7 percent of the residential waste stream, which is about three percent higher than what was measured to be in the ICI waste stream (1.3 percent).

5.4 NON-MARKETABLE MATERIALS

The analysis above provides details on the over 70 percent of the waste stream disposed of in Iowa than could potentially be diverted from disposal. This section provides some details on the 28.9 percent of the Iowa waste stream that is classified as non-marketable. SCS identified those materials for which no markets exist or markets are developing, but not yet widespread across the Upper Midwest. It is possible that in the future markets will exist to make it economically and environmentally sound to divert these materials, but at this time it would be difficult to locate such markets.

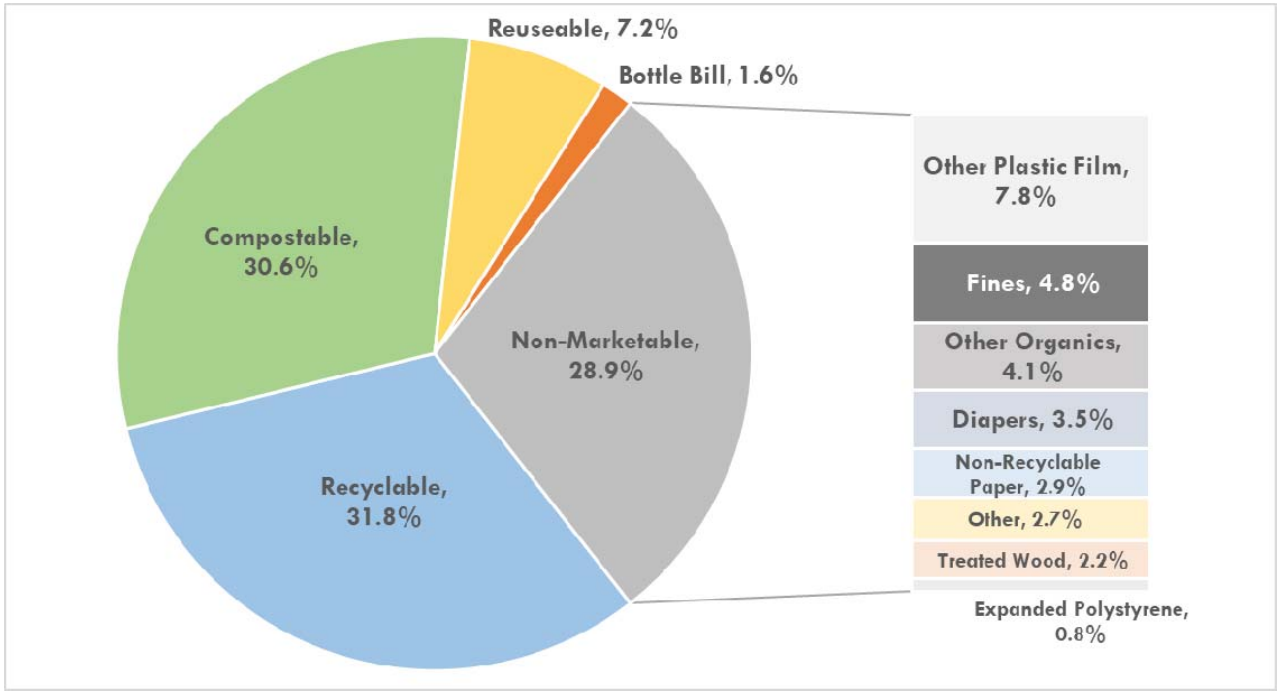
Table 22 summarizes the material components that are classified as non-marketable. **Exhibit 13** provides graphical representations of how each of the non-marketable material components comprise the overall, residential, and ICI waste streams, respectively.

Table 22. Material Components Classified as Non-Marketable

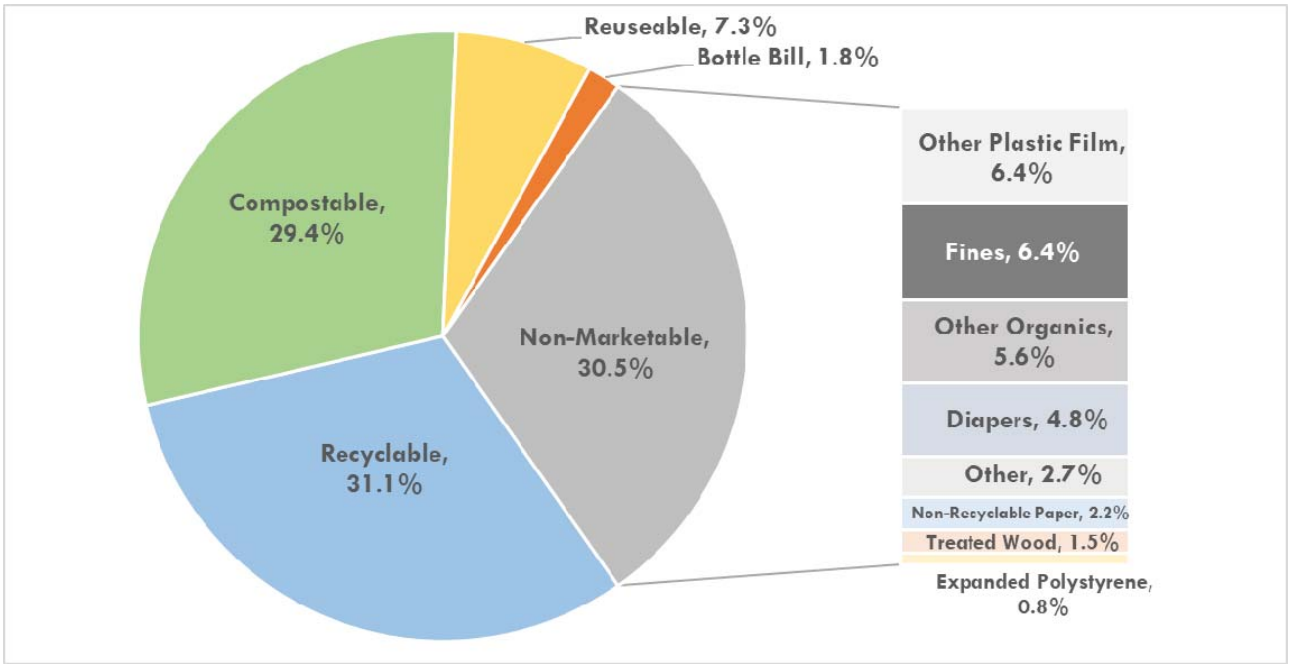
Material Components	
Non-recyclable paper	Other plastic film
Expanded polystyrene	Other mixed cullet
Wood – treated	Sharps
Prescription medications	Other organics
Other inorganics	Other HHMs
Fines	Other

Exhibit 13. Non-Marketable Portion of the Overall, Residential, and ICI Waste Stream

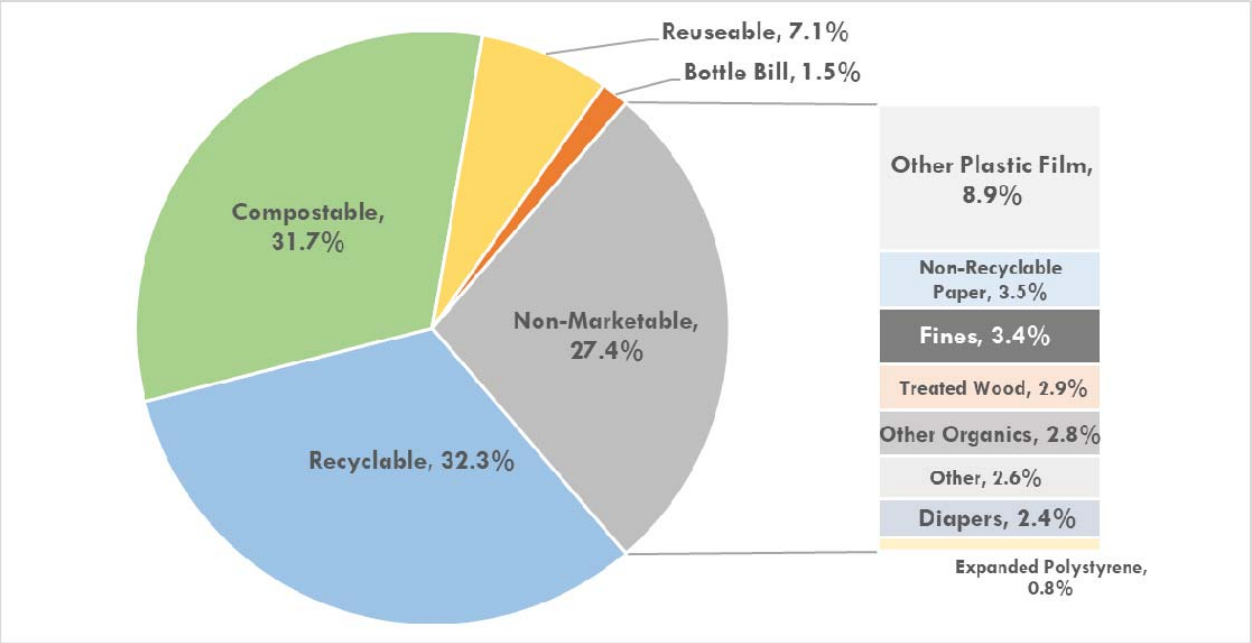
OVERALL



RESIDENTIAL



ICI



Other plastic film comprises the largest portion of the non-marketable ICI waste stream at 8.9 percent. Other plastic film and fines each comprise 6.4 percent of the residential waste stream, which makes those material components the largest portions of the non-marketable waste. Other plastic film is used in significant quantities for the packaging of food and other goods. Despite the material being lightweight, it still comprises the largest portion of the non-marketable waste stream by weight.

Other notable materials that comprise larger portions of the non-marketable residential waste stream include other organics (5.6 percent) and diapers (4.8 percent). Other materials that encompass the larger portions of the ICI waste stream include non-recyclable paper (3.5 percent), fines (3.4 percent), treated wood (2.9 percent), and other organics (2.8 percent). For complete definitions of all materials sorted in this study please refer to **Appendix A**.

5.5 TOP MATERIAL COMPONENTS

Table 23 provides a summary of the top five material components in the overall, residential and ICI waste streams. This table designated each of the top five materials as being either recyclable (R), compostable (C), or non-marketable (NM). The percentage in the last line of the table indicates the cumulative percentage of the waste stream for the top five most prevalent materials.

Table 23. Top Five Material Components

No.	Overall MSW	Residential	ICI
1	**Food Waste**[1] 20.0% (C)	**Food Waste**[1] 17.9% (C)	**Food Waste**[1] 21.9% (C)
2	**Plastic Film**[2] 8.6% (R, NM)	**Plastic Film**[2] 7.6% (R, NM)	**Plastic Film**[2] 9.5% (R, NM)
3	**Compostable Paper** 7.6% (C)	**Compostable Paper** 6.8% (C)	**Compostable Paper** 8.4% (C)
4	**Mixed Recyclable Paper** 6.1% (R)	**Mixed Recyclable Paper** 6.5% (R)	**OCC & Kraft Paper** 5.9% (R)
5	**OCC and Kraft Paper**[3] 4.6% (R)	**Other Organics**[4] 5.6% (NM)	**Mixed Recyclable Paper** 5.7% (R)
TOTAL	**46.9%**	**44.4%**	**51.4%**

[1] Includes both "loose" food and "packaged" food categories
[2] Includes "other plastic film" and plastic "retail bags" categories
[3] Fines comprised 4.8 percent of the overall MSW waste stream
[4] Fines comprised 6.4 percent of the residential waste stream

The five material components that comprise the largest portion of the overall, residential, and ICI waste streams are similar. The top three materials are the same for each generating sector – food waste, plastic film, and compostable paper. For the overall waste stream and the residential generating sector, mixed recyclable paper represents the fourth largest portion of the waste stream. Rounding out the top five most prevalent material components is OCC and Kraft paper (4.6 percent) for the overall MSW waste stream and other organics (5.6 percent) for the residential waste stream. For the ICI waste generating sector, OCC and Kraft paper (5.9 percent) represents the fourth largest portion of the waste stream followed by mixed recyclable paper at 5.7 percent.

6.0 ECONOMIC IMPACT OF INCREASED DIVERSION

Diverting waste from disposal increases revenue, creates jobs, and reduces greenhouse gas emissions. This section quantifies the economic and environmental impacts by disposing of recyclable materials in the State of Iowa.

6.1 REVENUE IMPACTS

Using waste composition data from the 2017 study and disposal tonnage data from 2016 as reported by the IDNR[4], SCS estimated the quantity of select recyclable materials in the waste stream. The materials analyzed are summarized in **Table 24**.

Table 24. Recyclable Material Components Evaluated

Paper	Plastic	Metal	Glass
High-Grade Office Paper	#1 PET Containers	Aluminum Beverage Containers	Brown Glass
Magazines/Catalogs	#2 HDPE Containers (natural and colored)	Aluminum IA Deposit Beverage Containers	Clear Glass
Mixed Recyclable Paper	#3-#7 Plastic Containers	Ferrous Food and Beverage Containers	Glass IA Deposit Containers
Newsprint	Other Plastic Containers		Green Glass
OCC and Kraft Paper	Other Plastic Products		
Aseptic/Gable Top Containers			

Using the online recycling market database, www.recyclingmarkets.net, maintained by Recycling Markets Limited, SCS obtained average commodity pricing for selected material components based on the most recent average regional market price (October 2017) for the Midwest/Central region of the country. Commodity pricing and the estimated quantity of recyclable materials disposed of were used to calculate the potential revenue received from the recovery of these materials. **Table 25** summarizes the results of this analysis and calculations.

[4] Iowa Department of Natural Resources, Tonnage Data, accessed from http://www.iowadnr.gov/Environmental-Protection/Land-Quality/Solid-Waste/Tonnage-Data on October 20, 2017; estimated 65 percent or 1,846,639 tons of the waste disposal tonnage is MSW

Table 25. Estimated Value of Disposed Recyclable Materials

Material Components		Estimated Tons Disposed[1]	Average Market Price ($/ton)[2]	Estimated Total Market Value ($)
Recyclable Paper	High Grade Office Paper	16,400	$210	$3,444,000
	Magazines/Catalogs	27,800	$88	$2,432,500
	Mixed Recyclable Paper	112,200	$33	$3,646,500
	Newsprint	23,900	$38	$896,250
	OCC and Kraft Paper	84,200	$108	$9,051,500
	Aseptic/Gable Top Containers	11,100	$85	$943,500
	Subtotal	**275,700**		**$20,414,250**
Recyclable Containers	#1 PET IA Deposit Beverage Containers	6,800	$295	$2,006,000
	#1 PET Beverage Containers	20,900	$295	$6,165,500
	#2 HDPE Containers Natural	8,600	$635	$5,461,000
	#2 HDPE Containers Colored	11,200	$340	$3,808,000
	Other #1 PET Containers	8,600	$295	$2,537,000
	Plastic Containers #3-#7	41,200	$20	$824,000
	Other Plastic Containers	9,300	$20	$186,000
	Other Plastic Products	56,500	$50	$2,825,000
	Aluminum Beverage Containers	1,600	$1,370	$2,192,000
	Aluminum IA Deposit Beverage Containers	7,700	$1,370	$10,549,000
	Ferrous Food and Beverage Containers	14,800	$163	$2,405,000
	Brown Glass	1,600	$28	$44,000
	Clear Glass	14,900	$31	$461,900
	Glass IA Deposit Containers	15,600	$28	$429,000
	Green Glass	200	$10	$2,000
	Subtotal	**219,600**		**$39,895,400**
	TOTAL	**495,300**		**$60,309,650**

1 Based on estimated overall MSW waste composition for 2017 and IDNR's reported waste disposal tonnage for calendar year 2016 (assumes 65 percent of waste tonnage reported is MSW - 1,846,639 tons).

2 Based on the average October 2017 price index from RecyclingMarkets.net for the Midwest/Central region.

SCS estimates that 275,700 tons of recyclable paper was disposed of in Iowa in 2016. The market value of those materials is estimated to be 20.4 million dollars. For recyclable containers, it is estimated that 219,600 tons was disposed of in 2016. The value of the recyclable containers is estimated to be nearly 40 million dollars. Overall, over 495,300 tons of recyclable materials is estimated to be disposed of in Iowa in 2016. The value of that material is estimated to be 60.3 million dollars.

Note that the revenue estimates provided in **Table 25** estimate the value of recovering all the material components listed in the table. It is not possible to recover 100 percent of these materials. The revenue estimates are provided to illustrate the significant value of the materials disposed of in Iowa and cannot be used to quantify the actual revenue that can be realized.

Also, the average commodity price estimates are for the Midwest/Central region as a whole. Local variations in market value may cause the revenue from the sale of recyclable material to be lower or higher. For example, some recovered glass in Iowa is received by Ripple Glass where currently no revenue is generated from the sale of the material.

6.2 JOB IMPACTS

Diverting recyclable materials from disposal has a significant impact on the number of jobs sustained in the waste management industry. On a per ton basis, the sorting and processing of recyclable materials alone creates 10 time more jobs than disposing of the same materials in a landfill or incinerator[5]. The increased number of jobs results from all phases of the recycling process -- from collection to processing to manufacturing or reuse. This section estimates the potential number of jobs that could be created if select recyclable materials currently disposed of in Iowa were diverted for recycling and/or composting.

There are a number of reports that estimate recycling's impact on job creation. SCS used the job creation estimates from a report provided by the Natural Resources Defense Council and written by the Tellus Institute titled, *More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.*[6], to calculate the number of jobs that could potentially be created through increased recycling. This report uses a number of methods and sources to estimate the number of jobs created at different phases in the recycling or composting process. These employment estimates were then extrapolated for the recyclable materials in Iowa's waste stream to estimate the number of jobs that could be supported by diverting these materials for manufacturing or reuse (**Table 26, Table 27**). For comparison, SCS estimated the number of jobs currently supported through the disposal of these recyclable materials (**Table 28**).

The calculations in **Table 26** estimate that over 5,900 jobs could be supported by diverting recyclable and compostable materials from disposal and instead using the materials as inputs in manufacturing processes. Job estimates are provided for collecting, processing, and manufacturing steps in the material value chain. The materials that are estimated have the most significant impact on jobs creation include plastics (2,280 jobs) and paper (2,160 jobs). Composting food scraps is estimated to support 800 jobs through collection and processing.

Table 27 provides estimates on the number of jobs that could potentially be created if the recyclable and compostable materials in the disposed waste stream were to be collected, processed, and reused. Material reuse is generally a more labor-intensive process and estimates indicate that 6,600 jobs could be supported through reuse. Plastics (3,860 jobs) and paper (1,010) contribute to the largest share of those jobs.

Note that if recyclable and compostable materials in the waste stream were to be diverted, it is likely the materials would be directed to a mix of manufacturing and reuse opportunities. The actual number of jobs created would be a combination of the two estimates depending on the percentage of each material directed to either manufacturing or reuse.

[5] Institute of Local Self-Reliance; Recycling Mean Business; 2002; access on October 23, 2017 from https://ilsr.org/recycling-means-business/

[6] More Jobs, Less Pollution: Growing the Recycling Economy in the U.S., Tellus Institute; accessed on October 23, 2017 from https://www.nrdc.org/sites/default/files/glo_11111401a.pdf.

Table 26. Estimated Job Creation by Diverting Recyclables for Manufacturing

Divertable Materials	Estimated Tons to Divert[1]	Diverted Waste				
		Estimated Jobs Creation				
		Coll.[2]	Proc.[2]	Mfg.[2]	Total	Estimate for Iowa[3]
		(jobs/1,000 tons)				
Paper	275,700	1.67	2.00	4.16	7.83	2,160
Glass	32,300	1.67	2.00	7.85	11.52	370
Ferrous Metal	14,800	1.67	2.00	4.12	7.79	120
Nonferrous Metal	9,300	1.67	2.00	17.63	21.30	200
Plastics	163,100	1.67	2.00	10.30	13.97	2,280
Food Scraps	370,100	1.67	0.50	--	2.17	800
TOTAL	**865,300**					**5,930**

1 Based on estimated overall MSW waste composition for 2017 and IDNR's reported waste disposal tonnage for calendar year 2016

2 More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.: Tellus Institute; accessed from the Natural Resources Defense Council on October 23, 2017 at https://www.nrdc.org/sites/default/files/glo_11111401a.pdf

3 Estimated number of jobs that could be supported by diverting key recyclable materials from waste disposal in Iowa

Table 27. Estimated Job Creation by Diverting Recyclables for Reuse

Divertable Materials	Estimated Tons to Divert[1]	Diverted Waste				
		Estimated Jobs Creation				
		Coll.[2]	Proc.[2]	Reuse/ Re-mfg[2]	Total	Estimate for Iowa[3]
		(jobs/1,000 tons)				
Paper	275,700	1.67	2.00	--	3.67	1,010
Glass	32,300	1.67	2.00	7.35	11.02	360
Ferrous Metal	14,800	1.67	2.00	20.00	23.67	350
Nonferrous Metal	9,300	1.67	2.00	20.00	23.67	220
Plastics	163,100	1.67	2.00	20.00	23.67	3,860
Food Scraps	370,100	1.67	0.50	--	2.17	800
TOTAL	**865,300**					**6,600**

1 Based on estimated overall MSW waste composition for 2017 and IDNR's reported waste disposal tonnage for calendar year 2016

2 More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.: Tellus Institute; accessed from the Natural Resources Defense Council on October 23, 2017 at https://www.nrdc.org/sites/default/files/glo_11111401a.pdf

3 Estimated number of jobs that could be supported by diverting key recyclable materials from waste disposal in Iowa

Table 28. Estimated Jobs Supported through Waste Disposal

Divertable Materials	Estimated Tons to Divert[1]	Disposed Waste			
		Estimated Jobs Creation			
		Coll.[2]	Disposal[2]	Total	Estimate for Iowa[3]
		jobs/1,000 tons)			
Paper	275,700	0.56	0.10	0.66	180
Glass	32,300	0.56	0.10	0.66	20
Ferrous Metal	14,800	0.56	0.10	0.66	10
Nonferrous Metal	9,300	0.56	0.10	0.66	10
Plastics	163,100	0.56	0.10	0.66	110
Food Scraps	370,100	0.56	0.10	0.66	240
TOTAL	**865,300**				**570**

1 Based on estimated overall MSW waste composition for 2017 and IDNR's reported waste disposal tonnage for calendar year 2016

2 More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.: Tellus Institute; accessed from the Natural Resources Defense Council on October 23, 2017 at https://www.nrdc.org/sites/default/files/glo_11111401a.pdf

3 Jobs supported through the disposal of recyclable and compostable materials

Disposing of the estimated 865,300 tons of recyclable and compostable materials supports 570 jobs through the collection and disposal of these materials. Diverting these materials for recycling and composting creates over 10 times more jobs than disposal. Additional jobs would result in increased spending and serve to provide the state and local governments with increased tax revenues that would spur additional economic activity outside the solid waste and recycling industry.

6.3 GREENHOUSE GAS IMPACTS

The impacts of disposing of recyclable materials go far beyond lost revenue and job creation. Disposing of recyclable materials prevents those materials from being reused or manufactured into new products. Using recycled materials in the manufacturing of new products and materials often results in energy and emission savings compared to producing those same products from virgin materials.

SCS estimated the energy and emissions impacts of disposing over 854,000 tons of recyclable paper and containers, and compostable materials annually in the state of Iowa. SCS used the U.S. EPA's Waste Reduction Model (WARM), Version 14[7] to estimate the emissions that could be reduced if these materials were instead diverted for recycling and composting. EPA created WARM to help solid waste planners quantify and track greenhouse gas emissions by material from different waste management practices. WARM calculates the greenhouse gas emissions from baseline and alternative waste management practices for users to gain an understanding of

[7] U.S. EPA Waste Reduction Model (WARM), Version 14, accessed from https://www.epa.gov/warm/versions-waste-reduction-model-warm#v14 on October 20, 2014)

how emissions would change if wastes were to be managed differently. The emission factors used in WARM were developed using life-cycle assessment techniques for developing national greenhouse gas inventories for different types of materials.

Table 29 summarizes the results of SCS's analysis of the emissions that could be reduced if the estimated quantities of recyclable and compostable materials disposed of in Iowa were alternatively diverted from disposal. Using WARM, SCS estimates that over 1.4 million metric tons of carbon dioxide equivalent ($MTCO_2E$) emissions could be reduced by recycling paper and containers and composting food waste as listed in the table. Over 850,000 $MTCO_2E$ could be reduced by recycling paper while over 287,000 emission reductions could be realized by diverting recyclable containers. Composting food scraps currently disposed would reduce emissions by over 266,000 $MTCO_2E$.

Table 29. WARM Results for Recyclable Materials Disposed of in Iowa

Material Components		Tons Recycled/ Composted[1]	Emissions Reduced ($MTCO_2E$)[2]
Recyclable Paper	Corrugated Containers	84,200	262,800
	Magazines	27,800	85,300
	Newspaper	23,900	65,700
	Office Paper	16,400	46,900
	Mixed Paper (general)	112,200	396,200
	Subtotal	**264,500**	**856,900**
Recyclable Containers	Aluminum Cans	9,300	84,700
	Steel Cans	14,800	26,800
	Glass	32,300	8,900
	HDPE	19,800	17,200
	PET	36,300	40,600
	Mixed Plastics	107,000	109,400
	Subtotal	**219,500**	**287,600**
Compostable	Food Waste	370,100	266,200
	Subtotal	**370,100**	**266,200**
	TOTAL	**854,100**	**1,410,700**

[1] Based on estimated overall MSW waste composition for 2017 and IDNR's reported waste disposal tonnage for calendar year 2016. Assumes this materials would be recycled instead of disposed.

[2] U.S EPA Waste Reduction Model, Version 14

These emission reductions result in energy savings that are the equivalent of any of the following:

- Removing the annual emissions from nearly 303,000 passenger vehicles;
- Conserving nearly 162 million gallons of gasoline;

- Conserving over 7,700 railcars of coal;
- Conserving nearly 60 million propone cylinders used in home barbeques.

Note that actual emission reductions may be impacted by the types of collection programs employed to collect and recover the materials. For example, materials may be recovered through curbside collection programs or drop-off convenience centers. Diversity in the types of recycling programs offered by local governments in Iowa could either result in greenhouse gas reductions, increases, or consistent emissions depending on existing programs and what program modifications are required in order to recover these materials.

Developing new programs and expanding existing programs that seek to divert these materials from the disposed waste stream will have an important and positive impact on economic development and environmental protection across the state.

7.0 CONCLUSIONS

This section summarizes some conclusions that can be drawn from the 2017 Study:

- **Comparability –** The 2017 study was designed to mirror previous IDNR waste characterization studies and in a broad sense these studies can be directly compared. However, each study was modified slightly to account for changes in the study's parameters. Data from the 2017 study was obtained from 10 host facilities with additional targeting of waste from five transfer stations. Material components analyzed for the 2017 closely mirrored the 2011 study; however, the 2017 did differentiate between food waste "loose" and food waste "packaged."

- **Comprehensiveness –** The 2017 study successfully characterized 524 solid waste samples at 10 host facilities throughout the State of Iowa. Of these samples, 275 samples were of residential waste and 249 samples were from the ICI generating sector. The facilities that participated in the study ranged in size from accepting several hundred thousand tons of solid waste annually to just over 10,000 tons – and everything in between. These facilities were geographically diverse in their location. Thus, the 2017 study provides a comprehensive snapshot of MSW disposed of in the State of Iowa.

- **Diversion Opportunities –** The 2017 study results show that about 70 percent of the waste disposed of in the State of Iowa could potentially be diverted through new and expanded reuse, recycling, and composting programs. This includes:

    - Recyclable – 33.4[8] percent;
    - Compostable 30.6 percent; and
    - Reusable – 7.2 percent.

This illustrates that the State needs to continue to grow and expand the variety of programs and policies that seek to divert waste from disposal. An additional 30 percent of the waste stream was classified as non-marketable. In some instances these materials could be recycled, but generally few markets exist at this time. The State may consider policies or programs to expand reuse and recycling programs for these material or encourage policies to reduce and eliminate the material from the waste stream.

[8] Includes 1.7 percent of the waste stream that is covered under Iowa container deposit law (i.e. bottle bill)

8.0 RECOMMENDATIONS

- **Continue Performing Statewide Waste Characterization Studies –** Iowa is one of only a small number of states that has been tracking the composition of solid waste disposed of in it. Over the last two decades these studies have provided the State and local governments with valuable information on how the waste stream is changing. This allows governments to make decisions on the programs and policies needed to reduce disposal, recover resources, and boost the economy. IDNR should continue carrying out these studies on an incremental basis to further track changes in the waste stream.

- **Seasonal Studies** – The State of Iowa may consider conducting a multi-season waste characterization study. Waste generation and disposal quantities and composition is known to fluctuate by season. Iowa, with very distinct four seasons, may benefit from a waste characterization study that spans two-to-four seasons in order to obtain detailed data on how the waste composition changes from one season to the next.

- **Modifying Waste Generating Sectors –** In future waste characterization studies, SCS recommends the State modify and define the types of properties that are included in the residential and ICI waste generating sectors:

    - **Residential –** It is recommended that the State look at characterizing solid waste generated at single family and multi-family properties separately. Oftentimes the programs and policies that successfully promote waste diversion at these properties are different. As Iowa continues to seek more and expanded programs to divert materials, SCS believes targeting multi-family properties for increased diversion may be warranted.

    - **ICI –** Properties that generate waste classified as ICI are varied and encompass a variety of different industries. As a result, the types of waste generated by these facilities is varied as well. The State of Iowa should consider splitting this category into "commercial/institutional" waste and "industrial" waste. The commercial/institutional waste generating sector would include wastes from office buildings, restaurants, shopping malls, colleges, and hospitals while the industrial waste stream would include waste originating from manufacturing facilities and factories. Commercial/institutional waste could be hand-sorted and the industrial waste, which is generally bulky, would be visually characterized.

- **Focus on Diverting Compostable Materials –** The four compostable material components, compostable paper; food waste – loose; food waste – packaged, and yard waste, comprise 30.6 percent of the disposed waste stream in 2017. This represents an over six percent increase of what was observed in 2011. Nationwide there continues to be growing interest in diverting materials for composting and other processing technologies. This interest is also prevalent in Iowa where municipalities and other organizations have been launching efforts to recover organic material, particularly food waste. For example, the City of Iowa City launched a curbside food waste collection program in early 2017, and Luther College and other institutions installed pulpers in their dining service cafeteria to capture food waste for composting. The opportunity for diverting compostable materials in Iowa is tremendous and the State should continue to work with local governments, non-governmental organizations,

and private companies to develop and expand programs to reduce and recover this significant portion of the waste stream.

- **Additional Materials to Target –** In addition to compostable materials, 2017 study data indicates significant opportunity exists to divert more paper materials, in particular OCC/Kraft paper and mixed paper. These materials are prime for diversion for the following reasons:

    - **Quantities –** These materials comprise some of the largest portions of the disposed waste stream (mixed recyclable paper – 6.1 percent and OCC/Kraft paper – 4.6 percent);

    - **Value –** The value of these disposed materials are some of the highest of all the recyclable materials (**Table 25**) and;

    - **Greenhouse Gas Emissions –** Diverting these materials from disposal result in the highest reductions in greenhouse gas emissions (**Table 29**).

- **Visual Characterization of Construction and Demolition Debris –** The 2017 study found that the portion of the MSW waste stream that represents construction and demolition debris decreased by eight percent from 2011 to 2017. However, this represents a very small fraction of the overall waste stream in Iowa as most construction and demolition debris is source-separated and disposed of either separately or mixed with MSW. Since this waste generating sector was not included in the 2017 study or previous studies, the IDNR may wish to obtain information on the composition of this material. This material can be visually characterized by experienced professionals that can estimate the percent composition by weight. Obtaining waste composition data on the construction and demolition debris is important for a number of reasons including:

    - Represents a significant portion of the waste stream;
    - Materials can often be reused and recycled;
    - No composition data exists on this segment of the waste stream

    Data from a construction and demolition debris characterization study would provide IDNR with baseline data for how these materials are managed and disposed of in the State. This data can be used to establish policies and programs to divert these materials from disposal, which can be used to further evaluate the success of implemented policies and program.

Appendix A

Material Definitions

APPENDIX A
MATERIAL DEFINITIONS

Material Category	No.	Material Component	Material Definition
PAPER	1	Compostable Paper	Low grade paper that could be composted; examples include uncoated paper towels, paper plate, napkins, tissues, and food-contaminated recyclable paper.
	2	High Grade Office Paper	The type of paper that is free of ground wood fibers; usually sulfite or sulphate paper; includes office printing and writing papers such as white ledger, color ledger, envelopes, and computer printout paper, bond, rag, or stationary grade paper. This subtype does not include fluorescent dyed paper or deep-tone dyed paper such a goldenrod colored paper.
	3	Magazines/Catalogs	Items made of glossy coated paper; this paper is usually slick, smooth to the touch, and reflects light. Examples include glossy magazines, catalogs, brochures, and pamphlets.
	4	Mixed Recyclable Paper	Other recyclable paper; examples include manila folders, manila envelopes, index cards, notebook paper, carbonless forms, junk mail, chipboard and uncoated paperboard, phone directories, non glossy catalogs, books and deep-toned or fluorescent dyed paper.
	5	Newsprint	Paper chiefly used for printing newspapers – i.e. uncoated ground wood paper includes glossy inserts.
	6	Non-Recyclable Paper	Items made mostly of paper but combined with large amounts of other materials such as plastic, metal, glues, foil, and moisture; examples include plastic coated corrugated cardboard, cellulose insulation, blueprints, sepia, onionskin, foiled lined fast food wrappers, frozen juice containers, carbon paper, self-adhesive notes, and photographs.
	7	OCC and Kraft Bags	Corrugated boxes or paper bags made from Kraft paper. Old Corrugated Cardboard has a wavy center layer and is sandwiched between the two outer layers; examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. This type does not include chipboard. Examples of Kraft paper include paper grocery bags, un-soiled fast food bags, department store bags, and heavyweight sheets of Kraft packing paper.
	8	Aseptic/Gable Top Paper Containers	Containers made from paper, polyethylene, and aluminum layers. Examples include non-refrigerated drinks and food containers such as juice boxes, soy milk containers, and tofu containers. Polycoated bleached paperboard boxes that contain ready-to-drink beverages such as milk or orange juice. May include plastic pour spouts as part of the carton. Excludes take-out containers.
METAL	9	Aluminum Beverage Containers	Beverage containers made from aluminum other than IA deposit containers.
	10	Aluminum IA Deposit Beverage Containers	Aluminum beverage containers subject to IA's container deposit law and marked as deposit container.
	11	Ferrous Food and Beverage Containers	Rigid containers made mainly of steel, such as food and beverage containers; these items will stick to a magnet and may be tin-coated.
	12	Other Aluminum Containers	Aluminum containers such as food containers, cat food cans, aluminum foil, empty aerosol cans, etc.
	13	Other Ferrous Scrap Metals	Any iron or steel that is magnetic; this subtype does not include non- food "tin/steel containers;" examples include empty or dry paint cans, structural steel beams, boilers, clothes hangers, pipes, some cookware, security bars, scrap ferrous items, and galvanized items such as nails and flashing.
	14	Other Non-Ferrous Scrap Metals	Metal items that are not magnetic including copper, brass, lead, zinc, etc.
GLASS	15	Blue Glass	Blue glass bottles and jars that do not have an IA deposit; these include wine bottles, nonalcoholic beverage containers, liquor bottles, food jars, etc.
	16	Brown Glass	Brown glass bottles and jars that do not have an IA deposit; these include beer and wine bottles, nonalcoholic beverage containers, liquor bottles, food jars, etc.
	17	Clear Glass	Clear glass bottles and jars that do not have an IA deposit; these include beer and wine bottles, nonalcoholic beverage containers, liquor bottles, food jars, etc.
	18	Glass Deposit Containers	Glass beverage containers subject to IA's bottle bill and marked as deposit containers in Iowa.
	19	Green Glass	Green glass bottles and jars that do not have an IA deposit; these include wine bottles, nonalcoholic beverage containers, liquor bottles, food jars, etc.
	20	Other Mixed Cullet	Glass that cannot be put in any other type. It may include items made mostly of glass but combined with other materials. Examples include Pyrex, Corning ware, crystal, plate glass, window and door glass, , ceramics, porcelain, and other glass tableware, mirrors, non-fluorescent light bulbs, auto windshields, laminated glass, or any curved glass.

APPENDIX A
MATERIAL DEFINITIONS

Material Category	No.	Material Component	Material Definition
ORGANIC	21	Yard Waste	Debris such as grass clippings, leaves, garden waste, brush, tree stumps and trees.
	22	Food Waste - Loose	Food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food; includes material from industrial, commercial, or residential sources; examples include discarded meat scraps, dairy products, eggshells, fruit or vegetable peels, and other food items from homes, stores and restaurants. Includes apple pomace and other processed residues or material from canneries, wineries or other industrial sources; does not include food discarded in its original store-bought or manufacturing packaging
	23	Food Waste - Packaged	Food material still in the original packaging; includes material from industrial, commercial, or residential sources. Examples include discarded meat scraps. Also includes, liquids drained from PET #1, HDPE #2, metal, or glass containers discarded as waste such as unconsumed soft drinks, water, milk, pickle juice, etc.; excludes any liquid not meant for human consumption.
	24	Textiles and Leather	Items composed of at least 50% natural or manmade textile and leather. Items such yarn, thread, clothing, apparel, shop rags, blankets, pillows, shoes, stuffed toys, backpacks, and in some cases suit/briefcases; includes leather items such as wallets, purses, belts, shoes, and scrap leather.
	25	Diapers	Adult or infant diapers; includes soiled absorbing bed covers and dog pads.
	26	Rubber	Natural or manmade rubber products such as hoses; foam rubber; latex or nitrile gloves; rubber bands and solid or pneumatic tires intended for use on any type of vehicle (including bicycles), or trailer to be used in tandem with any type vehicle.
CONSTRUCTION/DEMOLITION	27	Wood – Untreated	Refers to any wood which does not contain an adhesive, paint, stain, fire retardant, pesticide or preservative; includes such items as pallets, skids, spools, packaging materials, bulky wood waste or scraps from newly built wood products and wood pallets; does not include land clearing debris or yard waste pruning and trimmings.
	28	Wood – Treated	Wood that contains an adhesive, paint, stain, fire retardant, pesticide or preservative; includes all engineered wood.
	29	Asphalt Pavement, Brick, Rock, and Concrete	Includes asphalt pavement, brick, rock, and concrete from construction activities and demolition of buildings, roads, and bridges and similar sources; asphalt pavement includes other black or brown, tar-like material mixed with aggregate and used as a paving material; brick includes masonry brick, landscaping or walkway brick; concrete includes pieces of building foundations, concrete paving, and cinder blocks.
	30	Asphalt Roofing	Composite shingles and other roofing material made with asphalt; examples include asphalt shingles and attached roofing tar and tar paper.
	31	Drywall/Gypsum Board	Painted or unpainted interior wall covering made of a sheet of gypsum sandwiched between paper layers; examples include used or unused, broken or whole sheets of sheetrock, drywall, gypsum board, plasterboard, gypsum board, and wallboard.
	32	Carpet and Carpet Padding	Flooring applications consisting of various natural or synthetic fibers which maybe bonded to some type of backing material and plastic, foam, felt, or other material used under carpet to provide insulation and padding.
PLASTIC	33	#1 PET IA Deposit Beverage Containers	Plastic beverage containers subject to IA's container redemption law and marked as deposit container.
	34	#1 PET Beverage Containers	Clear or colored PET beverage bottles other than IA deposit containers (water, flavored water, juice, sports drinks, etc.); when marked for identification, it bears the number (1) in the center of the triangular recycling symbol and may also bear the letters (PETE) or (PET). A PET container usually has a small dot left from the manufacturing process, not a seam.
	35	#2 High Density Polyethylene (HDPE) Containers Natural	Plastic is usually cloudy white allowing light to pass through it; when marked for identification, it bears the number(2) in the triangular recycling symbol and may also bear the letters (HDPE).
	36	#2 High Density Polyethylene (HDPE) Containers Colored	Colored HDPE containers. This plastic is a solid color, preventing light from passing through it; when marked for identification, it bears the number (2) in the triangular recycling symbol and may also bear the letters (HDPE).
	37	Plastic Retail Shopping Bags	Plastic shopping bags, used to contain merchandise to transport from the place of purchase, given out by the store with the purchase.
	38	Other Film Plastic	Examples include garbage bags and other types of plastic bags (sandwich bags, zipper-re-closeable bags, produce bags, frozen vegetable bags), painting tarps, food wrappers such as candy-bar wrappers, mailing pouches, bank bags, X-ray film, metalized film (wine containers and balloons), plastic food wrap, and source contaminated commercial/industrial film.
	39	Other #1 PET Containers	Types of containers such as PET jars, rectangular, cups, or clam shell PET containers used for food, produce, egg cartons, etc.
	40	#3-#7 Plastic Containers	Plastic containers made of types of plastic other than HDPE or PET. Items may be made of PVC, PP, or PS. When marked for identification, these items may bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol. This subtype also includes unmarked plastic containers.
	41	Other Plastic Containers	All other non-film packaging that does not fit into the above categories including pails, cups, plant pots and flats, caps, closures, blister packs tubs, and other miscellaneous plastic packaging not listed above.
	42	Expanded Polystyrene	"Styrofoam" products includes food packaging and finished products made of expanded polystyrene including cups, plates, trays, clamshells, packaging products, including packing peanuts and other packaging materials.
	43	Other Plastic Products	Remainder or composite plastic composed of at least 50% plastic that is not identifiable as one of the categories above. Molded toys, plastic clothes hangers, corrugated plastic, plastic lawn furniture, disposable razors, kitchen ware, plastic hoses, drinking straws, credit cards, CD and DVDs, car parts, and writing pens.

APPENDIX A
MATERIAL DEFINITIONS

Material Category	No.	Material Component	Material Definition
DURABLE	44	Cell Phones and Chargers	Cellular phones and the related chargers.
	45	Central Processing Units/Peripherals	Includes computer CPUs, laptop computers, notebook computers, processors, printers, scanners, keyboards, etc. This category does not include automated typewriters or typesetters, portable handheld calculators, portable digital assistants or other similar devices with circuit boards.
	46	Computer Monitors/T.V.s	A stand-alone display system containing a CRT or any other type of display primarily intended to receive video programming via broadcast. Examples also include non-CRT units such as plasma and LCD monitors.
	47	Electrical and Household Appliances	Includes PODs, PDAs, small electronic appliances such as toasters, telephones, stereos, radios, clocks, hair dryers, microwaves, electric motors, alternators, etc.
HOUSEHOLD HAZARDOUS MATERIALS	48	Chemicals	Household and commercial products. Including products used to destroy or control organisms such as insects, plants, or fungus growth. Containers with fluids used in vehicles or engines. Containers with paint or solvents in them. Household cleaners that are toxic or corrosive. These products typically have either a high (>7.0) or low (,7.0) pH factor.
	49	Lead Acid Batteries	Lead acid storage batteries most commonly used in vehicles such as cars, trucks, boats, etc.
	50	Mercury Containing Products	Items or product that contain mercury. Items such as thermostats, thermometers, and light switches. This category also includes fluorescent light ballasts, which are devices that electrically control fluorescent light fixtures and that include a capacitor, CFLs, which are compact fluorescent bulbs, and other fluorescent lighting, which includes tubular fluorescent lamps, neon lamps, black lights, and other lamps used for sanitation or cosmetic purposes.
	51	Lithium Batteries	Lithium storage batteries most commonly used in cell phones.
	52	Other Batteries	Alkaline (including rechargeable) or household batteries such as AA, AAA, C, D, 4.5 volt, button cell, rechargeable and 9 volt used for flashlights, small appliances, and electronic devices.
	53	Sharps	Discarded needles that have been used in animal or human patient care or treatment or in medical, research or laboratories.
	54	Prescription Medications	Medication which requires a doctor's prescription. Does not include over- the-counter medications.
OTHER	55	Other Organics	Organic material that cannot be put in any other type or subtype. This type includes items made mostly of organic materials but combined with other materials. Examples include cork, hemp rope, hair, cigarette butts, full vacuum bags, sawdust, wax, sponges, and animal feces from residential dwellings.
	56	Other Inorganics	All other inorganic items not elsewhere classified. Includes products such as de-icing chemicals, hand warming packets, desiccant, shampoo, tooth paste, hair coloring products and some non-prescription medication and creams.
	57	Other C&D	Construction and demolition material that cannot be put in any other type or subtype. This type may include items from different types of material that are combined, which would be very hard to separate. Also includes items used in construction/demolition/renovations activities such as ceiling tiles, insulation, tiles, linoleum, used paint brushes, caulking tubes, glue, plaster mixtures, etc. Does not include paints or other solvents.
	58	Other Durables	Household furniture and mattresses.
	59	Other HHM	All household or commercial products characterized as toxic, corrosive, flammable, ignitable, radioactive, poisonous, reactive, or not elsewhere classified.
	60	Fines	Un-sortable small fragments (generally less than 1/2 inch in diameter); mainly composed of organic material and miscellaneous fines and dirt.
	61	Other	Items not elsewhere classified.

Appendix B

Individual Host Facility Waste Composition

City of Cedar Falls Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.4%	2.9%	6.7%	8.1%
High Grade Office Paper	1.2%	1.1%	1.0%	1.5%
Magazines/Catalogs	1.4%	1.1%	1.2%	1.7%
Mixed Recyclable Paper	6.2%	2.1%	5.7%	6.7%
Newsprint	2.2%	1.7%	1.8%	2.6%
Non-Recyclable Paper	4.1%	2.5%	3.5%	4.7%
OCC and Kraft Paper	3.1%	2.1%	2.6%	3.6%
Aseptic/Gable Top Containers	0.3%	0.4%	0.2%	0.4%
Total Paper	**26.0%**	**6.9%**	**24.4%**	**27.7%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
#1 PET Beverage Containers	1.6%	1.4%	1.2%	1.9%
#2 HDPE Containers Natural	0.4%	0.3%	0.4%	0.5%
#2 HDPE Containers Colored	0.7%	0.5%	0.6%	0.8%
Retail Shopping Bags	0.9%	0.4%	0.8%	1.0%
Other Plastic Film	4.9%	1.8%	4.5%	5.3%
Other #1 PET Containers	0.5%	0.3%	0.5%	0.6%
Plastic Containers #3-#7	2.0%	1.1%	1.8%	2.3%
Other Plastic Containers	0.2%	0.2%	0.2%	0.3%
Expanded Polystyrene	0.7%	0.7%	0.6%	0.9%
Other Plastic Products	2.1%	1.8%	1.6%	2.5%
Total Plastic	**14.5%**	**4.5%**	**13.4%**	**15.5%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
Ferrous Food and Beverage Containers	0.8%	0.5%	0.7%	0.9%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.4%
Other Ferrous Scrap Metals	1.6%	1.9%	1.1%	2.0%
Other Non-Ferrous Scrap Metals	0.2%	0.4%	0.1%	0.3%
Total Metals	**3.4%**	**2.1%**	**2.9%**	**3.9%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	1.5%	1.0%	1.2%	1.7%
Glass IA Deposit Containers	1.9%	1.7%	1.5%	2.3%
Green Glass	<0.1%	0.2%	<0.1%	0.1%
Other Mixed Cullet	0.3%	0.4%	0.2%	0.4%
Total Glass	**3.7%**	**2.0%**	**3.3%**	**4.2%**
ORGANICS				
Yard Waste	0.9%	1.4%	0.6%	1.2%
Food Waste - Loose	13.4%	5.2%	12.2%	14.6%
Food Waste - Packaged	10.6%	3.9%	9.7%	11.5%
Textiles and Leather	3.3%	2.1%	2.8%	3.9%
Diapers	4.5%	3.6%	3.6%	5.3%
Rubber	0.6%	0.8%	0.4%	0.7%
Total Organics	**33.3%**	**8.5%**	**31.3%**	**35.3%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.5%	1.9%	<0.1%	0.9%
Computer Monitors/TVs	<0.1%	0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.4%	0.7%	0.2%	0.6%
Total Durable	**0.9%**	**2.1%**	**0.4%**	**1.4%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.1%	0.7%	<0.1%	0.3%
Wood - Treated	0.7%	1.0%	0.4%	0.9%
Asphalt Pavement, Brick, Rock, and Concrete	0.2%	0.6%	<0.1%	0.4%
Asphalt Roofing	<0.1%	0.3%	<0.1%	0.1%
Drywall/Gypsum Board	0.4%	1.3%	0.1%	0.7%
Carpet and Carpet Padding	0.8%	1.8%	0.4%	1.2%
Total Construction & Demolition	**2.3%**	**2.5%**	**1.7%**	**2.8%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.4%	1.7%	<0.1%	0.8%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.4%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Household Hazardous Materials (HHMs)	**0.6%**	**1.7%**	**0.2%**	**1.0%**
OTHER				
Other Organics	7.5%	6.4%	6.0%	9.1%
Other Inorganics	0.6%	0.8%	0.4%	0.8%
Other Construction & Demolition	0.2%	0.5%	<0.1%	0.3%
Other Durables	4.2%	14.0%	0.9%	7.5%
Other HHM	<0.1%	0.1%	<0.1%	<0.1%
Fines	2.7%	2.3%	2.2%	3.3%
Other	<0.1%	0.2%	<0.1%	<0.1%
Total Other	**15.3%**	**13.7%**	**12.1%**	**18.5%**
TOTALS	**100.0%**			

Note: Composition based on 49 samples

City of Cedar Falls Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.2%	2.4%	6.5%	7.8%
High Grade Office Paper	1.1%	1.0%	0.9%	1.4%
Magazines/Catalogs	1.6%	1.1%	1.3%	1.9%
Mixed Recyclable Paper	6.7%	2.0%	6.1%	7.2%
Newsprint	2.5%	1.8%	2.1%	3.0%
Non-Recyclable Paper	4.0%	2.3%	3.4%	4.6%
OCC and Kraft Paper	2.0%	1.2%	1.7%	2.3%
Aseptic/Gable Top Containers	0.3%	0.4%	0.2%	0.4%
Total Paper	**25.5%**	**6.2%**	**23.8%**	**27.1%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.4%	0.3%	0.4%
#1 PET Beverage Containers	1.4%	0.7%	1.2%	1.5%
#2 HDPE Containers Natural	0.5%	0.4%	0.4%	0.6%
#2 HDPE Containers Colored	0.8%	0.5%	0.6%	0.9%
Retail Shopping Bags	1.0%	0.5%	0.9%	1.1%
Other Plastic Film	4.6%	1.1%	4.3%	4.9%
Other #1 PET Containers	0.6%	0.3%	0.5%	0.7%
Plastic Containers #3-#7	2.1%	1.2%	1.8%	2.5%
Other Plastic Containers	0.3%	0.2%	0.2%	0.3%
Expanded Polystyrene	0.7%	0.7%	0.5%	0.9%
Other Plastic Products	1.8%	1.2%	1.5%	2.1%
Total Plastic	**14.1%**	**3.2%**	**13.3%**	**14.9%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
Ferrous Food and Beverage Containers	0.9%	0.5%	0.7%	1.0%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.5%
Other Ferrous Scrap Metals	0.8%	0.9%	0.6%	1.1%
Other Non-Ferrous Scrap Metals	0.2%	0.4%	0.1%	0.3%
Total Metals	**2.8%**	**1.4%**	**2.4%**	**3.2%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	1.6%	1.1%	1.3%	1.9%
Glass IA Deposit Containers	2.2%	1.9%	1.7%	2.6%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.4%	0.2%	0.4%
Total Glass	**4.1%**	**2.1%**	**3.6%**	**4.7%**
ORGANICS				
Yard Waste	1.0%	1.6%	0.6%	1.4%
Food Waste - Loose	14.1%	5.1%	12.8%	15.5%
Food Waste - Packaged	10.9%	3.8%	9.9%	11.9%
Textiles and Leather	3.2%	1.8%	2.7%	3.7%
Diapers	5.3%	4.0%	4.2%	6.3%
Rubber	0.5%	0.6%	0.3%	0.6%
Total Organics	**34.9%**	**8.8%**	**32.6%**	**37.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.5%	2.1%	<0.1%	1.1%
Computer Monitors/TVs	<0.1%	0.2%	<0.1%	<0.1%
Electrical and Household Appliances	0.3%	0.5%	0.2%	0.5%
Total Durable	**0.9%**	**2.1%**	**0.3%**	**1.4%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.1%	0.8%	<0.1%	0.3%
Wood - Treated	0.6%	0.9%	0.4%	0.8%
Asphalt Pavement, Brick, Rock, and Concre	0.2%	0.7%	<0.1%	0.4%
Asphalt Roofing	<0.1%	0.4%	<0.1%	0.2%
Drywall/Gypsum Board	0.5%	1.4%	0.2%	0.9%
Carpet and Carpet Padding	1.0%	2.0%	0.5%	1.5%
Total Construction & Demolition	**2.5%**	**2.7%**	**1.8%**	**3.2%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.6%	<0.1%	0.4%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.4%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.4%**	**0.7%**	**0.2%**	**0.6%**
OTHER				
Other Organics	7.7%	5.5%	6.3%	9.1%
Other Inorganics	0.6%	0.8%	0.4%	0.8%
Other Construction & Demolition	0.2%	0.4%	<0.1%	0.3%
Other Durables	3.5%	14.8%	<0.1%	7.4%
Other HHM	<0.1%	0.1%	<0.1%	<0.1%
Fines	2.7%	1.7%	2.2%	3.1%
Other	<0.1%	0.2%	<0.1%	<0.1%
Total Other	**14.7%**	**13.9%**	**11.1%**	**18.4%**
TOTALS	**100.0%**			

Note: Composition based on 39 samples

City of Cedar Falls Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	8.4%	4.3%	6.2%	10.7%
High Grade Office Paper	1.5%	1.3%	0.9%	2.2%
Magazines/Catalogs	0.9%	0.9%	0.5%	1.4%
Mixed Recyclable Paper	4.2%	2.2%	3.0%	5.4%
Newsprint	1.0%	0.9%	0.5%	1.4%
Non-Recyclable Paper	4.2%	3.2%	2.6%	5.9%
OCC and Kraft Paper	7.7%	4.0%	5.6%	9.8%
Aseptic/Gable Top Containers	0.3%	0.3%	0.2%	0.5%
Total Paper	**28.3%**	**9.5%**	**23.4%**	**33.2%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.1%	0.1%	0.3%
#1 PET Beverage Containers	2.3%	2.8%	0.9%	3.8%
#2 HDPE Containers Natural	0.2%	0.2%	0.1%	0.3%
#2 HDPE Containers Colored	0.6%	0.5%	0.3%	0.8%
Retail Shopping Bags	0.6%	0.2%	0.5%	0.7%
Other Plastic Film	6.1%	3.3%	4.3%	7.8%
Other #1 PET Containers	0.3%	0.2%	0.2%	0.4%
Plastic Containers #3-#7	1.7%	0.6%	1.3%	2.0%
Other Plastic Containers	0.2%	0.2%	<0.1%	0.3%
Expanded Polystyrene	0.7%	0.6%	0.3%	1.0%
Other Plastic Products	3.1%	3.3%	1.4%	4.8%
Total Plastic	**15.9%**	**7.9%**	**11.8%**	**20.0%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.5%
Ferrous Food and Beverage Containers	0.4%	0.4%	0.2%	0.7%
Other Aluminum Containers	0.2%	0.1%	0.1%	0.3%
Other Ferrous Scrap Metals	4.6%	4.0%	2.5%	6.6%
Other Non-Ferrous Scrap Metals	0.2%	0.2%	<0.1%	0.3%
Total Metals	**5.7%**	**3.8%**	**3.7%**	**7.7%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	1.0%	0.5%	0.8%	1.3%
Glass IA Deposit Containers	0.6%	0.6%	0.3%	1.0%
Green Glass	0.2%	0.5%	<0.1%	0.4%
Other Mixed Cullet	0.2%	0.4%	<0.1%	0.4%
Total Glass	**2.1%**	**1.2%**	**1.5%**	**2.7%**
ORGANICS				
Yard Waste	0.5%	0.8%	<0.1%	0.9%
Food Waste - Loose	10.5%	5.4%	7.7%	13.3%
Food Waste - Packaged	9.5%	4.1%	7.3%	11.6%
Textiles and Leather	3.9%	3.3%	2.2%	5.6%
Diapers	1.2%	1.1%	0.7%	1.8%
Rubber	0.9%	1.1%	0.3%	1.5%
Total Organics	**26.6%**	**7.0%**	**23.0%**	**30.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	0.3%	<0.1%	0.3%
Central Processing Units/Peripherals	0.2%	0.6%	<0.1%	0.5%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.8%	1.3%	<0.1%	1.4%
Total Durable	**1.0%**	**2.1%**	**<0.1%**	**2.1%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	1.0%	1.3%	0.3%	1.7%
Asphalt Pavement, Brick, Rock, and Concre	0.1%	0.3%	<0.1%	0.3%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
Total Construction & Demolition	**1.1%**	**1.5%**	**0.4%**	**1.9%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	1.4%	3.7%	<0.1%	3.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.2%	0.4%	<0.1%	0.4%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**1.5%**	**3.7%**	**<0.1%**	**3.5%**
OTHER				
Other Organics	6.8%	9.6%	1.8%	11.8%
Other Inorganics	0.6%	0.6%	0.3%	1.0%
Other Construction & Demolition	0.3%	0.6%	<0.1%	0.6%
Other Durables	7.0%	9.9%	1.9%	12.2%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	2.8%	4.1%	0.7%	5.0%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**17.7%**	**13.0%**	**10.9%**	**24.4%**
TOTALS	**100.0%**			

Note: Composition based on 10 samples

Cedar Rapids Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	9.3%	4.8%	8.2%	10.3%
High Grade Office Paper	0.8%	1.3%	0.5%	1.1%
Magazines/Catalogs	1.1%	1.8%	0.7%	1.5%
Mixed Recyclable Paper	4.2%	2.9%	3.6%	4.9%
Newsprint	1.0%	1.4%	0.7%	1.3%
Non-Recyclable Paper	4.6%	3.2%	3.9%	5.4%
OCC and Kraft Paper	3.4%	2.9%	2.8%	4.0%
Aseptic/Gable Top Containers	0.1%	0.2%	<0.1%	0.2%
Total Paper	**24.5%**	**8.0%**	**22.8%**	**26.3%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.5%	1.6%	0.1%	0.8%
#1 PET Beverage Containers	1.2%	0.9%	1.0%	1.4%
#2 HDPE Containers Natural	0.5%	0.7%	0.4%	0.7%
#2 HDPE Containers Colored	0.6%	1.0%	0.4%	0.9%
Retail Shopping Bags	0.8%	0.5%	0.7%	0.9%
Other Plastic Film	8.7%	5.4%	7.5%	9.9%
Other #1 PET Containers	0.3%	0.3%	0.3%	0.4%
Plastic Containers #3-#7	2.4%	1.3%	2.1%	2.7%
Other Plastic Containers	0.3%	0.4%	0.2%	0.4%
Expanded Polystyrene	0.9%	0.9%	0.6%	1.1%
Other Plastic Products	2.9%	2.3%	2.4%	3.4%
Total Plastic	**19.1%**	**7.0%**	**17.5%**	**20.6%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.8%	0.6%	0.6%	0.9%
Other Aluminum Containers	0.3%	0.4%	0.3%	0.4%
Other Ferrous Scrap Metals	1.2%	2.9%	0.5%	1.8%
Other Non-Ferrous Scrap Metals	0.7%	2.5%	0.2%	1.3%
Total Metals	**3.4%**	**4.5%**	**2.4%**	**4.4%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	0.9%	0.8%	0.7%	1.1%
Glass IA Deposit Containers	0.6%	0.9%	0.4%	0.8%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.6%	1.2%	0.3%	0.9%
Total Glass	**2.1%**	**1.7%**	**1.8%**	**2.5%**
ORGANICS				
Yard Waste	1.0%	2.1%	0.6%	1.5%
Food Waste - Loose	15.3%	9.8%	13.2%	17.5%
Food Waste - Packaged	6.8%	6.1%	5.4%	8.1%
Textiles and Leather	2.9%	2.9%	2.2%	3.5%
Diapers	2.9%	4.4%	1.9%	3.9%
Rubber	2.4%	7.0%	0.8%	4.0%
Total Organics	**31.4%**	**13.7%**	**28.3%**	**34.4%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.3%	1.3%	<0.1%	0.6%
Computer Monitors/TVs	0.2%	1.0%	<0.1%	0.5%
Electrical and Household Appliances	0.9%	2.1%	0.5%	1.4%
Total Durable	**1.4%**	**2.9%**	**0.8%**	**2.1%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.3%	0.7%	0.1%	0.4%
Wood - Treated	5.5%	12.6%	2.6%	8.3%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.2%	<0.1%	<0.1%
Asphalt Roofing	<0.1%	0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	0.7%	<0.1%	0.2%
Carpet and Carpet Padding	1.3%	4.2%	0.4%	2.3%
Total Construction & Demolition	**7.2%**	**13.0%**	**4.3%**	**10.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.4%	0.2%	0.8%
Lead-Acid Batteries	<0.1%	0.4%	<0.1%	0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	0.1%	0.8%	<0.1%	0.3%
Other Batteries	<0.1%	0.2%	<0.1%	0.1%
Sharps	<0.1%	0.2%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.8%**	**2.1%**	**0.4%**	**1.3%**
OTHER				
Other Organics	4.4%	5.7%	3.1%	5.7%
Other Inorganics	1.2%	3.4%	0.4%	2.0%
Other Construction & Demolition	1.1%	3.1%	0.4%	1.8%
Other Durables	1.3%	8.2%	<0.1%	3.2%
Other HHM	0.1%	0.8%	<0.1%	0.3%
Fines	1.6%	1.6%	1.2%	1.9%
Other	0.3%	1.7%	<0.1%	0.7%
Total Other	**10.0%**	**10.8%**	**7.6%**	**12.5%**
TOTALS	**100.0%**			

Note: Composition based on 54 samples

Cedar Rapids Sort Data – Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	8.8%	3.7%	7.5%	10.0%
High Grade Office Paper	0.6%	1.1%	0.2%	1.0%
Magazines/Catalogs	1.3%	2.0%	0.7%	2.0%
Mixed Recyclable Paper	4.9%	1.9%	4.2%	5.5%
Newsprint	1.2%	1.6%	0.7%	1.7%
Non-Recyclable Paper	4.1%	2.0%	3.5%	4.8%
OCC and Kraft Paper	1.8%	1.3%	1.3%	2.2%
Aseptic/Gable Top Containers	0.2%	0.2%	0.1%	0.2%
Total Paper	**22.8%**	**6.3%**	**20.7%**	**24.9%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.7%	2.4%	<0.1%	1.5%
#1 PET Beverage Containers	0.8%	0.7%	0.6%	1.0%
#2 HDPE Containers Natural	0.3%	0.4%	0.2%	0.4%
#2 HDPE Containers Colored	0.6%	0.5%	0.5%	0.8%
Retail Shopping Bags	1.5%	0.7%	1.2%	1.7%
Other Plastic Film	6.9%	2.5%	6.1%	7.8%
Other #1 PET Containers	0.5%	0.3%	0.4%	0.6%
Plastic Containers #3-#7	2.4%	1.0%	2.0%	2.7%
Other Plastic Containers	0.4%	0.4%	0.3%	0.6%
Expanded Polystyrene	0.9%	0.9%	0.6%	1.2%
Other Plastic Products	2.6%	1.9%	2.0%	3.3%
Total Plastic	**17.7%**	**5.3%**	**15.9%**	**19.5%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.8%	0.4%	0.7%	0.9%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.5%
Other Ferrous Scrap Metals	2.2%	4.1%	0.8%	3.6%
Other Non-Ferrous Scrap Metals	0.9%	3.0%	<0.1%	1.9%
Total Metals	**4.7%**	**6.3%**	**2.5%**	**6.8%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	0.1%
Clear Glass	1.6%	1.0%	1.3%	1.9%
Glass IA Deposit Containers	0.9%	1.0%	0.6%	1.3%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.5%	0.1%	0.5%
Total Glass	**2.9%**	**1.4%**	**2.5%**	**3.4%**
ORGANICS				
Yard Waste	0.9%	2.0%	0.2%	1.5%
Food Waste - Loose	15.8%	6.9%	13.5%	18.1%
Food Waste - Packaged	7.7%	4.5%	6.2%	9.2%
Textiles and Leather	3.4%	2.5%	2.6%	4.3%
Diapers	4.3%	3.0%	3.3%	5.3%
Rubber	1.1%	1.1%	0.8%	1.5%
Total Organics	**33.2%**	**11.2%**	**29.4%**	**37.0%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.9%	1.3%	0.4%	1.3%
Total Durable	**0.9%**	**1.3%**	**0.5%**	**1.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	1.0%	1.4%	0.5%	1.5%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.3%	<0.1%	0.2%
Asphalt Roofing	<0.1%	0.2%	<0.1%	<0.1%
Drywall/Gypsum Board	0.2%	1.0%	<0.1%	0.5%
Carpet and Carpet Padding	0.8%	1.5%	0.3%	1.3%
Total Construction & Demolition	**2.2%**	**2.6%**	**1.3%**	**3.0%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.5%	<0.1%	1.0%
Lead-Acid Batteries	0.1%	0.7%	<0.1%	0.4%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.1%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.9%**	**1.8%**	**0.3%**	**1.5%**
OTHER				
Other Organics	8.0%	6.1%	6.0%	10.1%
Other Inorganics	0.7%	1.1%	0.3%	1.1%
Other Construction & Demolition	0.2%	0.6%	<0.1%	0.4%
Other Durables	3.0%	12.2%	<0.1%	7.1%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	2.8%	2.1%	2.1%	3.5%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**14.7%**	**13.3%**	**10.2%**	**19.2%**
TOTALS	**100.0%**			

Note: Composition based on 24 samples

Cedar Rapids Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	9.5%	5.4%	7.8%	11.1%
High Grade Office Paper	0.9%	1.4%	0.5%	1.4%
Magazines/Catalogs	0.9%	1.6%	0.5%	1.4%
Mixed Recyclable Paper	4.0%	3.5%	3.0%	5.0%
Newsprint	0.9%	1.2%	0.5%	1.2%
Non-Recyclable Paper	4.8%	3.9%	3.7%	6.0%
OCC and Kraft Paper	4.1%	3.7%	3.0%	5.2%
Aseptic/Gable Top Containers	0.1%	0.2%	<0.1%	0.2%
Total Paper	**25.2%**	**9.1%**	**22.5%**	**27.9%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
#1 PET Beverage Containers	1.3%	1.0%	1.0%	1.6%
#2 HDPE Containers Natural	0.6%	0.9%	0.3%	0.9%
#2 HDPE Containers Colored	0.7%	1.3%	0.3%	1.0%
Retail Shopping Bags	0.5%	0.4%	0.4%	0.7%
Other Plastic Film	9.4%	6.9%	7.3%	11.4%
Other #1 PET Containers	0.3%	0.2%	0.2%	0.3%
Plastic Containers #3-#7	2.4%	1.4%	2.0%	2.8%
Other Plastic Containers	0.3%	0.3%	0.2%	0.4%
Expanded Polystyrene	0.8%	1.0%	0.5%	1.1%
Other Plastic Products	3.0%	2.7%	2.2%	3.8%
Total Plastic	**19.6%**	**8.2%**	**17.1%**	**22.1%**
METAL				
Aluminum Beverage Containers	<0.1%	0.2%	<0.1%	0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.7%	0.7%	0.5%	0.9%
Other Aluminum Containers	0.3%	0.5%	0.2%	0.4%
Other Ferrous Scrap Metals	0.8%	1.2%	0.4%	1.1%
Other Non-Ferrous Scrap Metals	0.7%	2.0%	<0.1%	1.3%
Total Metals	**2.9%**	**2.1%**	**2.3%**	**3.5%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.6%	0.7%	0.4%	0.8%
Glass IA Deposit Containers	0.4%	0.8%	0.2%	0.7%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.7%	1.6%	0.2%	1.2%
Total Glass	**1.8%**	**1.8%**	**1.3%**	**2.4%**
ORGANICS				
Yard Waste	1.1%	2.1%	0.5%	1.7%
Food Waste - Loose	15.2%	11.6%	11.7%	18.6%
Food Waste - Packaged	6.4%	7.1%	4.3%	8.5%
Textiles and Leather	2.7%	3.3%	1.7%	3.6%
Diapers	2.3%	5.3%	0.8%	3.9%
Rubber	2.9%	9.4%	0.1%	5.8%
Total Organics	**30.6%**	**15.4%**	**26.0%**	**35.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.4%	1.7%	<0.1%	0.9%
Computer Monitors/TVs	0.3%	1.3%	<0.1%	0.7%
Electrical and Household Appliances	0.9%	2.6%	0.2%	1.7%
Total Durable	**1.6%**	**3.7%**	**0.5%**	**2.8%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.4%	0.9%	<0.1%	0.7%
Wood - Treated	7.3%	16.9%	2.2%	12.3%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.1%	<0.1%	<0.1%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	1.5%	5.5%	<0.1%	3.2%
Total Construction & Demolition	**9.2%**	**17.2%**	**4.1%**	**14.4%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.4%	<0.1%	0.9%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	0.2%	1.1%	<0.1%	0.5%
Other Batteries	<0.1%	0.3%	<0.1%	0.2%
Sharps	<0.1%	0.2%	<0.1%	0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Total Household Hazardous Materials (HHMs)	**0.8%**	**2.4%**	**0.1%**	**1.5%**
OTHER				
Other Organics	3.0%	5.4%	1.3%	4.6%
Other Inorganics	1.4%	4.4%	<0.1%	2.7%
Other Construction & Demolition	1.4%	4.1%	0.2%	2.6%
Other Durables	0.7%	1.9%	<0.1%	1.2%
Other HHM	0.2%	1.1%	<0.1%	0.5%
Fines	1.1%	1.1%	0.8%	1.4%
Other	0.4%	2.3%	<0.1%	1.1%
Total Other	**8.2%**	**8.3%**	**5.7%**	**10.7%**
TOTALS	**100.0%**			

Note: Composition based on 30 samples

Dubuque Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.2%	5.6%	5.9%	8.5%
High Grade Office Paper	0.6%	1.6%	0.3%	1.0%
Magazines/Catalogs	1.1%	2.3%	0.5%	1.6%
Mixed Recyclable Paper	4.7%	4.4%	3.7%	5.7%
Newsprint	1.3%	2.0%	0.9%	1.8%
Non-Recyclable Paper	4.8%	3.9%	3.9%	5.8%
OCC and Kraft Paper	5.9%	8.4%	4.0%	7.8%
Aseptic/Gable Top Containers	0.2%	0.4%	0.1%	0.3%
Total Paper	**25.9%**	**11.8%**	**23.1%**	**28.6%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.3%	0.4%
#1 PET Beverage Containers	1.2%	1.6%	0.8%	1.6%
#2 HDPE Containers Natural	0.3%	0.4%	0.2%	0.4%
#2 HDPE Containers Colored	0.4%	0.8%	0.3%	0.6%
Retail Shopping Bags	0.5%	0.5%	0.4%	0.6%
Other Plastic Film	8.5%	5.6%	7.2%	9.8%
Other #1 PET Containers	1.1%	3.4%	0.3%	1.9%
Plastic Containers #3-#7	1.8%	1.7%	1.4%	2.2%
Other Plastic Containers	0.2%	0.4%	<0.1%	0.3%
Expanded Polystyrene	0.8%	1.0%	0.6%	1.0%
Other Plastic Products	2.4%	2.1%	1.9%	2.9%
Total Plastic	**17.5%**	**9.8%**	**15.2%**	**19.8%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.8%	1.5%	0.4%	1.1%
Ferrous Food and Beverage Containers	0.6%	0.8%	0.4%	0.8%
Other Aluminum Containers	0.3%	0.4%	0.2%	0.4%
Other Ferrous Scrap Metals	2.3%	4.6%	1.2%	3.3%
Other Non-Ferrous Scrap Metals	0.2%	0.4%	0.1%	0.3%
Total Metals	**4.2%**	**4.9%**	**3.0%**	**5.3%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.9%	0.8%	0.7%	1.1%
Glass IA Deposit Containers	1.2%	1.7%	0.8%	1.6%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.9%	0.1%	0.6%
Total Glass	**2.5%**	**2.4%**	**1.9%**	**3.1%**
ORGANICS				
Yard Waste	2.3%	7.1%	0.6%	3.9%
Food Waste - Loose	10.5%	6.4%	9.0%	12.0%
Food Waste - Packaged	7.4%	11.6%	4.7%	10.1%
Textiles and Leather	4.3%	12.0%	1.5%	7.1%
Diapers	2.6%	4.4%	1.6%	3.6%
Rubber	1.5%	2.4%	0.9%	2.0%
Total Organics	**28.5%**	**16.7%**	**24.6%**	**32.4%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.1%	0.4%	<0.1%	0.2%
Computer Monitors/TVs	0.1%	0.7%	<0.1%	0.3%
Electrical and Household Appliances	1.6%	3.8%	0.7%	2.5%
Total Durable	**1.9%**	**3.9%**	**1.0%**	**2.8%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	2.4%	5.1%	1.2%	3.6%
Asphalt Pavement, Brick, Rock, and Concre	0.8%	3.3%	<0.1%	1.5%
Asphalt Roofing	0.9%	4.4%	<0.1%	1.9%
Drywall/Gypsum Board	0.7%	2.5%	<0.1%	1.3%
Carpet and Carpet Padding	3.9%	8.7%	1.8%	5.9%
Total Construction & Demolition	**8.6%**	**12.7%**	**5.7%**	**11.6%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	1.0%	<0.1%	0.5%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	0.1%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
usehold Hazardous Materials (HHMs)	**0.3%**	**1.0%**	**0.1%**	**0.6%**
OTHER				
Other Organics	1.6%	2.8%	0.9%	2.2%
Other Inorganics	0.7%	1.7%	0.3%	1.1%
Other Construction & Demolition	1.4%	3.4%	0.6%	2.2%
Other Durables	2.1%	5.3%	0.9%	3.4%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.6%	2.5%	4.0%	5.2%
Other	0.1%	0.8%	<0.1%	0.3%
Total Other	**10.6%**	**7.1%**	**8.9%**	**12.2%**
TOTALS	**100.0%**			

Note: Composition based on 50 samples

Dubuque Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.1%	2.1%	5.1%	7.2%
High Grade Office Paper	<0.1%	0.1%	<0.1%	<0.1%
Magazines/Catalogs	1.1%	0.7%	0.7%	1.4%
Mixed Recyclable Paper	4.9%	2.6%	3.6%	6.2%
Newsprint	0.7%	0.4%	0.5%	0.9%
Non-Recyclable Paper	3.0%	1.3%	2.3%	3.6%
OCC and Kraft Paper	1.9%	0.7%	1.6%	2.2%
Aseptic/Gable Top Containers	0.2%	0.1%	0.1%	0.2%
Total Paper	**17.9%**	**4.9%**	**15.4%**	**20.3%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
#1 PET Beverage Containers	0.7%	0.3%	0.5%	0.8%
#2 HDPE Containers Natural	0.2%	0.1%	0.1%	0.2%
#2 HDPE Containers Colored	0.5%	0.5%	0.3%	0.7%
Retail Shopping Bags	1.0%	0.5%	0.7%	1.2%
Other Plastic Film	5.7%	1.7%	4.9%	6.6%
Other #1 PET Containers	0.7%	0.3%	0.5%	0.8%
Plastic Containers #3-#7	1.2%	0.7%	0.8%	1.6%
Other Plastic Containers	0.5%	0.9%	<0.1%	1.0%
Expanded Polystyrene	0.6%	0.2%	0.5%	0.7%
Other Plastic Products	2.6%	1.2%	2.0%	3.2%
Total Plastic	**13.9%**	**3.6%**	**12.2%**	**15.7%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.5%	0.4%	0.3%	0.7%
Ferrous Food and Beverage Containers	0.6%	0.5%	0.4%	0.9%
Other Aluminum Containers	0.5%	0.3%	0.3%	0.6%
Other Ferrous Scrap Metals	1.2%	1.8%	0.3%	2.1%
Other Non-Ferrous Scrap Metals	0.2%	0.3%	<0.1%	0.4%
Total Metals	**3.1%**	**1.9%**	**2.1%**	**4.0%**
GLASS				
Blue Glass	<0.1%	0.2%	<0.1%	0.2%
Brown Glass	0.1%	0.2%	<0.1%	0.2%
Clear Glass	1.6%	1.0%	1.1%	2.1%
Glass IA Deposit Containers	2.2%	1.6%	1.4%	3.0%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	1.0%	1.9%	<0.1%	1.9%
Total Glass	**5.0%**	**3.2%**	**3.4%**	**6.5%**
ORGANICS				
Yard Waste	4.7%	12.2%	<0.1%	10.8%
Food Waste - Loose	18.4%	3.9%	16.5%	20.3%
Food Waste - Packaged	9.6%	4.0%	7.7%	11.6%
Textiles and Leather	5.4%	4.4%	3.3%	7.6%
Diapers	3.7%	2.6%	2.5%	5.0%
Rubber	1.8%	2.3%	0.6%	2.9%
Total Organics	**43.8%**	**13.8%**	**36.9%**	**50.6%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	0.1%	<0.1%	0.1%
Computer Monitors/TVs	0.1%	0.3%	<0.1%	0.3%
Electrical and Household Appliances	1.4%	2.0%	0.4%	2.3%
Total Durable	**1.6%**	**1.6%**	**0.8%**	**2.4%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	0.5%	0.7%	0.1%	0.8%
Asphalt Pavement, Brick, Rock, and Concre	0.1%	0.5%	<0.1%	0.4%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	0.3%	<0.1%	0.2%
Carpet and Carpet Padding	1.0%	1.6%	0.2%	1.8%
Total Construction & Demolition	**1.7%**	**1.9%**	**0.8%**	**2.7%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.1%	0.3%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.2%	0.2%	<0.1%	0.3%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ousehold Hazardous Materials (HHMs)	**0.4%**	**0.5%**	**0.1%**	**0.6%**
OTHER				
Other Organics	4.6%	5.4%	1.9%	7.3%
Other Inorganics	0.6%	0.7%	0.3%	1.0%
Other Construction & Demolition	0.7%	1.6%	<0.1%	1.4%
Other Durables	0.4%	0.9%	<0.1%	0.8%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	6.5%	1.5%	5.8%	7.2%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**12.8%**	**6.1%**	**9.8%**	**15.8%**
TOTALS	**100.0%**			

Note: Composition based on 11 samples

Dubuque Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.4%	6.2%	5.8%	9.0%
High Grade Office Paper	0.8%	1.8%	0.3%	1.3%
Magazines/Catalogs	1.1%	2.6%	0.4%	1.8%
Mixed Recyclable Paper	4.6%	4.7%	3.4%	5.9%
Newsprint	1.5%	2.2%	0.9%	2.1%
Non-Recyclable Paper	5.3%	4.4%	4.2%	6.5%
OCC and Kraft Paper	6.9%	9.4%	4.5%	9.4%
Aseptic/Gable Top Containers	0.2%	0.5%	0.1%	0.3%
Total Paper	**28.0%**	**13.0%**	**0.2455**	**0.3139**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.3%	0.4%
#1 PET Beverage Containers	1.3%	1.7%	0.9%	1.8%
#2 HDPE Containers Natural	0.4%	0.5%	0.3%	0.5%
#2 HDPE Containers Colored	0.4%	0.8%	0.2%	0.6%
Retail Shopping Bags	0.4%	0.5%	0.3%	0.5%
Other Plastic Film	9.2%	6.2%	7.6%	10.8%
Other #1 PET Containers	1.2%	3.8%	0.2%	2.2%
Plastic Containers #3-#7	1.9%	1.9%	1.4%	2.4%
Other Plastic Containers	<0.1%	0.2%	<0.1%	0.1%
Expanded Polystyrene	0.8%	1.1%	0.5%	1.1%
Other Plastic Products	2.3%	2.2%	1.7%	2.9%
Total Plastic	**18.4%**	**10.9%**	**15.6%**	**21.3%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.8%	1.7%	0.4%	1.3%
Ferrous Food and Beverage Containers	0.6%	0.9%	0.3%	0.8%
Other Aluminum Containers	0.3%	0.4%	0.2%	0.4%
Other Ferrous Scrap Metals	2.5%	5.1%	1.2%	3.9%
Other Non-Ferrous Scrap Metals	0.2%	0.5%	<0.1%	0.3%
Total Metals	**4.4%**	**5.4%**	**3.0%**	**5.9%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.8%	0.8%	0.6%	1.0%
Glass IA Deposit Containers	0.9%	1.7%	0.5%	1.4%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.2%	0.4%	<0.1%	0.3%
Total Glass	**1.9%**	**2.1%**	**1.3%**	**2.4%**
ORGANICS				
Yard Waste	1.6%	4.9%	0.4%	2.9%
Food Waste - Loose	8.5%	6.9%	6.6%	10.3%
Food Waste - Packaged	6.8%	12.9%	3.4%	10.2%
Textiles and Leather	4.0%	13.3%	0.5%	7.5%
Diapers	2.3%	4.7%	1.1%	3.6%
Rubber	1.4%	2.5%	0.7%	2.0%
Total Organics	**24.6%**	**17.4%**	**20.0%**	**29.1%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.1%	0.4%	<0.1%	0.2%
Computer Monitors/TVs	0.1%	0.8%	<0.1%	0.3%
Electrical and Household Appliances	1.7%	4.1%	0.6%	2.8%
Total Durable	**2.0%**	**4.2%**	**0.8%**	**3.1%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	2.9%	5.8%	1.4%	4.5%
Asphalt Pavement, Brick, Rock, and Concre	0.9%	3.7%	<0.1%	1.9%
Asphalt Roofing	1.1%	5.0%	<0.1%	2.4%
Drywall/Gypsum Board	0.8%	2.8%	<0.1%	1.6%
Carpet and Carpet Padding	4.6%	9.8%	2.0%	7.2%
Total Construction & Demolition	**10.4%**	**14.3%**	**6.7%**	**14.2%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.3%	1.1%	<0.1%	0.6%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ousehold Hazardous Materials (HHMs)	**0.3%**	**1.1%**	**<0.1%**	**0.6%**
OTHER				
Other Organics	0.8%	1.5%	0.4%	1.2%
Other Inorganics	0.7%	1.8%	0.3%	1.2%
Other Construction & Demolition	1.6%	3.7%	0.6%	2.6%
Other Durables	2.6%	5.9%	1.0%	4.2%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.1%	2.7%	3.4%	4.8%
Other	0.1%	0.9%	<0.1%	0.4%
Total Other	**10.0%**	**7.4%**	**8.1%**	**11.9%**
TOTALS	**100.0%**			

Note: Composition based on 39 samples

Iowa City Landfill Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	7.3%	4.0%	6.3%	8.2%
High Grade Office Paper	1.7%	1.4%	1.4%	2.1%
Magazines/Catalogs	1.4%	1.6%	1.1%	1.8%
Mixed Recyclable Paper	4.6%	2.1%	4.1%	5.1%
Newsprint	1.2%	1.4%	0.9%	1.5%
Non-Recyclable Paper	5.6%	2.8%	4.9%	6.2%
OCC and Kraft Paper	3.1%	2.8%	2.5%	3.8%
Aseptic/Gable Top Containers	0.5%	1.4%	0.2%	0.8%
Total Paper	**25.4%**	**6.5%**	**23.9%**	**26.9%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.4%
#1 PET Beverage Containers	1.3%	1.2%	1.0%	1.6%
#2 HDPE Containers Natural	0.7%	1.9%	0.2%	1.1%
#2 HDPE Containers Colored	0.6%	0.7%	0.4%	0.8%
Retail Shopping Bags	0.7%	0.4%	0.6%	0.7%
Other Plastic Film	7.2%	2.5%	6.6%	7.8%
Other #1 PET Containers	0.5%	0.6%	0.4%	0.7%
Plastic Containers #3-#7	2.5%	1.3%	2.2%	2.8%
Other Plastic Containers	0.8%	1.3%	0.5%	1.1%
Expanded Polystyrene	0.5%	0.7%	0.4%	0.7%
Other Plastic Products	2.0%	2.0%	1.5%	2.5%
Total Plastic	**17.1%**	**5.6%**	**15.8%**	**18.4%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.5%	0.7%	0.3%	0.6%
Ferrous Food and Beverage Containers	0.5%	0.5%	0.4%	0.7%
Other Aluminum Containers	0.4%	0.4%	0.3%	0.5%
Other Ferrous Scrap Metals	2.6%	6.0%	1.2%	4.0%
Other Non-Ferrous Scrap Metals	<0.1%	0.3%	<0.1%	0.1%
Total Metals	4.1%	5.8%	2.8%	5.5%
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.8%	0.8%	0.6%	1.0%
Glass IA Deposit Containers	1.7%	1.9%	1.2%	2.1%
Green Glass	<0.1%	0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.5%	0.2%	0.4%
Total Glass	**2.8%**	**2.0%**	**2.4%**	**3.3%**
ORGANICS				
Yard Waste	1.9%	4.6%	0.9%	3.0%
Food Waste - Loose	16.3%	11.2%	13.7%	18.9%
Food Waste - Packaged	8.5%	5.1%	7.3%	9.7%
Textiles and Leather	3.5%	3.3%	2.7%	4.3%
Diapers	4.3%	6.6%	2.7%	5.8%
Rubber	0.7%	1.1%	0.4%	0.9%
Total Organics	**35.2%**	**12.9%**	**32.2%**	**38.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.4%	1.7%	<0.1%	0.8%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.7%	1.2%	0.4%	1.0%
Total Durable	**1.2%**	**2.1%**	**0.7%**	**1.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.6%	3.4%	<0.1%	1.3%
Wood - Treated	2.1%	3.7%	1.2%	2.9%
Asphalt Pavement, Brick, Rock, and Concre	0.2%	1.0%	<0.1%	0.5%
Asphalt Roofing	0.2%	1.7%	<0.1%	0.6%
Drywall/Gypsum Board	0.2%	1.1%	<0.1%	0.5%
Carpet and Carpet Padding	0.2%	0.8%	<0.1%	0.4%
Total Construction & Demolition	**3.5%**	**5.0%**	**2.4%**	**4.7%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.4%	0.9%	0.2%	0.6%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	0.3%	1.1%	<0.1%	0.5%
Prescription Medications	0.1%	0.6%	<0.1%	0.2%
ɔusehold Hazardous Materials (HHMs)	**0.8%**	**2.0%**	**0.3%**	**1.2%**
OTHER				
Other Organics	6.9%	8.6%	4.9%	8.8%
Other Inorganics	0.7%	1.3%	0.4%	1.0%
Other Construction & Demolition	0.2%	0.6%	<0.1%	0.3%
Other Durables	0.3%	0.7%	0.1%	0.5%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	1.9%	2.6%	1.3%	2.5%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**9.9%**	**8.9%**	7.8%	12.0%
TOTALS	**100.0%**			

Note: Composition based on 50 samples

Iowa City Landfill Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.4%	2.4%	5.6%	7.2%
High Grade Office Paper	2.2%	1.1%	1.8%	2.5%
Magazines/Catalogs	1.7%	1.4%	1.2%	2.2%
Mixed Recyclable Paper	5.5%	2.3%	4.7%	6.2%
Newsprint	1.2%	1.2%	0.8%	1.6%
Non-Recyclable Paper	5.2%	1.8%	4.6%	5.8%
OCC and Kraft Paper	2.1%	1.3%	1.7%	2.6%
Aseptic/Gable Top Containers	0.3%	0.2%	0.2%	0.3%
Total Paper	**24.6%**	**5.2%**	**22.9%**	**26.3%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.2%	0.2%	0.4%
#1 PET Beverage Containers	1.2%	1.0%	0.9%	1.6%
#2 HDPE Containers Natural	0.4%	0.4%	0.3%	0.5%
#2 HDPE Containers Colored	0.7%	0.9%	0.4%	1.0%
Retail Shopping Bags	0.8%	0.4%	0.7%	1.0%
Other Plastic Film	6.3%	1.8%	5.8%	6.9%
Other #1 PET Containers	0.5%	0.3%	0.4%	0.7%
Plastic Containers #3-#7	2.4%	0.9%	2.1%	2.7%
Other Plastic Containers	1.0%	1.4%	0.5%	1.4%
Expanded Polystyrene	0.4%	0.2%	0.4%	0.5%
Other Plastic Products	2.2%	2.3%	1.5%	3.0%
Total Plastic	**16.3%**	**4.4%**	**14.9%**	**17.8%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.2%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.6%	0.4%	0.5%	0.7%
Other Aluminum Containers	0.4%	0.3%	0.4%	0.5%
Other Ferrous Scrap Metals	1.5%	1.0%	1.2%	1.8%
Other Non-Ferrous Scrap Metals	<0.1%	0.4%	<0.1%	0.2%
Total Metals	**3.0%**	**1.1%**	**2.6%**	**3.4%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	1.0%	0.9%	0.7%	1.3%
Glass IA Deposit Containers	2.1%	2.0%	1.4%	2.7%
Green Glass	<0.1%	0.2%	<0.1%	0.1%
Other Mixed Cullet	0.5%	0.7%	0.2%	0.7%
Total Glass	**3.6%**	**2.2%**	**2.9%**	**4.4%**
ORGANICS				
Yard Waste	2.8%	6.0%	0.8%	4.8%
Food Waste - Loose	12.1%	6.0%	10.1%	14.1%
Food Waste - Packaged	8.8%	3.9%	7.5%	10.1%
Textiles and Leather	4.5%	3.6%	3.3%	5.7%
Diapers	4.1%	3.1%	3.0%	5.1%
Rubber	0.3%	0.5%	0.1%	0.5%
Total Organics	**32.5%**	**9.2%**	**29.5%**	**35.6%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.7%	2.5%	<0.1%	1.5%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.0%	1.5%	0.5%	1.5%
Total Durable	**1.7%**	**2.8%**	**0.8%**	**2.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.1%	0.5%	<0.1%	0.3%
Wood - Treated	2.0%	3.1%	1.0%	3.1%
Asphalt Pavement, Brick, Rock, and Concre	0.4%	1.5%	<0.1%	0.9%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	0.4%	1.5%	<0.1%	0.8%
Carpet and Carpet Padding	0.3%	1.0%	<0.1%	0.7%
Total Construction & Demolition	**3.3%**	**3.4%**	**2.2%**	**4.4%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.1%	0.1%	0.9%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	0.3%	1.5%	<0.1%	0.8%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.9%**	**2.6%**	**<0.1%**	**1.8%**
OTHER				
Other Organics	10.4%	11.1%	6.8%	14.1%
Other Inorganics	0.4%	0.6%	0.2%	0.6%
Other Construction & Demolition	0.1%	0.2%	<0.1%	0.2%
Other Durables	0.5%	1.0%	0.1%	0.8%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	2.6%	3.5%	1.4%	3.7%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**14.0%**	**11.0%**	**10.4%**	**17.6%**
TOTALS	**100.0%**			

Note: Composition based on 25 samples

Iowa City Landfill Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	8.3%	5.0%	6.6%	9.9%
High Grade Office Paper	1.2%	1.6%	0.7%	1.8%
Magazines/Catalogs	1.1%	1.7%	0.6%	1.7%
Mixed Recyclable Paper	3.6%	1.9%	3.0%	4.2%
Newsprint	1.1%	1.5%	0.6%	1.6%
Non-Recyclable Paper	6.0%	3.5%	4.8%	7.1%
OCC and Kraft Paper	4.3%	3.7%	3.1%	5.5%
Aseptic/Gable Top Containers	0.8%	1.9%	0.2%	1.4%
Total Paper	**26.4%**	**7.7%**	**23.8%**	**28.9%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.6%
#1 PET Beverage Containers	1.4%	1.3%	1.0%	1.8%
#2 HDPE Containers Natural	1.0%	2.7%	0.1%	1.9%
#2 HDPE Containers Colored	0.5%	0.6%	0.3%	0.6%
Retail Shopping Bags	0.5%	0.4%	0.3%	0.6%
Other Plastic Film	8.2%	3.1%	7.1%	9.2%
Other #1 PET Containers	0.5%	0.8%	0.2%	0.7%
Plastic Containers #3-#7	2.6%	1.7%	2.0%	3.1%
Other Plastic Containers	0.6%	1.1%	0.3%	1.0%
Expanded Polystyrene	0.7%	1.0%	0.3%	1.0%
Other Plastic Products	1.7%	1.7%	1.2%	2.3%
Total Plastic	**18.0%**	**5.6%**	**16.2%**	**19.8%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.7%	0.9%	0.4%	1.0%
Ferrous Food and Beverage Containers	0.5%	0.6%	0.3%	0.7%
Other Aluminum Containers	0.3%	0.4%	0.2%	0.5%
Other Ferrous Scrap Metals	3.9%	8.4%	1.2%	6.7%
Other Non-Ferrous Scrap Metals	<0.1%	<0.1%	<0.1%	<0.1%
Total Metals	**5.5%**	**5.8%**	**3.6%**	**7.4%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.6%	0.8%	0.3%	0.9%
Glass IA Deposit Containers	1.2%	1.7%	0.6%	1.7%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	<0.1%	0.2%	<0.1%	0.2%
Total Glass	**1.9%**	**2.0%**	**1.2%**	**2.5%**
ORGANICS				
Yard Waste	0.9%	2.2%	0.1%	1.6%
Food Waste - Loose	21.4%	14.7%	16.5%	26.2%
Food Waste - Packaged	8.1%	6.1%	6.1%	10.1%
Textiles and Leather	2.4%	2.9%	1.4%	3.3%
Diapers	4.5%	8.8%	1.6%	7.4%
Rubber	1.1%	1.5%	0.6%	1.6%
Total Organics	**38.4%**	**15.7%**	**33.2%**	**43.6%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.1%	0.3%	<0.1%	0.2%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.4%	1.0%	<0.1%	0.7%
Total Durable	**0.5%**	**1.0%**	**0.1%**	**0.8%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.1%	4.7%	<0.1%	2.6%
Wood - Treated	2.1%	4.2%	0.7%	3.5%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	<0.1%	<0.1%	<0.1%
Asphalt Roofing	0.5%	2.5%	<0.1%	1.3%
Drywall/Gypsum Board	<0.1%	0.2%	<0.1%	0.1%
Carpet and Carpet Padding	0.1%	0.5%	<0.1%	0.3%
Total Construction & Demolition	**3.9%**	**6.3%**	**1.8%**	**5.9%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.4%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	0.2%	0.5%	<0.1%	0.3%
Prescription Medications	0.2%	0.8%	<0.1%	0.5%
ousehold Hazardous Materials (HHMs)	**0.6%**	**1.0%**	**0.3%**	**1.0%**
OTHER				
Other Organics	2.5%	5.0%	0.9%	4.2%
Other Inorganics	1.0%	1.8%	0.4%	1.6%
Other Construction & Demolition	0.3%	0.8%	<0.1%	0.6%
Other Durables	0.1%	0.3%	<0.1%	0.2%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	1.0%	1.2%	0.6%	1.4%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**4.9%**	**6.1%**	**2.9%**	**7.0%**
TOTALS	**100.0%**			

Note: Composition based on 25 samples

Landfill of North Iowa Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.1%	3.3%	6.4%	7.9%
High Grade Office Paper	0.2%	0.7%	<0.1%	0.4%
Magazines/Catalogs	1.9%	2.3%	1.4%	2.5%
Mixed Recyclable Paper	6.3%	3.5%	5.5%	7.1%
Newsprint	1.5%	1.4%	1.2%	1.8%
Non-Recyclable Paper	4.0%	3.9%	3.1%	4.9%
OCC and Kraft Paper	2.7%	3.5%	1.9%	3.5%
Aseptic/Gable Top Containers	0.5%	1.0%	0.3%	0.8%
Total Paper	**24.4%**	**6.1%**	**22.9%**	**25.8%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
#1 PET Beverage Containers	1.1%	0.6%	0.9%	1.2%
#2 HDPE Containers Natural	0.5%	0.4%	0.4%	0.6%
#2 HDPE Containers Colored	0.7%	0.6%	0.5%	0.8%
Retail Shopping Bags	0.8%	0.4%	0.7%	0.9%
Other Plastic Film	8.7%	6.9%	7.1%	10.4%
Other #1 PET Containers	0.5%	0.4%	0.4%	0.6%
Plastic Containers #3-#7	1.7%	0.7%	1.6%	1.9%
Other Plastic Containers	0.6%	1.0%	0.4%	0.8%
Expanded Polystyrene	0.7%	0.6%	0.6%	0.9%
Other Plastic Products	3.0%	3.3%	2.2%	3.8%
Total Plastic	**18.6%**	**8.8%**	**16.6%**	**20.6%**
METAL				
Aluminum Beverage Containers	0.2%	1.2%	<0.1%	0.5%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
Ferrous Food and Beverage Containers	1.0%	0.9%	0.8%	1.2%
Other Aluminum Containers	0.4%	0.5%	0.2%	0.5%
Other Ferrous Scrap Metals	1.7%	2.2%	1.2%	2.2%
Other Non-Ferrous Scrap Metals	0.4%	1.2%	<0.1%	0.7%
Total Metals	**4.0%**	**4.0%**	**3.1%**	**5.0%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	0.1%
Clear Glass	0.8%	0.6%	0.7%	0.9%
Glass IA Deposit Containers	0.8%	0.7%	0.6%	1.0%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	1.0%	0.2%	0.7%
Total Glass	**2.1%**	**1.4%**	**1.8%**	**2.4%**
ORGANICS				
Yard Waste	2.4%	4.2%	1.4%	3.4%
Food Waste - Loose	13.1%	8.0%	11.3%	15.0%
Food Waste - Packaged	8.5%	4.9%	7.4%	9.7%
Textiles and Leather	3.9%	4.7%	2.8%	5.0%
Diapers	5.9%	5.5%	4.7%	7.2%
Rubber	1.1%	1.2%	0.8%	1.4%
Total Organics	**35.0%**	**10.0%**	**32.6%**	**37.3%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	0.2%	0.9%	<0.1%	0.4%
Central Processing Units/Peripherals	0.2%	0.7%	<0.1%	0.3%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.2%	2.7%	0.6%	1.9%
Total Durable	**1.5%**	**2.8%**	**0.9%**	**2.2%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.4%	0.9%	0.2%	0.6%
Wood - Treated	1.9%	3.8%	1.0%	2.8%
Asphalt Pavement, Brick, Rock, and Concre	0.5%	1.3%	0.1%	0.8%
Asphalt Roofing	0.6%	3.9%	<0.1%	1.5%
Drywall/Gypsum Board	0.6%	2.2%	<0.1%	1.1%
Carpet and Carpet Padding	0.8%	2.4%	0.3%	1.4%
Total Construction & Demolition	**4.8%**	**5.7%**	**3.5%**	**6.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.4%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.1%	<0.1%	0.1%
Sharps	<0.1%	0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
usehold Hazardous Materials (HHMs)	**0.3%**	**0.4%**	**0.3%**	**0.4%**
OTHER				
Other Organics	4.0%	4.2%	3.1%	5.0%
Other Inorganics	1.0%	2.0%	0.5%	1.5%
Other Construction & Demolition	0.3%	1.0%	<0.1%	0.5%
Other Durables	0.3%	2.0%	<0.1%	0.8%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	3.6%	2.2%	3.1%	4.1%
Other	<0.1%	0.5%	<0.1%	0.2%
Total Other	**9.3%**	**5.5%**	**8.0%**	**10.6%**
TOTALS	**100.0%**			

Note: Composition based on 50 samples

Landfill of North Iowa Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.1%	3.3%	6.1%	8.2%
High Grade Office Paper	0.3%	0.8%	<0.1%	0.5%
Magazines/Catalogs	2.1%	1.9%	1.5%	2.8%
Mixed Recyclable Paper	6.9%	3.7%	5.7%	8.1%
Newsprint	1.8%	1.7%	1.3%	2.4%
Non-Recyclable Paper	3.4%	3.0%	2.4%	4.4%
OCC and Kraft Paper	1.9%	1.7%	1.4%	2.4%
Aseptic/Gable Top Containers	0.6%	1.0%	0.3%	0.9%
Total Paper	**24.2%**	**5.7%**	**22.3%**	**26.0%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.2%	0.2%	0.4%
#1 PET Beverage Containers	1.2%	0.7%	1.0%	1.5%
#2 HDPE Containers Natural	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers Colored	0.9%	0.8%	0.6%	1.1%
Retail Shopping Bags	1.0%	0.5%	0.8%	1.1%
Other Plastic Film	6.8%	2.1%	6.1%	7.4%
Other #1 PET Containers	0.6%	0.4%	0.5%	0.7%
Plastic Containers #3-#7	1.7%	0.6%	1.5%	1.9%
Other Plastic Containers	0.6%	0.5%	0.4%	0.7%
Expanded Polystyrene	0.9%	0.7%	0.6%	1.1%
Other Plastic Products	2.6%	2.4%	1.8%	3.3%
Total Plastic	**16.9%**	**4.3%**	**15.6%**	**18.3%**
METAL				
Aluminum Beverage Containers	0.3%	1.6%	<0.1%	0.9%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
Ferrous Food and Beverage Containers	1.0%	0.6%	0.8%	1.2%
Other Aluminum Containers	0.4%	0.4%	0.3%	0.5%
Other Ferrous Scrap Metals	1.3%	1.3%	0.9%	1.7%
Other Non-Ferrous Scrap Metals	0.5%	1.7%	<0.1%	1.1%
Total Metals	**3.9%**	**2.4%**	**3.1%**	**4.7%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	0.1%	0.3%	<0.1%	0.2%
Clear Glass	0.9%	0.7%	0.7%	1.1%
Glass IA Deposit Containers	0.9%	0.7%	0.6%	1.1%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.5%	0.2%	0.5%
Total Glass	**2.2%**	**1.3%**	**1.8%**	**2.6%**
ORGANICS				
Yard Waste	2.8%	4.4%	1.4%	4.3%
Food Waste - Loose	12.2%	5.9%	10.3%	14.1%
Food Waste - Packaged	9.4%	5.4%	7.6%	11.1%
Textiles and Leather	4.2%	5.4%	2.4%	5.9%
Diapers	8.0%	7.0%	5.7%	10.2%
Rubber	0.9%	0.9%	0.6%	1.2%
Total Organics	**37.4%**	**7.8%**	**34.9%**	**39.9%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.1%	0.4%	<0.1%	0.2%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.9%	1.9%	0.3%	1.5%
Total Durable	**1.1%**	**1.9%**	**0.5%**	**1.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.3%	0.7%	0.1%	0.6%
Wood - Treated	0.9%	1.3%	0.5%	1.3%
Asphalt Pavement, Brick, Rock, and Concre	0.8%	1.9%	0.2%	1.4%
Asphalt Roofing	0.2%	0.6%	<0.1%	0.4%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	0.3%	0.7%	<0.1%	0.5%
Total Construction & Demolition	**2.6%**	**2.2%**	**1.9%**	**3.3%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.3%	0.5%	0.1%	0.4%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.2%	0.2%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.5%**	**0.5%**	**0.3%**	**0.6%**
OTHER				
Other Organics	5.3%	4.8%	3.8%	6.9%
Other Inorganics	1.4%	2.7%	0.5%	2.3%
Other Construction & Demolition	0.3%	0.4%	0.1%	0.4%
Other Durables	0.1%	0.5%	<0.1%	0.3%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.0%	2.1%	3.3%	4.7%
Other	0.1%	0.7%	<0.1%	0.4%
Total Other	**11.2%**	**5.4%**	**9.4%**	**12.9%**
TOTALS	**100.0%**			

Note: Composition based on 26 samples

Landfill of North Iowa Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.2%	3.3%	6.0%	8.3%
High Grade Office Paper	0.2%	0.6%	<0.1%	0.4%
Magazines/Catalogs	1.7%	2.7%	0.7%	2.6%
Mixed Recyclable Paper	5.5%	3.3%	4.4%	6.7%
Newsprint	1.0%	1.0%	0.7%	1.4%
Non-Recyclable Paper	4.8%	4.6%	3.3%	6.3%
OCC and Kraft Paper	3.7%	4.7%	2.2%	5.3%
Aseptic/Gable Top Containers	0.5%	1.0%	0.1%	0.8%
Total Paper	**24.6%**	**6.5%**	**22.4%**	**26.8%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
#1 PET Beverage Containers	0.9%	0.5%	0.7%	1.1%
#2 HDPE Containers Natural	0.6%	0.5%	0.4%	0.7%
#2 HDPE Containers Colored	0.4%	0.3%	0.3%	0.5%
Retail Shopping Bags	0.5%	0.3%	0.4%	0.6%
Other Plastic Film	11.2%	9.8%	7.9%	14.5%
Other #1 PET Containers	0.4%	0.5%	0.3%	0.6%
Plastic Containers #3-#7	1.7%	0.8%	1.5%	2.0%
Other Plastic Containers	0.6%	1.4%	0.2%	1.1%
Expanded Polystyrene	0.5%	0.5%	0.4%	0.7%
Other Plastic Products	3.5%	4.1%	2.1%	4.9%
Total Plastic	**20.7%**	**11.9%**	**16.7%**	**24.7%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.5%
Ferrous Food and Beverage Containers	1.0%	1.1%	0.6%	1.3%
Other Aluminum Containers	0.3%	0.6%	0.2%	0.5%
Other Ferrous Scrap Metals	2.2%	3.0%	1.2%	3.2%
Other Non-Ferrous Scrap Metals	0.2%	0.3%	<0.1%	0.3%
Total Metals	**4.2%**	**3.2%**	**3.1%**	**5.2%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	0.7%	0.5%	0.5%	0.8%
Glass IA Deposit Containers	0.7%	0.7%	0.4%	0.9%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.5%	1.4%	<0.1%	1.0%
Total Glass	**1.9%**	**1.6%**	**1.4%**	**2.5%**
ORGANICS				
Yard Waste	1.8%	4.0%	0.5%	3.2%
Food Waste - Loose	14.2%	9.7%	11.0%	17.5%
Food Waste - Packaged	7.5%	4.4%	6.0%	9.0%
Textiles and Leather	3.5%	3.8%	2.3%	4.8%
Diapers	3.4%	3.2%	2.3%	4.5%
Rubber	1.4%	1.5%	0.9%	1.9%
Total Organics	**31.9%**	**11.9%**	**27.9%**	**35.9%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	0.3%	1.3%	<0.1%	0.7%
Central Processing Units/Peripherals	0.2%	0.9%	<0.1%	0.5%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.6%	3.4%	0.4%	2.7%
Total Durable	**2.1%**	**3.6%**	**0.9%**	**3.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.4%	1.1%	<0.1%	0.8%
Wood - Treated	3.2%	5.4%	1.4%	5.0%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	<0.1%	<0.1%	<0.1%
Asphalt Roofing	1.2%	5.7%	<0.1%	3.1%
Drywall/Gypsum Board	1.2%	3.2%	0.2%	2.3%
Carpet and Carpet Padding	1.5%	3.4%	0.4%	2.7%
Total Construction & Demolition	**7.5%**	**7.9%**	**4.9%**	**10.2%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	<0.1%	0.2%	<0.1%	0.1%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.2%	<0.1%	0.1%
Prescription Medications	<0.1%	0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.2%**	**0.3%**	**0.1%**	**0.3%**
OTHER				
Other Organics	2.5%	3.5%	1.3%	3.6%
Other Inorganics	0.5%	0.7%	0.2%	0.7%
Other Construction & Demolition	0.3%	1.3%	<0.1%	0.8%
Other Durables	0.6%	2.8%	<0.1%	1.5%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	3.1%	2.2%	2.3%	3.8%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**6.9%**	**5.6%**	**5.0%**	**8.8%**
TOTALS	**100.0%**			

Note: Composition based on 24 samples

Metro Waste Authority Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.9%	5.5%	6.6%	9.2%
High Grade Office Paper	0.9%	1.5%	0.6%	1.3%
Magazines/Catalogs	1.7%	2.1%	1.3%	2.2%
Mixed Recyclable Paper	7.3%	3.7%	6.4%	8.1%
Newsprint	1.2%	1.3%	0.8%	1.5%
Non-Recyclable Paper	1.5%	2.9%	0.8%	2.2%
OCC and Kraft Paper	5.2%	3.4%	4.4%	6.0%
Aseptic/Gable Top Containers	1.0%	1.8%	0.6%	1.4%
Total Paper	**26.7%**	**8.5%**	**24.7%**	**28.7%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.5%
#1 PET Beverage Containers	1.1%	0.7%	1.0%	1.3%
#2 HDPE Containers Natural	0.4%	0.3%	0.3%	0.5%
#2 HDPE Containers Colored	0.6%	0.4%	0.5%	0.7%
Retail Shopping Bags	1.0%	0.4%	0.9%	1.1%
Other Plastic Film	7.9%	2.9%	7.3%	8.6%
Other #1 PET Containers	0.3%	0.3%	0.3%	0.4%
Plastic Containers #3-#7	2.4%	2.8%	1.8%	3.1%
Other Plastic Containers	0.6%	1.2%	0.3%	0.9%
Expanded Polystyrene	0.8%	0.7%	0.7%	1.0%
Other Plastic Products	2.5%	1.7%	2.1%	2.9%
Total Plastic	**18.1%**	**4.6%**	**17.1%**	**19.2%**
METAL				
Aluminum Beverage Containers	0.1%	0.4%	<0.1%	0.2%
Aluminum IA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.5%
Ferrous Food and Beverage Containers	0.8%	0.8%	0.6%	1.0%
Other Aluminum Containers	0.4%	0.6%	0.2%	0.5%
Other Ferrous Scrap Metals	1.9%	2.8%	1.3%	2.6%
Other Non-Ferrous Scrap Metals	0.2%	0.5%	<0.1%	0.3%
Total Metals	**3.8%**	**2.7%**	**3.2%**	**4.4%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	0.1%
Clear Glass	0.6%	0.6%	0.5%	0.8%
Glass IA Deposit Containers	0.6%	0.7%	0.5%	0.8%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.2%	0.5%	0.1%	0.3%
Total Glass	**1.6%**	**1.0%**	**1.3%**	**1.8%**
ORGANICS				
Yard Waste	4.1%	7.3%	2.4%	5.8%
Food Waste - Loose	13.5%	9.7%	11.2%	15.8%
Food Waste - Packaged	5.6%	5.9%	4.2%	7.0%
Textiles and Leather	4.8%	4.9%	3.7%	6.0%
Diapers	2.7%	2.3%	2.2%	3.2%
Rubber	0.5%	1.3%	0.2%	0.8%
Total Organics	**31.2%**	**12.6%**	**28.3%**	**34.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	0.3%	1.9%	<0.1%	0.7%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	0.1%	0.8%	<0.1%	0.3%
Electrical and Household Appliances	1.1%	2.2%	0.6%	1.6%
Total Durable	**1.5%**	**3.4%**	**0.7%**	**2.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.3%	2.2%	0.8%	1.8%
Wood - Treated	1.4%	2.2%	0.9%	1.9%
Asphalt Pavement, Brick, Rock, and Concre	1.1%	4.6%	<0.1%	2.2%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	0.2%	1.0%	<0.1%	0.5%
Carpet and Carpet Padding	0.8%	1.6%	0.4%	1.2%
Total Construction & Demolition	**4.9%**	**6.3%**	**3.4%**	**6.3%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	<0.1%	0.4%	<0.1%	0.2%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	0.1%
Sharps	0.1%	0.4%	<0.1%	0.2%
Prescription Medications	<0.1%	0.2%	<0.1%	<0.1%
›usehold Hazardous Materials (HHMs)	**0.3%**	**0.8%**	**0.1%**	**0.5%**
OTHER				
Other Organics	3.4%	5.9%	2.0%	4.8%
Other Inorganics	0.7%	1.1%	0.4%	0.9%
Other Construction & Demolition	0.2%	0.4%	<0.1%	0.3%
Other Durables	0.3%	1.0%	<0.1%	0.5%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	7.3%	5.3%	6.1%	8.6%
Other	<0.1%	0.2%	<0.1%	<0.1%
Total Other	**11.9%**	**8.1%**	**10.0%**	**13.7%**
TOTALS	**100.0%**			

Note: Composition based on 50 samples

Metro Waste Authority Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.2%	3.1%	5.1%	7.2%
High Grade Office Paper	0.6%	1.0%	0.3%	1.0%
Magazines/Catalogs	1.8%	1.9%	1.1%	2.4%
Mixed Recyclable Paper	7.0%	2.9%	6.0%	8.0%
Newsprint	1.1%	1.0%	0.7%	1.4%
Non-Recyclable Paper	0.9%	1.9%	0.2%	1.5%
OCC and Kraft Paper	3.7%	2.4%	2.9%	4.6%
Aseptic/Gable Top Containers	0.6%	1.2%	0.2%	1.1%
Total Paper	**21.8%**	**6.3%**	**19.6%**	**24.0%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.5%
#1 PET Beverage Containers	0.8%	0.4%	0.7%	1.0%
#2 HDPE Containers Natural	0.4%	0.2%	0.3%	0.5%
#2 HDPE Containers Colored	0.6%	0.4%	0.4%	0.7%
Retail Shopping Bags	1.2%	0.4%	1.1%	1.3%
Other Plastic Film	6.8%	2.8%	5.9%	7.8%
Other #1 PET Containers	0.3%	0.3%	0.2%	0.4%
Plastic Containers #3-#7	2.0%	0.6%	1.8%	2.2%
Other Plastic Containers	0.5%	0.7%	0.2%	0.7%
Expanded Polystyrene	0.7%	0.5%	0.6%	0.9%
Other Plastic Products	2.9%	1.7%	2.3%	3.5%
Total Plastic	**16.5%**	**3.8%**	**15.2%**	**17.9%**
METAL				
Aluminum Beverage Containers	0.2%	0.7%	<0.1%	0.5%
Aluminum IA Deposit Beverage Containers	0.3%	0.2%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.9%	0.7%	0.6%	1.1%
Other Aluminum Containers	0.5%	0.8%	0.2%	0.8%
Other Ferrous Scrap Metals	2.3%	3.1%	1.2%	3.4%
Other Non-Ferrous Scrap Metals	<0.1%	0.2%	<0.1%	0.1%
Total Metals	**4.2%**	**2.9%**	**3.2%**	**5.3%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	0.8%	0.7%	0.6%	1.1%
Glass IA Deposit Containers	0.8%	0.7%	0.5%	1.0%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.2%	0.5%	<0.1%	0.4%
Total Glass	**1.9%**	**1.0%**	**1.5%**	**2.3%**
ORGANICS				
Yard Waste	7.6%	10.7%	3.9%	11.4%
Food Waste - Loose	7.5%	3.8%	6.1%	8.8%
Food Waste - Packaged	5.2%	2.7%	4.3%	6.2%
Textiles and Leather	7.0%	6.4%	4.8%	9.3%
Diapers	4.1%	2.7%	3.1%	5.0%
Rubber	0.7%	1.8%	0.1%	1.4%
Total Organics	**32.1%**	**11.3%**	**28.2%**	**36.1%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.8%	3.2%	0.7%	2.9%
Total Durable	**1.8%**	**3.1%**	**0.7%**	**2.9%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	2.0%	2.8%	1.0%	2.9%
Wood - Treated	1.7%	2.3%	0.9%	2.5%
Asphalt Pavement, Brick, Rock, and Concre	0.4%	1.0%	<0.1%	0.7%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	1.1%	1.5%	0.6%	1.7%
Total Construction & Demolition	**5.2%**	**3.1%**	**4.1%**	**6.3%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	<0.1%	0.1%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.2%	<0.1%	0.2%
Sharps	<0.1%	0.2%	<0.1%	0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.3%**	**0.4%**	**0.1%**	**0.4%**
OTHER				
Other Organics	3.7%	4.9%	1.9%	5.4%
Other Inorganics	1.0%	1.5%	0.5%	1.5%
Other Construction & Demolition	0.3%	0.5%	<0.1%	0.4%
Other Durables	0.6%	1.5%	<0.1%	1.2%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	10.6%	5.9%	8.5%	12.6%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**16.2%**	**7.9%**	**13.4%**	**19.0%**
TOTALS	**100.0%**			

Note: Composition based on 22 samples

Metro Waste Authority Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	9.4%	6.9%	7.2%	11.5%
High Grade Office Paper	1.2%	1.8%	0.6%	1.7%
Magazines/Catalogs	1.7%	2.1%	1.1%	2.4%
Mixed Recyclable Paper	7.5%	4.3%	6.2%	8.8%
Newsprint	1.2%	1.6%	0.7%	1.7%
Non-Recyclable Paper	2.0%	3.5%	1.0%	3.1%
OCC and Kraft Paper	6.4%	4.0%	5.2%	7.7%
Aseptic/Gable Top Containers	1.2%	2.1%	0.6%	1.9%
Total Paper	**30.7%**	**9.9%**	**27.6%**	**33.7%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.5%	0.5%	0.3%	0.6%
#1 PET Beverage Containers	1.4%	0.9%	1.1%	1.7%
#2 HDPE Containers Natural	0.5%	0.3%	0.3%	0.6%
#2 HDPE Containers Colored	0.6%	0.5%	0.5%	0.8%
Retail Shopping Bags	0.8%	0.5%	0.6%	0.9%
Other Plastic Film	8.8%	2.9%	7.9%	9.7%
Other #1 PET Containers	0.4%	0.4%	0.2%	0.5%
Plastic Containers #3-#7	2.7%	3.7%	1.6%	3.9%
Other Plastic Containers	0.7%	1.5%	0.2%	1.1%
Expanded Polystyrene	0.9%	0.8%	0.6%	1.1%
Other Plastic Products	2.2%	1.8%	1.7%	2.8%
Total Plastic	**19.4%**	**5.1%**	**17.8%**	**21.0%**
METAL				
Aluminum Beverage Containers	<0.1%	0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.6%
Ferrous Food and Beverage Containers	0.8%	0.8%	0.5%	1.0%
Other Aluminum Containers	0.3%	0.2%	0.2%	0.4%
Other Ferrous Scrap Metals	1.6%	2.5%	0.9%	2.4%
Other Non-Ferrous Scrap Metals	0.3%	0.7%	<0.1%	0.5%
Total Metals	**3.5%**	**2.5%**	**2.7%**	**4.3%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	0.1%
Clear Glass	0.5%	0.5%	0.3%	0.6%
Glass IA Deposit Containers	0.5%	0.7%	0.3%	0.7%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.2%	0.5%	<0.1%	0.4%
Total Glass	**1.3%**	**1.0%**	**1.0%**	**1.7%**
ORGANICS				
Yard Waste	1.2%	2.5%	0.4%	2.0%
Food Waste - Loose	18.4%	12.5%	14.5%	22.3%
Food Waste - Packaged	5.9%	7.5%	3.6%	8.3%
Textiles and Leather	3.1%	3.2%	2.1%	4.0%
Diapers	1.6%	1.9%	1.0%	2.2%
Rubber	0.4%	0.6%	0.2%	0.5%
Total Organics	**30.5%**	**13.6%**	**26.3%**	**34.7%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	0.5%	2.5%	<0.1%	1.3%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	0.2%	1.0%	<0.1%	0.5%
Electrical and Household Appliances	0.6%	0.8%	0.3%	0.8%
Total Durable	**1.3%**	**3.5%**	**0.2%**	**2.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.8%	1.7%	0.2%	1.3%
Wood - Treated	1.2%	2.1%	0.6%	1.9%
Asphalt Pavement, Brick, Rock, and Concre	1.7%	6.1%	<0.1%	3.6%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	0.4%	1.3%	<0.1%	0.8%
Carpet and Carpet Padding	0.6%	1.7%	<0.1%	1.1%
Total Construction & Demolition	**4.6%**	**7.9%**	**2.2%**	**7.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.1%	0.6%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
Sharps	0.1%	0.5%	<0.1%	0.3%
Prescription Medications	<0.1%	0.2%	<0.1%	0.1%
ousehold Hazardous Materials (HHMs)	**0.4%**	**1.0%**	**<0.1%**	**0.7%**
OTHER				
Other Organics	3.2%	6.5%	1.1%	5.2%
Other Inorganics	0.4%	0.7%	0.1%	0.6%
Other Construction & Demolition	<0.1%	0.2%	<0.1%	0.2%
Other Durables	<0.1%	<0.1%	<0.1%	<0.1%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.6%	4.9%	3.1%	6.2%
Other	<0.1%	0.2%	<0.1%	0.1%
Total Other	**8.4%**	**8.2%**	**5.8%**	**10.9%**
TOTALS	**100.0%**			

Note: Composition based on 28 samples

Newton Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	3.9%	3.5%	3.2%	4.7%
High Grade Office Paper	1.5%	1.7%	1.1%	1.8%
Magazines/Catalogs	1.2%	1.7%	0.9%	1.6%
Mixed Recyclable Paper	4.8%	5.8%	3.5%	6.0%
Newsprint	1.3%	1.6%	1.0%	1.6%
Non-Recyclable Paper	3.2%	3.6%	2.4%	3.9%
OCC and Kraft Paper	7.1%	13.0%	4.3%	9.9%
Aseptic/Gable Top Containers	0.2%	0.7%	<0.1%	0.4%
Total Paper	**23.2%**	**14.9%**	**20.0%**	**26.4%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.3%	0.2%	0.3%
#1 PET Beverage Containers	1.0%	1.1%	0.8%	1.2%
#2 HDPE Containers Natural	0.5%	0.5%	0.4%	0.6%
#2 HDPE Containers Colored	0.5%	0.6%	0.4%	0.7%
Retail Shopping Bags	0.8%	0.9%	0.6%	1.0%
Other Plastic Film	4.1%	3.5%	3.3%	4.8%
Other #1 PET Containers	0.5%	0.4%	0.4%	0.6%
Plastic Containers #3-#7	1.4%	1.1%	1.2%	1.7%
Other Plastic Containers	0.3%	0.5%	0.2%	0.4%
Expanded Polystyrene	0.6%	0.7%	0.4%	0.7%
Other Plastic Products	17.6%	28.2%	11.6%	23.7%
Total Plastic	**27.6%**	**24.1%**	**22.4%**	**32.7%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.4%	0.3%	0.4%
Ferrous Food and Beverage Containers	0.8%	0.8%	0.7%	1.0%
Other Aluminum Containers	0.5%	1.4%	0.2%	0.8%
Other Ferrous Scrap Metals	1.3%	2.1%	0.8%	1.7%
Other Non-Ferrous Scrap Metals	0.2%	0.5%	<0.1%	0.3%
Total Metals	**3.2%**	**2.4%**	**2.7%**	**3.7%**
GLASS				
Blue Glass	<0.1%	0.5%	<0.1%	0.2%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	1.1%	0.9%	0.9%	1.3%
Glass IA Deposit Containers	0.9%	2.7%	0.3%	1.5%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	1.0%	0.2%	0.6%
Total Glass	**2.5%**	**3.1%**	**1.8%**	**3.2%**
ORGANICS				
Yard Waste	0.8%	1.7%	0.4%	1.2%
Food Waste - Loose	11.1%	10.8%	8.8%	13.4%
Food Waste - Packaged	7.1%	6.8%	5.6%	8.5%
Textiles and Leather	2.7%	3.9%	1.9%	3.5%
Diapers	3.1%	3.7%	2.3%	3.9%
Rubber	0.7%	1.4%	0.4%	1.0%
Total Organics	**25.5%**	**17.0%**	**21.8%**	**29.1%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.4%	4.1%	0.5%	2.2%
Total Durable	**1.4%**	4.1%	0.5%	2.3%
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.1%	3.7%	0.3%	1.9%
Wood - Treated	1.3%	3.5%	0.6%	2.1%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.4%	<0.1%	0.2%
Asphalt Roofing	<0.1%	0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	0.4%	2.0%	<0.1%	0.8%
Carpet and Carpet Padding	0.5%	2.3%	<0.1%	1.0%
Total Construction & Demolition	**3.4%**	**5.5%**	**2.2%**	**4.6%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.4%	1.2%	0.2%	0.7%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	0.2%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.6%**	**1.3%**	**0.3%**	**0.8%**
OTHER				
Other Organics	6.8%	9.4%	4.8%	8.8%
Other Inorganics	0.9%	3.1%	0.3%	1.6%
Other Construction & Demolition	0.7%	2.6%	0.1%	1.2%
Other Durables	2.1%	3.9%	1.3%	2.9%
Other HHM	<0.1%	0.2%	<0.1%	<0.1%
Fines	1.9%	2.0%	1.5%	2.4%
Other	0.3%	2.3%	<0.1%	0.8%
Total Other	**12.8%**	**11.2%**	**10.4%**	**15.1%**
	100.0%			

Note: Composition based on 59 samples

Newton Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	4.6%	2.9%	3.7%	5.5%
High Grade Office Paper	2.0%	1.8%	1.5%	2.6%
Magazines/Catalogs	1.7%	2.1%	1.0%	2.3%
Mixed Recyclable Paper	7.0%	7.8%	4.6%	9.4%
Newsprint	1.8%	1.7%	1.3%	2.3%
Non-Recyclable Paper	3.8%	3.5%	2.7%	4.8%
OCC and Kraft Paper	3.4%	2.1%	2.8%	4.0%
Aseptic/Gable Top Containers	0.1%	0.2%	<0.1%	0.2%
Total Paper	**24.4%**	**11.6%**	**20.9%**	**27.9%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
#1 PET Beverage Containers	1.0%	0.8%	0.8%	1.3%
#2 HDPE Containers Natural	0.6%	0.5%	0.4%	0.8%
#2 HDPE Containers Colored	0.7%	0.7%	0.5%	0.9%
Retail Shopping Bags	1.0%	0.6%	0.8%	1.2%
Other Plastic Film	4.3%	1.6%	3.9%	4.8%
Other #1 PET Containers	0.7%	0.4%	0.6%	0.8%
Plastic Containers #3-#7	1.9%	1.1%	1.5%	2.2%
Other Plastic Containers	0.3%	0.2%	0.2%	0.3%
Expanded Polystyrene	0.7%	0.6%	0.5%	0.8%
Other Plastic Products	2.5%	2.5%	1.8%	3.3%
Total Plastic	**13.9%**	**3.1%**	**13.0%**	**14.9%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.5%	0.5%	0.3%	0.6%
Ferrous Food and Beverage Containers	1.1%	0.9%	0.8%	1.4%
Other Aluminum Containers	0.3%	0.3%	0.2%	0.4%
Other Ferrous Scrap Metals	1.5%	1.9%	0.9%	2.1%
Other Non-Ferrous Scrap Metals	0.1%	0.2%	<0.1%	0.2%
Total Metals	**3.6%**	**2.0%**	**2.9%**	**4.2%**
GLASS				
Blue Glass	0.1%	0.7%	<0.1%	0.3%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	1.3%	0.9%	1.1%	1.6%
Glass IA Deposit Containers	1.4%	3.8%	0.3%	2.6%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.7%	1.4%	0.3%	1.1%
Total Glass	**3.6%**	**4.1%**	**2.4%**	**4.9%**
ORGANICS				
Yard Waste	1.2%	2.2%	0.5%	1.9%
Food Waste - Loose	13.3%	9.5%	10.4%	16.2%
Food Waste - Packaged	8.3%	5.2%	6.7%	9.9%
Textiles and Leather	4.4%	5.3%	2.7%	6.0%
Diapers	4.0%	3.2%	3.0%	5.0%
Rubber	0.7%	1.8%	0.2%	1.3%
Total Organics	**31.9%**	**12.2%**	**28.2%**	**35.6%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	0.2%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	2.5%	5.8%	0.7%	4.3%
Total Durable	**2.6%**	**5.8%**	**0.8%**	**4.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.3%	1.5%	<0.1%	0.7%
Wood - Treated	0.7%	1.0%	0.4%	1.0%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.1%	<0.1%	<0.1%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	0.9%	3.3%	<0.1%	1.9%
Total Construction & Demolition	**2.0%**	**3.5%**	**0.9%**	**3.0%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.1%	0.1%	0.8%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ousehold Hazardous Materials (HHMs)	**0.6%**	**1.2%**	**0.2%**	**1.0%**
OTHER				
Other Organics	9.7%	10.6%	6.5%	12.9%
Other Inorganics	0.9%	1.8%	0.4%	1.5%
Other Construction & Demolition	1.2%	3.7%	<0.1%	2.3%
Other Durables	3.2%	4.4%	1.9%	4.6%
Other HHM	<0.1%	0.3%	<0.1%	0.1%
Fines	2.4%	1.8%	1.8%	2.9%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**17.5%**	**10.8%**	**14.2%**	**20.8%**
TOTALS	**100.0%**			

Note: Composition based on 29 samples

Newton Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	3.2%	3.9%	2.0%	4.4%
High Grade Office Paper	0.9%	1.6%	0.4%	1.4%
Magazines/Catalogs	0.8%	1.3%	0.4%	1.2%
Mixed Recyclable Paper	2.4%	2.9%	1.5%	3.3%
Newsprint	0.8%	1.4%	0.4%	1.2%
Non-Recyclable Paper	2.5%	3.7%	1.4%	3.6%
OCC and Kraft Paper	11.0%	18.1%	5.6%	16.5%
Aseptic/Gable Top Containers	0.3%	1.0%	<0.1%	0.6%
Total Paper	**21.9%**	**17.4%**	**16.6%**	**27.1%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	0.1%	0.3%
#1 PET Beverage Containers	1.0%	1.3%	0.6%	1.4%
#2 HDPE Containers Natural	0.4%	0.4%	0.2%	0.5%
#2 HDPE Containers Colored	0.4%	0.5%	0.3%	0.5%
Retail Shopping Bags	0.6%	1.1%	0.2%	0.9%
Other Plastic Film	3.8%	4.6%	2.4%	5.2%
Other #1 PET Containers	0.3%	0.4%	0.1%	0.4%
Plastic Containers #3-#7	1.0%	1.2%	0.6%	1.3%
Other Plastic Containers	0.3%	0.7%	<0.1%	0.5%
Expanded Polystyrene	0.5%	0.7%	0.2%	0.7%
Other Plastic Products	33.8%	39.4%	22.0%	45.7%
Total Plastic	**42.1%**	**33.7%**	**32.0%**	**52.2%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.2%	0.3%	0.1%	0.3%
Ferrous Food and Beverage Containers	0.5%	0.8%	0.3%	0.8%
Other Aluminum Containers	0.7%	1.9%	0.2%	1.3%
Other Ferrous Scrap Metals	1.0%	2.2%	0.4%	1.7%
Other Non-Ferrous Scrap Metals	0.2%	0.6%	<0.1%	0.4%
Total Metals	**2.8%**	**2.7%**	**1.9%**	**3.6%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.8%	0.9%	0.5%	1.1%
Glass IA Deposit Containers	0.3%	0.6%	0.2%	0.5%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	<0.1%	0.3%	<0.1%	0.2%
Total Glass	**1.3%**	**1.6%**	**0.8%**	**1.7%**
ORGANICS				
Yard Waste	0.3%	1.0%	<0.1%	0.6%
Food Waste - Loose	8.8%	11.9%	5.3%	12.4%
Food Waste - Packaged	5.8%	8.0%	3.3%	8.2%
Textiles and Leather	1.0%	1.5%	0.5%	1.4%
Diapers	2.1%	4.1%	0.9%	3.4%
Rubber	0.7%	1.0%	0.4%	0.9%
Total Organics	**18.6%**	**20.6%**	**12.4%**	**24.8%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.2%	0.4%	<0.1%	0.3%
Total Durable	**0.2%**	**0.4%**	**<0.1%**	**0.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	2.1%	5.0%	0.6%	3.6%
Wood - Treated	1.9%	4.8%	0.5%	3.4%
Asphalt Pavement, Brick, Rock, and Concre	0.1%	0.6%	<0.1%	0.3%
Asphalt Roofing	<0.1%	0.2%	<0.1%	0.1%
Drywall/Gypsum Board	0.7%	2.8%	<0.1%	1.6%
Carpet and Carpet Padding	<0.1%	0.1%	<0.1%	<0.1%
Total Construction & Demolition	**4.9%**	**7.0%**	**2.9%**	**7.0%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.4%	1.2%	<0.1%	0.8%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	0.3%	<0.1%	0.1%
ousehold Hazardous Materials (HHMs)	**0.5%**	**1.4%**	**0.1%**	**1.0%**
OTHER				
Other Organics	3.7%	8.0%	1.3%	6.1%
Other Inorganics	0.9%	4.0%	<0.1%	2.1%
Other Construction & Demolition	0.1%	0.5%	<0.1%	0.3%
Other Durables	0.9%	3.3%	<0.1%	1.9%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	1.5%	2.3%	0.8%	2.1%
Other	0.6%	3.3%	<0.1%	1.6%
Total Other	**7.7%**	**11.5%**	**4.2%**	**11.2%**
TOTALS	**100.0%**			

Note: Composition based on 30 samples

South Central Iowa Solid Waste Agency Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
PAPER				
Compostable Paper	6.9%	4.6%	5.9%	7.9%
High Grade Office Paper	0.3%	0.5%	0.2%	0.4%
Magazines/Catalogs	1.4%	1.5%	1.1%	1.7%
Mixed Recyclable Paper	8.6%	3.7%	7.8%	9.4%
Newsprint	1.5%	1.3%	1.3%	1.8%
Non-Recyclable Paper	1.8%	5.6%	0.5%	3.0%
OCC and Kraft Paper	3.6%	3.6%	2.8%	4.3%
Aseptic/Gable Top Containers	0.6%	1.0%	0.4%	0.9%
Total Paper	**24.7%**	**8.2%**	**22.9%**	**26.5%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	0.1%	0.2%
#1 PET Beverage Containers	1.0%	0.7%	0.8%	1.2%
#2 HDPE Containers Natural	0.6%	0.6%	0.4%	0.7%
#2 HDPE Containers Colored	0.6%	0.6%	0.5%	0.8%
Retail Shopping Bags	0.8%	0.5%	0.7%	0.9%
Other Plastic Film	8.8%	8.6%	7.0%	10.7%
Other #1 PET Containers	0.5%	0.4%	0.4%	0.5%
Plastic Containers #3-#7	2.2%	1.3%	1.9%	2.5%
Other Plastic Containers	0.3%	0.3%	0.3%	0.4%
Expanded Polystyrene	1.0%	1.5%	0.7%	1.4%
Other Plastic Products	4.1%	10.7%	1.7%	6.4%
Total Plastic	**20.1%**	**13.9%**	**17.1%**	**23.1%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.3%
Ferrous Food and Beverage Containers	0.9%	0.7%	0.7%	1.1%
Other Aluminum Containers	0.3%	0.3%	0.3%	0.4%
Other Ferrous Scrap Metals	1.8%	2.7%	1.2%	2.4%
Other Non-Ferrous Scrap Metals	0.5%	4.0%	<0.1%	1.4%
Total Metals	**3.8%**	**4.8%**	**2.8%**	**4.9%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	0.1%
Clear Glass	0.7%	0.6%	0.6%	0.8%
Glass IA Deposit Containers	0.5%	0.6%	0.4%	0.6%
Green Glass	<0.1%	0.1%	<0.1%	<0.1%
Other Mixed Cullet	1.1%	7.9%	<0.1%	2.8%
Total Glass	**2.4%**	**7.9%**	**0.7%**	**4.1%**
ORGANICS				
Yard Waste	1.8%	3.5%	1.0%	2.5%
Food Waste - Loose	14.1%	10.6%	11.8%	16.4%
Food Waste - Packaged	5.0%	3.8%	4.2%	5.8%
Textiles and Leather	3.5%	4.0%	2.6%	4.3%
Diapers	4.3%	4.1%	3.4%	5.2%
Rubber	0.8%	2.0%	0.4%	1.2%
Total Organics	**29.4%**	**14.4%**	**26.3%**	**32.5%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.2%	1.2%	<0.1%	0.5%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.6%	1.0%	0.4%	0.8%
Total Durable	**0.9%**	**1.4%**	**0.5%**	**1.2%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	2.5%	9.7%	0.4%	4.6%
Wood - Treated	2.0%	4.3%	1.1%	3.0%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.3%	<0.1%	0.1%
Asphalt Roofing	0.3%	1.2%	<0.1%	0.5%
Drywall/Gypsum Board	0.3%	0.9%	<0.1%	0.4%
Carpet and Carpet Padding	0.4%	1.8%	<0.1%	0.8%
Total Construction & Demolition	**5.5%**	**12.0%**	**2.9%**	**8.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.3%	0.8%	0.2%	0.5%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.2%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Paint	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.5%**	**0.9%**	**0.3%**	**0.7%**
OTHER				
Other Organics	3.9%	5.7%	2.7%	5.2%
Other Inorganics	0.5%	0.9%	0.3%	0.7%
Other Construction & Demolition	2.9%	10.0%	0.7%	5.1%
Other Durables	0.6%	1.6%	0.3%	1.0%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.4%	3.7%	3.6%	5.3%
Other	0.3%	1.8%	<0.1%	0.7%
Total Other	**12.7%**	**10.7%**	**10.4%**	**15.0%**
	100.0%			

Note: Composition based on 57 samples

South Central Iowa Solid Waste Agency Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.0%	2.3%	6.3%	7.7%
High Grade Office Paper	0.4%	0.6%	0.2%	0.5%
Magazines/Catalogs	1.9%	1.8%	1.4%	2.5%
Mixed Recyclable Paper	10.3%	2.8%	9.5%	11.2%
Newsprint	2.0%	1.5%	1.5%	2.4%
Non-Recyclable Paper	0.5%	0.8%	0.3%	0.8%
OCC and Kraft Paper	3.1%	2.0%	2.5%	3.7%
Aseptic/Gable Top Containers	0.5%	0.4%	0.4%	0.7%
Total Paper	**25.7%**	**5.4%**	**24.1%**	**27.3%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.1%	0.1%	0.2%
#1 PET Beverage Containers	1.2%	0.8%	1.0%	1.4%
#2 HDPE Containers Natural	0.7%	0.6%	0.5%	0.9%
#2 HDPE Containers Colored	0.8%	0.5%	0.7%	1.0%
Retail Shopping Bags	1.1%	0.4%	0.9%	1.2%
Other Plastic Film	6.8%	2.5%	6.1%	7.6%
Other #1 PET Containers	0.6%	0.2%	0.5%	0.6%
Plastic Containers #3-#7	2.4%	1.0%	2.1%	2.7%
Other Plastic Containers	0.4%	0.4%	0.3%	0.6%
Expanded Polystyrene	1.0%	0.6%	0.8%	1.2%
Other Plastic Products	2.2%	1.0%	1.9%	2.5%
Total Plastic	**17.4%**	**3.9%**	**16.2%**	**18.6%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.3%
Ferrous Food and Beverage Containers	1.1%	0.8%	0.9%	1.3%
Other Aluminum Containers	0.4%	0.2%	0.3%	0.5%
Other Ferrous Scrap Metals	2.3%	3.1%	1.4%	3.2%
Other Non-Ferrous Scrap Metals	0.1%	0.4%	<0.1%	0.3%
Total Metals	**4.2%**	**3.3%**	**3.2%**	**5.2%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.2%	<0.1%	0.2%
Clear Glass	0.9%	0.6%	0.7%	1.1%
Glass IA Deposit Containers	0.7%	0.7%	0.4%	0.9%
Green Glass	<0.1%	0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.3%	0.6%	0.2%	0.5%
Total Glass	**2.1%**	**1.3%**	**1.7%**	**2.5%**
ORGANICS				
Yard Waste	2.7%	4.8%	1.3%	4.2%
Food Waste - Loose	14.9%	8.4%	12.4%	17.5%
Food Waste - Packaged	5.8%	3.5%	4.7%	6.8%
Textiles and Leather	4.1%	4.1%	2.9%	5.3%
Diapers	5.2%	3.9%	4.0%	6.4%
Rubber	0.5%	0.6%	0.3%	0.6%
Total Organics	**33.2%**	**10.4%**	**30.0%**	**36.3%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.4%	1.6%	<0.1%	0.9%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.8%	1.0%	0.5%	1.1%
Total Durable	**1.2%**	**1.8%**	**0.6%**	**1.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.7%	2.3%	<0.1%	1.4%
Wood - Treated	1.2%	1.4%	0.8%	1.6%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.3%	<0.1%	0.2%
Asphalt Roofing	0.5%	1.6%	<0.1%	0.9%
Drywall/Gypsum Board	0.3%	0.9%	<0.1%	0.6%
Carpet and Carpet Padding	0.3%	1.0%	<0.1%	0.6%
Total Construction & Demolition	**3.1%**	**3.6%**	**2.0%**	**4.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.5%	1.1%	0.2%	0.9%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	0.2%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.2%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Paint	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.7%**	**1.2%**	**0.3%**	**1.0%**
OTHER				
Other Organics	4.9%	5.3%	3.4%	6.5%
Other Inorganics	0.6%	0.9%	0.3%	0.8%
Other Construction & Demolition	1.0%	2.7%	0.2%	1.8%
Other Durables	0.7%	1.9%	0.1%	1.3%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	5.4%	4.0%	4.2%	6.6%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**12.6%**	**7.7%**	**10.3%**	**14.9%**
TOTALS	**100.0%**			

Note: Composition based on 30 samples

South Central Iowa Solid Waste Agency Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.7%	6.3%	4.7%	8.7%
High Grade Office Paper	0.2%	0.3%	0.1%	0.3%
Magazines/Catalogs	0.6%	1.0%	0.3%	0.9%
Mixed Recyclable Paper	5.9%	4.5%	4.5%	7.3%
Newsprint	0.9%	1.1%	0.5%	1.3%
Non-Recyclable Paper	3.7%	8.1%	1.1%	6.2%
OCC and Kraft Paper	4.3%	4.7%	2.8%	5.8%
Aseptic/Gable Top Containers	0.8%	1.3%	0.4%	1.2%
Total Paper	**23.2%**	**10.4%**	**19.9%**	**26.5%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	<0.1%	0.2%
#1 PET Beverage Containers	0.7%	0.7%	0.5%	0.9%
#2 HDPE Containers Natural	0.4%	0.5%	0.2%	0.5%
#2 HDPE Containers Colored	0.4%	0.6%	0.2%	0.6%
Retail Shopping Bags	0.4%	0.5%	0.3%	0.6%
Other Plastic Film	11.9%	12.2%	8.0%	15.8%
Other #1 PET Containers	0.3%	0.5%	0.2%	0.5%
Plastic Containers #3-#7	1.9%	1.6%	1.4%	2.4%
Other Plastic Containers	0.1%	0.2%	<0.1%	0.2%
Expanded Polystyrene	1.1%	2.0%	0.5%	1.7%
Other Plastic Products	6.9%	15.6%	2.0%	11.8%
Total Plastic	**24.3%**	**19.8%**	**18.1%**	**30.6%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.2%	0.2%	0.1%	0.3%
Ferrous Food and Beverage Containers	0.6%	0.7%	0.4%	0.8%
Other Aluminum Containers	0.3%	0.4%	0.1%	0.4%
Other Ferrous Scrap Metals	1.1%	2.3%	0.4%	1.8%
Other Non-Ferrous Scrap Metals	1.2%	5.8%	<0.1%	3.0%
Total Metals	**3.3%**	**6.0%**	**1.4%**	**5.2%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	<0.1%	<0.1%	<0.1%
Clear Glass	0.3%	0.5%	0.2%	0.5%
Glass IA Deposit Containers	0.2%	0.5%	<0.1%	0.4%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	2.3%	11.5%	<0.1%	5.9%
Total Glass	**2.9%**	**11.5%**	**<0.1%**	**6.5%**
ORGANICS				
Yard Waste	0.2%	0.5%	<0.1%	0.4%
Food Waste - Loose	12.9%	12.5%	8.9%	16.8%
Food Waste - Packaged	3.7%	4.1%	2.4%	5.0%
Textiles and Leather	2.5%	3.9%	1.3%	3.7%
Diapers	2.9%	4.2%	1.5%	4.2%
Rubber	1.4%	2.9%	0.5%	2.3%
Total Organics	**23.6%**	**17.8%**	**17.9%**	**29.2%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.3%	1.0%	<0.1%	0.7%
Total Durable	**0.4%**	**1.0%**	**<0.1%**	**0.7%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	5.2%	13.9%	0.8%	9.6%
Wood - Treated	3.3%	6.1%	1.4%	5.3%
Asphalt Pavement, Brick, Rock, and Concre	<0.1%	0.2%	<0.1%	0.1%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	0.2%	0.8%	<0.1%	0.4%
Carpet and Carpet Padding	0.5%	2.4%	<0.1%	1.3%
Total Construction & Demolition	**9.3%**	**17.0%**	**3.9%**	**14.7%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	<0.1%	0.1%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
Sharps	<0.1%	0.2%	<0.1%	0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Paint	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.1%**	**0.3%**	**<0.1%**	**0.2%**
OTHER				
Other Organics	2.3%	6.2%	0.4%	4.3%
Other Inorganics	0.5%	0.9%	0.2%	0.8%
Other Construction & Demolition	5.8%	14.3%	1.2%	10.3%
Other Durables	0.5%	1.1%	0.2%	0.8%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	3.0%	3.3%	2.0%	4.1%
Other	0.7%	2.7%	<0.1%	1.6%
Total Other	**12.9%**	**13.4%**	**8.6%**	**17.1%**
TOTALS	**100.0%**			

Note: Composition based on 27 samples

Scott County Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	7.7%	3.9%	6.9%	8.6%
High Grade Office Paper	0.8%	1.0%	0.6%	1.1%
Magazines/Catalogs	1.4%	1.5%	1.1%	1.8%
Mixed Recyclable Paper	4.0%	2.3%	3.4%	4.5%
Newsprint	1.8%	1.4%	1.5%	2.1%
Non-Recyclable Paper	1.5%	1.0%	1.3%	1.8%
OCC and Kraft Paper	4.1%	2.7%	3.5%	4.7%
Aseptic/Gable Top Containers	0.2%	0.3%	0.2%	0.3%
Total Paper	**21.6%**	**8.4%**	**19.8%**	**23.5%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.5%	0.6%	0.3%	0.6%
#1 PET Beverage Containers	0.9%	0.7%	0.8%	1.1%
#2 HDPE Containers Natural	0.3%	0.3%	0.3%	0.4%
#2 HDPE Containers Colored	0.5%	0.5%	0.4%	0.6%
Retail Shopping Bags	1.1%	0.8%	1.0%	1.3%
Other Plastic Film	5.2%	2.2%	4.7%	5.7%
Other #1 PET Containers	0.5%	0.4%	0.4%	0.6%
Plastic Containers #3-#7	2.0%	1.0%	1.8%	2.2%
Other Plastic Containers	0.5%	0.6%	0.4%	0.7%
Expanded Polystyrene	1.0%	1.4%	0.7%	1.3%
Other Plastic Products	4.0%	5.9%	2.7%	5.4%
Total Plastic	**16.7%**	**6.5%**	**15.2%**	**18.1%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.5%	0.7%	0.4%	0.7%
Ferrous Food and Beverage Containers	1.0%	1.9%	0.6%	1.5%
Other Aluminum Containers	0.6%	1.1%	0.4%	0.8%
Other Ferrous Scrap Metals	1.6%	2.0%	1.2%	2.1%
Other Non-Ferrous Scrap Metals	<0.1%	0.1%	<0.1%	<0.1%
Total Metals	**3.9%**	**2.9%**	**3.2%**	**4.5%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.4%	<0.1%	0.2%
Clear Glass	1.2%	1.0%	0.9%	1.4%
Glass IA Deposit Containers	1.2%	1.7%	0.8%	1.5%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.6%	2.5%	<0.1%	1.1%
Total Glass	**3.0%**	**3.3%**	**2.3%**	**3.7%**
ORGANICS				
Yard Waste	2.9%	4.6%	1.9%	4.0%
Food Waste - Loose	12.0%	6.7%	10.5%	13.5%
Food Waste - Packaged	6.2%	3.6%	5.4%	7.0%
Textiles and Leather	3.6%	3.1%	2.9%	4.3%
Diapers	4.7%	4.2%	3.8%	5.6%
Rubber	0.4%	1.0%	0.2%	0.6%
Total Organics	**29.8%**	**13.5%**	**26.8%**	**32.8%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	0.4%	<0.1%	0.2%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.0%	1.7%	0.7%	1.4%
Total Durable	**1.1%**	**1.7%**	**0.7%**	**1.5%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.4%	4.7%	0.3%	2.4%
Wood - Treated	2.8%	6.2%	1.4%	4.2%
Asphalt Pavement, Brick, Rock, and Concre	0.3%	0.9%	<0.1%	0.5%
Asphalt Roofing	<0.1%	0.2%	<0.1%	<0.1%
Drywall/Gypsum Board	0.1%	0.4%	<0.1%	0.2%
Carpet and Carpet Padding	1.9%	6.7%	0.4%	3.4%
Total Construction & Demolition	**6.5%**	**12.1%**	**3.8%**	**9.2%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.5%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.2%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
usehold Hazardous Materials (HHMs)	**0.4%**	**0.5%**	**0.3%**	**0.5%**
OTHER				
Other Organics	6.4%	8.0%	4.6%	8.2%
Other Inorganics	0.3%	0.6%	0.1%	0.4%
Other Construction & Demolition	1.1%	3.1%	0.4%	1.8%
Other Durables	0.1%	0.6%	<0.1%	0.3%
Other HHM	4.8%	16.9%	1.1%	8.6%
Fines	3.8%	3.5%	3.0%	4.6%
Other	0.5%	3.7%	<0.1%	1.4%
Total Other	**17.1%**	**16.0%**	**13.5%**	**20.6%**
TOTALS	**100.0%**			

Note: Composition based on 55 samples

Scott County Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	8.2%	4.1%	7.2%	9.2%
High Grade Office Paper	0.8%	1.0%	0.5%	1.0%
Magazines/Catalogs	1.5%	1.4%	1.2%	1.9%
Mixed Recyclable Paper	4.2%	2.3%	3.6%	4.8%
Newsprint	1.9%	1.4%	1.5%	2.2%
Non-Recyclable Paper	1.6%	1.0%	1.4%	1.9%
OCC and Kraft Paper	2.8%	1.6%	2.4%	3.2%
Aseptic/Gable Top Containers	0.2%	0.3%	0.1%	0.3%
Total Paper	**21.2%**	**8.4%**	**19.1%**	**23.3%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.4%	0.6%	0.3%	0.6%
#1 PET Beverage Containers	0.9%	0.7%	0.7%	1.0%
#2 HDPE Containers Natural	0.4%	0.3%	0.3%	0.4%
#2 HDPE Containers Colored	0.5%	0.4%	0.4%	0.6%
Retail Shopping Bags	1.3%	0.8%	1.1%	1.5%
Other Plastic Film	5.2%	2.3%	4.6%	5.8%
Other #1 PET Containers	0.6%	0.4%	0.5%	0.7%
Plastic Containers #3-#7	2.1%	1.1%	1.9%	2.4%
Other Plastic Containers	0.5%	0.5%	0.4%	0.6%
Expanded Polystyrene	1.1%	1.5%	0.7%	1.5%
Other Plastic Products	4.1%	6.3%	2.6%	5.7%
Total Plastic	**17.0%**	**6.3%**	**15.4%**	**18.6%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.3%	0.3%	0.5%
Ferrous Food and Beverage Containers	1.1%	2.1%	0.6%	1.6%
Other Aluminum Containers	0.7%	1.2%	0.4%	1.0%
Other Ferrous Scrap Metals	1.6%	1.9%	1.1%	2.0%
Other Non-Ferrous Scrap Metals	<0.1%	0.1%	<0.1%	<0.1%
Total Metals	**3.8%**	**3.0%**	**3.0%**	**4.5%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.5%	<0.1%	0.2%
Clear Glass	1.3%	1.1%	1.0%	1.5%
Glass IA Deposit Containers	0.9%	0.9%	0.7%	1.1%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.7%	2.7%	<0.1%	1.4%
Total Glass	**3.0%**	**3.2%**	**2.2%**	**3.8%**
ORGANICS				
Yard Waste	3.1%	4.8%	1.9%	4.3%
Food Waste - Loose	13.1%	6.6%	11.5%	14.8%
Food Waste - Packaged	6.9%	3.8%	6.0%	7.9%
Textiles and Leather	3.9%	3.3%	3.1%	4.7%
Diapers	5.4%	4.4%	4.3%	6.5%
Rubber	0.2%	0.3%	0.1%	0.3%
Total Organics	**32.7%**	**13.6%**	**29.3%**	**36.1%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	<0.1%	<0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.1%	1.8%	0.7%	1.6%
Total Durable	**1.2%**	**1.8%**	**0.7%**	**1.6%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	1.7%	5.2%	0.4%	2.9%
Wood - Treated	1.8%	3.6%	1.0%	2.7%
Asphalt Pavement, Brick, Rock, and Concre	0.2%	0.7%	<0.1%	0.3%
Asphalt Roofing	<0.1%	0.2%	<0.1%	<0.1%
Drywall/Gypsum Board	0.2%	0.5%	<0.1%	0.3%
Carpet and Carpet Padding	0.8%	2.4%	0.2%	1.4%
Total Construction & Demolition	**4.7%**	**7.9%**	**2.8%**	**6.7%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.5%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.2%	<0.1%	0.2%
Sharps	<0.1%	0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
Total Household Hazardous Materials (HHMs)	**0.4%**	**0.5%**	**0.3%**	**0.6%**
OTHER				
Other Organics	6.0%	6.2%	4.4%	7.5%
Other Inorganics	0.3%	0.6%	0.1%	0.4%
Other Construction & Demolition	0.4%	1.4%	<0.1%	0.7%
Other Durables	0.1%	0.7%	<0.1%	0.3%
Other HHM	6.0%	18.8%	1.4%	10.7%
Fines	3.2%	2.3%	2.7%	3.8%
Other	<0.1%	0.1%	<0.1%	<0.1%
Total Other	**16.0%**	**16.6%**	**11.9%**	**20.1%**
TOTALS	**100.0%**			

Note: Composition based on 44 samples

Scott County Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	5.9%	2.8%	4.5%	7.3%
High Grade Office Paper	1.1%	1.3%	0.4%	1.7%
Magazines/Catalogs	1.0%	1.7%	0.2%	1.9%
Mixed Recyclable Paper	3.0%	2.4%	1.8%	4.1%
Newsprint	1.6%	1.5%	0.9%	2.4%
Non-Recyclable Paper	1.2%	1.0%	0.7%	1.7%
OCC and Kraft Paper	9.3%	5.2%	6.7%	11.8%
Aseptic/Gable Top Containers	0.3%	0.2%	0.1%	0.4%
Total Paper	**23.4%**	**8.5%**	**19.2%**	**27.6%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.6%	0.5%	0.3%	0.8%
#1 PET Beverage Containers	1.1%	0.6%	0.8%	1.4%
#2 HDPE Containers Natural	0.3%	0.2%	0.2%	0.4%
#2 HDPE Containers Colored	0.7%	0.9%	0.3%	1.2%
Retail Shopping Bags	0.7%	0.6%	0.4%	0.9%
Other Plastic Film	5.2%	1.7%	4.4%	6.0%
Other #1 PET Containers	0.2%	0.2%	<0.1%	0.3%
Plastic Containers #3-#7	1.4%	0.9%	1.0%	1.9%
Other Plastic Containers	0.7%	0.8%	0.4%	1.1%
Expanded Polystyrene	0.7%	0.6%	0.4%	1.0%
Other Plastic Products	3.6%	4.1%	1.6%	5.7%
Total Plastic	**15.3%**	**7.1%**	**11.8%**	**18.8%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	1.1%	1.5%	0.3%	1.8%
Ferrous Food and Beverage Containers	0.9%	0.7%	0.6%	1.3%
Other Aluminum Containers	0.3%	0.3%	0.2%	0.4%
Other Ferrous Scrap Metals	1.9%	2.0%	0.9%	2.9%
Other Non-Ferrous Scrap Metals	<0.1%	<0.1%	<0.1%	<0.1%
Total Metals	**4.2%**	**2.8%**	**2.8%**	**5.6%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	0.1%
Clear Glass	0.7%	0.7%	0.3%	1.1%
Glass IA Deposit Containers	2.2%	3.4%	0.5%	3.9%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.2%	0.4%	<0.1%	0.4%
Total Glass	**3.1%**	**3.5%**	**1.3%**	**4.9%**
ORGANICS				
Yard Waste	2.3%	3.7%	0.5%	4.2%
Food Waste - Loose	7.2%	7.2%	3.6%	10.8%
Food Waste - Packaged	3.0%	2.8%	1.6%	4.4%
Textiles and Leather	2.5%	2.0%	1.5%	3.5%
Diapers	1.8%	2.9%	0.4%	3.3%
Rubber	1.1%	2.2%	<0.1%	2.2%
Total Organics	**17.9%**	**12.9%**	**11.5%**	**24.3%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.3%	1.0%	<0.1%	0.8%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	0.6%	0.9%	0.1%	1.1%
Total Durable	**0.9%**	**1.2%**	**0.3%**	**1.5%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.2%	0.4%	<0.1%	0.4%
Wood - Treated	6.6%	12.1%	0.6%	12.6%
Asphalt Pavement, Brick, Rock, and Concre	0.7%	1.5%	<0.1%	1.5%
Asphalt Roofing	<0.1%	<0.1%	<0.1%	<0.1%
Drywall/Gypsum Board	<0.1%	<0.1%	<0.1%	<0.1%
Carpet and Carpet Padding	6.1%	14.5%	<0.1%	13.3%
Total Construction & Demolition	**13.6%**	**22.6%**	**2.4%**	**24.8%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.1%	0.3%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.1%	0.2%	<0.1%	0.2%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	<0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.3%**	**0.4%**	**<0.1%**	**0.5%**
OTHER				
Other Organics	8.2%	13.2%	1.6%	14.8%
Other Inorganics	0.3%	0.6%	<0.1%	0.6%
Other Construction & Demolition	4.1%	6.5%	0.9%	7.4%
Other Durables	0.1%	0.4%	<0.1%	0.3%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	6.0%	6.5%	2.8%	9.2%
Other	2.6%	8.6%	<0.1%	6.8%
Total Other	**21.4%**	**13.5%**	**14.7%**	**28.1%**
TOTALS	**100.0%**			

Note: Composition based on 11 samples

West Central Iowa Solid Waste Sort Data - Overall

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.4%	3.0%	5.7%	7.0%
High Grade Office Paper	0.7%	1.9%	0.3%	1.2%
Magazines/Catalogs	1.1%	1.1%	0.9%	1.4%
Mixed Recyclable Paper	6.2%	3.7%	5.3%	7.0%
Newsprint	1.9%	1.4%	1.6%	2.2%
Non-Recyclable Paper	3.3%	4.2%	2.4%	4.3%
OCC and Kraft Paper	6.3%	7.6%	4.6%	8.1%
Aseptic/Gable Top Containers	0.2%	0.3%	0.2%	0.3%
Total Paper	**26.1%**	**9.1%**	**24.0%**	**28.2%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.3%
#1 PET Beverage Containers	1.1%	0.6%	0.9%	1.2%
#2 HDPE Containers Natural	0.5%	0.5%	0.4%	0.6%
#2 HDPE Containers Colored	0.9%	1.2%	0.6%	1.2%
Retail Shopping Bags	0.8%	0.5%	0.7%	0.9%
Other Plastic Film	7.4%	3.9%	6.5%	8.3%
Other #1 PET Containers	0.6%	0.8%	0.4%	0.7%
Plastic Containers #3-#7	2.0%	1.3%	1.7%	2.3%
Other Plastic Containers	0.4%	0.5%	0.3%	0.5%
Expanded Polystyrene	1.0%	1.0%	0.8%	1.2%
Other Plastic Products	2.3%	1.7%	1.9%	2.7%
Total Plastic	**17.3%**	**6.2%**	**15.8%**	**18.7%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.3%	0.4%
Ferrous Food and Beverage Containers	1.0%	0.9%	0.8%	1.2%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.4%
Other Ferrous Scrap Metals	2.5%	3.4%	1.7%	3.3%
Other Non-Ferrous Scrap Metals	0.4%	0.6%	0.2%	0.5%
Total Metals	**4.5%**	**3.7%**	**3.6%**	**5.4%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	0.7%	4.4%	<0.1%	1.7%
Clear Glass	1.0%	1.9%	0.6%	1.5%
Glass IA Deposit Containers	0.7%	0.8%	0.6%	0.9%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.4%	1.4%	<0.1%	0.7%
Total Glass	**2.8%**	**6.4%**	**1.3%**	**4.3%**
ORGANICS				
Yard Waste	3.6%	6.1%	2.2%	5.1%
Food Waste - Loose	8.2%	5.8%	6.9%	9.6%
Food Waste - Packaged	9.5%	15.6%	5.9%	13.1%
Textiles and Leather	4.6%	6.0%	3.2%	6.0%
Diapers	5.9%	6.2%	4.5%	7.3%
Rubber	1.9%	3.2%	1.2%	2.7%
Total Organics	**33.8%**	**15.4%**	**30.2%**	**37.4%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	0.6%	2.9%	<0.1%	1.3%
Computer Monitors/TVs	<0.1%	0.3%	<0.1%	0.1%
Electrical and Household Appliances	0.8%	1.1%	0.6%	1.1%
Total Durable	**1.6%**	**3.1%**	**0.9%**	**2.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.4%	2.3%	<0.1%	1.0%
Wood - Treated	2.4%	3.0%	1.7%	3.1%
Asphalt Pavement, Brick, Rock, and Concre	0.3%	0.7%	0.1%	0.4%
Asphalt Roofing	0.7%	2.9%	<0.1%	1.4%
Drywall/Gypsum Board	0.1%	0.4%	<0.1%	0.2%
Carpet and Carpet Padding	0.8%	2.4%	0.3%	1.4%
Total Construction & Demolition	**4.7%**	**5.9%**	**3.3%**	**6.1%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.4%	1.1%	0.1%	0.6%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	0.2%	<0.1%	0.1%
Sharps	<0.1%	0.3%	<0.1%	0.1%
Prescription Medications	<0.1%	0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.6%**	**1.1%**	**0.3%**	**0.8%**
OTHER				
Other Organics	2.7%	4.1%	1.7%	3.6%
Other Inorganics	0.4%	0.7%	0.2%	0.6%
Other Construction & Demolition	0.8%	2.4%	0.2%	1.3%
Other Durables	0.8%	2.8%	0.1%	1.4%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.0%	2.4%	3.4%	4.5%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**8.6%**	**6.1%**	**7.2%**	**10.1%**
TOTALS	**100.0%**			

Note: Composition based on 50 samples

West Central Iowa Solid Waste Sort Data - Residential

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.7%	1.8%	6.1%	7.2%
High Grade Office Paper	<0.1%	0.2%	<0.1%	0.2%
Magazines/Catalogs	1.4%	0.9%	1.1%	1.7%
Mixed Recyclable Paper	7.0%	2.7%	6.1%	7.9%
Newsprint	2.4%	1.4%	1.9%	2.9%
Non-Recyclable Paper	3.0%	1.7%	2.4%	3.5%
OCC and Kraft Paper	4.9%	5.2%	3.2%	6.6%
Aseptic/Gable Top Containers	0.2%	0.1%	0.2%	0.3%
Total Paper	**25.6%**	**6.4%**	**23.5%**	**27.8%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.3%
#1 PET Beverage Containers	1.2%	0.6%	1.0%	1.4%
#2 HDPE Containers Natural	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers Colored	0.6%	0.4%	0.5%	0.8%
Retail Shopping Bags	1.2%	0.4%	1.0%	1.3%
Other Plastic Film	6.5%	1.9%	5.9%	7.1%
Other #1 PET Containers	0.6%	0.3%	0.5%	0.8%
Plastic Containers #3-#7	2.2%	0.9%	1.9%	2.5%
Other Plastic Containers	0.6%	0.5%	0.4%	0.8%
Expanded Polystyrene	0.9%	0.5%	0.8%	1.1%
Other Plastic Products	2.0%	0.9%	1.7%	2.3%
Total Plastic	**16.6%**	**2.6%**	**15.8%**	**17.5%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.4%	0.2%	0.3%	0.4%
Ferrous Food and Beverage Containers	1.3%	0.9%	1.0%	1.6%
Other Aluminum Containers	0.4%	0.3%	0.3%	0.5%
Other Ferrous Scrap Metals	1.7%	1.9%	1.1%	2.3%
Other Non-Ferrous Scrap Metals	0.5%	0.8%	0.3%	0.8%
Total Metals	**4.3%**	**1.1%**	**4.0%**	**4.7%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	<0.1%	0.1%	<0.1%	<0.1%
Clear Glass	0.9%	0.6%	0.7%	1.1%
Glass IA Deposit Containers	0.9%	0.7%	0.7%	1.2%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.1%	0.2%	<0.1%	0.2%
Total Glass	**2.0%**	**1.1%**	**1.6%**	**2.4%**
ORGANICS				
Yard Waste	4.4%	4.4%	3.0%	5.8%
Food Waste - Loose	9.1%	4.1%	7.7%	10.4%
Food Waste - Packaged	8.0%	3.4%	6.9%	9.2%
Textiles and Leather	5.3%	3.6%	4.1%	6.5%
Diapers	7.1%	3.9%	5.8%	8.4%
Rubber	1.3%	1.3%	0.9%	1.7%
Total Organics	**35.2%**	**8.3%**	**32.5%**	**38.0%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	0.2%	<0.1%	0.1%
Central Processing Units/Peripherals	<0.1%	0.1%	<0.1%	<0.1%
Computer Monitors/TVs	<0.1%	<0.1%	<0.1%	<0.1%
Electrical and Household Appliances	1.1%	1.2%	0.7%	1.5%
Total Durable	**1.2%**	**1.2%**	**0.8%**	**1.6%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	0.9%	3.2%	<0.1%	1.9%
Wood - Treated	1.8%	3.0%	0.9%	2.8%
Asphalt Pavement, Brick, Rock, and Concre	0.2%	0.6%	<0.1%	0.4%
Asphalt Roofing	0.7%	2.3%	<0.1%	1.4%
Drywall/Gypsum Board	<0.1%	0.3%	<0.1%	0.2%
Carpet and Carpet Padding	0.7%	2.0%	<0.1%	1.3%
Total Construction & Demolition	**4.4%**	**5.1%**	**2.7%**	**6.0%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.6%	1.5%	<0.1%	1.1%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	0.2%	0.3%	<0.1%	0.2%
Sharps	<0.1%	0.4%	<0.1%	0.2%
Prescription Medications	<0.1%	0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.9%**	**1.6%**	**0.4%**	**1.4%**
OTHER				
Other Organics	4.0%	5.0%	2.3%	5.6%
Other Inorganics	0.4%	0.4%	0.3%	0.5%
Other Construction & Demolition	0.3%	0.7%	<0.1%	0.5%
Other Durables	0.4%	1.3%	<0.1%	0.9%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	4.6%	2.4%	3.8%	5.4%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**9.7%**	**5.6%**	**7.8%**	**11.6%**
TOTALS	**100.0%**			

Note: Composition based on 25 samples

West Central Iowa Solid Waste Sort Data - ICI

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
PAPER				
Compostable Paper	6.0%	3.8%	4.8%	7.3%
High Grade Office Paper	1.3%	2.7%	0.4%	2.2%
Magazines/Catalogs	0.8%	1.2%	0.4%	1.2%
Mixed Recyclable Paper	5.3%	4.5%	3.8%	6.8%
Newsprint	1.4%	1.3%	0.9%	1.8%
Non-Recyclable Paper	3.7%	5.7%	1.8%	5.6%
OCC and Kraft Paper	7.8%	9.3%	4.7%	10.8%
Aseptic/Gable Top Containers	0.3%	0.4%	0.1%	0.4%
Total Paper	**26.6%**	**11.1%**	**22.9%**	**30.2%**
PLASTIC				
#1 PET IA Deposit Beverage Containers	0.2%	0.2%	0.1%	0.3%
#1 PET Beverage Containers	0.9%	0.5%	0.7%	1.1%
#2 HDPE Containers Natural	0.5%	0.6%	0.3%	0.6%
#2 HDPE Containers Colored	1.1%	1.6%	0.6%	1.7%
Retail Shopping Bags	0.5%	0.5%	0.3%	0.6%
Other Plastic Film	8.3%	5.2%	6.6%	10.0%
Other #1 PET Containers	0.5%	1.1%	0.1%	0.8%
Plastic Containers #3-#7	1.9%	1.5%	1.4%	2.4%
Other Plastic Containers	0.3%	0.4%	0.1%	0.4%
Expanded Polystyrene	1.1%	1.3%	0.7%	1.6%
Other Plastic Products	2.6%	2.2%	1.9%	3.3%
Total Plastic	**17.9%**	**8.4%**	**15.1%**	**20.7%**
METAL				
Aluminum Beverage Containers	<0.1%	<0.1%	<0.1%	<0.1%
Aluminum IA Deposit Beverage Containers	0.3%	0.3%	0.2%	0.4%
Ferrous Food and Beverage Containers	0.6%	0.9%	0.3%	0.9%
Other Aluminum Containers	0.3%	0.3%	0.2%	0.4%
Other Ferrous Scrap Metals	3.2%	4.5%	1.8%	4.7%
Other Non-Ferrous Scrap Metals	0.2%	0.4%	<0.1%	0.3%
Total Metals	**4.7%**	**4.6%**	**3.2%**	**6.2%**
GLASS				
Blue Glass	<0.1%	<0.1%	<0.1%	<0.1%
Brown Glass	1.3%	6.2%	<0.1%	3.3%
Clear Glass	1.2%	2.6%	0.3%	2.0%
Glass IA Deposit Containers	0.6%	0.8%	0.3%	0.8%
Green Glass	<0.1%	<0.1%	<0.1%	<0.1%
Other Mixed Cullet	0.6%	2.0%	<0.1%	1.3%
Total Glass	**3.6%**	**9.0%**	**0.7%**	**6.6%**
ORGANICS				
Yard Waste	2.9%	7.5%	0.4%	5.4%
Food Waste - Loose	7.4%	7.1%	5.1%	9.7%
Food Waste - Packaged	10.9%	21.8%	3.8%	18.1%
Textiles and Leather	3.8%	7.7%	1.3%	6.4%
Diapers	4.7%	7.8%	2.2%	7.3%
Rubber	2.6%	4.4%	1.1%	4.0%
Total Organics	**32.4%**	**20.2%**	**25.7%**	**39.0%**

Material Components	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
DURABLE				
Cell Phones and Chargers	<0.1%	<0.1%	<0.1%	<0.1%
Central Processing Units/Peripherals	1.3%	4.1%	<0.1%	2.6%
Computer Monitors/TVs	<0.1%	0.5%	<0.1%	0.3%
Electrical and Household Appliances	0.6%	1.0%	0.2%	0.9%
Total Durable	**1.9%**	**4.2%**	**0.6%**	**3.3%**
CONSTRUCTION & DEMOLITION				
Wood - Untreated	<0.1%	<0.1%	<0.1%	<0.1%
Wood - Treated	2.9%	3.1%	1.9%	3.9%
Asphalt Pavement, Brick, Rock, and Concre	0.3%	0.8%	<0.1%	0.5%
Asphalt Roofing	0.7%	3.4%	<0.1%	1.8%
Drywall/Gypsum Board	0.2%	0.5%	<0.1%	0.4%
Carpet and Carpet Padding	1.0%	2.8%	<0.1%	1.9%
Total Construction & Demolition	**5.1%**	**6.6%**	**2.9%**	**7.3%**
HOUSEHOLD HAZARDOUS MATERIALS (HHMs)				
Chemicals	0.2%	0.4%	<0.1%	0.3%
Lead-Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Mercury Containing Products	<0.1%	<0.1%	<0.1%	<0.1%
Lithium Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Sharps	<0.1%	<0.1%	<0.1%	<0.1%
Prescription Medications	<0.1%	0.1%	<0.1%	<0.1%
ɔusehold Hazardous Materials (HHMs)	**0.2%**	**0.4%**	**0.1%**	**0.3%**
OTHER				
Other Organics	1.4%	2.7%	0.5%	2.3%
Other Inorganics	0.4%	0.9%	0.1%	0.7%
Other Construction & Demolition	1.3%	3.4%	0.1%	2.4%
Other Durables	1.1%	3.7%	<0.1%	2.3%
Other HHM	<0.1%	<0.1%	<0.1%	<0.1%
Fines	3.4%	2.4%	2.6%	4.2%
Other	<0.1%	<0.1%	<0.1%	<0.1%
Total Other	**7.6%**	**6.6%**	**5.4%**	**9.7%**
TOTALS	**100.0%**			

Note: Composition based on 25 samples