



Wake County, North Carolina Waste Characterization Study

Summary of Results May 2011

Presented to:



Wake County
Solid Waste Management Division

336 Fayetteville Street
PO Box 550
Raleigh, North Carolina 27602

Presented by:

SCS ENGINEERS
11260 Roger Bacon Drive
Suite 300

Reston, Virginia 20190-5282
(703)-471-6150

August 9, 2011
File No. 02211010.00

Offices Nationwide
www.scsengineers.com

Table of Contents

Section	Page
1. Introduction.....	1
2. Approach.....	2
Waste Sampling	2
Waste Sorting.....	2
Data Reduction	6
3. Summary of Results	7
Overall Waste Stream Composition	7
MSW Composition by Sector	12
Commercial.....	12
Single-Family Residential.....	17
Multi-Family Residential	22
Comparison by Residential Sector	27
Geographic Comparison.....	27
Waste Diversion Opportunities	32
Recyclable Materials	34
Compostable Materials	35

List of Exhibits

No.	Page
Exhibit 1. Description of Waste Categories	4
Exhibit 2. Overall Waste Stream Composition	7
Exhibit 3. Commercial Waste Stream Composition	12
Exhibit 4. Single-family Residential Waste Stream Composition	17
Exhibit 5. Multi-Family Residential Waste Stream.....	22
Exhibit 6. Residential Waste Stream Composition by Geographic Area	28

Summary of May 2011 Results

Exhibit 7. Commercial Waste Stream – Recyclable and Compostable Composition
32

Exhibit 8. Single-family Waste Stream – Recyclable and Compostable
Composition 33

Exhibit 9. Multi-Family Waste Stream – Recyclable and Compostable
Composition 33

Exhibit 10.....Recyclable Compostable, and Trash Materials
34

Appendices

- Appendix A Data Collection Forms
- Appendix B Health and Safety Plan

1. INTRODUCTION

In May 2011, Wake County Solid Waste Management Division contracted with SCS Engineers (SCS) to conduct a waste composition analysis of residential and commercial waste generated in Wake County, North Carolina (the County). The primary objectives of the study were as follows:

- To estimate types and quantities of recyclable waste components in the residential and commercial waste streams; and
- To establish a baseline waste composition that can be used to monitor the success of recycling programs in future years.

The basis for this waste characterization consisted of a week-long sampling event, during which 100 waste samples were collected and sorted from various generator sectors and haulers. The data will be used by the County to develop long-term waste management strategies and to evaluate the effectiveness of current recycling programs.

The remaining sections of this report are organized as follows:

- Section 2 describes field classification and sampling methods.
- Section 3 presents project data and results gathered from the study.
- Appendix A presents the forms used to record data
- Appendix B presents the Health and Safety plan for the field activities

2. APPROACH

This section summarizes methods used to characterize the waste stream generated in Wake County. Sampling was conducted from May 23 through May 31, 2011. Waste characterization activities were performed by manually sorting samples from municipal solid waste (MSW) into distinct material categories.

WASTE SAMPLING

Waste sorting was performed at the South Wake Landfill (SWLF) during the operating hours of the facility. Given the limited size of the data set (twenty samples sorted per day), it was important that simple random sampling and unrepresentative data were avoided. Simple random sampling may not include all service areas and thus could bias the results. Unrepresentative data includes commercial waste or community events that generate atypical or seasonal waste. Each day vehicles from select areas and haulers were diverted from the landfill or East Wake Transfer Station to the sorting area. Drivers were directed to dump their waste loads into a designated area of the tipping floor. A front-end loader supplied by Waste Industries randomly gathered a sample from a random quadrant from each target load (approximately two hundred pounds) for classification (sorting). Two important procedural factors were considered:

- The vehicle selected for sampling contained MSW that was representative of the type of waste typically generated in that service area; and
- The process of acquiring the waste sample did not, in itself, alter the apparent MSW composition.

The sort sample was obtained as follows:

1. The refuse vehicle dumped its load onto the designated area on the tipping floor. This area had sufficient room to allow the front-end loader to grab a sample from the refuse.
2. A front-end loader grabbed a refuse sample from a randomly selected quadrant of the dumped load.
3. The front-end loader carried the sample to the area immediately in front of the sort crew and deposited it into 32-gallon trash cans. The trash cans were weighed and set aside until at least two hundred pounds from the discharged load had been selected for characterization.

WASTE SORTING

The sorting and weighing program for samples entailed the use of two sorting crews and two SCS Crew Chiefs. Samples were characterized into the waste components shown in **Exhibit 1**.

Summary of May 2011 Results

During each day of fieldwork, waste loads from specified service areas and routes were diverted to the transfer station near the SWLF. The basic procedures and objectives for sorting (as described below) were identical for each sample, each day. Sorting was performed as follows:

1. The sort crew transferred the refuse sample onto the sorting table until it was full and began sort activities. Large or heavy waste items, such as bags of yard waste, were torn open, examined and then placed directly into the appropriate waste container for subsequent weighing.
2. Plastic bags of refuse were opened and sort crew members manually segregated each item of waste, according to categories defined in Exhibit 1 and placed it in the appropriate waste container. These steps were repeated until the whole sample was sorted.
3. At the completion of sorting, the waste containers were moved to the scale where a representative of SCS weighed each category and recorded the net and tare weight of the container on the Sort Data Sheet (Appendix A). Measurements were made to the nearest 0.1 pounds.
4. After each waste category had been recorded, the waste was returned to tipping floor where a front end loader deposited it into a transfer trailer for disposal.

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

Members of the sorting crew were fully equipped with, high visibility vests, puncture resistant gloves, and other safety equipment. The Health and Safety Plan is presented in Appendix B.

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

Due to the County's expressed objective for this study to evaluate recycling programs, waste sorting activities targeted recyclable materials. **Exhibit 1** defines the categories for the waste sorting activities.

Summary of May 2011 Results

Exhibit 1. Description of Waste Categories

Major Waste Fractions	Waste Component Categories	Examples
Paper	Newspaper/Print	Daily, weekly newspapers
	Glossy/Magazines	TV Guide, Periodicals, Journals
	Recyclable Corrugated Cardboard	Packing/shipping boxes
	Non-Recyclable Corrugated Cardboard	Wax or plastic coated, pizza boxes
	Kraft Paper	Brown shopping bags
	Paperboard	Cereal/Soda Boxes
	Phone Books	Phone number listings
	Other Books	Hard and soft-cover books
	White Office Paper	High grade white copy paper or letterhead
	Gable Top/Aseptic Cartons	Milk/Juice Cartons/Boxes
	Paper Plates/Cups	Paper plates/cups/bowls – used for food
	File Folders	Manila or colored file folders
	Paper Packaging	Crumpled paper used for package padding
	Other Recyclable Paper	Junk mail, notebook paper, colored copy paper
Non-Recyclable Paper	Paper coated with plastic, tissues, napkins	
Plastics	PET (#1) Bottles	Water, Soda
	HDPE (#2) Bottles	Milk, Detergent
	Other (#3-#7) Bottles	Prescriptions
	Plastic Film	Garbage, chip, candy bags, bubble wrap
	Plastic Cups and Tubs	Recyclable margarine tubs, yogurt tubs
	Polystyrene (#6)	Clamshell containers,
	Rigid Plastics	Plastic toys, items without a #
	Grocery Bags	Shopping bags from Harris Teeter, Kroger, etc.
	Flower Pots	Recyclable flower pots
	DVD/CD Cases	Self explanatory
	Other Plastic	Not defined above
Metal	Bi-Metal/Steel Cans	Ferrous cans generally used to contain food
	Aluminum Cans	Soda, beer cans
	Aluminum Tins/Foil	Aluminum tins and foils
	Aerosol Cans	Self explanatory
	Other Ferrous	Ferrous metals not otherwise classified
	Other Non-Ferrous	Non-Ferrous metals not otherwise classified

Summary of May 2011 Results

Exhibit 1. Description of Waste Categories (continued)

Major Waste Fractions	Waste Component Categories	Examples
Glass	Clear Glass Bottles/Jars	Clear containers used for food/beverages
	Green Glass Bottles/Jars	Green containers used for food/beverages
	Brown Glass Bottles/Jars	Brown containers used for food/beverages
	Ceramic Glass	Ceramic/porcelain containers
	Other Glass	Plate or window glass, pint glasses
Organic	Food Waste	Meat, vegetables, food and byproducts
	Treated Wood	Pressure treated or painted wood
	Untreated Wood	Lumber, 2x4's
	Furniture	Chairs, couches, tables, shelves
	Mattresses	Mattresses, box spring
	Pallets	Broken or unbroken wooden pallets
	Yard Waste	Sticks, grass, leaves, yard trimmings
	Rubber	Gloves, boots, inner tubes
	Stumps	Self explanatory
	Other Organics	Organics not otherwise classified
Textiles	Textiles	Clothes, blankets
	Other Textiles	Carpet
	Leather	Clothes
Electronics	Computers	Monitors, CPUs
	Televisions	monitors
	Cell Phones	Self explanatory
	Printers	Self explanatory
	DVDs/CDs	Self explanatory
	Printer Ink Cartridges	Self explanatory
	VCRs	Self explanatory
	MP3 Players	Self explanatory
	Other Electronic Waste	Electronics not categorized above
HHW	Household Hazardous Waste	Cleaners, oil based paints, pesticides
	Oil Filters	Used oil filters for automobiles or machinery
	Dry Cell Batteries	Alkaline, Zinc-carbon, household batteries
	Lead-Acid Batteries	Automotive batteries

Summary of May 2011 Results

Exhibit 1. Description of Waste Categories (continued)

Major Waste Fractions	Waste Component Categories	Examples
Other	Infectious Waste	Biohazardous materials
	Diapers	Adult and baby diapers
	Brick	Self Explanatory
	Concrete	Self Explanatory
	Roofing Materials	Self Explanatory
	Drywall (Gypsum)	Self Explanatory
	Vinyl Siding	Self Explanatory
	Fines	Materials less than ¼ inch by ¼ inch
	Other	Materials not categorized above.

DATA REDUCTION

One hundred samples were collected during the sampling event. Data presented include mean percentages by weight, standard deviations, and statistical confidence intervals (95 percent confidence interval). Derivation of this data is as follows:

$$\text{Mean } (\bar{X}) = \sum_{i=1}^n x_i * \frac{1}{n};$$

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

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

where: n = number of samples; and
x = sample percentage.

Waste samples are acquired to estimate the County's true waste composition (i.e., the proportion of each waste component present in residential waste collected by the County). The mean is the arithmetic average of all data and the standard deviation is a measure of the dispersion in the data. Together, the mean and standard deviation determine the confidence interval. A 95 percent confidence interval is said to contain the true proportion of a waste component with 95 percent confidence (i.e., similar studies will produce the same results 95 percent of the time).

3. SUMMARY OF RESULTS

OVERALL WASTE STREAM COMPOSITION

The overall waste stream composition is based upon all 100 samples that were collected and sorted during the field activities, which totaled approximately 21,138 pounds. These samples included 51 single-family residential, 14 multi-family residential, and 35 commercial waste samples. The composition presented in **Exhibit 2** portrays the major components graphically and then lists mean composition by weight, standard deviation, and 95 percent confidence intervals for each material component.

Exhibit 2. Overall Waste Stream Composition

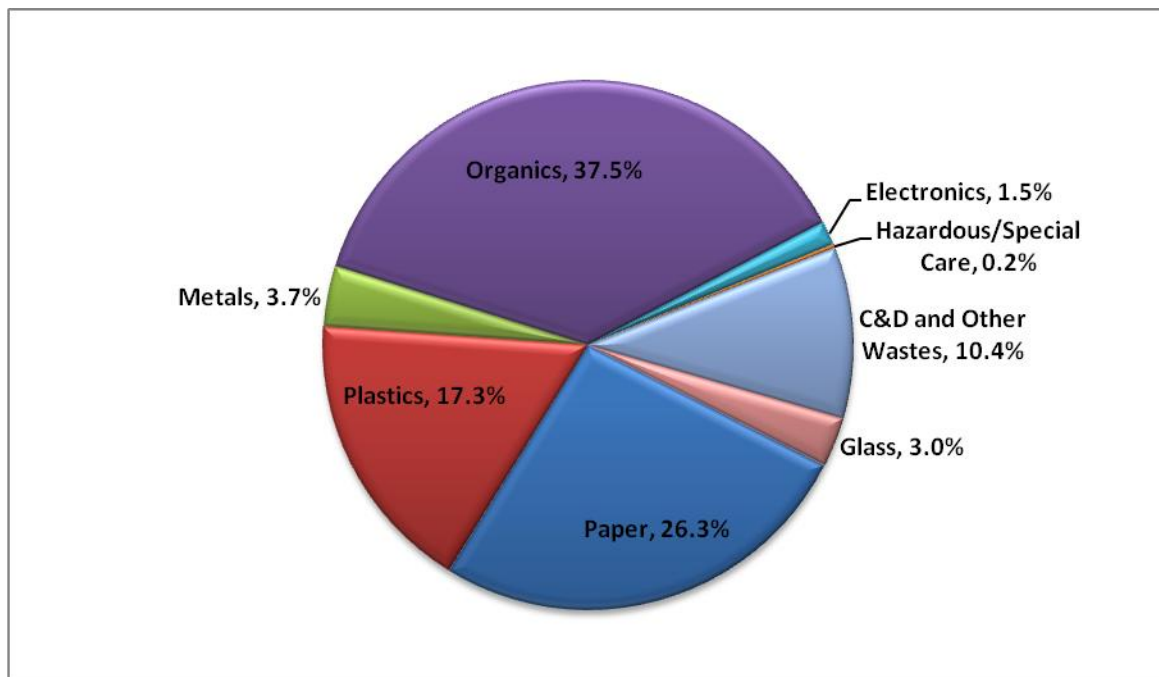


Exhibit 2. Overall Waste Stream Composition (continued)

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
Other Paper	6.9%	4.2%	6.1%	7.7%
Paperboard	3.6%	2.0%	3.2%	4.0%
Rec Corr Cardboard	3.5%	3.4%	2.8%	4.1%
Mixed Office Paper	3.3%	2.6%	2.8%	3.8%
Magazines	2.0%	2.5%	1.5%	2.4%
Newspaper	1.8%	2.1%	1.4%	2.2%
White Ledger Paper	1.6%	3.1%	1.0%	2.2%
Paper Plates, Cups	0.6%	1.0%	0.5%	0.8%
Other Books	0.6%	2.8%	<0.1%	1.2%
Phone Books	0.6%	1.4%	0.3%	0.9%
Kraft Paper	0.6%	0.8%	0.4%	0.7%
Gable Top/ Aseptic Cartons	0.5%	1.0%	0.3%	0.7%
NR Corr Cardboard	0.4%	1.9%	<0.1%	0.8%
Paper Packaging	0.1%	0.4%	<0.1%	0.2%
File Folders	<0.1%	<0.1%	<0.1%	<0.1%
Total Paper	26.3%			
PLASTIC				
Plastic Film	6.3%	3.8%	5.6%	7.0%
Rigid Plastics	2.4%	3.4%	1.8%	3.1%
Grocery Bags	2.1%	2.5%	1.6%	2.6%
PET # 1 Bottles	1.9%	1.7%	1.5%	2.2%
Polystyrene # 6 Foam	1.7%	1.1%	1.5%	1.9%
Plastic Cups & Tubs	1.6%	1.5%	1.3%	1.9%
HDPE # 2 Bottles	0.9%	0.8%	0.8%	1.1%
Other # 3-# 7 Bottles	0.2%	0.4%	<0.1%	0.2%
Flower Pots	0.1%	0.3%	<0.1%	0.2%
DVD/ CD Cases	<0.1%	0.2%	<0.1%	<0.1%
Total Plastics	17.3%			
GLASS				
Clear Glass Bottles/ Jars	1.6%	1.7%	1.3%	1.9%
Brown Glass Bottles/ Jars	0.7%	1.3%	0.4%	0.9%
Green Glass Bottles/ Jars	0.6%	0.9%	0.4%	0.8%
Ceramic Glass	0.1%	0.4%	<0.1%	0.2%
Other Glass	<0.1%	0.2%	<0.1%	0.1%
Total Glass	3.0%			
C&D/ OTHER WASTE				
Diapers	3.6%	4.2%	2.8%	4.4%
Fines	3.2%	2.4%	2.7%	3.7%
Other	3.0%	6.2%	1.7%	4.2%
Concrete	0.3%	1.5%	<0.1%	0.6%
Brick	0.2%	1.6%	<0.1%	0.5%
Drywall	0.1%	1.1%	<0.1%	0.4%
Roofing Material	<0.1%	0.3%	<0.1%	0.1%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	10.4%			

Exhibit 2. Overall Waste Stream Composition (continued)

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
ELECTRONICS				
Other Electronic Waste	0.8%	1.6%	0.5%	1.1%
DVDs/ CDs	0.3%	1.9%	<0.1%	0.7%
Computers	0.2%	1.6%	<0.1%	0.5%
VCRs	<0.1%	0.5%	<0.1%	0.2%
Printers	<0.1%	0.7%	<0.1%	0.2%
Printer Ink Cartridges	<0.1%	0.3%	<0.1%	<0.1%
Cell Phones	<0.1%	<0.1%	<0.1%	<0.1%
Televisions	<0.1%	<0.1%	<0.1%	<0.1%
MP3 Players	<0.1%	<0.1%	<0.1%	<0.1%
Total Electronics	1.5%			
METALS				
Steel/ Bi Metal Food Cans	1.0%	0.8%	0.8%	1.1%
Aluminum Cans	0.5%	0.7%	0.4%	0.6%
Aluminum Tin/ Foil	0.4%	0.5%	0.3%	0.5%
Aerosol Cans	0.3%	0.6%	0.2%	0.4%
Other Ferrous	1.0%	2.3%	0.6%	1.5%
Other Non-Ferrous	0.5%	1.1%	0.3%	0.8%
Total Metals	3.7%			
ORGANICS				
Food Waste	15.1%	10.6%	13.0%	17.2%
Other Organics	7.9%	4.9%	7.0%	8.9%
Textiles	3.7%	7.1%	2.4%	5.1%
Yard Waste	2.3%	5.8%	1.2%	3.4%
Furniture	2.2%	7.3%	0.7%	3.6%
Other Textiles	2.2%	6.5%	0.9%	3.4%
Untreated Wood	1.8%	3.5%	1.1%	2.5%
Treated Wood	0.9%	3.1%	0.3%	1.5%
Mattresses	0.9%	5.3%	<0.1%	1.9%
Pallets	0.3%	1.4%	<0.1%	0.6%
Rubber	0.2%	0.9%	<0.1%	0.4%
Stumps	<0.1%	0.4%	<0.1%	0.1%
Leather	<0.1%	0.2%	<0.1%	<0.1%
Total Organics	37.5%			
HAZARDOUS/SPECIAL CARE				
Infectious Waste	0.2%	1.6%	<0.1%	0.5%
Household Haz Waste	<0.1%	0.3%	<0.1%	<0.1%
Oil Filters	<0.1%	0.1%	<0.1%	<0.1%
Dry Cell Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Lead-acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Total Hazardous/Special Care	0.2%			
TOTALS	100.0%			

Note: Composition based on 100 samples

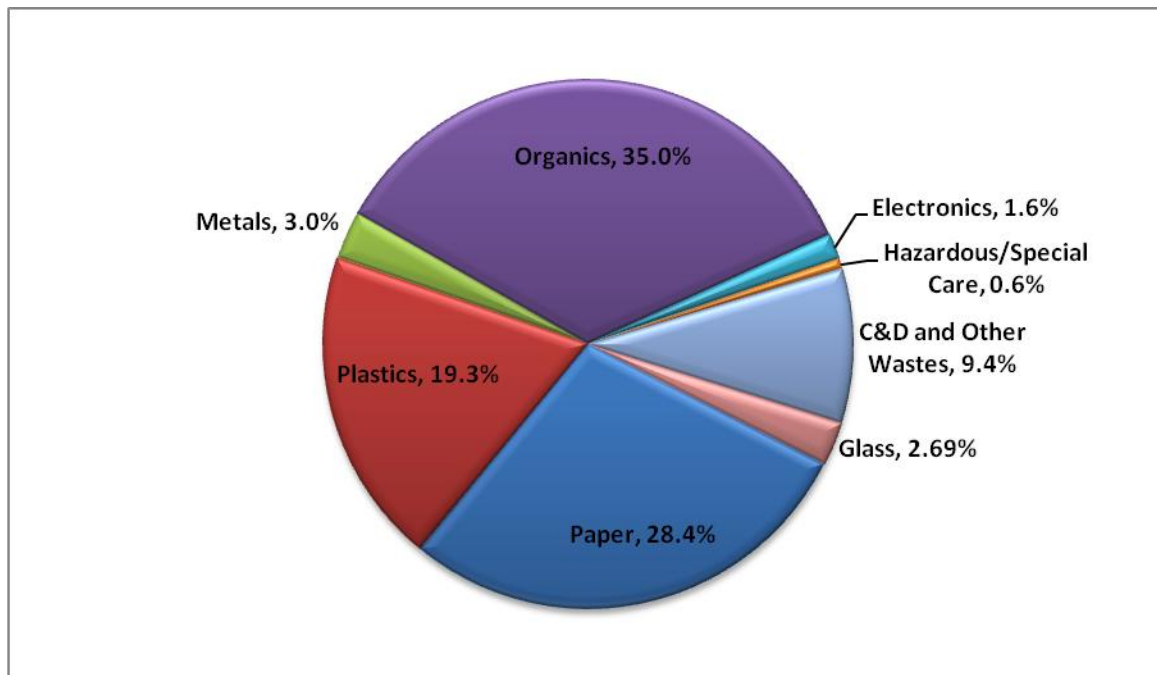
MSW COMPOSITION BY SECTOR

Commercial

Exhibit 3 presents a summary of the 35 commercial waste samples obtained and sorted, totaling approximately 7,482 pounds. This composition includes two samples from NC State: one from a dormitory and another from the veterinary science building. Commercial waste often has high variability between samples as the waste stream from different businesses, such as a restaurant and an office building, can vary greatly. Based on these samples, the three largest components by weight of the commercial waste stream are Organics (35.0 percent), Paper (28.4 percent), and Plastics (19.3 percent). The top three subcomponents present in the commercial waste stream by weight are Food Waste (19.2 percent), Other Paper (8.1 percent), and Plastic Films (7.6 percent).

Exhibit 3 presents the composition of the commercial waste stream including the mean percentage by weight, standard deviation, and 95 percent confidence intervals for each material component. **Exhibit 7** highlights potential diversion opportunities for the commercial section.

Exhibit 3. Commercial Waste Stream Composition



**Exhibit 3. Commercial Waste Stream Composition
(continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
Other Paper	8.1%	4.9%	6.5%	9.8%
Rec Corr Cardboard	5.0%	3.5%	3.8%	6.1%
Paperboard	3.0%	2.2%	2.3%	3.7%
Mixed Office Paper	2.9%	2.6%	2.0%	3.8%
White Ledger Paper	2.2%	4.0%	0.9%	3.5%
Magazines	1.6%	2.5%	0.7%	2.4%
Newspaper	1.1%	1.0%	0.8%	1.4%
NR Corr Cardboard	1.0%	3.1%	<0.1%	2.1%
Other Books	0.9%	4.3%	<0.1%	2.3%
Kraft Paper	0.7%	1.1%	0.4%	1.1%
Paper Plates, Cups	0.7%	1.4%	0.3%	1.2%
Gable Top/ Aseptic Cartons	0.7%	1.5%	0.2%	1.2%
Phone Books	0.6%	1.4%	<0.1%	1.0%
Paper Packaging	<0.1%	<0.1%	<0.1%	<0.1%
File Folders	<0.1%	<0.1%	<0.1%	<0.1%
Total Paper	28.4%			
PLASTIC				
Plastic Film	7.6%	4.8%	6.0%	9.2%
Rigid Plastics	2.4%	3.6%	1.2%	3.6%
Grocery Bags	2.3%	3.0%	1.3%	3.3%
PET #1 Bottles	2.2%	2.3%	1.4%	2.9%
Plastic Cups & Tubs	1.7%	2.1%	1.0%	2.4%
Polystyrene #6 Foam	1.7%	1.4%	1.2%	2.2%
HDPE #2 Bottles	1.1%	1.0%	0.8%	1.4%
Other #3-#7 Bottles	0.1%	0.4%	<0.1%	0.3%
Flower Pots	<0.1%	0.2%	<0.1%	0.2%
DVD/ CD Cases	<0.1%	0.3%	<0.1%	0.1%
Total Plastics	19.3%			
GLASS				
Clear Glass Bottles/ Jars	1.7%	2.1%	1.0%	2.4%
Brown Glass Bottles/ Jars	0.6%	1.2%	0.2%	1.0%
Green Glass Bottles/ Jars	0.2%	0.5%	<0.1%	0.4%
Ceramic Glass	<0.1%	0.3%	<0.1%	0.2%
Other Glass	<0.1%	0.2%	<0.1%	0.1%
Total Glass	2.7%			
C&D/OTHER WASTE				
Other	3.6%	7.7%	1.0%	6.1%
Fines	3.1%	2.1%	2.4%	3.8%
Diapers	2.4%	4.7%	0.9%	4.0%
Concrete	0.3%	1.3%	<0.1%	0.7%
Brick	<0.1%	<0.1%	<0.1%	<0.1%
Roofing Material	<0.1%	<0.1%	<0.1%	<0.1%
Drywall	<0.1%	<0.1%	<0.1%	<0.1%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	9.4%			

**Exhibit 3. Commercial Waste Stream Composition
(continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
ELECTRONICS				
DVDs/ CDs	0.7%	3.3%	<0.1%	1.7%
Other Electronic Waste	0.6%	1.8%	<0.1%	1.2%
Printers	0.2%	1.2%	<0.1%	0.6%
Printer Ink Cartridges	<0.1%	0.4%	<0.1%	0.2%
Computers	<0.1%	0.1%	<0.1%	<0.1%
Televisions	<0.1%	<0.1%	<0.1%	<0.1%
Cell Phones	<0.1%	<0.1%	<0.1%	<0.1%
VCRs	<0.1%	<0.1%	<0.1%	<0.1%
MP3 Players	<0.1%	<0.1%	<0.1%	<0.1%
Total Electronics	1.6%			
METALS				
Steel/ Bi Metal Food Cans	0.7%	0.7%	0.5%	1.0%
Aluminum Cans	0.6%	1.0%	0.3%	0.9%
Other Ferrous	0.5%	1.0%	0.2%	0.9%
Other Non-Ferrous	0.5%	1.0%	0.1%	0.8%
Aluminum Tin/ Foil	0.3%	0.5%	0.1%	0.5%
Aerosol Cans	0.3%	0.4%	0.1%	0.4%
Total Metals	3.0%			
ORGANICS				
Food Waste	19.2%	15.2%	14.1%	24.2%
Other Organics	6.8%	5.0%	5.2%	8.5%
Yard Waste	2.7%	9.0%	<0.1%	5.7%
Textiles	1.8%	2.4%	1.0%	2.6%
Untreated Wood	1.6%	3.1%	0.5%	2.6%
Other Textiles	1.2%	2.6%	0.4%	2.1%
Treated Wood	1.0%	4.1%	<0.1%	2.4%
Pallets	0.4%	1.5%	<0.1%	0.9%
Rubber	0.1%	0.5%	<0.1%	0.3%
Stumps	0.1%	0.7%	<0.1%	0.4%
Leather	<0.1%	0.1%	<0.1%	<0.1%
Furniture	<0.1%	0.1%	<0.1%	<0.1%
Mattresses	<0.1%	<0.1%	<0.1%	<0.1%
Total Organics	35.0%			
HAZARDOUS/SPECIAL CARE				
Infectious Waste	0.5%	2.9%	<0.1%	1.5%
Household Haz Waste	<0.1%	0.5%	<0.1%	0.2%
Oil Filters	<0.1%	<0.1%	<0.1%	<0.1%
Dry Cell Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Lead-acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Total Hazardous/Special Care	0.6%			
TOTAL	100.0%			

Note: Composition based on 35 samples

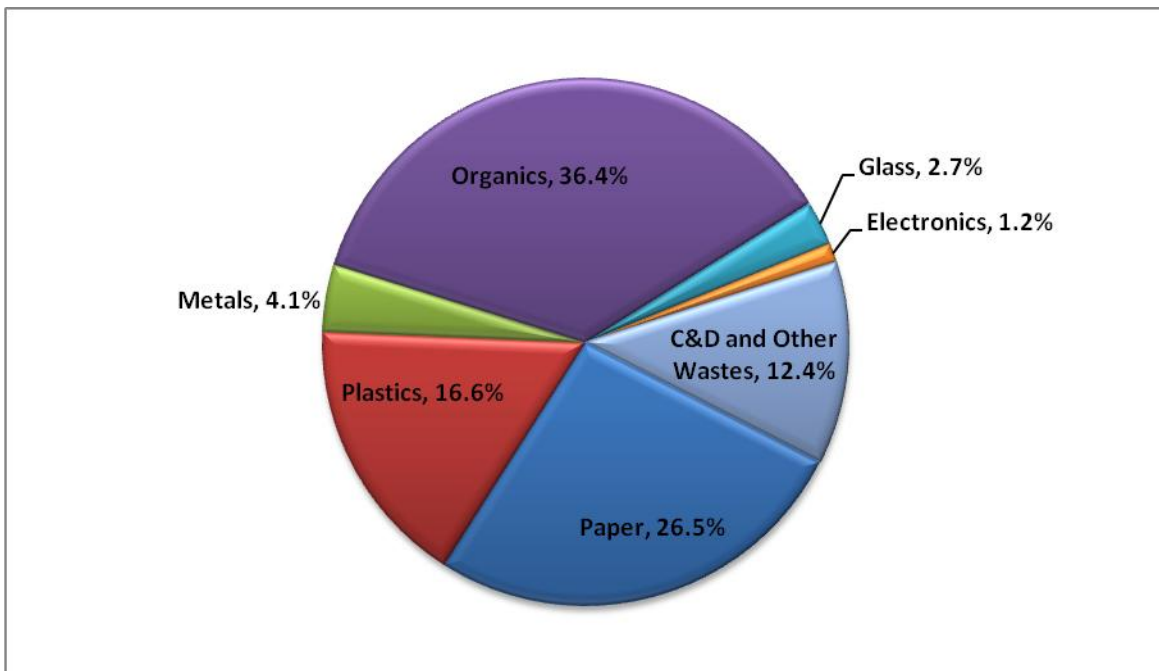
Summary of May 2011 Results

Single-Family Residential

Exhibit 4 presents a summary of the 51 single-family residential waste samples obtained and sorted, totaling approximately 10,702 pounds. Based on these samples, the three largest components by weight of the residential waste stream are Organics (36.4 percent), Paper (26.5 percent), and Plastics (16.6 percent). The top three subcomponents of the residential waste stream by weight are Food Waste (12.9 percent), Other Organics (8.7 percent) and Other Paper (6.5 percent). Significant portions of each of these categories are compostable.

Exhibit 4 presents the composition of the single-family waste stream including the mean percentage by weight, standard deviation, and 95 percent confidence intervals for each material component. **Exhibit 8** highlights potential diversion opportunities for the commercial section.

Exhibit 4. Single-family Residential Waste Stream Composition



**Exhibit 4. Single-family Residential Waste Stream
Composition (continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
Other Paper	6.5%	3.5%	5.6%	7.5%
Paperboard	4.0%	1.8%	3.5%	4.5%
Mixed Office Paper	3.9%	2.7%	3.1%	4.6%
Rec Corr Cardboard	2.8%	3.3%	1.9%	3.7%
Newspaper	2.6%	2.5%	1.9%	3.3%
Magazines	2.1%	2.0%	1.5%	2.6%
White Ledger Paper	1.4%	2.6%	0.7%	2.2%
Phone Books	0.6%	1.4%	0.3%	1.0%
Paper Plates Cups	0.6%	0.7%	0.5%	0.8%
Other Books	0.6%	1.8%	<0.1%	1.1%
Kraft Paper	0.5%	0.6%	0.3%	0.7%
Gable Top/ Aseptic Cartons	0.5%	0.7%	0.3%	0.7%
Paper Packaging	0.2%	0.5%	<0.1%	0.3%
NR Corr Cardboard	0.1%	0.3%	<0.1%	0.2%
File Folders	<0.1%	0.1%	<0.1%	<0.1%
Total Paper	26.5%			
PLASTIC				
Plastic Film	6.0%	2.7%	5.2%	6.7%
Rigid Plastics	2.4%	3.0%	1.6%	3.2%
Grocery Bags	1.9%	2.2%	1.4%	2.5%
PET # 1 Bottles	1.7%	1.3%	1.4%	2.1%
Polystrene # 6 Foam	1.7%	0.9%	1.5%	2.0%
Plastic Cups & Tubs	1.7%	1.1%	1.4%	2.0%
HDPE # 2 Bottles	0.9%	0.7%	0.7%	1.1%
Other # 3-# 7 Bottles	0.2%	0.5%	<0.1%	0.3%
Flower Pots	0.1%	0.3%	<0.1%	0.2%
DVD/ CD Cases	<0.1%	0.1%	<0.1%	<0.1%
Total Plastics	16.6%			
GLASS				
Clear Glass Bottles/ Jars	1.3%	1.2%	1.0%	1.7%
Green Glass Bottles/ Jars	0.7%	0.9%	0.4%	1.0%
Brown Glass Bottles/ Jars	0.5%	0.9%	0.3%	0.8%
Ceramic Glass	<0.1%	0.3%	<0.1%	0.2%
Other Glass	<0.1%	0.3%	<0.1%	0.2%
Total Glass	2.7%			
C&D/ OTHER WASTE				
Diapers	4.7%	3.9%	3.6%	5.8%
Fines	3.5%	2.6%	2.8%	4.2%
Other	3.1%	5.9%	1.5%	4.7%
Brick	0.4%	2.2%	<0.1%	1.0%
Concrete	0.4%	1.8%	<0.1%	0.9%
Drywall	0.3%	1.5%	<0.1%	0.7%
Roofing Material	<0.1%	0.5%	<0.1%	0.2%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	12.4%			

**Exhibit 4. Single-family Residential Waste Stream
Composition (continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
C&D/OTHER WASTE				
Diapers	4.7%	3.9%	3.6%	5.8%
Fines	3.5%	2.6%	2.8%	4.2%
Other	3.1%	5.9%	1.5%	4.7%
Brick	0.4%	2.2%	<0.1%	1.0%
Concrete	0.4%	1.8%	<0.1%	0.9%
Drywall	0.3%	1.5%	<0.1%	0.7%
Roofing Material	<0.1%	0.5%	<0.1%	0.2%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	12.4%			
ELECTRONICS				
Other Electronic Waste	1.0%	1.7%	0.6%	1.5%
DVDs/ CDs	<0.1%	0.7%	<0.1%	0.3%
VCRs	<0.1%	0.5%	<0.1%	0.2%
Cell Phones	<0.1%	<0.1%	<0.1%	<0.1%
Printer Ink Cartridges	<0.1%	<0.1%	<0.1%	<0.1%
Computers	<0.1%	<0.1%	<0.1%	<0.1%
Televisions	<0.1%	<0.1%	<0.1%	<0.1%
Printers	<0.1%	<0.1%	<0.1%	<0.1%
MP3 Players	<0.1%	<0.1%	<0.1%	<0.1%
Total Electronics	1.2%			
METALS				
Other Ferrous	1.3%	2.6%	0.6%	2.0%
Steel/ Bi Metal Food Cans	1.1%	0.8%	0.9%	1.3%
Aluminum Tin/ Foil	0.5%	0.5%	0.3%	0.6%
Other Non-Ferrous	0.4%	0.9%	0.2%	0.7%
Aluminum Cans	0.4%	0.5%	0.3%	0.5%
Aerosol Cans	0.4%	0.7%	0.2%	0.6%
Total Metals	4.1%			
ORGANICS				
Food Waste	12.9%	6.0%	11.2%	14.5%
Other Organics	8.7%	4.5%	7.5%	10.0%
Textiles	5.4%	9.4%	2.8%	8.0%
Yard Waste	2.5%	3.6%	1.5%	3.5%
Furniture	2.1%	7.3%	<0.1%	4.0%
Untreated Wood	1.9%	3.9%	0.8%	3.0%
Other Textiles	1.5%	2.8%	0.7%	2.3%
Treated Wood	1.0%	2.8%	0.3%	1.8%
Pallets	0.2%	0.9%	<0.1%	0.4%
Rubber	0.1%	0.9%	<0.1%	0.4%
Leather	<0.1%	0.3%	<0.1%	0.1%
Mattresses	<0.1%	<0.1%	<0.1%	<0.1%
Stumps	<0.1%	<0.1%	<0.1%	<0.1%
Total Organics	36.4%			
HAZARDOUS/SPECIAL CARE				
Oil Filters	<0.1%	0.1%	<0.1%	<0.1%
Dry Cell Batteries	<0.1%	0.1%	<0.1%	<0.1%
Household Haz Waste	<0.1%	<0.1%	<0.1%	<0.1%
Infectious Waste	<0.1%	<0.1%	<0.1%	<0.1%
Lead-acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Total Hazardous/Special Care	<0.1%			
TOTAL	100.0%			

Note: Composition based on 51 samples

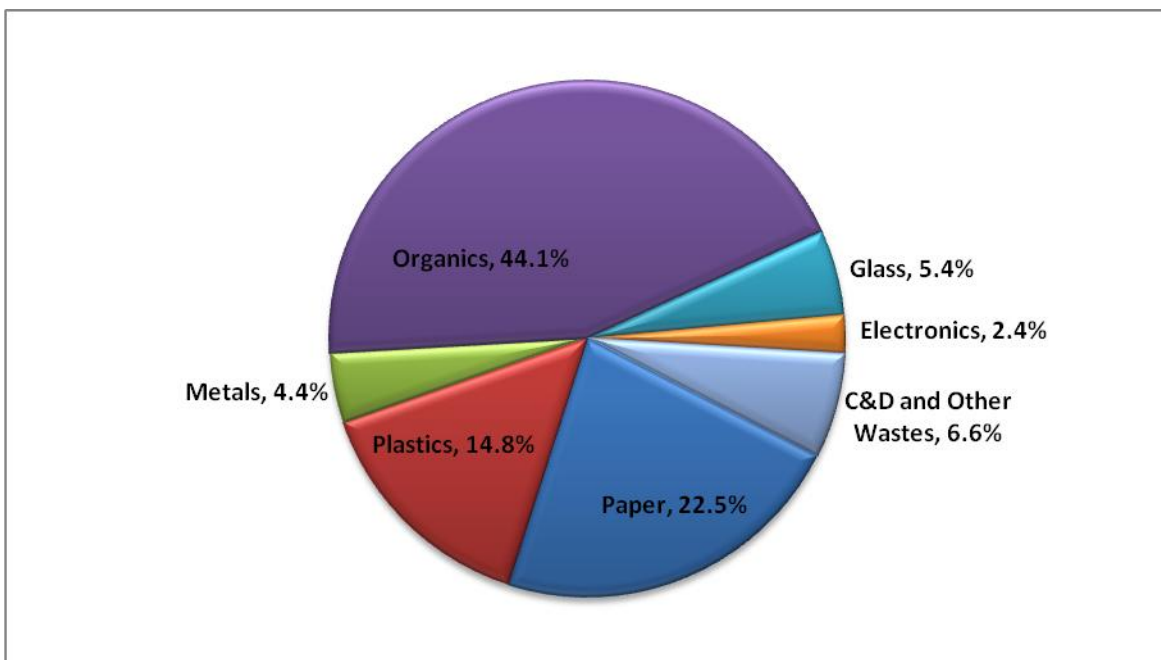
Summary of May 2011 Results

Multi-Family Residential

Fourteen samples were obtained and sorted from multi-family residential samples, totaling approximately 2,953 pounds. Multi-family residential waste is generated from apartments and condominiums, where multiple families live in one larger building. The waste stream composition based on these samples is presented in **Exhibit 5**. Based on the field results, the three largest components by weight of the multi-family waste stream are Organics (44.1 percent), Paper (22.5 percent), and Plastics (14.8 percent). The top three subcomponents of the multi-family waste stream by weight are Food Waste (14.9 percent), Other Organics (7.8 percent), and Furniture (5.5 percent). Bulky waste such as furniture, carpet, and mattresses was observed in a few of the multi-family samples.

Exhibit 5 presents the composition of the multi-family waste stream including the mean percentage by weight, standard deviation, and 95 percent confidence intervals for each material component. **Exhibit 9** highlights potential diversion opportunities for the commercial section.

Exhibit 5. Multi-Family Residential Waste Stream



**Exhibit 5. Multi-Family Residential Waste Stream
Composition (continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
PAPER				
Other Paper	5.3%	3.4%	3.5%	7.1%
Paperboard	4.0%	2.0%	3.0%	5.1%
Rec Corr Cardboard	3.0%	2.8%	1.6%	4.5%
Magazines	2.7%	3.9%	0.7%	4.7%
Mixed Office Paper	2.5%	2.1%	1.5%	3.6%
White Ledger Paper	1.1%	2.5%	<0.1%	2.4%
Newspaper	1.0%	0.9%	0.5%	1.4%
Phone Books	0.7%	1.5%	<0.1%	1.5%
Kraft Paper	0.6%	0.7%	0.2%	0.9%
Gable Top/ Aseptic Cartons	0.5%	0.5%	0.2%	0.8%
Paper Plates Cups	0.5%	0.5%	0.2%	0.7%
NR Corr Cardboard	0.3%	0.5%	<0.1%	0.5%
Other Books	0.2%	0.5%	<0.1%	0.4%
Paper Packaging	<0.1%	0.2%	<0.1%	0.2%
File Folders	<0.1%	<0.1%	<0.1%	<0.1%
Total Paper	22.5%			
PLASTIC				
Plastic Film	4.5%	3.0%	2.9%	6.0%
Grocery Bags	2.6%	3.0%	1.0%	4.1%
PET # 1 Bottles	2.0%	1.4%	1.3%	2.7%
Rigid Plastics	1.7%	1.1%	1.1%	2.3%
Plastic Cups & Tubs	1.5%	1.0%	0.9%	2.0%
Polystyrene # 6 Foam	1.4%	0.9%	0.9%	1.9%
HDPE # 2 Bottles	1.0%	0.7%	0.6%	1.3%
Other # 3-# 7 Bottles	0.1%	0.3%	<0.1%	0.3%
Flower Pots	<0.1%	<0.1%	<0.1%	<0.1%
DVD/ CD Cases	<0.1%	<0.1%	<0.1%	<0.1%
Total Plastics	14.8%			
GLASS				
Clear Glass Bottles/ Jars	2.4%	1.8%	1.5%	3.4%
Brown Glass Bottles/ Jars	1.6%	2.0%	0.6%	2.7%
Green Glass Bottles/ Jars	1.0%	1.4%	0.3%	1.8%
Ceramic Glass	0.2%	0.6%	<0.1%	0.5%
Other Glass	<0.1%	0.2%	<0.1%	0.2%
Total Glass	5.4%			
C&D/ OTHER WASTE				
Diapers	2.8%	3.4%	1.0%	4.6%
Fines	2.4%	2.0%	1.4%	3.4%
Other	1.4%	3.1%	<0.1%	3.0%
Brick	<0.1%	<0.1%	<0.1%	<0.1%
Concrete	<0.1%	<0.1%	<0.1%	<0.1%
Roofing Material	<0.1%	<0.1%	<0.1%	<0.1%
Drywall	<0.1%	<0.1%	<0.1%	<0.1%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	6.6%			

**Exhibit 5. Multi-Family Residential Waste Stream
Composition (continued)**

Summary of May 2011 Results

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
ELECTRONICS				
Computers	1.5%	4.2%	<0.1%	3.6%
Other Electronic Waste	0.5%	0.9%	<0.1%	1.0%
VCRs	0.3%	1.0%	<0.1%	0.8%
DVDs/ CDs	0.2%	0.8%	<0.1%	0.6%
Cell Phones	<0.1%	<0.1%	<0.1%	<0.1%
Televisions	<0.1%	<0.1%	<0.1%	<0.1%
Printers	<0.1%	<0.1%	<0.1%	<0.1%
Printer Ink Cartridges	<0.1%	<0.1%	<0.1%	<0.1%
MP3 Players	<0.1%	<0.1%	<0.1%	<0.1%
Total Electronics	2.4%			
METALS				
Other Ferrous	1.3%	3.1%	<0.1%	2.9%
Other Non-Ferrous	1.0%	2.0%	<0.1%	2.1%
Steel/ Bi Metal Food Cans	1.0%	1.0%	0.5%	1.5%
Aluminum Cans	0.6%	0.6%	0.3%	0.9%
Aluminum Tin/ Foil	0.2%	0.3%	<0.1%	0.4%
Aerosol Cans	0.2%	0.3%	<0.1%	0.3%
Total Metals	4.4%			
ORGANICS				
Food Waste	14.9%	8.5%	10.5%	19.4%
Other Organics	7.8%	5.4%	5.0%	10.7%
Furniture	5.5%	9.6%	0.5%	10.5%
Mattresses	5.0%	12.9%	<0.1%	11.7%
Other Textiles	4.5%	13.2%	<0.1%	11.4%
Textiles	2.4%	1.8%	1.5%	3.4%
Untreated Wood	1.6%	3.2%	<0.1%	3.3%
Yard Waste	1.0%	1.9%	<0.1%	2.0%
Pallets	0.7%	2.7%	<0.1%	2.1%
Rubber	0.5%	1.6%	<0.1%	1.3%
Treated Wood	0.2%	0.4%	<0.1%	0.4%
Leather	<0.1%	<0.1%	<0.1%	<0.1%
Stumps	<0.1%	<0.1%	<0.1%	<0.1%
Total Organics	44.1%			
HAZARDOUS/SPECIAL CARE				
Household Haz Waste	<0.1%	<0.1%	<0.1%	<0.1%
Oil Filters	<0.1%	<0.1%	<0.1%	<0.1%
Infectious Waste	<0.1%	<0.1%	<0.1%	<0.1%
Dry Cell Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Lead-acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
Total Hazardous/Special Care	<0.1%			
TOTAL	100.0%			

Note: Composition based on 14 samples

COMPARISON BY RESIDENTIAL SECTOR

SCS compared upper and lower bounds of the confidence intervals derived in the Exhibits 4 and 5 to assess significant differences between single-family and multi-family waste. Waste components that were in single-family waste in greater proportions than in multi-family waste include:

- **Mixed Office Paper** (3.9 percent in single-family vs. 2.5 percent in multi-family)
- **Newspaper** (2.6 percent in single-family vs. 1.0 percent in multi-family)
- **Other Books** (0.6 percent in single-family vs. 0.2 percent in multi-family)
- **Diapers** (4.7 percent in single-family vs. 2.8 percent in multi-family)
- **Construction Materials**
 - **Brick** (0.4 percent in single-family vs. <0.1 percent in multi-family)
 - **Concrete** (0.4 percent in single-family vs. <0.1 percent in multi-family)
 - **Drywall** (0.3 percent in single-family vs. <0.1 percent in multi-family)
- **Aluminum Foil** (0.5 percent in single-family vs. 0.2 percent in multi-family)
- **Textiles** (5.4 percent in single-family vs. 2.4 percent in multi-family)
- **Yard Waste** (2.5 percent in single-family vs. 1.0 percent in multi-family)
- **Treated Wood** (1.0 percent in single-family vs. 0.2 percent in multi-family)

Waste components that were in multi-family waste in greater proportions than in single-family waste include:

- **Clear Glass Bottles/Jars** (2.4 percent in multi-family vs. 1.3 percent in single-family)
- **Brown Glass Bottles/Jars** (1.6 percent in multi-family vs. 0.5 percent in single-family)
- **Other Textiles** (4.5 percent in multi-family vs. 1.5 percent in single-family)
- **Mattresses** (5.0 percent in multi-family vs. <0.1 percent in single-family)

GEOGRAPHIC COMPARISON

Exhibit 6 portrays the mean waste composition of the seven towns from which waste samples were acquired. These compositions include residential waste, from both the multi- and single-family sectors.

Because the purpose of the study was to estimate waste composition generated by Wake County, there were not a sufficient number of samples from each of the seven towns to assess statistically significant differences in waste composition between towns. For this reason, 95 percent confidence intervals are not presented. The residential waste composition by town is presented for informational purposes only.

**Exhibit 6. Residential Waste Stream Composition by
Geographic Area**

Summary of May 2011 Results

Material Components	Raleigh	Apex	Cary	Fuquay Varina	Holly Springs	Wake Forest	Gamer
PAPER							
Other Paper	6.9%	7.8%	5.7%	2.9%	5.4%	4.5%	14.3%
Paperboard	4.2%	5.0%	4.3%	5.7%	3.9%	4.6%	4.2%
Rec Corr Cardboard	2.7%	3.3%	2.3%	4.6%	0.9%	6.9%	<0.1%
Mixed Office Paper	3.8%	3.4%	4.5%	1.8%	4.1%	2.3%	3.9%
Magazines	1.9%	4.2%	2.7%	1.3%	3.0%	0.1%	1.6%
Newspaper	2.4%	1.3%	1.6%	2.4%	3.4%	0.8%	1.7%
White Ledger Paper	1.3%	0.5%	2.4%	2.2%	1.0%	0.3%	<0.1%
Paper Plates, Cups	0.5%	0.5%	0.6%	0.6%	1.6%	0.8%	<0.1%
Other Books	0.8%	<0.1%	0.5%	<0.1%	0.1%	<0.1%	<0.1%
Phone Books	0.4%	1.0%	0.8%	1.6%	0.8%	3.2%	0.9%
Kraft Paper	0.6%	0.5%	0.3%	<0.1%	0.9%	1.2%	<0.1%
Gable Top/ Aseptic Cartons	0.3%	0.5%	1.0%	0.3%	1.1%	0.2%	1.8%
NR Corr Cardboard	0.2%	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	<0.1%
Paper Packaging	0.2%	0.5%	<0.1%	0.8%	0.1%	<0.1%	<0.1%
File Folders	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total Paper	26.3%	28.5%	26.8%	24.4%	26.4%	24.9%	28.5%
PLASTIC							
Plastic Film	6.2%	6.9%	4.3%	6.8%	4.9%	5.8%	11.7%
Rigid Plastics	1.7%	1.9%	1.8%	9.6%	1.8%	2.3%	2.5%
Grocery Bags	1.5%	1.8%	3.9%	4.4%	2.6%	2.2%	1.6%
PET # 1 Bottles	1.9%	1.6%	1.6%	2.1%	1.4%	1.9%	1.1%
Polystrene # 6 Foam	1.7%	1.4%	1.6%	1.1%	2.0%	1.8%	1.7%
Plastic Cups & Tubs	1.7%	1.6%	2.0%	1.6%	2.4%	1.8%	1.8%
HDPE # 2 Bottles	1.0%	0.6%	0.7%	0.9%	0.7%	1.3%	0.8%
Other # 3-# 7 Bottles	<0.1%	0.6%	0.2%	<0.1%	0.3%	<0.1%	<0.1%
Flower Pots	0.1%	<0.1%	0.2%	<0.1%	<0.1%	0.3%	<0.1%
DVD/ CD Cases	<0.1%	<0.1%	<0.1%	<0.1%	0.2%	<0.1%	<0.1%
Total Plastics	15.9%	16.5%	16.5%	26.4%	16.4%	17.5%	21.1%
GLASS							
Clear Glass Bottles/ Jars	1.6%	1.6%	2.2%	0.5%	1.2%	1.7%	1.0%
Brown Glass Bottles/ Jars	0.7%	0.4%	1.9%	<0.1%	0.7%	0.4%	0.2%
Green Glass Bottles/ Jars	0.8%	1.4%	0.7%	0.4%	1.1%	0.7%	0.7%
Ceramic Glass	<0.1%	0.5%	<0.1%	<0.1%	<0.1%	0.3%	<0.1%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%	0.3%	0.8%	<0.1%
Total Glass	3.2%	4.0%	4.9%	1.0%	3.3%	4.0%	1.9%
C&D/OTHER WASTE							
Diapers	3.5%	7.5%	4.0%	7.4%	6.1%	4.3%	3.5%
Fines	3.2%	3.1%	4.5%	4.8%	3.1%	1.2%	4.6%
Other	3.4%	1.8%	2.5%	<0.1%	3.3%	<0.1%	0.6%
Concrete	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Brick	0.5%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.3%
Drywall	0.4%	<0.1%	0.3%	<0.1%	<0.1%	<0.1%	<0.1%
Roofing Material	<0.1%	<0.1%	0.3%	<0.1%	<0.1%	<0.1%	<0.1%
Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total C&D and Other Wastes	11.0%	12.3%	11.8%	12.1%	12.5%	5.5%	8.9%

**Exhibit 6. Residential Waste Stream Composition by
Geographic Area (continued)**

Summary of May 2011 Results

Material Components	Raleigh	Apex	Cary	Fuquay Varina	Holly Springs	Wake Forest	Garner
ELECTRONICS							
Other Electronic Waste	0.5%	2.4%	0.9%	2.1%	0.5%	<0.1%	0.8%
DVDs/ CDs	<0.1%	<0.1%	0.3%	<0.1%	<0.1%	<0.1%	<0.1%
Computers	0.2%	<0.1%	1.7%	<0.1%	<0.1%	<0.1%	<0.1%
VCRs	0.3%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Printers	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Printer Ink Cartridges	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Cell Phones	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Televisions	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
MP3 Players	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total Electronics	0.9%	2.4%	2.9%	2.1%	0.5%	<0.1%	0.8%
METALS							
Steel/ Bi Metal Food Cans	1.0%	1.0%	1.1%	0.7%	1.1%	2.2%	1.9%
Aluminum Cans	0.5%	0.4%	0.4%	0.6%	0.2%	0.5%	1.0%
Aluminum Tir/ Foil	0.5%	0.3%	0.3%	0.4%	0.6%	0.1%	1.0%
Aerosol Cans	0.4%	0.4%	0.4%	0.1%	0.3%	0.2%	<0.1%
Other Ferrous	1.3%	1.5%	1.0%	1.8%	0.6%	<0.1%	<0.1%
Other Non-Ferrous	0.5%	0.9%	0.6%	1.5%	0.3%	0.9%	<0.1%
Total Metals	4.2%	4.5%	3.8%	5.1%	3.1%	3.9%	4.0%
ORGANICS							
Food Waste	14.9%	13.6%	14.8%	12.6%	16.5%	12.5%	7.5%
Other Organics	7.9%	5.5%	9.6%	11.5%	12.0%	10.9%	13.5%
Textiles	3.5%	3.4%	2.9%	1.4%	2.4%	12.1%	2.3%
Yard Waste	1.8%	1.4%	2.2%	1.9%	3.0%	2.0%	3.1%
Furniture	2.2%	3.0%	1.2%	<0.1%	<0.1%	3.1%	<0.1%
Other Textiles	2.6%	0.3%	1.2%	0.5%	1.3%	0.6%	8.0%
Untreated Wood	2.3%	1.0%	0.5%	<0.1%	<0.1%	2.8%	<0.1%
Treated Wood	0.1%	3.6%	0.1%	<0.1%	2.6%	<0.1%	0.4%
Mattresses	2.4%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Pallets	0.4%	<0.1%	<0.1%	0.8%	<0.1%	<0.1%	<0.1%
Rubber	0.2%	<0.1%	0.8%	<0.1%	<0.1%	<0.1%	<0.1%
Stumps	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Leather	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total Organics	38.5%	31.8%	33.3%	28.8%	37.9%	44.0%	34.9%
HAZARDOUS/SPECIAL CARE							
Infectious Waste	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Household Haz Waste	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Oil Filters	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Dry Cell Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Lead-acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Total Hazardous/Special Care	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
TOTALS	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

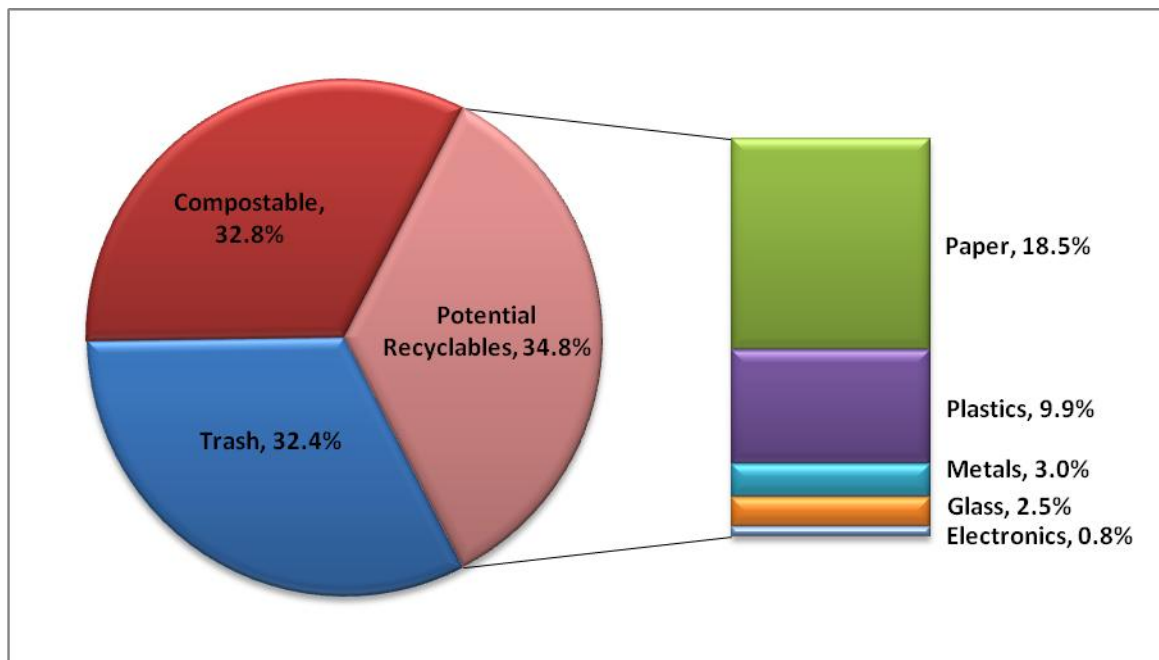
Note: Composition based on the following number of samples

29 5 9 2 5 2 2

WASTE DIVERSION OPPORTUNITIES

To estimate types and quantities of recyclable waste components in the residential and commercial waste streams, the waste material components were classified as recyclable, compostable, or trash. The following graphs present the recyclable components by material type for each of the three sectors. **Exhibit 10** identifies waste materials that are considered recyclable or compostable.

Exhibit 7. Commercial Waste Stream - Recyclable and Compostable Composition



Summary of May 2011 Results

Exhibit 8. Single-family Waste Stream - Recyclable and Compostable Composition

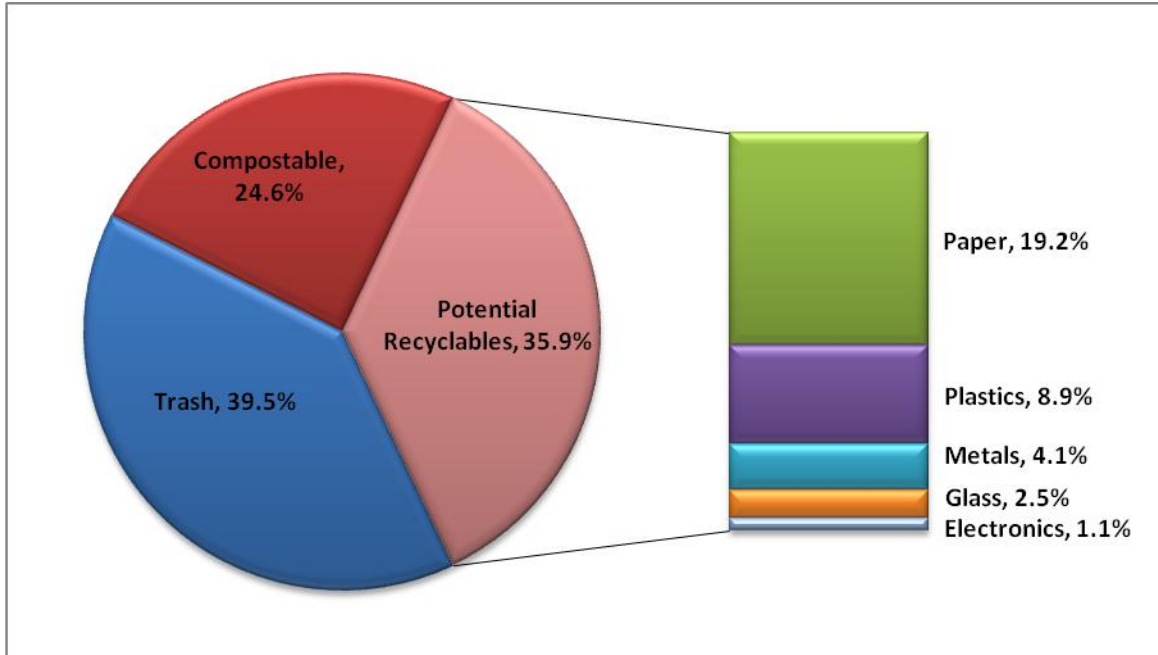


Exhibit 9. Multi-Family Waste Stream - Recyclable and Compostable Composition

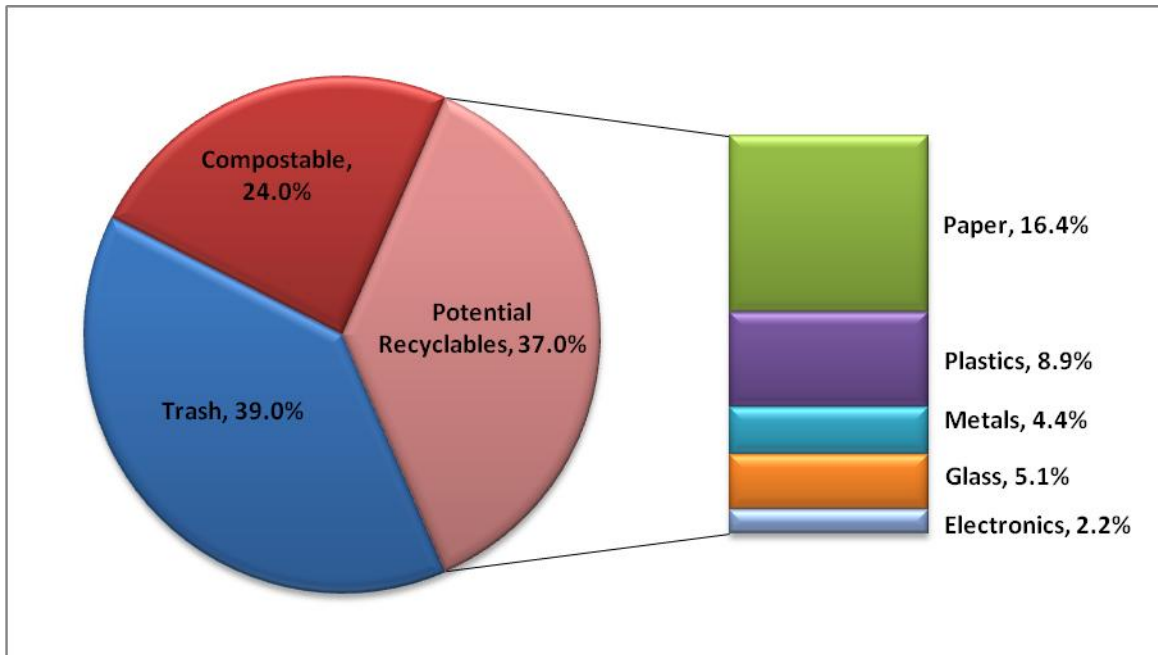


Exhibit 10. Recyclable Compostable, and Trash Materials

Recyclable Components of the Waste Stream		
Newspaper	PET # 1 Bottles	Other Non-Ferrous
Magazines	HDPE # 2 Bottles	Clear Glass Bottles/ Jars
Corrugated Cardboard	Other # 3-# 7 Bottles	Green Glass Bottles/ Jars
Kraft Paper	Plastic Cups & Tubs	Brown Glass Bottles/ Jars
Phone Books	Rigid Plastics	Computers
Paperboard	Grocery Bags	Televisions
Other Books	Flower Pots	Cell Phones
White Ledger Paper	Steel/ Bi Metal Food Cans	Printers
Mixed Office Paper	Aluminum Cans	VCRs
Gable Top/ Aseptic Cartons	Aluminum Tin/ Foil	MP3 Players
File Folders	Aerosol Cans	Other Electronic Waste
Paper Packaging	Other Ferrous	
Compostable Components of the Waste Stream		
Paper Plates, Cups	Untreated Wood	Yard Waste
Other Paper	Pallets	Stumps
Food Waste		
Trash Components of the Waste Stream		
NR Corr Cardboard	Rubber	Lead-acid Batteries
Plastic Film	Other Organics	Diapers
Polystyrene # 6 Foam	Ceramic Glass	Brick
DVD/ CD Cases	Other Glass	Concrete
Textiles	DVD's/ CD's	Roofing Material
Other Textiles	Printer Ink Cartridges	Drywall
Leather	Household Haz Waste	Vinyl Siding
Treated Wood	Oil Filters	Fines
Furniture	Infectious Waste	Other
Mattresses	Dry Cell Batteries	

Recyclable Materials

There is still a significant amount of recyclable material in the waste stream with established markets. One area of improvement would be to broaden the types recyclables accepted by curbside and drop-off site recycling programs in the rural areas of the County. According to the 2009 Wake County Solid Waste Management Plan, junk mail and office paper is not accepted at

Summary of May 2011 Results

the community drop off sites or through the curbside recycling program in Cary. Education and community outreach can also improve recycling rates across all sectors. Recycling ordinances have also been shown to improve recycling rates in towns and counties across the country.

Compostable Materials

Compostable materials also comprise a significant portion of the waste stream. Some categories such as food waste are often compostable via backyard composting piles. Curbside compostable collection is also becoming more prevalent in some areas as composting operations can produce nutrient rich fertilizer and methane/ natural gas. Education and community outreach can improve diversion rates for compostable materials.

Appendix A
Data Collection Forms

Wake County Waste Characterization Study
 Summary of May 2011 Results

WAKE COUNTY WASTE CHARACTERIZATION STUDY - Data Collection Sheet

Crew: B		Date: M T W TH F		Time: a.m. p.m.	
Sample Number:		Vehicle #:		Hauler:	
Collection Area:		Quadrant: 4		Commercial / Residential / Other:	
Major Waste Fractions	Waste Component Categories	Examples	WEIGHT (In Pounds)		
			Gross	Tare	
Paper	Newspaper/Print				
	Glossy Magazines				
	Recyclable Cardboard				
	Non-Rec Corr Cardboard	pizza boxes, wax coated			
	Kraft Paper	grocery bags.			
	Phone Books				
	Paperboard (Chipboard)	cereal and soda boxes			
	Other Books				
	White Ledger	high grade office paper			
	Mixed Office Paper	junk mail, receipts			
	Gable Top/Aseptic Cartons	milk and juice cartons			
	Paper Plates, Cups	paper plates/cups/bowls			
	File Folders				
	Paper Packaging	cumpled padding paper			
Other Paper	Non-recyclable paper				
Plastic	PET (#1) Bottles	Water, Soda			
	HDPE (#2) Bottles)	Milk, Detergent			
	Other (#3-#7) Bottles	Prescriptions			
	Plastic Film	Yogurt, Butter			
	Plastic Cups and Tubs	Used to contain trash			
	Polystrene (#6) Foam	clamshells, cutlery, cups			
	Rigid Plastics	furniture, toys			
	Grocery Bags	safeway/giant bags			
	Flower Pots				
	DVD/CD Cases				
Textiles	Textiles	clothing, fabrics			
	Other Textiles	carpet			
	Leather				

Summary of May 2011 Results

Metal	Steel/Bi Metal Food Cans	Pet food cans, soup cans		
	Aluminum Cans	Soda cans, beer cans		
	Aluminum Tin/Foil			
	Aerosol Cans			
	Other Ferrous			
	Other Non-Ferrous			
Glass	Clear Glass Bottles/Jars			
	Green Glass Bottles/Jars			
	Brown Glass Bottles/Jars			
	Ceramic Glass			
	Other Glass			
Organic	Food Waste			
	Treated Wood			
	Furniture			
	Mattresses			
	Untreated Wood			
	Pallets			
	Yard Waste			
	Rubber			
	Stumps			
	Other Organics			
	Waste Component	Weight / Tare	Waste Component	Weight / Tare
Electronics	Computers	/	Printer Ink Cartridges	/
	Televisions	/	VCR's	/
	Cell Phones	/	MP3 Players	/
	Printers	/	Other Electronic Waste	/
	DVD's/CD's	/		
HHW	Household Haz Waste	/	Dry Cell Batteries	/
	Oil Filters	/	Lead-Acid Batteries	/
Other	Infectious Waste	/	Drywall (Gypsum)	/
	Diapers	/	Vinyle Siding	/
	Brick	/	Fines	/
	Concrete	/	Other	/
	Roofing Material	/		
Comments:				
3				

Appendix B

Health and Safety Plan

HEALTH AND SAFETY PLAN
FOR THE
WAKE COUNTY
2011 WASTE CHARACTERIZATION STUDY

EMERGENCY PHONE NUMBERS

Fire, First Aid, Ambulance, Police
911

Wakemed **(919) 350-2300**

Wake County Sheriff's Office **(919)-856-6900**

Field Responsibility:

Stacey Demers, Project Director
Josh DeGayner, Site Manager & Crew Chief
Brent Dieleman, Crew Chief

SCS ENGINEERS
11260 Roger Bacon Drive
Suite 300
Reston, VA 20190
(703) 471-6150

**A Copy Of This Safety Plan And Its Attachments
Must Be Kept At The Site During All Field Activities.**

May 2011

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1 INTRODUCTION	1
1.1 Purpose.....	1
1.2 Discussion.....	1
1.3 Responsible Individuals	2
1.4 Scope and Applicability.....	3
2 EMERGENCY INFORMATION AND PROCEDURES.....	5
2.1 Emergency Information	5
2.2 Accidents/Injuries	5
2.3 Fire	5
2.4 Evacuation.....	5
Stages of Evacuation.....	5
Withdrawal from Work Area	5
Withdrawal from Building.....	6
Withdrawal from Facility Property	6
2.5 Incident Reporting	6
Oral Accident/Incident Report Format	6
Distribution of Written Accident/Incident Report	7
3 GENERAL FIELD SAFETY PROCEDURES	8
3.1 Safety Equipment.....	8
3.2 Site Standard Operating Procedures	8
3.3 Inspections	11
3.4 Weather	11
3.5 Housekeeping.....	11
3.6 Decontamination.....	11
4 PERSONNEL PROTECTION LEVEL DETERMINATION	12
LEVEL D PERSONAL PROTECTION	12

Exhibit 1

1 ACKNOWLEDGEMENT OF RECEIPT, HEALTH AND SAFETY PLAN.....4

SECTION 1

INTRODUCTION

The health and safety of site workers is a primary concern and goal. Thus, a comprehensive, carefully managed, and thoroughly documented Health and Safety Plan is crucial for successful project completion.

1.1 PURPOSE

The purpose of this document is to inform persons of potential safety and health hazards and mitigating measures recommended for action when performing the project field work at transfer stations, on landfill sites, and associated areas where municipal solid waste is being handled. These recommendations are intended for work on sites containing biodegradable and solid waste materials, not for sites containing hazardous or toxic wastes regulated under federal or North Carolina state laws. This document has been prepared for use on the 2011 Wake County Waste Characterization Study to be performed by SCS Engineers.

1.2 DISCUSSION

Waste characterization involves both the sorting of solid waste into designated categories and the direct weighing of trucks entering and departing from the site. The data that is generated from the field activities will be compiled and presented to the Wake County Environmental Services Department.

There have been no reported serious or fatal incidents attributed specifically to the performance of waste characterization studies. However, accidents may occur due to the potential hazards associated with the presence of heavy equipment at the site, the components of the waste itself (potentially sharp objects, broken glass), climatic conditions, and carelessness. At transfer stations, combustion of the waste materials on the tipping floor or in "Hot Loads" from refuse vehicles can present potential hazards.

The presence of heavy equipment in operation at the site (end loaders, graders, transfer station compactors, garbage trucks, etc.) presents potential hazards which can be avoided with the use of general common sense. The equipment operators generally are involved in performing their tasks and may be unaware of the presence of other individuals within the immediate area. To reduce the risk of the sorting crews and SCS personnel working in the same area as the heavy equipment, the tipping floor will be divided in half with road cones. Trucks and loading equipment will be processing waste on one side and sorting activities will be taking place on the other side. There will be no reason for sorting personnel and heavy equipment to be working in close proximity. Personell will be trained to be aware of the movement and location of

Summary of May 2011 Results

equipment at all times. Also, highly visible clothing, including safety vests and hard hats, is required.

The components of solid waste present potential physical hazards. These include, but are not limited to, cuts from broken glass and sharp metal objects; splinters from pieces of wood; punctures from nails and other potential objects and scrapes and abrasions from the general handling of the solid waste. There also exists the potential for exposure to household products, such as bleach, cleansers, and other toxic chemicals.

To alleviate the possibility of injury, caution should be employed at all times when physically handling the solid waste. Protective clothing, including gloves and safety glasses, should be worn at all times. A tailgate safety meeting will be conducted on each day prior to any field activities. The purpose of this meeting will be to discuss safety concerns, the condition of personal protective gear, and keep health and safety foremost in everyone's minds. If there is any question about the handling of a component of solid waste, the Site Manager or Crew Chief should be notified.

The waste characterization will be performed indoors, but not in a climate controlled area. Heat stress is a risk. Sufficient water for personal use will be brought on-site daily. Caution should be taken to avoid the possibility of heat stress due to protective clothing or weather, or frostbite in areas of extreme cold. Depending on temperature, fans may be used to circulate air and cool sorting personnel.

Landfill gas (LFG) is produced by the anaerobic decomposition of organic waste materials placed in a landfill. LFG is typically composed of 50 to 60 percent methane, 40 to 50 percent carbon dioxide, and trace amounts of various other gases, including odorous and possible toxic compounds. At the South Wake Transfer Station, the generation of LFG is not expected to be a concern.

Refuse discharged at the Wake County Landfill can pose a potential fire hazard. Fires can be started through carelessness, sparks, or from "Hot Loads" discharged from refuse facilities. If fire or smoke is observed, Wake County Landfill personnel should be notified immediately, all SCS personnel and subcontractors should leave the immediate area at once, and the local, emergency fire department should be notified.

Before any field activities, Waste Industries will conduct a site specific health and safety orientation course for all SCS and Aerotek personnel that will be involved in field activities. This course is mandatory.

1.3 RESPONSIBLE INDIVIDUALS

Summary of May 2011 Results

Safety during the field work will be the responsibility of the Site Manager. The Site Manager may temporarily suspend work if there appears to be a threat to health or safety. The Site Manager and other SCS personnel will be on site during all field activities. Other safety-related responsibilities are described below.

The SCS Site Manager, or appointed representative, will have responsibility for overall safety policy, planning, and execution. He will be responsible for making project level decisions regarding safety rules and operations.

The Site Manager will have primary responsibility for:

- Assuring that appropriate personnel protective equipment is available and properly utilized by all SCS and sampling personnel;
- Assuring that sampling personnel are aware of the provisions of this plan, are instructed in the work practices necessary to ensure safety, and in planned procedures for dealing with emergencies;
- Assuring that sampling personnel are aware of the potential hazards associated with site operations;
- Supervising the monitoring of safety performance by all personnel to ensure that required work practices are employed; and
- Correcting work practices or conditions that may result in injury to personnel or exposure to hazardous substances.

In addition to the SCS Site Manager, a SCS Crew Chief will be utilized to conduct portions of the study. The Crew Chief will be responsible for the sampling personnel, which may be weighing refuse or performing waste characterization. Prior to the field event, a listing of responsible individuals will be developed and made a part of the field copy of this document. This listing will include the individual's name, title, office location, and phone number.

1.4 SCOPE AND APPLICABILITY

A copy of this safety plan and its attachments must be kept at the site during all field activities.

The provisions of this plan are mandatory for all SCS project personnel and personnel under contract to SCS while field work is being conducted at the site.

Summary of May 2011 Results

Prior to conducting any field work, those individuals who will be performing field work must read this Safety Plan and all attachments. If any of the information presented in these materials is unclear, the reader will contact the Site Manager for clarification. Once the information has been read and understood, the individual will sign a copy of the acknowledgment shown in ***Exhibit 1*** on the following page.

After field personnel have read the Safety Plan and attachments, but before beginning field activities, a training session will be conducted to familiarize personnel with health and safety requirements relevant to the project.

EXHIBIT 1

ACKNOWLEDGMENT OF RECEIPT, HEALTH AND SAFETY PLAN

CONFIRMATION OF NOTIFICATION

**HEALTH AND SAFETY PLAN FOR WAKE COUNTY 2011 WASTE COMPOSITION
STUDY**

I have been provided, read, and understand the Health and Safety Plan for the Wake County 2011 Waste Composition Study. I confirm that I will provide and use appropriate footwear and clothing.

I also understand that SCS Engineers will provide:

- Hard Hats
- Safety Glasses
- Gloves
- Safety Vest
- Tyvek Suit

These must be used during sorting activities. I understand that all safety regulations must be observed. **Violations of safety rules or use of safety equipment is grounds for dismissal.**

Signature

Date

SECTION 2

EMERGENCY INFORMATION AND PROCEDURES

2.1 EMERGENCY INFORMATION

Emergency telephone numbers for reporting an emergency are listed on the cover of this Plan.

2.2 ACCIDENTS/INJURIES

Depending on the severity of the injury, treatment may be given at the site by trained personnel, additional assistance may be required at the site (emergency medical technicians), or the victim may have to be transported to a hospital. Directions and the address of the nearest hospital are as follows:

1900 Kildaire Farm Rd
Cary, NC 27518
(919) 350-2300

From the South Wake Landfill:

- Head Northeast on Old Smithfield Rd
- Turn left onto N Carolina Bypass 55 W
- Continue onto E Williams St
- Turn right to merge onto US-1 N
- Take exit 98A to merge onto Tryon Rd
- Turn left at Kildaire Farm Rd, Destination is on the Left

2.3 FIRE

The potential for fire exists on this project. No smoking will be allowed by project participants.

2.4 EVACUATION

Stages of Evacuation

The Site Manager is responsible for judging if circumstances exist which require evacuation. Specific evacuation procedures will be covered in the health and safety training session prior to beginning field work.

Three stages of evacuation will be used:

- Withdraw from immediate work area.
- Withdraw from building.
- Withdraw from facility property.

These three stages are discussed below:

Withdrawal from Work Area

Withdrawal to a safe location will be required if any of the following occur:

- Occurrence of a minor accident, field operations will resume after first aid and/or decontamination procedures have been administered.
- Equipment, protective clothing, or respirator malfunctions.

Withdrawal from Building

SCS project personnel will be evacuated from the building in the following cases:

- Explosive or toxic levels of gases or volatile organics are suspected.
- A major accident or injury occurs.
- Fire and/or explosion occurs.

Withdrawal from the Facility Property

The Site Manager is responsible for judging if circumstances exist for evacuation of the facility property. Prior to evacuating the property, all field staff will meet at the rendezvous site, which will be designated by Waste Industries. Fire and police departments must be contacted.

Summary of May 2011 Results

2.5 INCIDENT REPORTING

Incident reporting procedures are listed below and should be performed in the order indicated.

1. Call the appropriate emergency number (911) (e.g., ambulance, fire, etc.). Give information in format provided under subsequent section titled "Oral Accident/Incident Report Format".
2. Call project points of contact. Give information in format provided under "Oral Accident/Incident Report Format".
3. Call SCS points of contact to report an accident or incident.

Oral Accident/Incident Report Format

Accident/Incident reports should contain the following information:

- Name, location, and title of the person(s) reporting.
- Location of accident/incident, (i.e., building number, facility name.)
- Casualties (fatalities, disabling injuries).
- Suspected/known chemical substances involved, if any.
- Details of any existing chemical hazard or contamination.
- Summary of accident/incident, giving pertinent details including type of operation at time of accident, etc.
- Suspected/known cause of accident incident.

Information will not be released under any circumstances to parties other than those listed in *Section 2-5*.

Distribution of Written Accident/Incident Report

The accident/incident report form will be distributed by the Site Manager to the following individuals as appropriate and in the following order of priority:

Name

Address

Summary of May 2011 Results

Stacey Demers	SCS Engineers 11260 Roger Bacon Drive Reston, Virginia 22090 703/471-6150 800/767-4727
Troy Mitchell	Waste Industries 6124 Old Smithfield Rd. Apex, NC 27502 919/291-6472
Casey Fulghum	North Wake Landfill 9025 Deponie Drive Raleigh, NC 27614 919/625-5967

SECTION 3

GENERAL FIELD SAFETY PROCEDURES

Safety is the responsibility of every individual involved in field efforts. Properly followed procedures are essential to assure personal safety and minimize lost time due to injuries or accidents. Anticipated hazards while working at the sites include, but are not limited to:

- Exposure to toxic or hazardous chemicals;
 - Physical hazards from use of heavy equipment end-loaders, graders, transfer station compactors, etc;
 - Fire or explosion caused by ignition of methane gas or other chemicals;
 - Site physical hazards including debris, uneven terrain, poor footing, and water hazards; and
 - Heat stress from personal protective equipment and weather.
-

Summary of May 2011 Results

This section presents procedures and requirements designed to reduce these hazards and minimize their impact on personnel safety and completion of the task.

3.1 SAFETY EQUIPMENT

The level of protection required will depend on the specific activity and the location. The Site Manager will define appropriate protection. The minimum personal protective equipment that will be worn at all times by field personnel is EPA Protocol Level D (hard hat, safety glasses, stout work boots, and heavy work clothes).

SCS field personnel (including subcontractors) will be informed in the use of safety equipment and will be required to wear protective clothing appropriate for the tasks in which they will be involved.

Extra equipment will be located on-site. This equipment will include the following items:

- Dust Masks
- Gloves (surgical and heavy rubber)
- Safety Vests
- Eye Protection
- Ear Protection
- Hard Hats
- First Aid Kit

Sufficient water for personal use will be brought on-site daily.

3.2 SITE STANDARD OPERATING PROCEDURES

SCS team members will conduct themselves in a professional manner at all times. The following restrictions will also be observed by all SCS personnel and subcontractors to SCS.

- Working while under the influence of intoxicants, narcotics, or controlled substances is prohibited;
 - Smoking anywhere on site is prohibited;
 - Loose clothing will not be worn on-site. Long hair will be worn up inside hard hat;
 - Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the
-

Summary of May 2011 Results

probability of hand-to-mouth transfer and ingestion of material is prohibited on-site;

- No personnel will be admitted to the site without the proper safety equipment, clearance or other approval;
 - All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the Site Manager, will be immediately dismissed from the site;
 - No unapproved work clothes or equipment will be allowed on-site;
 - The buddy system will be used during site operations. Each worker should consider himself a safety backup to others on the work crew. All personnel should be aware of dangerous situations that may develop;
 - Prescription drugs should not be taken by personnel where the potential for contact with toxic substances exist. Use must be specifically approved by a qualified physician;
 - Work areas for various operational activities will be established;
 - Work areas will be established based on prevailing site conditions and are subject to change. Personnel should check with the Site Manager for current and appropriate procedures regularly;
 - Contact with contaminated or potentially contaminated material should be avoided. Whenever possible, do not walk through puddles, mud, or any discolored ground surface. Do not kneel on the ground. Do not lean, sit or place equipment on drums, containers, or vehicles;
 - No exchange of personal protective equipment will be allowed except in emergency situations involving a threat to health or safety;
 - Lunch eaten at the site will be eaten only at the designated areas located away from the immediate area of the site;
 - Due caution will be observed when proceeding on-foot through open areas, Aerotek personnel will not cross the line of cones that will separate the sorting area from the area where heavy equipment will be operating; and
 - Any medical emergency supersedes routine safety requirements.
-

Summary of May 2011 Results

A safety meeting will be conducted by the Site Manger prior to entering the site. The meeting will cover, but is not limited to, a review of site information and a question-and-answer period. A tailgate safety meeting will be conducted prior to any field activities on each day of fieldwork. The site information review will include:

Expected hazards:

- Special conditions.
- Sampling procedures.
- Location of telephones.
- Emergency medical information.
- Level of personal protection required.

Before entering the site, the following checklist should be reviewed:

- Check location of lavatory, water supply and telephones.
- Layout and check alternative safety gear.
 - First aid kit
 - Fire extinguishers
 - Extra clothing
- Put on required safety gear.
- Check gear for rips and malfunctions.
- Identify and be familiar with the responsibilities for each of the crewmembers prior to proceeding.
- Use caution.

The following regulations will be observed during sampling:

- No eating/drinking/smoking while sampling;
 - Use standard sampling techniques;
 - Use maximum care in handling samples. If the sampling site is not accessible using your gear (i.e., water too high, slippery ground, steeply sloped terrain, holes, etc.), do not sample. Confer with the Crew Chief about alternate sampling site;
 - Wipe off spills, dirt, and residue immediately;
-

Summary of May 2011 Results

- If any gear or equipment damage develops, immediately repair or replace;
- If any personal protective equipment fails, proceed immediately to a designated area; and
- If you experience any physical discomfort, abnormalities, fatigue, or lightheadedness, immediately stop work, tell the Crew Chief, and leave the area with escort.

3.3 INSPECTIONS

The Site Manager will inspect all safety equipment daily for the following:

- Proper working order.
- Nicks, cuts, tears, etc., in boots and gloves.
- Persistent stains.

Any piece of safety equipment that is not in order will be repaired or disposed of properly.

3.4 WEATHER

Decreased body ventilation caused by protective clothing and equipment can result in increased potential for heat stress. Workers should carefully observe each other for signs of heat stress, particularly on hot days. If appropriate, extra equipment will be assembled during periods of inclement weather, such as rain, wind, heat, and cold. Examples might include tents, coveralls, heaters, etc.

3.5 HOUSEKEEPING

Work areas will be kept clean and orderly at all times.

3.6 DECONTAMINATION

The risks of illness due to ingestion of diseased or decomposing materials from the work site are significant. To minimize these risks, all personnel should remove and store the outer layer of their protective clothing (i.e., coveralls, gloves, hat, etc.) on-site. Hands, face and nails should be thoroughly washed, or scrubbed, with soap and water prior to engaging in any activity likely to transmit materials encountered on-site into the mouth.

SECTION 4

PERSONNEL PROTECTION LEVEL DETERMINATION

The Site Manager is responsible for insuring the health, safety, and efficiency of the team at the work site. The level of personal protection necessary for the health and safety of the team will be determined by the Site Manager. These factors include surface air and wind characteristics, the location of the site relative to human traffic, and overt signs of hazards to life and health. Under no circumstances will the team members downgrade the level of personal protection selected. The constituents of the typical level of required personal protection are listed below:

LEVEL D PERSONAL PROTECTION

Level D is the basic work uniform of the team.

Equipment

1. Boots/shoes: Leather or chemical-resistant, steel toes.
2. Safety glasses.
3. Hard hat.
4. Dust mask. (Optional)
5. Work gloves (surgical and heavy rubber).
6. Safety vests.
7. Tyvek Suits (Sorting Crewmembers Only)

When to Use:

1. Site set-up and operations in working zones, including Waste Sorting Area.

Used By:

1. Team members working in the area, including:
 - Site Manager
 - Crew Chief
 - Sorting Crewmembers
 - Others, such as visitors, in the work zones.

Additional gear may be required, at the discretion of the Site Manager, as site conditions demand.
