

Waste Composition and Characterization Analysis



Presented to:

City of Fort Collins, Colorado

Submitted by:

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1. EXECUTIVE SUMMARY

Sloan Vazquez McAfee (SVM or SVM team) was commissioned to identify the waste composition and characteristics of City of Fort Collins MSW disposed at the Larimer County Landfill. The waste composition and characterization analysis was conducted on residential, commercial, construction and demolition (C&D), and self-haul volume delivered to the landfill during the months of May and September 2016.

The sampling and analysis was conducted by the SVM team, a consulting firm focused exclusively on municipal solid waste planning and management services, specializing in waste characterizations, MRF project development and operational analysis, rate studies, financial feasibility studies, municipal contract analysis and residential and commercial collection operations. The firm's principals have over 60 years of wide ranging expertise and experience in municipal waste management and recycling, and have conducted numerous waste composition studies at sites located throughout the United States. SVM maintains a specialized, streamlined organization that provides solid waste and recycling advisory services to both public and private sector solid waste and recycling enterprises.

2. METHODOLOGY

The intent of the solid waste composition and characteristics analysis is to identify, quantify and characterize MSW material types received from the City of Fort Collins for disposal at the Larimer County Landfill.

The methodology differentiates between four major categories of waste delivered to the landfill. The waste generation categories specifically identified and sampled as part of this composition and characterization study include residential, commercial, industrial and C&D materials and self-hauled waste. To ensure that the data collected was representative of the MSW the following assumptions were made about the type and delivery method of the waste to be sampled:

- Residential and Commercial MSW is typically delivered in route collection vehicles to the Larimer County Landfill. Although residential and commercial collection trucks may often be distinguished by either front-load, rear-load, or side-load configuration, drivers of the randomly selected vehicles were questioned by SVM staff in order to confirm the source of the load.
- C&D materials are typically collected in open-top drop-boxes, end-dump trailers, dump trucks, and dump trailers. These materials are most often

delivered to the landfill by waste collection companies, debris-box providers, and small contractors.

- Self-Haul, or Public, solid waste is typically hauled to the landfill by residents or small businesses using cars, pick-up trucks, and small trailers that are unloaded by hand.

Each of these material types are directed to specific, separate areas of the landfill by Larimer County personnel. A pictorial representation of this process is provided in Exhibit One.

A. Sampling Approach

All Fort Collins residential and commercial waste samples were hand-sorted. All industrial/C&D and self-haul loads were visually characterized. The following table shows the number of samples characterized for each waste generation category during the field-sampling process.

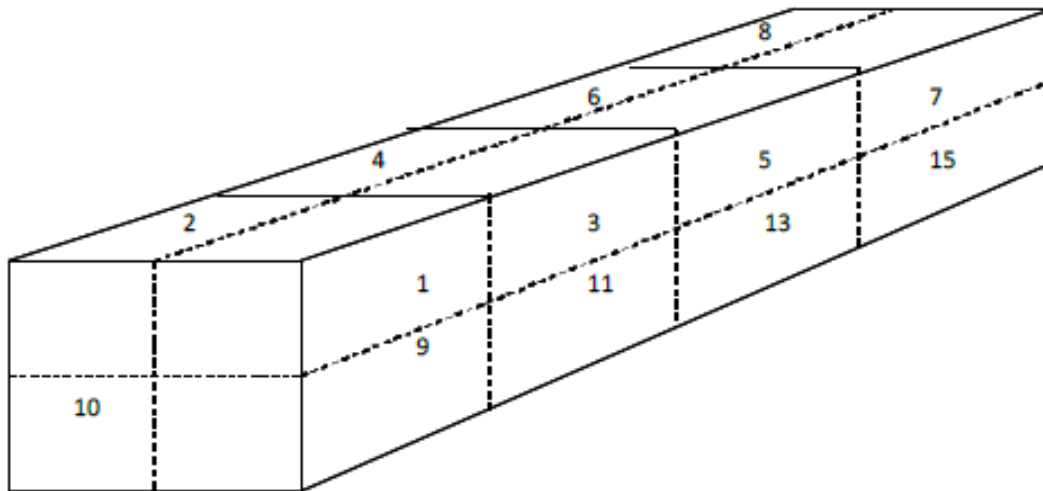
Table 1: Waste Generation Categories, Sample Numbers and Sort Type

Waste Generation Category	Sort Type	Season One Samples	Season Two Samples	Combined Two-Season Samples
Residential MSW	Hand Sort	15	15	30
Commercial MSW	Hand Sort	20	20	40
Industrial/C&D	Visual Sort	20	20	40
Self-Haul	Visual Sort	20	20	40
TOTAL SAMPLES		75	75	150

Sample Cell Selection

To randomly select samples, each load was divided into a 16-cell grid as depicted below. A randomizer tool was used to assign a primary and alternative cell for sampling. The sample was taken from the randomly assigned cell for each selected load. When the load arrived, the vehicle was directed to the designated location. Once the load was dumped, the randomly selected cell was extracted from the load and separated for sorting.

Figure 1: Sixteen-Cell Grid



Note: Cells 12, 14, and 16 are below cells 4, 6 and 8, respectively.

The randomizer is an MS-Excel worksheet that uses a set of formulas to randomly select material for sorting. Each cell in the sixteen cell table was assigned a random number. The first two cells were assigned an integer value based on their rank with the other cells. The number assigned to the first cell was the cell to be sampled, unless that cell was inaccessible. If accessible, the second cell was sampled.

B. Material Categories

The materials identified, extracted, sorted and weighed were divided into designated categories for each sample in order to establish the composition, or the various types of material, as well as the characterization, which is the shape and size of those materials. The types of items included in each material category are described below.

Dry Recoverable Fiber	All clean dry fiber, including cardboard (OCC), chip board (cereal/shoe box), office paper, junk mail, and shredded paper that is readily recoverable using current waste/recycling processing technology
OCC	Includes boxes, packaging materials made from kraft paper liner board and corrugated kraft, and brown kraft paper
PET UBC's	PET plastic (#1) used beverage containers

HDPE	All readily identifiable HDPE, including UBC's, five-gallon pails, laundry baskets, trash cans, toys, et al
Film Plastic	All film plastic from t-shirt bags to large garbage bags and painters' tarps
Mixed Plastics	All readily identifiable plastics except PET, HDPE, and Film
Glass	CRV and plate (window) glass
Aluminum UBC's	All aluminum beverage containers, primarily CRV
Mixed Ferrous	Tin cans, steel (pots, pans, construction material, shelving, etc.)
Mixed Non-Ferrous	Aluminum windows and doors, folding lawn chairs, stainless steel fixtures, brass hardware, copper pipe, et al
Inerts	Dirt, rock, sand, brick, tile, ceramic, concrete, et al
Hazardous Waste	Pesticide, insecticide, paint, solvents, oil, cleaning solutions, et al
E-waste	All items that operate via AC current or battery
Textiles	Clothing, bedding, carpet, towels, rags, et al
Organics	Yard/garden waste, food waste, clean wood, painted/treated wood, wet contaminated fiber, rubber
Wet Contaminated Fiber	Fiber that has been soiled and is not marketable as a post-consumer fiber grade, and fiber that would disintegrate during the mechanical sorting process (screens and/or air classification) making it non-recoverable with fiber products
Fines	Materials that fall through the 2" lattice on the sort table. Depending upon the source of the sample, the fines may be heavy in organic and inert materials, or in glass shards and small fiber (shred). The

organic/inert fines are produced from unprocessed MSW or from “dirty” MRF operations. The glass/fiber fines are produced from “clean”, or single-stream recycling processing plants.

Other

These materials are not readily recoverable as any of the other commodity/products. They are generally represented by items that are comprised of more than one material and cannot be readily, economically separated and recovered.

Examples of materials identified as “Fines” as part of the field work included the following:

- organic materials, which were primarily yard and food waste
- inert materials, which were primarily rock, gravel, sand and dirt
- small shards of glass, and
- <2” fiber, which was primarily 3x5 card sized and shredded paper.

Material identified as “Other” during the City of Fort Collins field work included the following items:

- Tar Roofing
- Window Blinds
- Cat Litter
- Tarps
- Sofa Bed
- Med Waste (Blue Bag)
- Polycoated fiber
- Auto Body and Interior Parts
- Foam Mattresses
- Office Cubicle Dividers
- Upholstered Furniture
- Diapers
- Asphalt Shingles
- Vinyl Coated Felt
- Strollers
- Roof tile w/ grout and wire
- Concrete filled tire
- Shoes
- Polycoated juice/food packaging
- Basketball goal

C. Detailed Hand-Sort Protocol

A total of 15 samples of residential MSW and 20 samples of commercial MSW were hand-sorted in the second season sort, for a combined total of 30 residential MSW samples and 40 commercial MSW samples for the two-season study. The step-by-step protocol for the hand sort is described below.

1. Conducted daily safety briefings, then reviewed methodology and sorting categories with the crew to ensure that all crewmembers understood the detailed material definitions before sampling began. The members of the crew were the same throughout the sampling process, and same crew members conducted the same activities during each day of the sampling. This consistency of team membership and assignment ensured reliability and uniformity of results throughout the process.
2. Obtained waste samples from the randomly selected cell, as identified by the Field Crew Manager. The samples consisted of approximately 150-200 pounds of waste that were removed and placed onto a 9' X 12' tarp. The larger items were recovered directly from the tarp and deposited into 30-gallon tubs. Once the larger materials were removed from the sample, the sorting table was moved into place and used for the recovery of smaller items and the allocation of fines.
3. Hand-sorted materials were placed into the prescribed categories. Sorting crew members specialized in specific material categories and placed the sorted materials into a designated plastic container while the Field Crew Manager monitored the sorting process to ensure proper classification. The Field Crew Manager verified the purity of each material classification as it was weighed, prior to recording data on the data sheet.
4. The composition weights were then recorded by the Field Crew Manager on the data sheet, depicted below as Figure 2. At the end of each day, the Field Crew Manager conducted a quality control review of the data recorded.

Figure 2: Data Form

		WEIGHT #1	WEIGHT #2	WEIGHT #3	WEIGHT #4	WEIGHT #5
DRY, RECOVERABLE FIBER						
PET						
HDPE						
FILM PLASTICS						
MIXED PLASTICS						
GLASS						
ALUMINUM UBC's						
MIXED FERROUS						
MIXED NON-FERROUS						
INERTS						
HAZARDOUS WASTE						
E-WASTE						
TEXTILES						
Organics	YARD WASTE					
	FOOD WASTE					
	CLEAN WOOD					
	TREATED/PAINTED WOOD					
	WET/CONTAMINATED FIBER					
	RUBBER PRODUCTS					
FINES						
OTHER						

D. Detailed Visual Characterization Protocol

The visual waste characterization analysis conducted for the second season included 20 samples of Industrial/C&D waste and 20 samples of Self-Haul waste at the landfill, for a two-season total of 40 samples each. The visual sampling method is summarized in the following steps:

1. The volume of each sample (cubic yards) was estimated by a trained observer/classifier.
2. Using available solid waste volume-to-weight conversion tables, as informed by practical experience, the volume of each observed/classified sample was converted to weight.
3. The major classes of material were identified and noted. An estimator walked entirely around the load and noted all identified major material classes in the load, including paper, plastic, glass, metal, E-waste, yard waste, organics, C&D, hazardous waste and special wastes.
4. The volume for each major class of material was estimated, beginning with the largest major material class presented by volume. The process was repeated for the next most common major material class, and so on until each material class had been estimated. Finally, the totals for this step were calculated to ensure that they totaled 100 percent.
5. The volume for each specific sub-category within each of the major material classes was then estimated and recorded.
6. The data was then reconciled on the sampling form using input verification rules set up on the computer system to ensure the percentages totaled 100 percent.

E. Data Analysis

Following the separation of each sample, all material was weighed and the weight was recorded on field forms and then entered into the database and reviewed for accuracy. Data input was checked twice by a two-person team for quality control to confirm that there were not any typos such as transposed numbers or misplaced decimal points. The equations used in these calculations are provided below.

Waste Sort Analytical Procedures

The waste characterization and quantity profiles for this study were developed through the following steps:

1. Converted volumetric estimates of material categories to weight (for industrial and self-haul characterization estimates).
2. Calculated the composition of all samples in the given sector, based on the sample weight.

Converting Volumes to Weights

The composition calculations relied on the availability of individual material weights for each sample. For industrial and self-haul samples, volume estimates were converted to weights using accepted waste density conversion factors. Using the volume-to-weight conversion factors and the volume estimates obtained during the characterization of visual samples, individual material weights were calculated using the following formula:

$$c = m \times s \times v \times d$$

where:

m = percentage estimate of the material, as a portion of the material class (e.g., the extent to which newspaper constitutes all of the paper in the sample)

s = percentage estimate of the material class, as a portion of all the material in the sample (e.g., the extent to which paper constitutes all of the material in the sample)

v = total volume of the sample (in cubic yards)

d = density conversion of the material (in pounds/cubic yard)

c = the total weight of the specific material in the sample

Each material weight was scaled so that the sum of all material weights equals the actual total sample weight (or net weight of the load).

Composition Calculations

The composition estimates represent the ratio of the material categories' weight to the total waste for each noted sector. They were derived by summing each material's weight across all of the selected records and dividing by the sum of the total weight of waste, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i}$$

where:

c = weight of a particular material

w = sum of all material weights

for $i = 1$ to n

where n = number of selected samples

for $j = 1$ to m

where m = number of material categories

Confidence Interval

The confidence interval for this estimate was derived in two steps. First, the variance around the estimate was calculated, accounting for the fact that the ration includes two random variables (the material and the total sample weights). The variance of the ratio estimator equation follows:

$$\hat{V}_{rj} = \left(\frac{1}{n}\right) \cdot \left(\frac{1}{\bar{w}^2}\right) \cdot \left(\frac{\sum_i (c_{ij} - r_j w_i)^2}{n - 1}\right)$$

where:

$$\bar{w} = \frac{\sum_i w_i}{n}$$

Second, precision levels at the 90% confidence interval were calculated for a material's mean as follows:

$$r_j \pm \left(t \cdot \sqrt{\hat{V}_{rj}}\right)$$

where:

t = the value of the t-statistic (1.645) corresponding to a 90% confidence level.

Weighted Averages

The overall County waste composition estimates was calculated by performing a weighted average across the five waste types. The weighted average for an overall composition estimate was performed as follows:

$$O_j = (p_1 * r_{j1}) + (p_2 * r_{j2}) + (p_3 * r_{j3}) + \dots$$

where:

p = the proportion of tonnage contributed by the noted sample group

r = ratio of material weight to total waste weight in the noted sample group for j
= 1 to m

where: m = number of material categories

The variance of the weighted average is calculated

$$VarO_j = (p_1^2 * \widehat{V_{r_{j1}}}) + (p_2^2 * \widehat{V_{r_{j2}}}) + (p_3^2 * \widehat{V_{r_{j3}}}) + \dots$$

F. Implementation Dates and Personnel

The waste characterization work was conducted during the months of May and September 2016. The SVM project team included a crew of six sorters, a loader operator, a field crew manager and a principal. The team was equipped with a sorting table, a work table, tarps, tubs, hand tools, a skid steer, a digital scale with a 2/10ths of one-pound increment, and personal protective equipment including high visibility vests, hard hats, dust masks, steel-toed boots, puncture resistant gloves and safety glasses. A storage box was secured at the site for placement of the equipment at end of each workday.

The sampling process was effectively facilitated by the cooperation and active support of the Larimer County Landfill management and field personnel. Their participation was critical to the timely, successful completion of the field sorting process. Personnel included the following:

- Caroline Mitchell – City of Fort Collins
- Stephen Gillette – Larimer County Solid Waste Director
- Eddie Enriquez – Larimer County Assistant Solid Waste Director

3. WASTE COMPOSITION AND CHARACTERIZATION RESULTS

Using the prescribed methodology and protocols, the first of the two seasonal waste composition and characterization studies was completed at the Larimer County Landfill. The data are provided for each material category, presented in tables and pie charts, according to the designated generator (Residential, Commercial, Industrial/C&D and Self-Haul). Additionally, the data for each sample from the four categories are provided in Exhibit A.

A. Residential MSW

Table 2: Residential Two-Season Waste Composition Overview¹

Residential MSW Mean Composition (Hand Sort)	Spring	Fall	Merged
1A. Dry Recoverable Fiber	2.0%	3.5%	2.7%
1B. OCC ²	2.7%	4.8%	3.8%
2. PET UBCs	0.8%	0.9%	0.8%
3. HDPE UBCs	0.9%	0.7%	0.8%
4. Film Plastic	4.2%	4.2%	4.2%
5. Mixed Plastics	3.6%	6.4%	5.0%
6. Glass	1.7%	1.9%	1.8%
7. Aluminum UBCs	0.5%	0.6%	0.5%
8. Mixed Ferrous (Tin & Salvage)	0.7%	3.3%	2.0%
9. Mixed Non-Ferrous (Salvage)	2.5%	0.5%	1.5%
10. Inerts	0.1%	2.1%	1.1%
11. Hazardous Waste	0.0%	3.1%	1.6%
12. E-Waste	1.6%	1.5%	1.6%
13. Textiles	2.5%	5.4%	3.9%
14. Organics	61.8% ³	45.6%	53.7%
a. Yard Waste	23.2%	13.3%	18.3%
b. Food Waste	23.7%	13.2%	18.4%
c. Clean Wood	1.6%	4.3%	3.0%
d. Treated/Painted Wood	3.3%	8.1%	5.7%
e. Wet/Contaminated Fiber	9.7%	5.5%	7.6%
f. Rubber	0.3%	1.2%	0.8%
15. Fines (<2" Items)	2.4%	4.8%	3.6%
16. Other	11.9%	10.7%	11.3%

¹ Note: Totals may not equal 100% due to rounding

² In the Spring study, OCC was included as part of the Dry Recoverable Fiber measurement and not weighed separately. However, in the Fall study OCC and Dry Recoverable Fiber were measured separately. For the purposes of this report, the average ratio of OCC to Dry Recoverable Fiber calculated for the Fall data was applied to the Dry Recoverable Fiber measurement to estimate the ratio of OCC and Dry Recoverable Fiber in the Spring study. These estimated percentages were combined with the actual percentages from the Fall study to calculate the aggregate OCC and Dry Recoverable material shown in this report.

³ There was a significant decrease in the percentage of organics found in the residential waste stream sampled in the Fall season. During the Spring sampling, 4 of the 15 randomly selected cells from the randomly selected loads contained 50% or more of yard waste and 6 of the 15 cells contained 25% or more of food waste. However, in the Fall season, only 1 of the 15 cells contained 75% or more of yard waste and 2 of the 15 cells contained 25% or more of food waste. Capturing this type of variance is one of the primary objectives in conducting a two-season study.

Table 3: Spring Residential MSW Data

Spring Residential MSW (15 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	2.0%	1.5%	1.4%	2.6%
1B. OCC	2.7%	2.0%	1.9%	3.6%
2. PET UBC's	0.8%	0.6%	0.5%	1.0%
3. HDPE UBC's	0.9%	0.7%	0.6%	1.2%
4. Film Plastic	4.2%	2.1%	3.3%	5.1%
5. Mixed Plastics	3.6%	2.6%	2.5%	4.7%
6. Glass	1.7%	2.6%	0.6%	2.8%
7. Aluminum UBC's	0.5%	0.5%	0.3%	0.7%
8. Mixed Ferrous (Tin & Salvage)	0.7%	0.7%	0.4%	1.0%
9. Mixed Non-Ferrous (Salvage)	2.5%	9.3%	0.0%	6.5%
10. Inerts	0.1%	0.6%	0.0%	0.4%
11. Hazardous Waste	0.0%	0.1%	0.0%	0.1%
12. E-Waste	1.6%	4.0%	0.0%	3.3%
13. Textiles	2.5%	2.7%	1.3%	3.6%
14. Organics	61.8%	24.1%	51.6%	72.1%
a. Yard Waste	23.2%	25.5%	12.4%	34.1%
b. Food Waste	23.7%	14.8%	17.4%	30.0%
c. Clean Wood	1.6%	4.2%	0.0%	3.4%
d. Treated/Painted Wood	3.3%	5.6%	0.9%	5.7%
e. Wet/Contaminated Fiber	9.7%	7.1%	6.7%	12.7%
f. Rubber	0.3%	1.0%	0.0%	0.7%
15. Fines (<2" Items)	2.4%	3.1%	1.1%	3.8%
16. Other	11.9%	11.9%	6.9%	17.0%

Figure 3: Spring Residential MSW Data

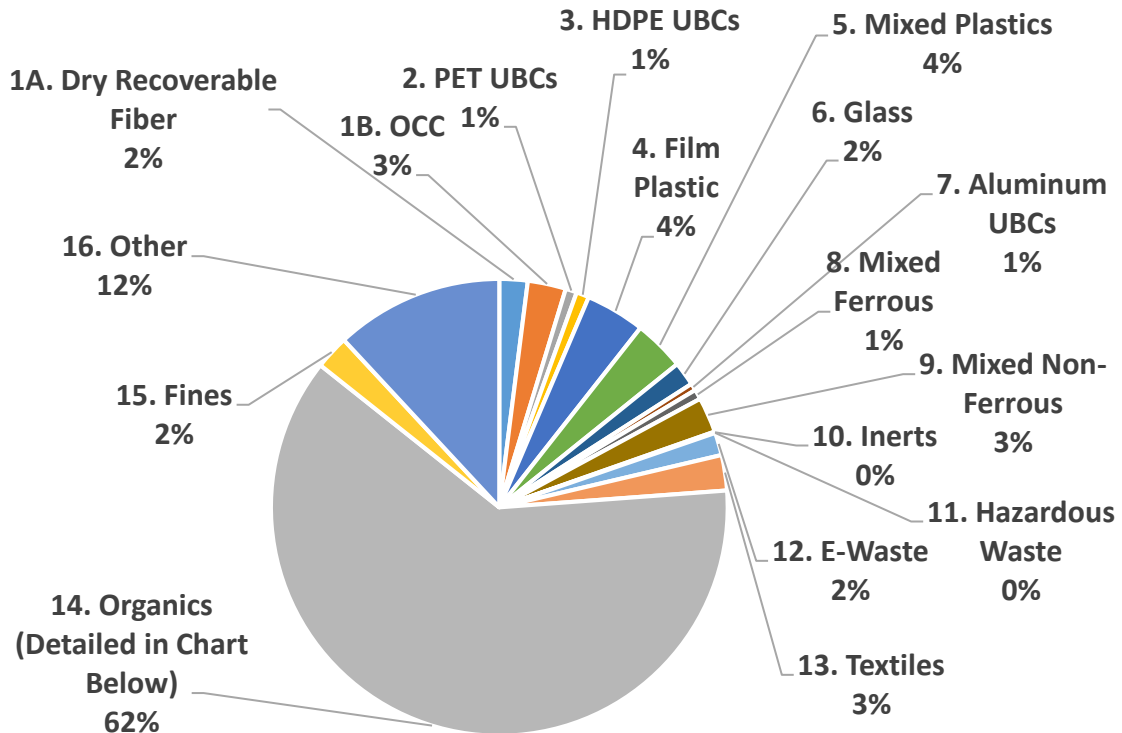


Figure 4: Spring Residential MSW Organics Detail

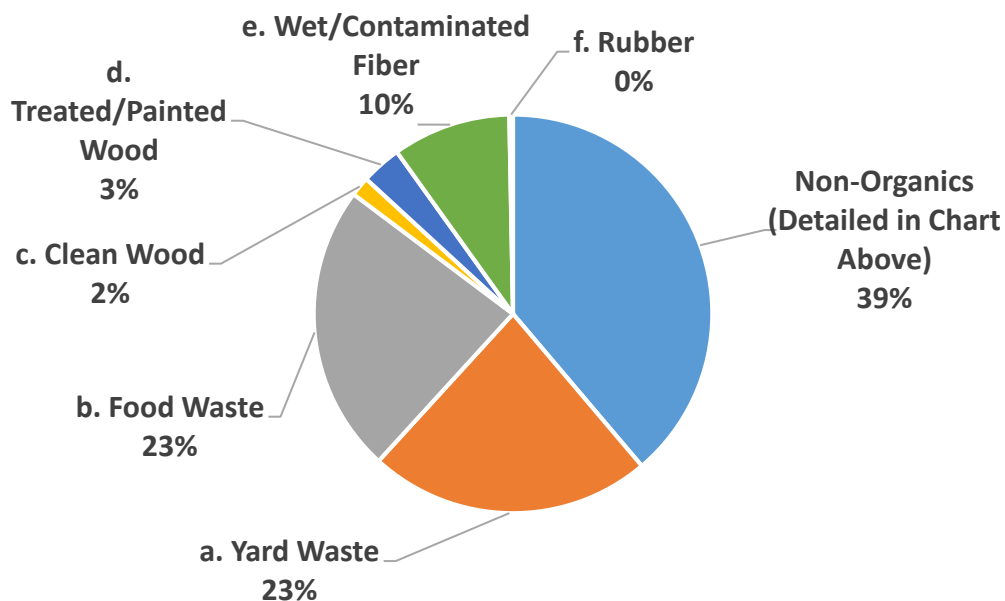


Table 4: Fall Residential MSW Data

Fall Residential MSW (15 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	3.5%	6.2%	0.9%	6.1%
1B. OCC	4.8%	4.6%	2.8%	6.7%
2. PET UBC's	0.9%	1.0%	0.5%	1.3%
3. HDPE UBC's	0.7%	0.8%	0.3%	1.0%
4. Film Plastic	4.2%	4.9%	2.1%	6.2%
5. Mixed Plastics	6.4%	11.4%	1.6%	11.3%
6. Glass	1.9%	2.0%	1.1%	2.8%
7. Aluminum UBC's	0.6%	0.7%	0.3%	0.9%
8. Mixed Ferrous (Tin & Salvage)	3.3%	5.1%	1.1%	5.4%
9. Mixed Non-Ferrous (Salvage)	0.5%	1.8%	0.0%	1.3%
10. Inerts	2.1%	5.6%	0.0%	4.4%
11. Hazardous Waste	3.1%	11.8%	0.0%	8.1%
12. E-Waste	1.5%	3.4%	0.1%	3.0%
13. Textiles	5.4%	12.9%	0.0%	10.9%
14. Organics	45.6%	30.7%	32.5%	58.6%
a. Yard Waste	13.3%	19.8%	4.9%	21.7%
b. Food Waste	13.2%	19.4%	4.9%	21.4%
c. Clean Wood	4.3%	10.6%	0.0%	8.9%
d. Treated/Painted Wood	8.1%	15.9%	1.3%	14.8%
e. Wet/Contaminated Fiber	5.5%	5.8%	3.0%	8.0%
f. Rubber	1.2%	2.5%	0.2%	2.3%
15. Fines (<2" Items)	4.8%	5.1%	2.6%	7.0%
16. Other	10.7%	12.1%	5.6%	15.8%

Figure 5: Fall Residential MSW Data

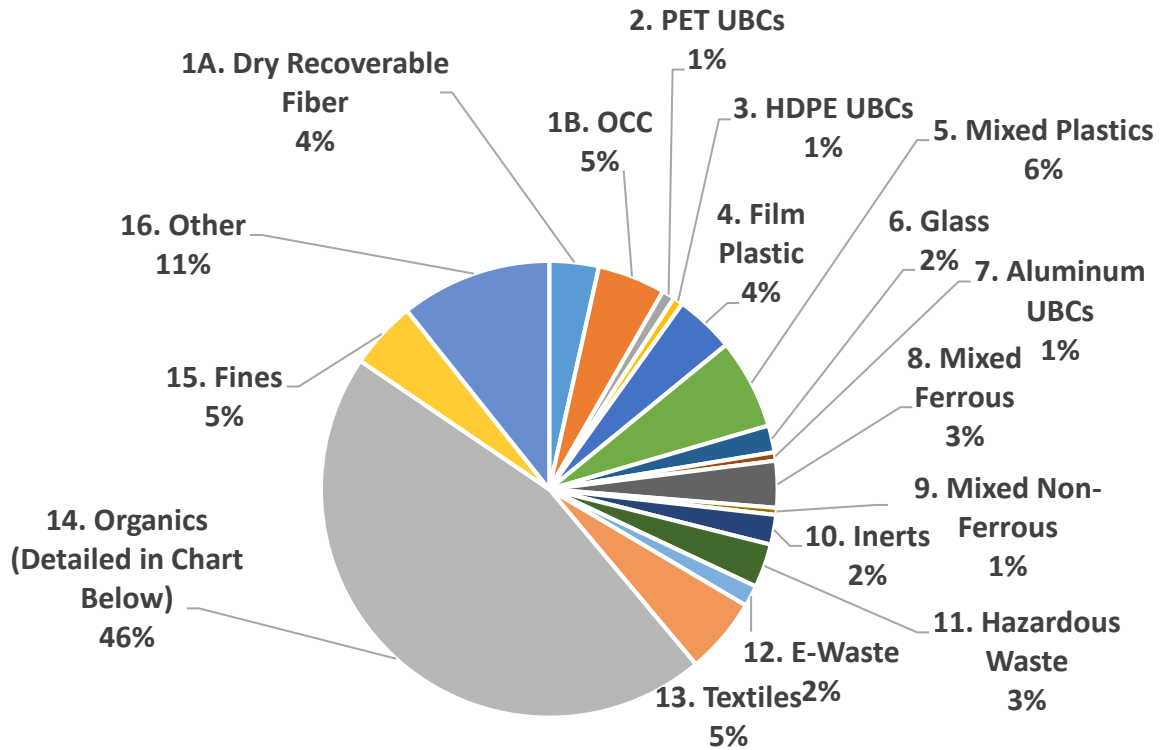


Figure 6: Fall Residential MSW Organics Detail

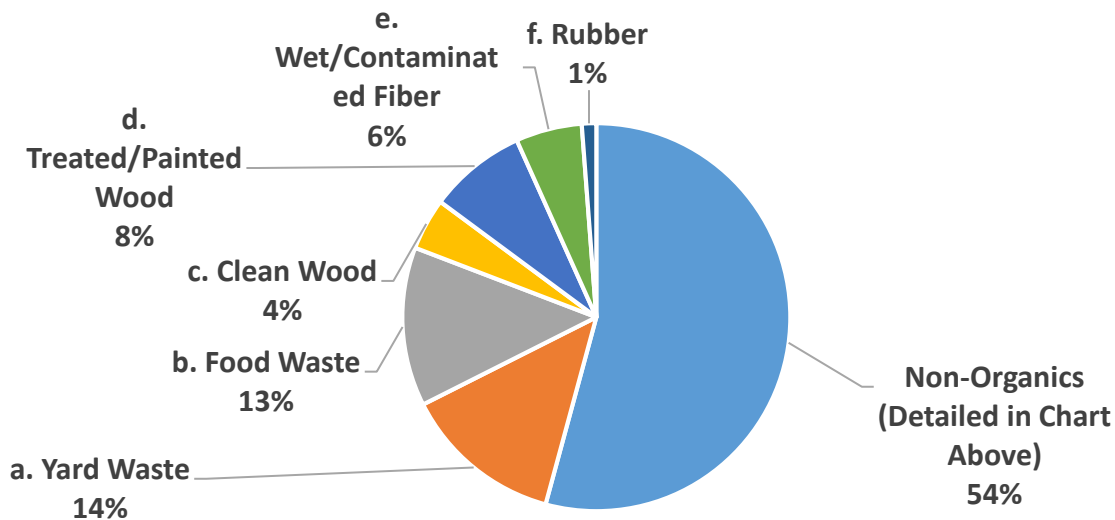


Table 5: Two-Season Residential MSW Data

Two-Season Merged Residential MSW (30 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	2.7%	4.5%	1.4%	4.1%
1B. OCC	3.8%	3.6%	2.7%	4.8%
2. PET UBC's	0.8%	0.8%	0.6%	1.1%
3. HDPE UBC's	0.8%	0.7%	0.5%	1.0%
4. Film Plastic	4.2%	3.7%	3.1%	5.3%
5. Mixed Plastics	5.0%	8.3%	2.5%	7.5%
6. Glass	1.8%	2.3%	1.1%	2.5%
7. Aluminum UBC's	0.5%	0.6%	0.4%	0.7%
8. Mixed Ferrous (Tin & Salvage)	2.0%	3.8%	0.9%	3.1%
9. Mixed Non-Ferrous (Salvage)	1.5%	6.7%	0.0%	3.5%
10. Inerts	1.1%	4.0%	0.0%	2.3%
11. Hazardous Waste	1.6%	8.3%	0.0%	4.1%
12. E-Waste	1.6%	3.6%	0.5%	2.7%
13. Textiles	3.9%	9.3%	1.1%	6.7%
14. Organics	53.7%	28.4%	45.2%	62.2%
a. Yard Waste	18.3%	23.0%	11.4%	25.2%
b. Food Waste	18.4%	17.8%	13.1%	23.8%
c. Clean Wood	3.0%	8.1%	0.5%	5.4%
d. Treated/Painted Wood	5.7%	11.9%	2.1%	9.3%
e. Wet/Contaminated Fiber	7.6%	6.7%	5.6%	9.6%
f. Rubber	0.8%	1.9%	0.2%	1.3%
15. Fines (<2" Items)	3.6%	4.3%	2.3%	4.9%
16. Other	11.3%	11.8%	7.8%	14.9%

Figure 7: Two Season Residential MSW Data

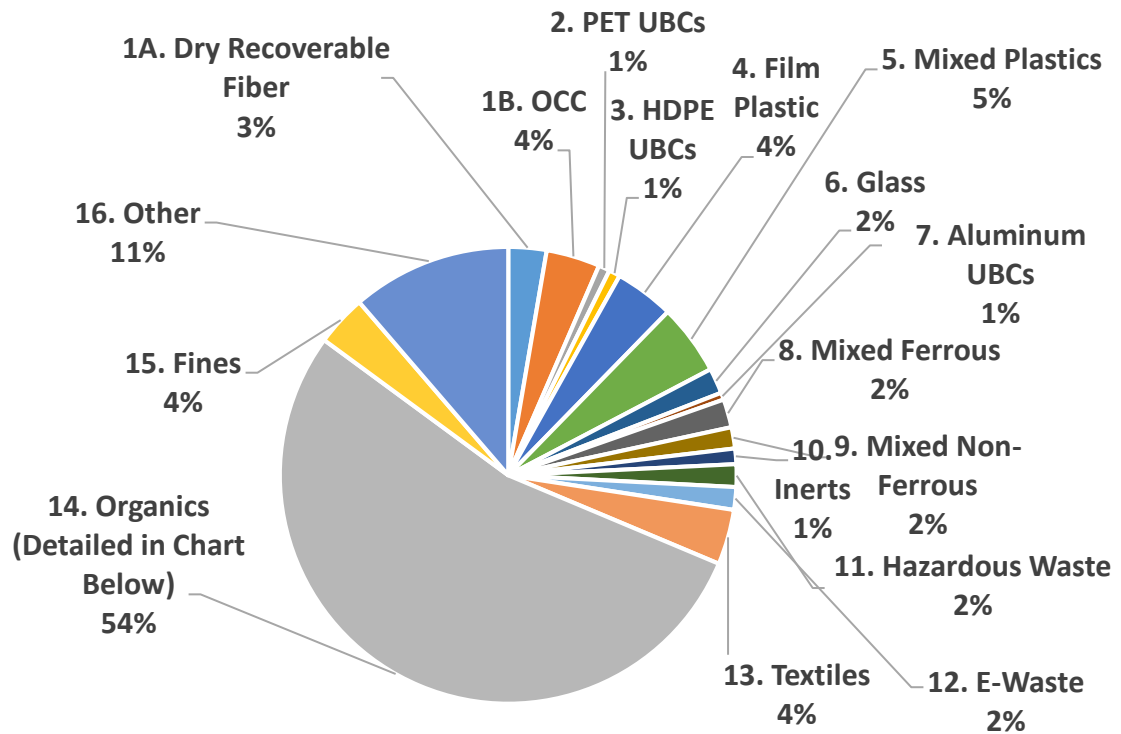
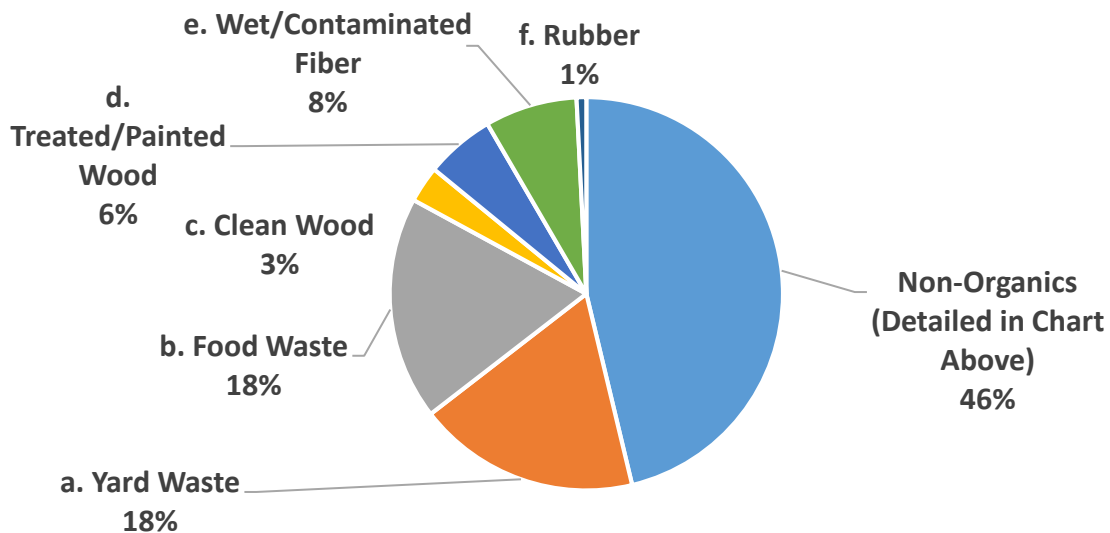


Figure 8: Two Season Residential MSW Organics Detail



B. Commercial MSW

Table 6: Commercial Two-Season Waste Composition Overview

Commercial MSW Mean Composition (Hand Sort)	Spring	Fall	Merged
1A. Dry Recoverable Fiber	1.4%	1.8%	1.6%
1B. OCC	5.9%	7.8%	6.8%
2. PET UBC's	1.2%	0.5%	0.9%
3. HDPE UBC's	0.6%	0.8%	0.7%
4. Film Plastic	4.8%	4.4%	4.6%
5. Mixed Plastics	5.6%	1.2%	3.4%
6. Glass	3.0%	0.9%	1.9%
7. Aluminum UBC's	0.7%	0.5%	0.6%
8. Mixed Ferrous (Tin & Salvage)	3.5%	2.2%	2.8%
9. Mixed Non-Ferrous (Salvage)	0.3%	0.0%	0.1%
10. Inerts	4.2%	0.0%	2.1%
11. Hazardous Waste	0.4%	0.5%	0.4%
12. E-Waste	1.7%	0.1%	0.9%
13. Textiles	3.8%	0.8%	2.3%
14. Organics	45.2%	65.3% ⁴	55.3%
a. Yard Waste	8.0%	11.7%	9.8%
b. Food Waste	17.9%	30.1%	24.0%
c. Clean Wood	3.2%	11.3%	7.2%
d. Treated/Painted Wood	5.8%	8.1%	7.0%
e. Wet/Contaminated Fiber	10.2%	4.1%	7.2%
f. Rubber	0.1%	0.1%	0.1%
15. Fines (<2" Items)	4.4%	2.5%	3.4%
16. Other	13.3%	10.7%	12.0%

⁴ There was a significant increase in the percentage of organics found in the commercial waste stream sampled in the Fall season. During the sampling, 6 of the 20 randomly selected cells from the randomly selected loads contained 100% organics. In one case, the cell contained 100% food waste, while in the five other samples, there were significant percentages of yard waste, food waste, and/or wood waste, along with other organic materials. Capturing this type of variance is one of the primary objectives in conducting a two-season study.

Table 7: Spring Commercial MSW Data

Spring Season Commercial MSW (20 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	1.4%	1.1%	1.0%	1.8%
1B. OCC	5.9%	4.4%	4.7%	7.0%
2. PET UBC's	1.2%	0.9%	0.9%	1.5%
3. HDPE	0.6%	0.6%	0.4%	0.8%
4. Film Plastic	4.8%	2.0%	4.0%	5.5%
5. Mixed Plastics	5.6%	4.3%	4.0%	7.2%
6. Glass	3.0%	2.9%	1.9%	4.1%
7. Aluminum UBC's	0.7%	0.7%	0.5%	1.0%
8. Mixed Ferrous (Tin & Salvage)	3.5%	2.0%	2.8%	4.3%
9. Mixed Non-Ferrous (Salvage)	0.3%	0.5%	0.1%	0.5%
10. Inerts	4.2%	10.3%	0.5%	8.0%
11. Hazardous Waste	0.4%	1.3%	0.0%	0.9%
12. E-Waste	1.7%	3.7%	0.3%	3.1%
13. Textiles	3.8%	4.0%	2.3%	5.2%
14. Organics	45.2%	8.8%	42.0%	48.4%
a. Yard Waste	8.0%	8.5%	4.9%	11.1%
b. Food Waste	17.9%	14.1%	12.7%	23.1%
c. Clean Wood	3.2%	6.8%	0.7%	5.7%
d. Treated/Painted Wood	5.8%	9.4%	2.4%	9.3%
e. Wet/Contaminated Fiber	10.2%	6.4%	7.9%	12.6%
f. Rubber	0.1%	0.2%	0.0%	0.2%
15. Fines (<2" Items)	4.4%	2.7%	3.4%	5.4%
16. Other	13.3%	11.0%	9.3%	17.4%

Figure 9: Spring Commercial MSW Data

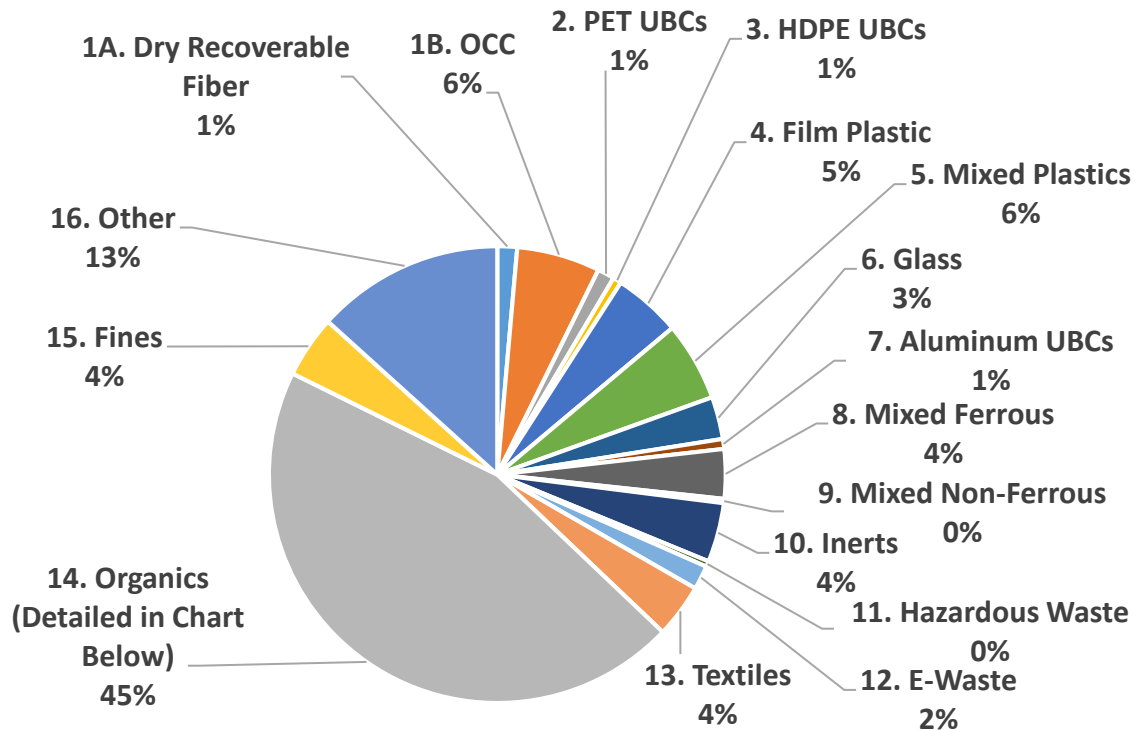


Figure 10: Spring Commercial MSW Organics Detail

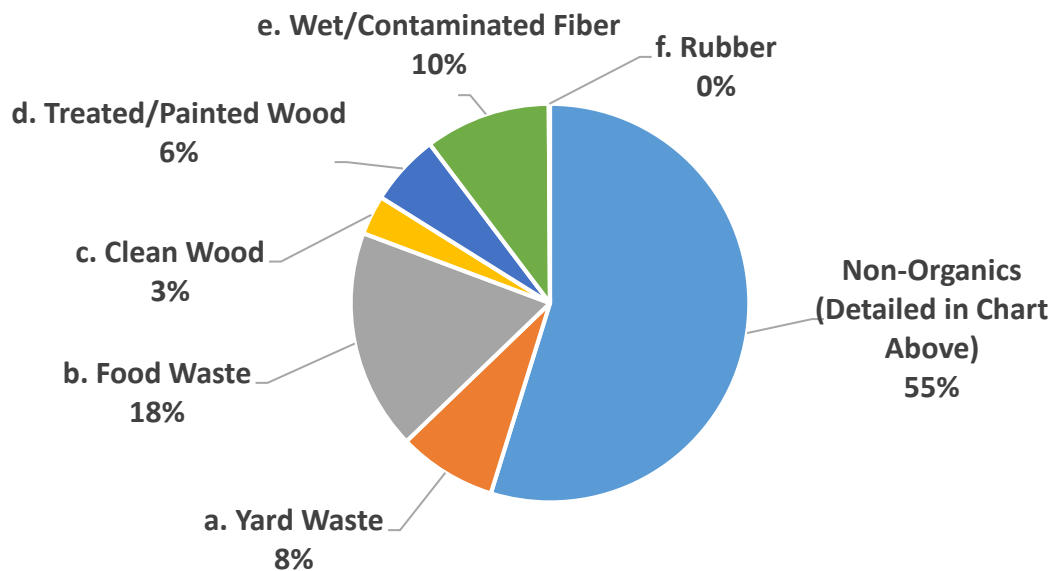


Table 8: Fall Commercial MSW Data

Fall Commercial MSW (20 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	1.8%	3.1%	0.7%	3.0%
1B. OCC	7.8%	19.6%	2.7%	12.9%
2. PET UBC's	0.5%	0.7%	0.2%	0.8%
3. HDPE	0.8%	1.7%	0.2%	1.4%
4. Film Plastic	4.4%	7.2%	1.8%	7.1%
5. Mixed Plastics	1.2%	1.5%	0.7%	1.8%
6. Glass	0.9%	2.7%	0.0%	1.9%
7. Aluminum UBC's	0.5%	0.7%	0.2%	0.7%
8. Mixed Ferrous (Tin & Salvage)	2.2%	4.4%	0.5%	3.8%
9. Mixed Non-Ferrous (Salvage)	0.0%	0.0%	-	-
10. Inerts	0.0%	0.0%	-	-
11. Hazardous Waste	0.5%	2.0%	0.0%	1.2%
12. E-Waste	0.1%	0.2%	0.0%	0.1%
13. Textiles	0.8%	1.7%	0.2%	1.5%
14. Organics	65.3%	30.7%	54.0%	76.6%
a. Yard Waste	11.7%	19.0%	4.7%	18.7%
b. Food Waste	30.1%	26.9%	20.2%	40.0%
c. Clean Wood	11.3%	24.7%	2.2%	20.3%
d. Treated/Painted Wood	8.1%	23.1%	0.0%	16.6%
e. Wet/Contaminated Fiber	4.1%	6.0%	1.9%	6.3%
f. Rubber	0.1%	0.2%	0.0%	0.1%
15. Fines (<2" Items)	2.5%	3.6%	1.2%	3.8%
16. Other	10.7%	14.5%	5.4%	16.1%

Figure 11: Fall Commercial MSW Data

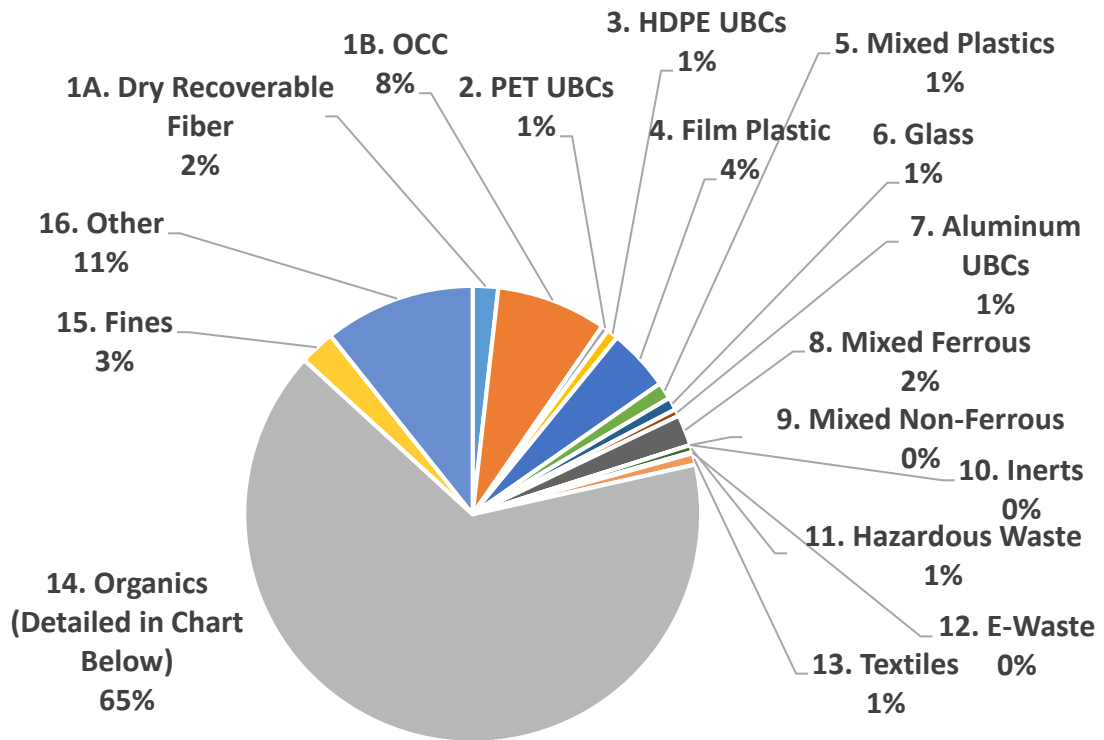


Figure 12: Fall Commercial MSW Organics Detail

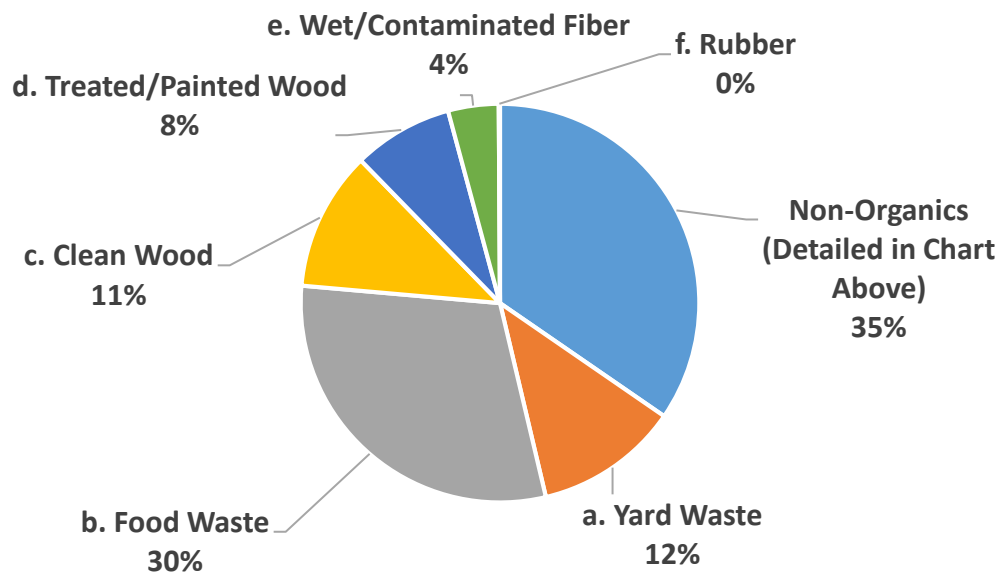


Table 9: Two-Season Commercial MSW Data

Two-Season Commercial MSW (40 Samples, Hand Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	1.6%	2.3%	1.0%	2.2%
1B. OCC	6.8%	14.0%	3.2%	10.5%
2. PET UBC's	0.9%	0.9%	0.6%	1.1%
3. HDPE	0.7%	1.2%	0.4%	1.0%
4. Film Plastic	4.6%	5.2%	3.2%	5.9%
5. Mixed Plastics	3.4%	3.9%	2.4%	4.4%
6. Glass	1.9%	3.0%	1.2%	2.7%
7. Aluminum UBC's	0.6%	0.7%	0.4%	0.8%
8. Mixed Ferrous (Tin & Salvage)	2.8%	3.4%	1.9%	3.7%
9. Mixed Non-Ferrous (Salvage)	0.1%	0.4%	0.0%	0.2%
10. Inerts	2.1%	7.5%	0.2%	4.1%
11. Hazardous Waste	0.4%	1.6%	0.0%	0.9%
12. E-Waste	0.9%	2.7%	0.2%	1.6%
13. Textiles	2.3%	3.4%	1.4%	3.2%
14. Organics	55.3%	24.5%	48.9%	61.6%
a. Yard Waste	9.8%	14.6%	6.0%	13.6%
b. Food Waste	24.0%	22.0%	18.3%	29.7%
c. Clean Wood	7.2%	18.3%	2.4%	12.0%
d. Treated/Painted Wood	7.0%	17.4%	2.4%	11.5%
e. Wet/Contaminated Fiber	7.2%	6.9%	5.4%	9.0%
f. Rubber	0.1%	0.2%	0.0%	0.1%
15. Fines (<2" Items)	3.4%	3.3%	2.6%	4.3%
16. Other	12.0%	12.8%	8.7%	15.4%

Figure 13: Two-Season Commercial MSW Data

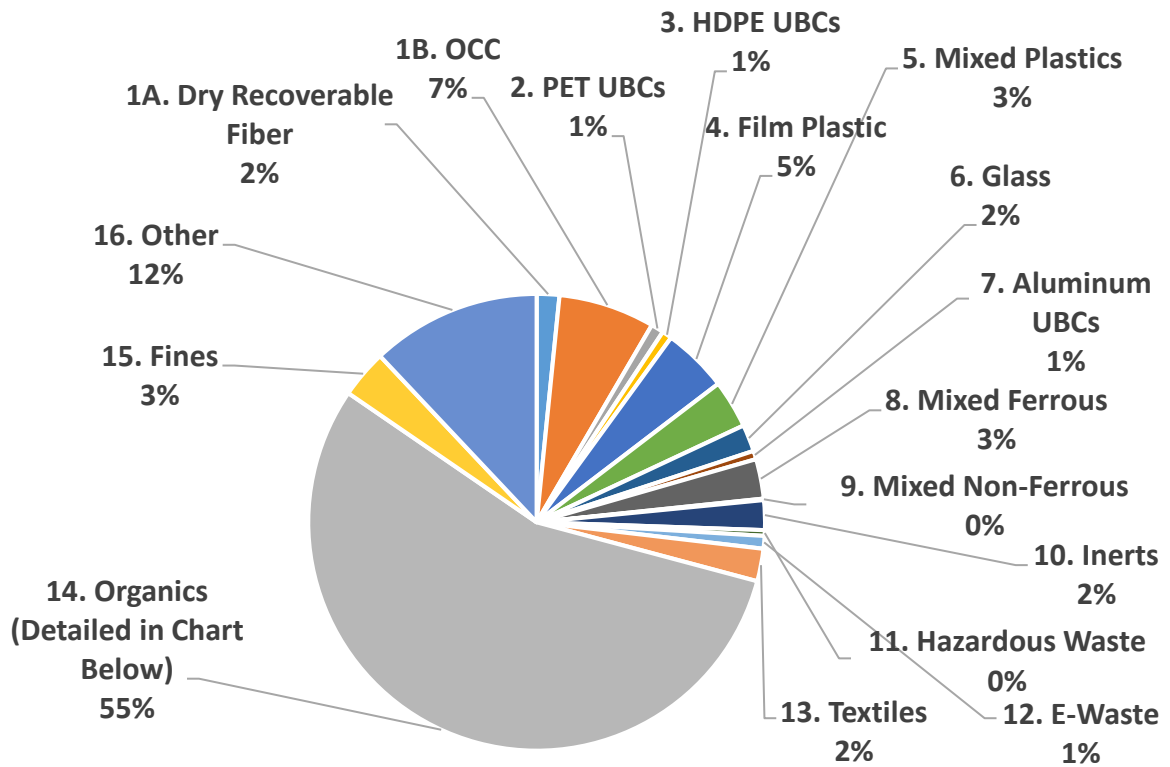
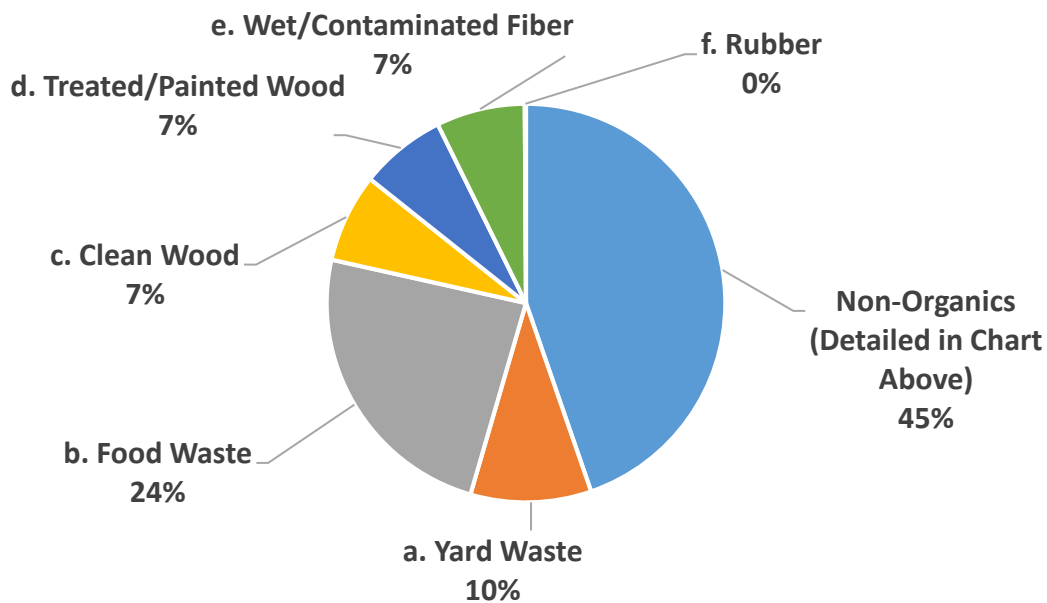


Figure 14: Two-Season Commercial MSW Organics Detail



C. Industrial/C&D

Table 10: Industrial/C&D Two-Season Waste Composition Overview

Industrial/C&D MSW Mean Composition (Visual Sort)	Spring	Fall	Two-Season
1A. Dry Recoverable Fiber	0.0%	0.0%	0.0%
1B. OCC	0.1%	0.4%	0.3%
2. PET UBC's	0.0%	0.0%	0.0%
3. HDPE UBC's	0.0%	0.0%	0.0%
4. Film Plastic	0.0%	0.1%	0.0%
5. Mixed Plastics	6.3%	0.0%	3.1%
6. Glass	3.0%	0.0%	1.5%
7. Aluminum UBC's	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	4.3%	3.8%	4.0%
9. Mixed Non-Ferrous (Salvage)	0.1%	0.4%	0.2%
10. Inerts	37.6%	45.6%	41.6%
11. Hazardous Waste	0.1%	0.0%	0.0%
12. E-Waste	0.2%	0.0%	0.1%
13. Textiles	1.6%	0.0%	0.8%
14. Organics	30.9%	24.1%	27.4%
a. Yard Waste	14.6%	4.2%	9.4%
b. Food Waste	0.0%	0.0%	0.0%
c. Clean Wood	6.7%	10.0%	8.3%
d. Treated/Painted Wood	9.6%	9.9%	9.7%
e. Wet/Contaminated Fiber	0.0%	0.0%	0.0%
f. Rubber	0.0%	0.0%	0.0%
15. Fines (<2" Items)	0.0%	0.0%	0.0%
16. Other	15.8%	25.6%	20.7%

Table 11: Spring Industrial/C&D MSW Data

Spring Industrial/C&D (20 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.0%	0.0%	0.0%
1B. OCC	0.1%	0.4%	0.0%	0.3%
2. PET	0.0%	0.0%	-	-
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.0%	0.0%	0.0%
5. Mixed Plastics	6.3%	22.7%	0.0%	14.6%
6. Glass	3.0%	11.2%	0.0%	7.1%
7. Aluminum	0.0%	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	4.3%	7.9%	1.4%	7.2%
9. Mixed Non-Ferrous (Salvage)	0.1%	0.3%	0.0%	0.2%
10. Inerts	37.6%	43.1%	21.7%	53.4%
11. Hazardous Waste	0.1%	0.3%	0.0%	0.2%
12. E-Waste	0.2%	0.8%	0.0%	0.5%
13. Textiles	1.6%	5.1%	0.0%	3.5%
14. Organics	30.9%	34.1%	18.3%	43.4%
a. Yard Waste	14.6%	29.1%	3.9%	25.3%
b. Food Waste	0.0%	0.0%	-	-
c. Clean Wood	6.7%	21.6%	0.0%	14.6%
d. Treated/Painted Wood	9.6%	18.1%	2.9%	16.2%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	0.0%	0.0%	-	-
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	15.8%	31.3%	4.3%	27.3%

Figure 15: Spring Industrial/C&D MSW Data

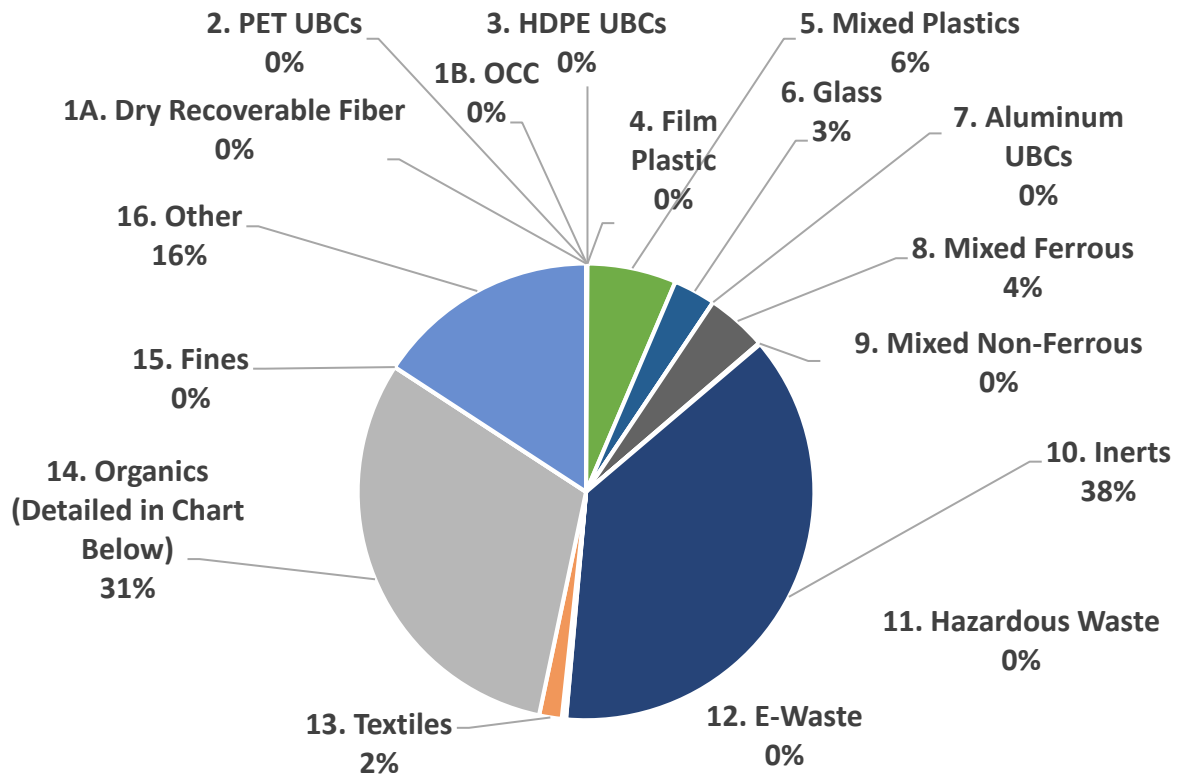


Figure 16: Spring Industrial/C&D MSW Organics Detail

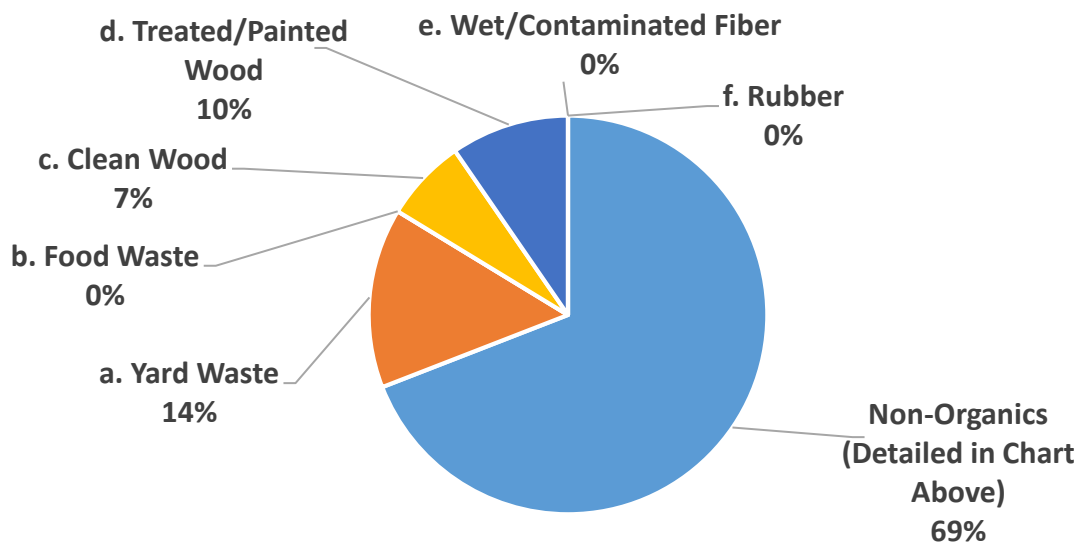


Table 12: Fall Industrial/C&D MSW Data

Fall Industrial/C&D Data (20 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.2%	0.0%	0.1%
1B. OCC	0.4%	0.8%	0.1%	0.7%
2. PET	0.0%	0.0%	0.0%	0.0%
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.1%	0.2%	0.0%	0.1%
5. Mixed Plastics	0.0%	0.0%	0.0%	0.0%
6. Glass	0.0%	0.0%	-	-
7. Aluminum	0.0%	0.1%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	3.8%	13.0%	0.0%	8.5%
9. Mixed Non-Ferrous (Salvage)	0.4%	1.2%	0.0%	0.8%
10. Inerts	45.6%	44.2%	29.4%	61.9%
11. Hazardous Waste	0.0%	0.0%	-	-
12. E-Waste	0.0%	0.0%	-	-
13. Textiles	0.0%	0.0%	-	-
14. Organics	24.1%	33.7%	11.7%	36.5%
a. Yard Waste	4.2%	10.8%	0.2%	8.2%
b. Food Waste	0.0%	0.0%	-	-
c. Clean Wood	10.0%	23.1%	1.5%	18.5%
d. Treated/Painted Wood	9.9%	24.2%	0.9%	18.8%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	0.0%	0.0%	-	-
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	25.6%	40.5%	10.8%	40.5%

Figure 17: Fall Industrial/C&D MSW Data

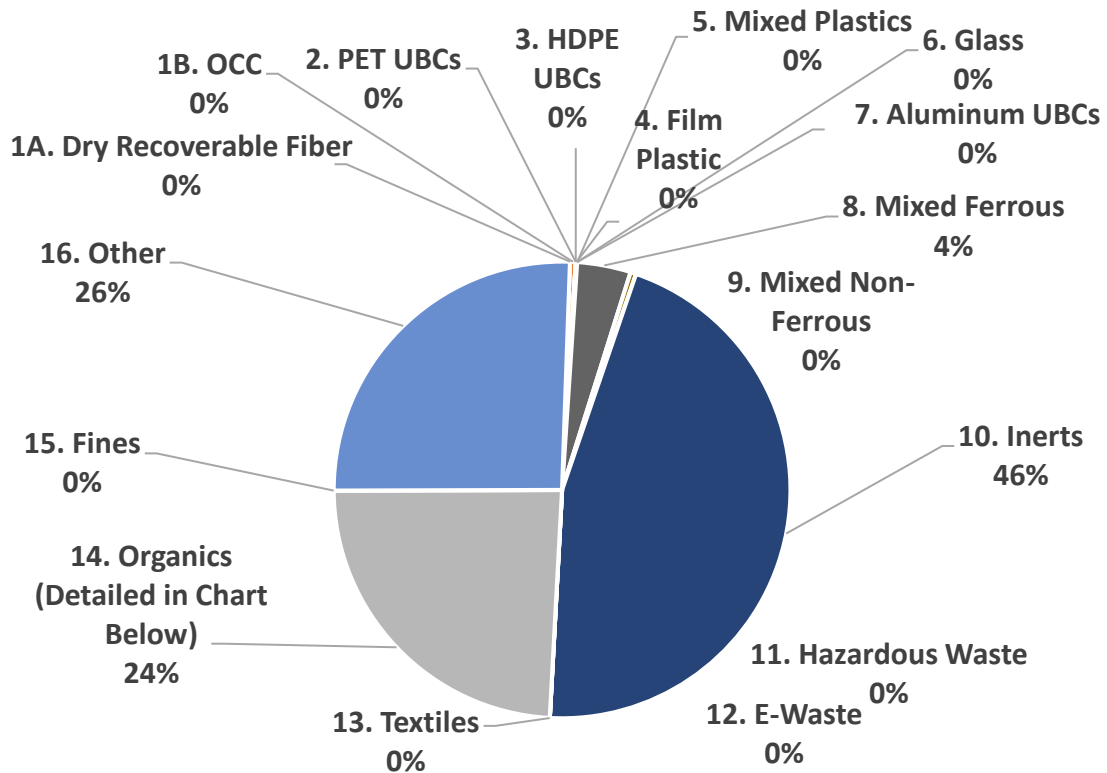


Figure 18: Fall Industrial/C&D MSW Organics Detail

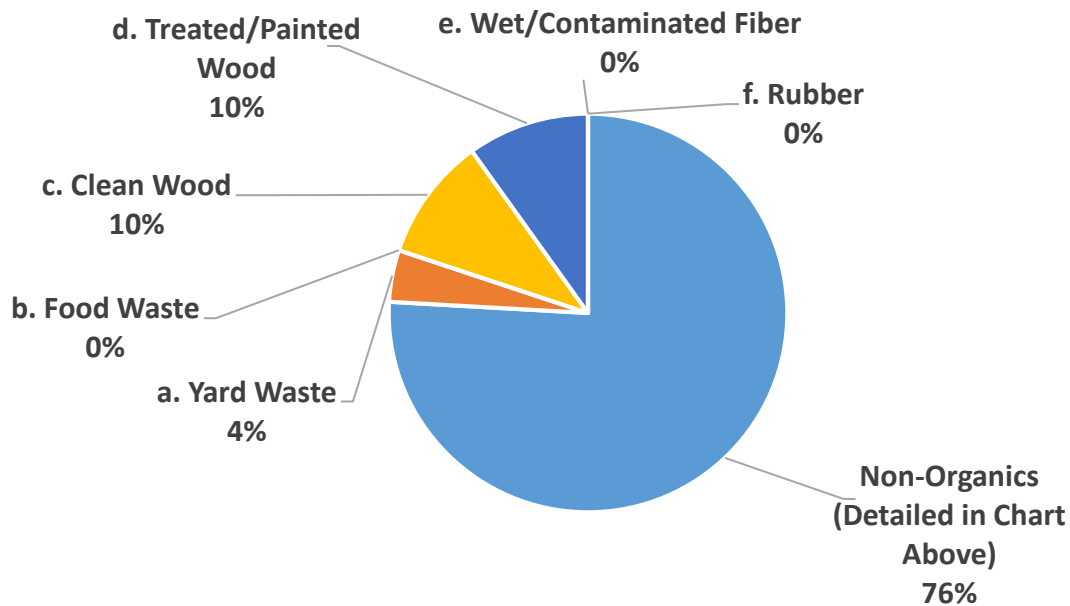


Table 13: Two-Season Industrial/C&D MSW Data

Two-Season Industrial/C&D (40 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.1%	0.0%	0.1%
1B. OCC	0.3%	0.6%	0.1%	0.4%
2. PET	0.0%	0.0%	0.0%	0.0%
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.1%	0.0%	0.1%
5. Mixed Plastics	3.1%	16.2%	0.0%	7.4%
6. Glass	1.5%	8.0%	0.0%	3.6%
7. Aluminum	0.0%	0.1%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	4.0%	10.6%	1.3%	6.8%
9. Mixed Non-Ferrous (Salvage)	0.2%	0.9%	0.0%	0.4%
10. Inerts	41.6%	43.3%	30.4%	52.9%
11. Hazardous Waste	0.0%	0.2%	0.0%	0.1%
12. E-Waste	0.1%	0.5%	0.0%	0.2%
13. Textiles	0.8%	3.6%	0.0%	1.8%
14. Organics	27.4%	33.7%	18.7%	36.2%
a. Yard Waste	9.4%	22.3%	3.6%	15.2%
b. Food Waste	0.0%	0.0%	-	-
c. Clean Wood	8.3%	22.1%	2.6%	14.1%
d. Treated/Painted Wood	9.7%	21.1%	4.2%	15.2%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	0.0%	0.0%	-	-
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	20.7%	36.0%	11.4%	30.1%

Figure 19: Two-Season Industrial/C&D MSW Data

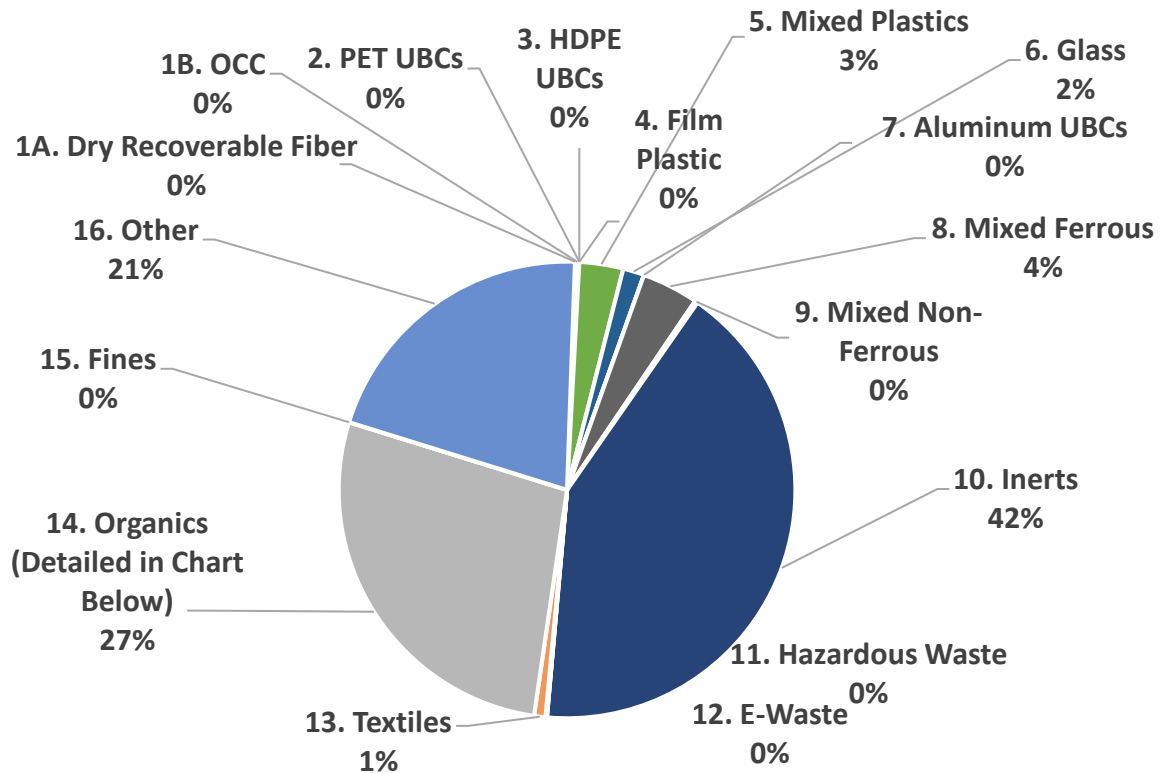
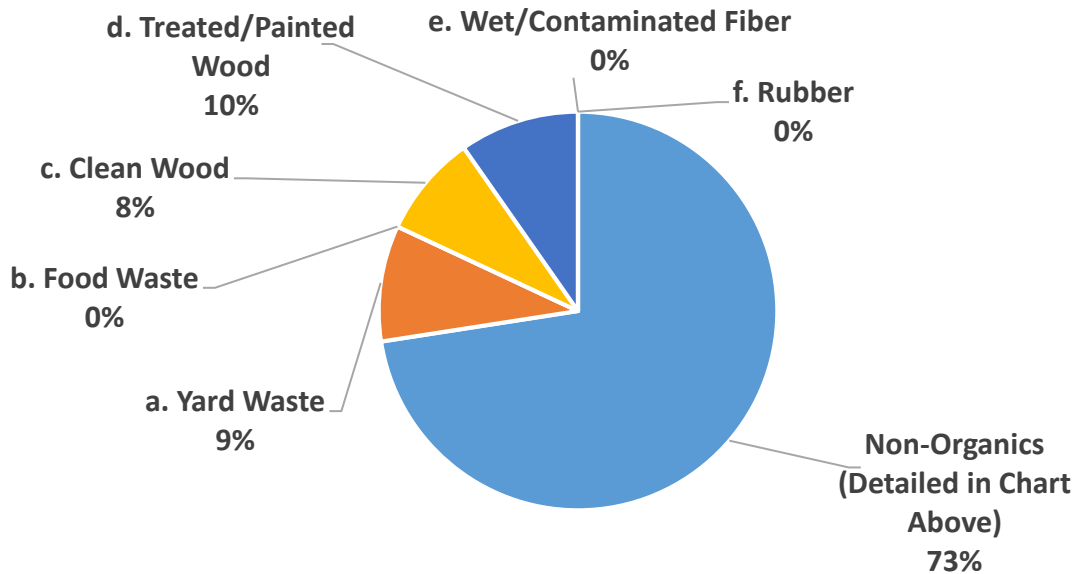


Figure 20: Two-Season Industrial/C&D MSW Organics Detail



D. Self-Haul

Table 14: Self-Haul Two-Season Waste Composition Overview

Self-Haul Mean Composition (Visual Sort)	Spring	Fall	Two-Season
1A. Dry Recoverable Fiber	0.0%	0.0%	0.0%
1B. OCC	2.7%	2.1%	2.4%
2. PET UBC's	0.0%	0.3%	0.2%
3. HDPE UBC's	0.0%	0.0%	0.0%
4. Film Plastic	0.0%	0.0%	0.0%
5. Mixed Plastics	0.2%	0.1%	0.1%
6. Glass	4.6%	0.0%	2.3%
7. Aluminum UBC's	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	6.0%	2.2%	4.1%
9. Mixed Non-Ferrous (Salvage)	0.3%	0.2%	0.2%
10. Inerts	21.1%	16.2%	18.6%
11. Hazardous Waste	0.5%	0.1%	0.3%
12. E-Waste	1.6%	0.6%	1.1%
13. Textiles	4.6%	5.8%	5.2%
14. Organics	56.2% ⁵	70.8%	63.5%
a. Yard Waste	18.4%	33.5%	25.9%
b. Food Waste	0.0%	8.4%	4.2%
c. Clean Wood	19.2%	15.3%	17.2%
d. Treated/Painted Wood	18.7%	6.0%	12.4%
e. Wet/Contaminated Fiber	0.0%	0.0%	0.0%
f. Rubber	0.0%	7.6%	3.8%
15. Fines (<2" Items)	0.0%	0.0%	0.0%
16. Other	2.2%	1.7%	2.0%

⁵ There was a significant increase in the percentage of organics found in the self-haul waste stream sampled in the Fall season. During the Spring sampling, 4 of the 20 randomly selected cells from the randomly selected loads contained 90-100% organics. During the Fall sampling, 8 of the 20 randomly selected cells/loads contained 90-100% organics. In three cases, the cells contained 100% yard waste. Capturing this type of variance is one of the primary objectives in conducting a two-season study.

Table 15: Spring Self-Haul MSW Data

Spring Self-Haul (20 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.0%	-	-
1B. OCC	2.7%	6.8%	0.2%	5.2%
2. PET	0.0%	0.0%	-	-
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.0%	-	-
5. Mixed Plastics	0.2%	0.4%	0.0%	0.3%
6. Glass	4.6%	11.3%	0.4%	8.7%
7. Aluminum	0.0%	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	6.0%	10.9%	2.0%	10.0%
9. Mixed Non-Ferrous (Salvage)	0.3%	0.7%	0.0%	0.6%
10. Inerts	21.1%	30.5%	9.8%	32.3%
11. Hazardous Waste	0.5%	1.7%	0.0%	1.1%
12. E-Waste	1.6%	4.0%	0.1%	3.1%
13. Textiles	4.6%	10.2%	0.9%	8.4%
14. Organics	56.2%	35.7%	43.1%	69.4%
a. Yard Waste	18.4%	32.6%	6.4%	30.4%
b. Food Waste	0.0%	0.0%	-	-
c. Clean Wood	19.2%	28.0%	8.9%	29.5%
d. Treated/Painted Wood	18.7%	21.8%	10.7%	26.7%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	0.0%	0.0%	-	-
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	2.2%	8.4%	0.0%	5.3%

Figure 21: Spring Self-Haul MSW Data

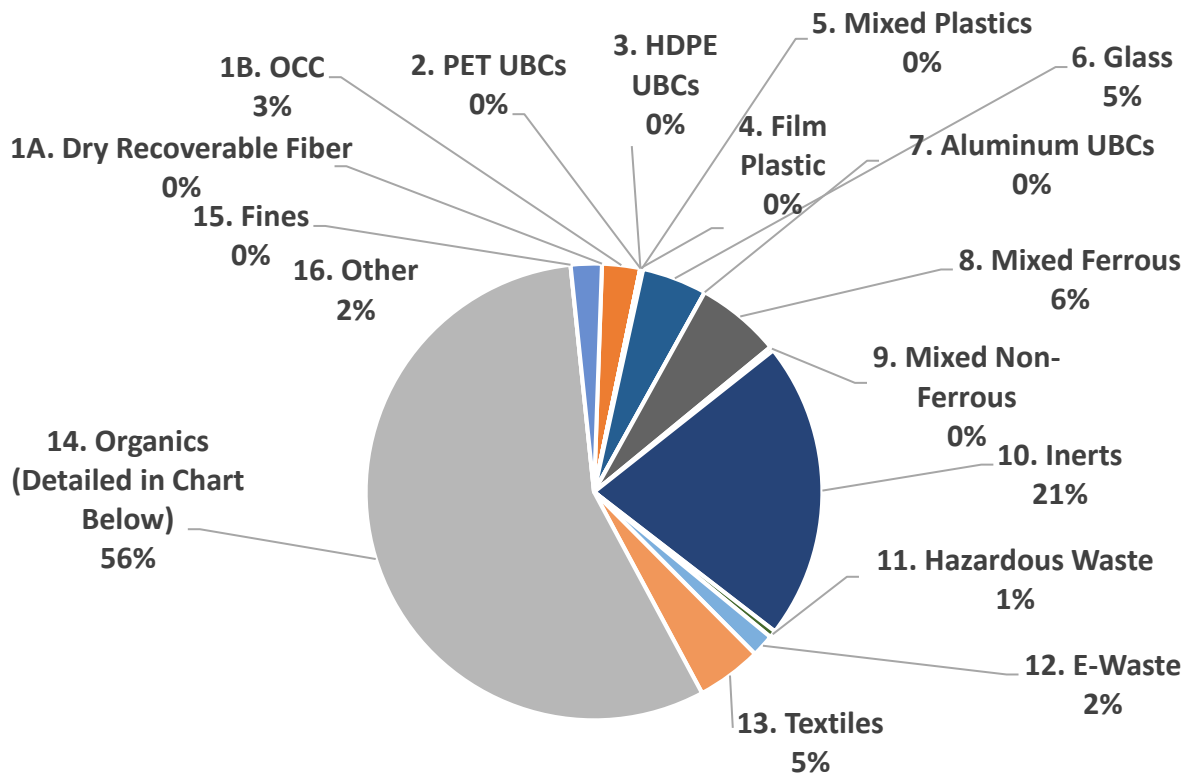


Figure 22: Spring Self-Haul MSW Organics Detail

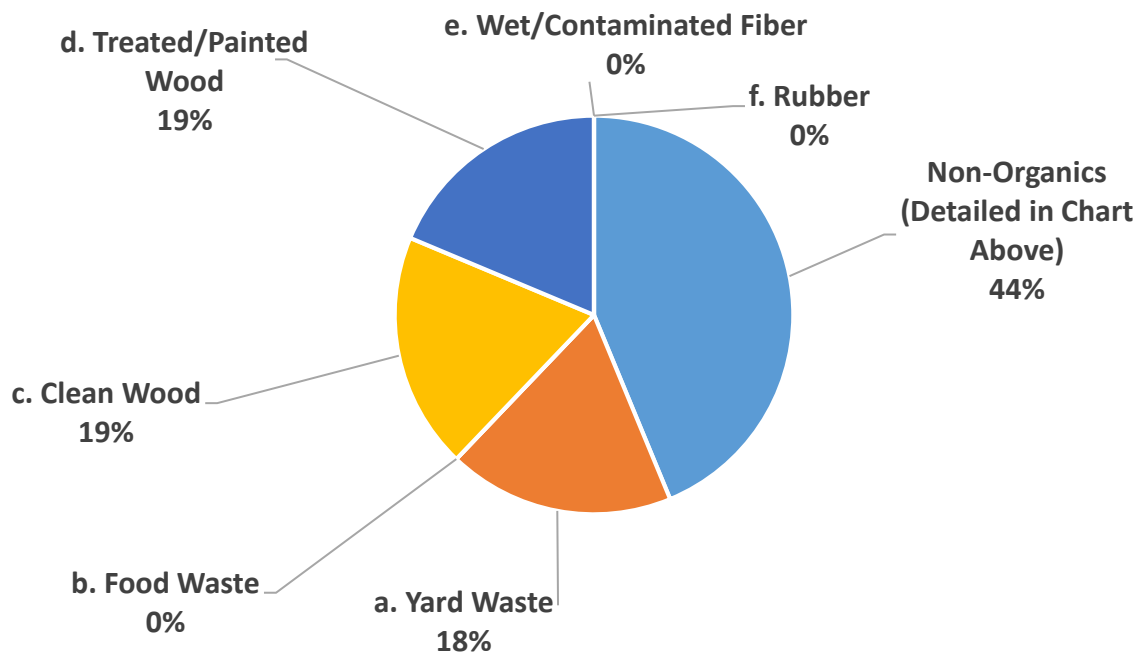


Table 16: Fall Self-Haul MSW Data

Fall Self-Haul (20 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.0%	-	-
1B. OCC	2.1%	6.6%	0.0%	4.5%
2. PET	0.3%	1.6%	0.0%	0.9%
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.1%	0.0%	0.0%
5. Mixed Plastics	0.1%	0.2%	0.0%	0.1%
6. Glass	0.0%	0.0%	-	-
7. Aluminum	0.0%	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	2.2%	4.9%	0.4%	4.0%
9. Mixed Non-Ferrous (Salvage)	0.2%	0.6%	0.0%	0.4%
10. Inerts	16.2%	30.7%	4.9%	27.4%
11. Hazardous Waste	0.1%	0.5%	0.0%	0.3%
12. E-Waste	0.6%	2.4%	0.0%	1.5%
13. Textiles	5.8%	13.6%	0.8%	10.8%
14. Organics	70.8%	31.4%	59.2%	82.3%
a. Yard Waste	33.5%	42.3%	17.9%	49.0%
b. Food Waste	8.4%	26.1%	0.0%	18.0%
c. Clean Wood	15.3%	29.6%	4.4%	26.2%
d. Treated/Painted Wood	6.0%	12.3%	1.5%	10.6%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	7.6%	18.0%	0.9%	14.2%
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	1.7%	3.4%	0.4%	2.9%

Figure 23: Fall Self-Haul MSW Data

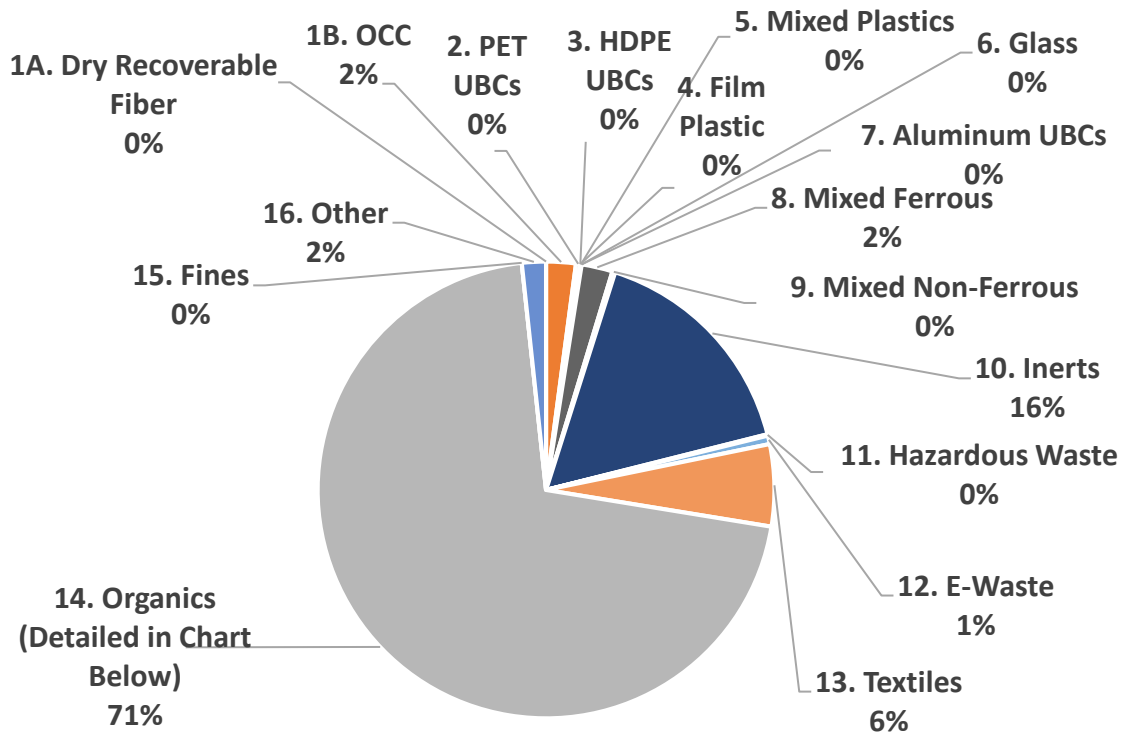


Figure 24: Fall Self-Haul MSW Organics Detail

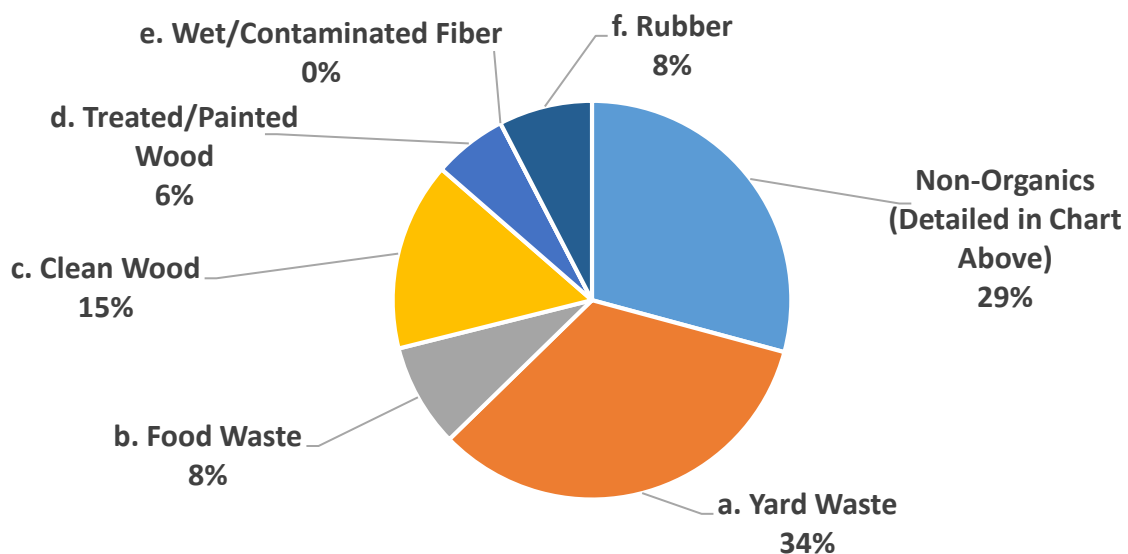


Table 17: Two-Season Self-Haul MSW Data

Two-Season Self-Haul (40 Samples, Visual Sort)	Mean Composition	Standard Deviation	Lower	Upper
1A. Dry Recoverable Fiber	0.0%	0.0%	-	-
1B. OCC	2.4%	6.6%	0.7%	4.1%
2. PET	0.2%	1.1%	0.0%	0.5%
3. HDPE	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.1%	0.0%	0.0%
5. Mixed Plastics	0.1%	0.3%	0.0%	0.2%
6. Glass	2.3%	8.2%	0.1%	4.4%
7. Aluminum	0.0%	0.0%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	4.1%	8.6%	1.9%	6.3%
9. Mixed Non-Ferrous (Salvage)	0.2%	0.6%	0.1%	0.4%
10. Inerts	18.6%	30.3%	10.7%	26.5%
11. Hazardous Waste	0.3%	1.3%	0.0%	0.6%
12. E-Waste	1.1%	3.3%	0.2%	2.0%
13. Textiles	5.2%	11.9%	2.1%	8.3%
14. Organics	63.5%	34.0%	54.7%	72.3%
a. Yard Waste	25.9%	38.0%	16.0%	35.8%
b. Food Waste	4.2%	18.7%	0.0%	9.1%
c. Clean Wood	17.2%	28.5%	9.8%	24.7%
d. Treated/Painted Wood	12.4%	18.6%	7.5%	17.2%
e. Wet/Contaminated Fiber	0.0%	0.0%	-	-
f. Rubber	3.8%	13.2%	0.4%	7.2%
15. Fines (<2" Items)	0.0%	0.0%	-	-
16. Other	2.0%	6.3%	0.3%	3.6%

Figure 25: Two-Season Self-Haul MSW Data

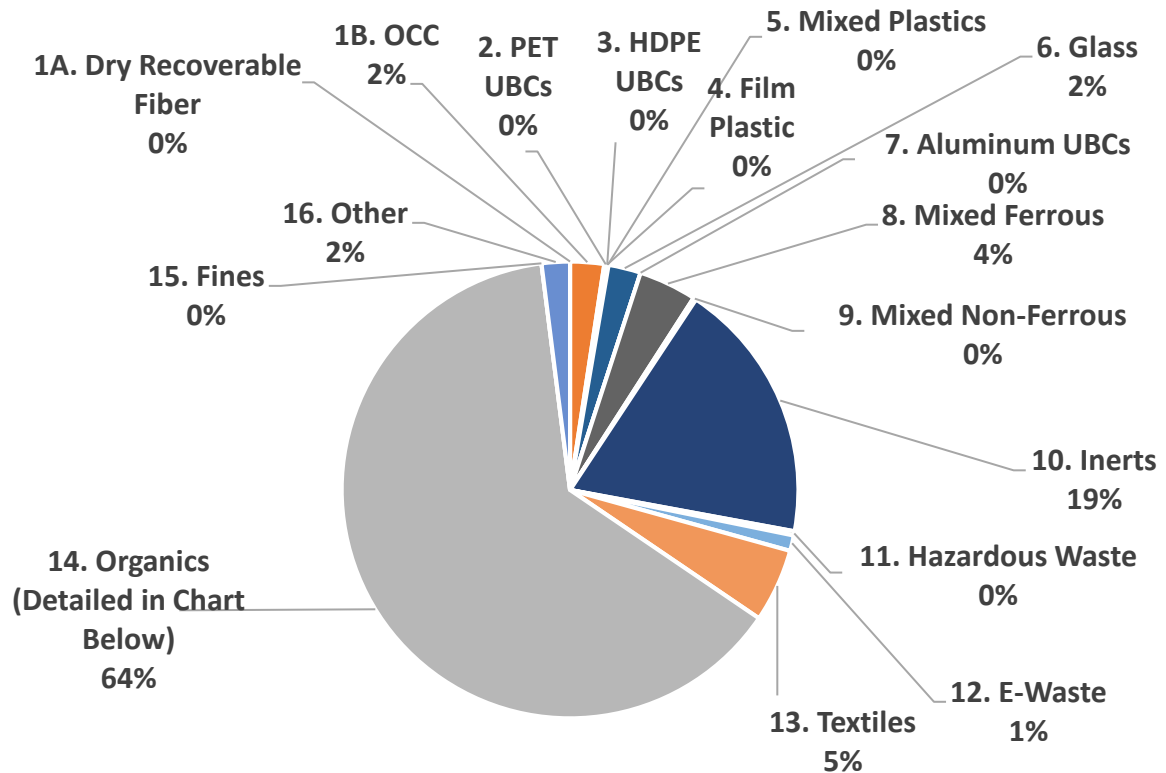


Figure 26: Two-Season Self-Haul MSW Organics Detail

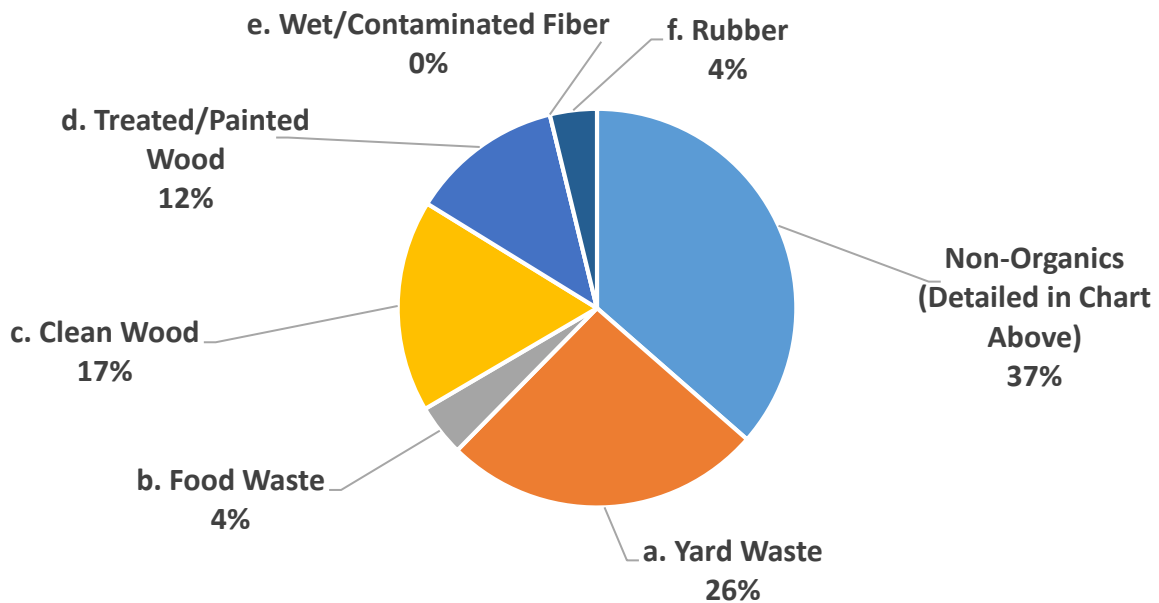


Exhibit A: Data for Residential, Commercial, Industrial/C&D and Self-Haul Samples

Fort Collins Two-Season Residential Data	Spring 2016 Samples															Fall 2016 Samples															Mean Composition	Standard Deviation	Lower	Upper
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
1A. Dry Recoverable Fiber	0.0%	2.0%	3.1%	3.0%	0.0%	0.0%	2.0%	3.0%	3.1%	4.2%	1.4%	1.6%	3.6%	0.0%	2.9%	5.7%	7.3%	3.2%	0.0%	0.0%	3.5%	0.0%	24.2%	0.0%	0.0%	3.3%	0.8%	1.1%	3.3%	0.0%	2.7%	4.5%	1.4%	4.1%
1B. OCC	0.0%	2.8%	4.2%	4.1%	0.0%	0.0%	2.8%	4.1%	4.3%	5.8%	1.9%	2.2%	4.9%	0.0%	4.0%	4.6%	1.2%	6.5%	3.7%	0.0%	6.2%	0.0%	14.8%	0.0%	0.0%	9.9%	7.5%	2.2%	11.1%	4.0%	3.8%	3.6%	2.7%	4.8%
2. PET UBC's	1.0%	0.6%	0.3%	1.4%	0.0%	0.0%	0.3%	1.1%	2.0%	1.6%	0.7%	0.7%	0.7%	0.2%	1.0%	1.5%	1.0%	1.3%	0.3%	0.0%	1.5%	0.0%	3.4%	0.0%	0.0%	1.9%	1.6%	0.5%	0.8%	0.0%	0.8%	0.8%	0.6%	1.1%
3. HDPE UBC's	0.7%	0.5%	0.2%	1.7%	0.0%	0.0%	0.7%	0.3%	1.8%	1.8%	1.9%	0.5%	2.0%	0.4%	0.6%	1.6%	1.0%	2.4%	0.4%	0.0%	2.0%	0.0%	0.5%	0.0%	0.0%	1.3%	0.4%	0.2%	0.4%	0.0%	0.8%	0.7%	0.5%	1.0%
4. Film Plastic	5.4%	4.8%	3.8%	2.7%	0.0%	0.0%	4.7%	4.1%	5.9%	4.5%	5.5%	2.8%	7.8%	4.4%	6.2%	4.6%	4.5%	2.5%	0.6%	14.6%	3.4%	0.0%	0.1%	0.0%	0.0%	6.6%	7.1%	4.2%	14.4%	0.0%	4.2%	3.7%	3.1%	5.3%
5. Mixed Plastics	1.6%	6.5%	6.5%	7.8%	0.0%	0.0%	1.8%	2.2%	8.0%	4.4%	5.0%	2.8%	2.4%	2.9%	2.1%	4.5%	5.5%	2.9%	0.1%	46.7%	5.8%	0.0%	0.7%	4.2%	0.0%	5.4%	4.1%	8.5%	4.5%	3.8%	5.0%	8.3%	2.5%	7.5%
6. Glass UBC's	0.0%	1.8%	2.5%	4.6%	0.0%	0.0%	0.4%	1.2%	0.0%	9.3%	4.0%	1.4%	0.0%	0.0%	0.6%	1.5%	1.3%	3.6%	4.5%	0.0%	5.2%	0.0%	4.6%	0.0%	0.0%	3.4%	0.1%	0.7%	0.4%	3.7%	1.8%	2.3%	1.1%	2.5%
7. Aluminum UBC's	0.1%	0.4%	0.5%	1.5%	0.0%	0.0%	0.3%	0.4%	1.1%	1.5%	0.5%	0.7%	0.0%	0.1%	0.3%	0.9%	0.7%	0.5%	0.3%	0.0%	1.6%	0.0%	0.9%	0.0%	0.0%	0.4%	2.3%	0.3%	0.7%	0.0%	0.5%	0.6%	0.4%	0.7%
8. Mixed Ferrous (Tin & Salvage)	0.6%	0.0%	0.7%	1.7%	0.0%	0.0%	2.4%	0.7%	0.0%	1.8%	0.4%	1.0%	0.5%	0.0%	1.1%	1.5%	3.1%	4.4%	0.7%	17.8%	7.3%	0.0%	0.1%	0.0%	0.0%	0.8%	2.1%	0.0%	0.5%	10.7%	2.0%	3.8%	0.9%	3.1%
9. Mixed Non-Ferrous (Salvage)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.2%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	1.0%	0.0%	0.0%	0.0%	1.5%	6.7%	0.0%	3.5%	
10. Inerts	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%	13.2%	0.0%	0.0%	0.0%	0.0%	0.0%	18.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	4.0%	0.0%	2.3%
11. Haz-Waste	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	45.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.6%	8.3%	0.0%	4.1%
12. E-Waste	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	14.9%	1.5%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	1.2%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	13.1%	0.0%	0.0%	1.4%	3.0%	0.0%	0.0%	3.2%	1.6%	3.6%	0.5%	2.7%
13. Textiles	2.3%	4.7%	2.8%	2.3%	0.0%	0.0%	0.0%	0.3%	8.6%	5.6%	1.7%	6.7%	0.0%	1.3%	0.6%	4.4%	0.7%	2.0%	1.1%	0.0%	8.1%	0.0%	0.0%	0.0%	0.0%	10.4%	3.5%	0.1%	50.6%	3.9%	9.3%	1.1%	6.7%	
14. Organics	88.2%	70.9%	56.2%	41.1%	100.0%	100.0%	27.8%	60.2%	58.4%	19.0%	70.0%	32.9%	67.3%	67.2%	68.3%	52.0%	53.1%	30.4%	82.0%	0.0%	27.6%	100%	7.4%	50.1%	100%	25.2%	28.4%	66.9%	37.1%	23.5%	53.7%	28.4%	45.2%	62.2%
a. Yard Waste	61.8%	4.9%	16.1%	7.9%	71.0%	52.1%	1.6%	8.1%	9.9%	0.0%	15.8%	0.7%	51.9%	0.0%	46.7%	0.6%	19.9%	13.1%	0.3%	0.0%	0.0%	0.0%	7.4%	35.4%	71.5%	15.0%	5.5%	29.6%	1.2%	0.0%	18.3%	23.0%	11.4%	25.2%
b. Food Waste	10.6%	57.9%	33.1%	28.2%	29.0%	23.1%	15.9%	22.2%	29.9%	2.5%	22.8%	10.7%	11.4%	47.5%	11.3%	29.7%	6.3%	6.6%	75.3%	0.0%	18.7%	0.0%	0.0%	10.5%	11.0%	0.0%	9.0%	7.6%	22.6%	0.0%	18.4%	17.8%	13.1%	23.8%
c. Clean Wood	0.0%	0.0%	0.4%	1.5%	0.0%	0.0%	0.3%	16.4%	0.0%	0.0%	1.6%	3.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%	0.0%	4.3%	2.1%	2.3%	1.0%	15.4%	0.0%	0.0%	3.0%	8.1%	0.5%	5.4%
d. Treated/Painted Wood	5.3%	0.0%	0.0%	0.0%	0.0%	20.1%	0.0%	0.0%	3.5%	7.8%	0.0%	9.1%	0.0%	3.0%	0.8%	2.9%	14.4%	8.4%	0.0%	0.0%	1.5%	60.0%	0.0%	0.0%	7.3%	0.0%	2.8%	0.0%	0.0%	23.5%	5.7%	11.9%	2.1%	9.3%
e. Wet/Contaminated Fiber	10.5%	8.1%	6.7%	3.5%	0.0%	4.7%	6.1%	13.6%	15.1%	8.8%	29.4%	9.3%	3.6%	16.7%	9.5%	18.9%	8.7%	2.3%	6.1%	0.0%	7.3%	0.0%	0.0%	0.0%	0.0%	7.9%	9.5%	8.6%	13.3%	0.0%	7.6%	6.7%	5.6%	9.6%
f. Rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	8.1%	0.0%	0.5%	5.7%	0.0%	0.0%	0.8%	1.9%	0.2%	1.3%
15. "Fines" (<2" Items)	0.0%	0.0%	2.6%	9.2%	0.0%	0.0%	3.9%	0.0%	0.0%	7.3%	0.0%	4.9%	5.8%	0.0%	2.7%	15.6%	6.5%	6.7%	0.0%	0.0%	12.8%	0.0%	5.3%	0.0%	0.0%	9.8%	4.1%	8.3%	2.7%	0.0%	3.6%	4.3%	2.3%	4.9%
16. Other	0.0%	2.5%	16.4%	19.1%	0.0%	0.0%	16.8%	7.5%	5.2%	33.2%	6.8%	39.4%	4.9%	17.9%	9.6%	0.0%	0.0%	33.5%	6.3%	21.0%	14.3%	0.0%	7.0%	0.0%	0.0%	24.0%	26.9%	3.6%	24.2%	0.0%	11.3%	11.8%	7.8%	14.9%
Confidence Interval																														90%				

Fort Collins Two-Season Commercial Data	Spring 2016 Samples																				Fall 2016 Samples																				Mean Composition	Standard Deviation	Lower	Upper
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
1A. Dry Recoverable Fiber	1.0%	0.9%	0.0%	1.2%	2.1%	1.5%	3.9%	4.1%	0.5%	1.9%	0.5%	0.9%	1.5%	1.8%	0.0%	1.5%	1.1%	0.8%	2.0%	1.2%	0.0%	11.7%	6.5%	0.0%	1.9%	0.0%	4.6%	0.0%	0.5%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	6.2%	1.8%	1.1%	0.0%	1.1%	1.6%	2.3%	1.0%	2.2%
1B. OCC	4.0%	3.8%	0.0%	4.8%	8.8%	6.1%	16.1%	16.7%	2.2%	7.9%	2.2%	3.9%	6.2%	7.5%	0.0%	6.1%	4.5%	3.3%	8.2%	5.0%	0.4%	10.6%	15.8%	0.0%	4.7%	0.0%	0.9%	88.2%	16.3%	0.0%	0.0%	5.1%	0.0%	0.0%	0.0%	2.3%	3.8%	3.6%	0.0%	4.8%	6.8%	14.0%	3.2%	10.5%
2. PET UBC's	0.2%	0.2%	0.3%	1.1%	2.1%	1.9%	2.1%	1.7%	1.8%	1.9%	0.1%	0.4%	3.4%	0.7%	0.4%	1.0%	1.2%	1.3%	1.5%	1.0%	1.2%	2.1%	0.0%	0.0%	0.5%	0.0%	1.3%	0.0%	1.4%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.3%	0.6%	0.1%	0.0%	2.1%	0.9%	0.9%	0.6%	1.1%
3. HDPE UBC's	0.2%	0.0%	0.2%	0.5%	0.6%	0.5%	0.0%	1.5%	0.6%	1.3%	2.5%	0.1%	0.5%	0.2%	0.7%	0.4%	0.4%	0.5%	0.5%	1.0%	1.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.7%	0.0%	7.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.8%	0.9%	3.3%	0.0%	0.4%	0.7%	1.2%	0.4%	1.0%
4. Film Plastic	5.8%	0.2%	3.9%	4.0%	3.9%	3.2%	10.3%	5.1%	6.2%	6.9%	6.3%	4.2%	3.2%	4.8%	2.4%	3.9%	4.8%	4.5%	6.0%	5.7%	5.8%	8.2%	2.2%	0.0%	7.9%	0.0%	8.1%	11.8%	2.2%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%	4.8%	30.9%	0.0%	4.0%	4.6%	5.2%	3.2%	5.9%
5. Mixed Plastics	14.6%	0.5%	5.3%	3.6%	2.9%	3.7%	16.4%	4.0%	3.1%	13.5%	4.8%	3.1%	2.9%	3.6%	2.0%	6.0%	6.6%	6.6%	4.4%	4.5%	1.2%	5.4%	1.9%	0.0%	2.3%	0.0%	3.4%	0.0%	1.3%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	2.4%	1.5%	0.0%	3.4%	3.4%	3.9%	2.4%	4.4%
6. Glass UBC's	0.4%	0.0%	5.7%	2.8%	0.9%	2.8%	1.3%	6.5%	1.9%	7.9%	10.8%	0.9%	0.9%	1.1%	0.0%	4.5%	2.1%	1.3%	3.4%	4.8%	1.7%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.6%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	12.3%	0.3%	0.0%	0.8%	1.9%	3.0%	1.2%	2.7%
7. Aluminum UBC's	0.3%	0.0%	0.2%	0.2%	1.6%	0.8%	0.0%	2.5%	1.5%	1.4%	0.4%	0.3%	1.5%	0.7%	0.0%	0.4%	0.4%	0.4%	1.0%	1.0%	0.6%	2.1%	0.0%	0.0%	0.1%	0.0%	1.7%	0.0%	0.9%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.1%	0.2%	2.2%	0.0%	1.1%	0.6%	0.7%	0.4%	0.8%
8. Mixed Ferrous (Tin & Salvage)	5.1%	0.0%	2.1%	5.9%	0.3%	2.9%	2.0%	6.3%	2.9%	4.3%	6.8%	2.8%	1.7%	6.6%	5.6%	4.3%	3.0%	3.2%	1.2%	3.3%	0.5%	1.3%	0.0%	0.0%	0.0%	1.0%	0.0%	15.9%	0.0%	9.3%	8.9%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.5%	2.8%	3.4%	1.9%	3.7%	
9. Mixed Non-Ferrous (Salvage)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	1.2%	0.1%	0.7%	1.2%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	0.2%
10. Inerts	0.0%	43.0%	0.0%	0.0%	0.0%	18.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.2%	5.1%	9.4%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	7.5%	0.2%	4.1%	
11. Haz-Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	5.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.7%	0.0%	8.9%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	1.6%	0.0%	0.9%	
12. E-Waste	0.0%	0.0%	0.0%	0.0%	16.4%	1.9%	2.4%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	4.5%	1.1%	1.2%	2.6%	0.9%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%	0.2%	1.6%	
13. Textiles	3.4%	0.2%	9.5%	2.9%	0.5%	2.2%	3.2%	0.0%	8.8%	2.6%	0.1%	1.3%	15.7%	6.7%	0.0%	6.0%	4.3%	3.7%	1.0%	3.6%	1.5%	2.2%	0.0%	0.0%	0.0%	0.3%	0.0%	0.7%	0.0%	7.1%	0.8%	0.0%	0.0%	0.0%	0.0%	3.1%	0.3%	0.7%	0.0%	0.0%	2.3%	3.4%	1.4%	3.2%
14. Organics	51.9%	45.4%	47.1%	68.5%	45.3%	43.8%	38.8%	34.5%	58.5%	31.5%	42.9%	31.9%	39.5%	47.1%	49.4%	45.0%	41.5%	52.1%	39.9%	49.5%	50.8%	36.1%	31.0%	100.0%	78.6%	100.0%	59.7%	0.0%	31.6%	100.0%	40.1%	50.9%	100.0%	100.0%	100.0%	75.5%	56.0%	51.4%	100.0%	45.0%	55.3%	24.5%	48.9%	61.6%
a. Yard Waste	0.5%	5.2%	11.4%	0.0%	11.8%	0.0%	7.4%	3.6%	23.7%	19.3%	0.0%	0.0%	2.7%	30.7%	0.0%	8.3%	5.4%	10.1%	11.7%	8.0%	0.4%	3.1%	21.1%	0.0%	1.3%	0.0%	0.0%	0.0%	1.4%	61.1%	0.0%	0.1%	40.0%	0.0%	40.0%	24.3%	0.0%	0.0%	40.0%	0.6%	9.8%	14.6%	6.0%	13.6%
b. Food Waste	39.6%	0.0%	21.1%	61.8%	11.8%	19.0%	2.8%	19.6%	8.7%	3.2%	23.3%	25.2%	20.8%	7.1%	5.8%	21.5%	15.9%	20.3%	9.7%	21.0%	29.9%	17.7%	7.6%	100.0%	7.5%	0.0%	32.3%	0.0%	7.7%	38.9%	0.0%	19.9%	60.0%	0.0%	60.0%	34.7%	53.6%	37.4%	60.0%	35.3%	24.0%	22.0%	18.3%	29.7%
c. Clean Wood	0.0%	27.6%	0.0%	0.0%	15.1%	2.0%	0.3%	0.0%	0.0%	3.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	5.5%	0.0%	4.5%	12.8%	0.0%	0.0%	0.0%	44.4%	0.0%	0.0%	0.0%	16.3%	0.0%	40.1%	0.0%	0.0%	100.0%	0.0%	10.7%	0.8%	0.0%	0.0%	7.2%	18.3%	2.4%	12.0%	
d. Treated/Painted Wood	0.5%	12.6%	0.1%	0.0%	0.0%	15.6%	0.0%	1.0%	9.3%	0.0%	0.0%	1.9%	1.8%	2.2%	40.5%	10.5%	4.8%	5.1%	5.9%	4.4%	0.0%	0.0%	2.3%	0.0%	25.4%	100.0%	7.8%	0.0%	0.0%	0.0%	0.0%	26.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	7.0%	17.4%	2.4%	11.5%
e. Wet/Contaminated Fiber	11.3%	0.0%	14.5%	6.5%	6.2%	7.1%	28.4%	9.7%	16.8%	5.3%	18.7%	4.8%	14.2%	7.1%	3.1%	4.7%	11.1%	11.0%	12.6%	11.5%	7.7%	15.3%	0.0%	0.0%	0.0%	0.0%	19.4%	0.0%	5.7%	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	5.7%	1.6%	14.0%	0.0%	9.1%	7.2%	6.9%	5.4%	9.0%
f. Rubber	0.0%	0.0%	0.0%	0.2%	0.4%	0.0%	0.0%	0.6%	0.0%	0.0%	0.5%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.5%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.1%	
15. "Fines" (<2" Items)	7.8%	5.5%	11.1%	2.0%	3.9%	4.5%	2.8%	4.8%	1.7%	0.0%	3.4%	4.7%	0.0%	9.2%	3.8%	4.7%	4.8%	4.1%	4.7%	4.8%	5.8%	13.2%	4.4%	0.0%	1.0%	0.0%	8.0%	0.0%	1.0%	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	6.6%	3.2%	2.8%	0.0%	0.0%	3.4%	3.3%	2.6%	4.3%
16. Other	5.4%	0.3%	14.7%	2.7%	10.6%	5.6%	0.7%	12.4%	7.4%	18.8%	13.6%	45.4%	23.0%	4.9%	34.7%	13.9%	15.4%	9.9%	14.8%	12.0%	20.4%	3.7%	38.3%	0.0%	2.9%	0.0%	9.5%	0.0%	20.6%	0.0%	43.5%	23.8%	0.0%	0.0%	0.0%	5.2%	7.9%	2.1%	0.0%	36.7%	Confidence Interval			90%

Fort Collins Two-Season Industrial/C&D Data	Spring 2016 Samples																				Fall 2016 Samples																				Mean Composition	Standard Deviation	Lower	Upper
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
1A. Dry Recoverable Fiber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%		
1B. OCC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	3.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.3%	0.6%	0.1%	0.4%
2. PET UBC's	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3. HDPE UBC's	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-
4. Film Plastic	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	
5. Mixed Plastics	0.0%	0.0%	0.0%	0.0%	0.0%	24.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	100.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	16.2%	0.0%	7.4%
6. Glass UBC's	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	49.4%	0.0%	0.0%	11.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	8.0%	0.0%	3.6%
7. Aluminum UBC's	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
8. Mixed Ferrous (Tin & Salvage)	0.0%	0.0%	0.0%	3.8%	0.0%	13.8%	7.1%	0.0%	0.0%	0.0%	8.8%	4.9%	33.8%	0.0%	4.4%	0.0%	4.8%	1.4%	0.0%	3.1%	0.0%	0.0%	0.0%	0.7%	0.0%	3.2%	0.0%	2.6%	0.0%	1.0%	0.0%	0.0%	0.5%	0.0%	8.3%	58.3%	0.5%	0.0%	0.0%	0.3%	4.0%	10.6%	1.3%	6.8%
9. Mixed Non-Ferrous (Salvage)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	5.1%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.9%	0.0%	0.4%
10. Inerts	100.0%	100.0%	0.0%	92.3%	0.0%	0.0%	84.7%	34.6%	0.0%	18.2%	39.6%	0.0%	0.0%	0.0%	13.2%	100.0%	95.0%	0.0%	0.0%	74.0%	0.0%	69.1%	100.0%	51.2%	23.7%	0.0%	0.0%	71.1%	100.0%	0.0%	94.1%	100.0%	0.0%	0.0%	23.8%	79.9%	100.0%	100.0%	0.0%	41.6%	43.3%	30.4%	52.9%	
11. Haz-Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%
12. E-Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.5%	0.0%	0.2%
13. Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	16.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	3.6%	0.0%	1.8%
14. Organics	0.0%	0.0%	100.0%	3.8%	14.3%	31.0%	7.1%	65.4%	0.0%	72.7%	51.6%	11.1%	47.4%	0.0%	70.2%	0.0%	0.0%	96.5%	27.6%	18.5%	0.0%	23.0%	0.0%	48.1%	42.2%	84.9%	4.5%	26.3%	0.0%	2.8%	5.9%	0.0%	3.3%	100.0%	4.3%	17.0%	19.6%	0.0%	0.0%	99.6%	27.5%	33.7%	18.7%	36.2%
a. Yard Waste	0.0%	0.0%	100.0%	3.8%	0.0%	0.0%	0.0%	65.4%	0.0%	0.0%	8.8%	0.0%	27.1%	0.0%	70.2%	0.0%	0.0%	0.0%	0.0%	17.2%	0.0%	0.0%	0.0%	41.0%	2.6%	0.0%	0.0%	26.3%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.4%	22.3%	3.6%	15.2%
b. Food Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	
c. Clean Wood	0.0%	0.0%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	96.5%	0.0%	9.2%	0.0%	11.5%	0.0%	0.0%	34.6%	0.5%	4.5%	0.0%	0.0%	2.3%	5.9%	0.0%	3.3%	100.0%	0.0%	1.7%	12.0%	0.0%	0.0%	24.0%	8.3%	22.1%	2.6%	14.1%
d. Treated/Painted Wood	0.0%	0.0%	0.0%	0.0%	0.0%	31.0%	7.1%	0.0%	0.0%	72.7%	33.0%	7.4%	20.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.3%	9.2%	0.0%	11.5%	0.0%	7.2%	4.9%	84.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	1.7%	7.6%	0.0%	0.0%	75.6%	9.7%	21.1%	4.2%	15.2%
e. Wet/Contaminated Fiber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	
f. Rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-
15. "Fines" (<2" Items)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-
16. Other	0.0%	0.0%	0.0%	0.0%	85.7%	13.8%	1.2%	0.0%	100.0%	9.1%	0.0%	34.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	69.0%	3.1%	93.8%	3.8%	0.0%	0.0%	34.1%	11.9%	94.5%	0.0%	0.0%	95.2%	0.0%	0.0%	96.1%	0.0%	83.3%	0.1%	0.0%	0.0%	0.0%	20.7%	36.0%	11.4%	30.1%
Confidence Interval																																									90%			

Fort Collins Two-Season Self-Haul Data	Spring 2016 Samples																				Fall 2016 Samples																				Mean Composition	Standard Deviation	Lower	Upper																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1A. Dry Recoverable Fiber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	