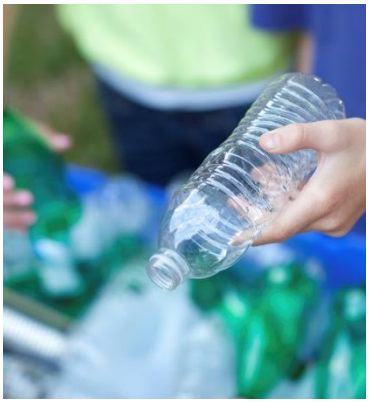

REPORT FOR

MERCER COUNTY IMPROVEMENT AUTHORITY
SOLID WASTE and RECYCLING
QUANTIFICATION and CHARACTERIZATION STUDY

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EXECUTIVE SUMMARY

The NJDEP has mandated that all counties prepare a Solid Waste Management Plan that promotes recycling and reuse. The NJDEP goals are to recycle 60% of the overall waste stream and 50% of the municipal solid waste (MSW50). Data indicates that Mercer County has achieved the overall goal, but falls short of the MSW recycling goal (42% in 2011). To develop a strategy to meet the MSW50 goal, the Mercer County Improvement Authority (MCIA) commissioned this Solid Waste and Recycling Quantification and Characterization study for 2013. The results of this study have determined the composition of the Type 10 MSW managed at the MCIA Ewing Transfer Station. This report, among other things, details the management strategies to implement in meeting the MSW50 goal.

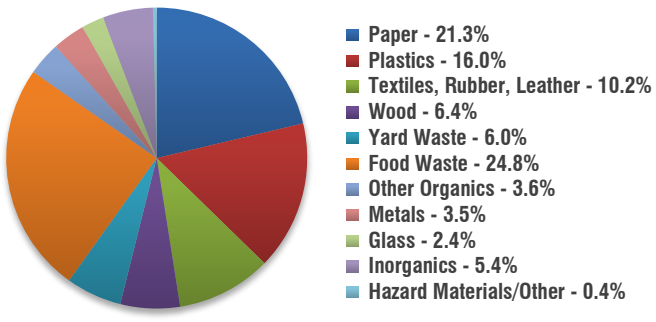
The solid waste generated in Mercer County is managed through various programs directed by the MCIA. These programs include the disposal of MSW, and curbside and municipal recycling programs. Waste that is collected in the County, including: MSW, dry industrial waste, yard waste, and bulky items, are directed to the MCIA Transfer Station for weighing. The collection vehicles only tip Type 10 MSW prior to transfer to the designated disposal facility. After weighing, all other waste is sent directly to the disposal facility without further processing.

The MCIA retained T&M Associates (T&M), who conducted the study in accordance with ASTM D5231 – 92 (2008). These protocols require collecting and analyzing (sorting) the waste samples over four one-week sample periods, which represent the seasonal variations of MSW. During each day of the sample week, approximately 12 waste load samples were collected randomly from tipped waste collection vehicles at the MCIA Transfer Station. To result in a 90-95% confidence reliance on the data, the statistical methods were used to determine the appropriate total number of discrete samples to sort.

The Type 10 waste samples were characterized by hand sorting portions of the tipped load after it was extruded onto the tipping floor. The sort categories included potential recycling and other waste components. The sorted samples were weighed to provide component ratios.

Review of the sort data showed that the current recycling program is effective for removing glass and metals. However, paper and plastic materials will require more recycling emphasis. Additionally, food waste is determined to be the largest single component in the MSW stream at nearly 25%, as indicated in Chart 1.

CHART 1 | 2013 MCIA WASTE COMPOSITION



By identifying these targets, effective management strategies can be identified to remove these components from the waste stream. The Curbside Recycling Program may be expanded to include additional paper and plastic types and a food waste diversion program may need to be further examined and developed alongside the other materials that are source separated.

This study includes waste trend predictions through 2028. The population of Mercer County is increasing in contemporary history at a rate of 0.48% per year. According to the US EPA, waste component trend data for the studied categories have increased in the case of plastics and food waste, while paper has decreased. By applying these trends to the sorted component data, predictions have been developed for Mercer County waste characteristics in the future.

Briefly, the recommendations of this study will be to divert other paper, other plastics, and food waste in sufficient quantities to meet the NJDEP MSW50 goal in 5 to 10 (2013-2022) years. The most significant component of the plan will be food waste diversion. Food waste accounted for 55,000 tons of the 237,000 tons disposed in 2013. By source separating food and other paper and other plastics from the MSW, from both residential and commercial generators, MSW50 should be achievable in the 5- to 10-year period.

INTRODUCTION

The Mercer County Improvement Authority (MCIA) oversees and manages the recycling and/or disposal of approximately 406,000 tons of municipal solid waste (MSW) in 2011, of which nearly 170,000 tons are recyclables. The MCIA is also responsible for the development and implementation of the Solid Waste Management Plan (SWMP) for Mercer County, New Jersey.

The MCIA selected T&M Associates to provide professional services to:

- Conduct a four season quantification and characterization study for a period of one year
- Provide a fifteen year waste stream generation projection
- Identify any necessary future infrastructure needs
- Analyze the recycling program
- Analyze and recommend how to achieve the State mandated recycling goals
- Prepare a final report inclusive of all the preceding as well as conclusions and recommendations.

The purpose of this study is to: provide an assessment of Type 10 solid waste and curbside recycled materials; identify cost reduction opportunities; demonstrate responsible operations (i.e., existing systems and practices that are working well); and, determine enhancements to infrastructure and/or policies that will provide more efficient and effective operations.

BACKGROUND

The State of New Jersey has established waste reduction and recycling goals. Specifically, the goals are to recycle 50% of the MSW Type 10 waste and 60% of the entire waste stream. The County's SWMP is the tool to implement these the programs that affect these goals. The SWMP also establishes local procedures for waste reduction strategies and recycling objectives necessary to meet the State mandates.

This study will establish the composition of the Mercer County MSW waste stream in the year 2013. By knowing the characterization of the waste, the MCIA can develop programs and strategies that target materials for diversion, recycling, and alternative management. These improved efficiencies and focused efforts are necessary to meet the State goals.

Processing, recycling, and diversion techniques will be identified through this study and then contemporary reduction strategies can be applied to the SWMP.

Industry best practices routinely find that recycling makes good economic sense. The objective is to improve recycling results through targeted practices that cost effectively reduce and recycle the components of the waste stream and offer the optimal return on investment.

Ultimately, reduction, recycling, and reuse strategies decrease the volume of waste that requires disposal and result in the financial benefit of reduced disposal costs as well as the inherent benefits to the environment.

MERCER COUNTY RECYCLING PROGRAM | SOLID WASTE MANAGEMENT PLAN

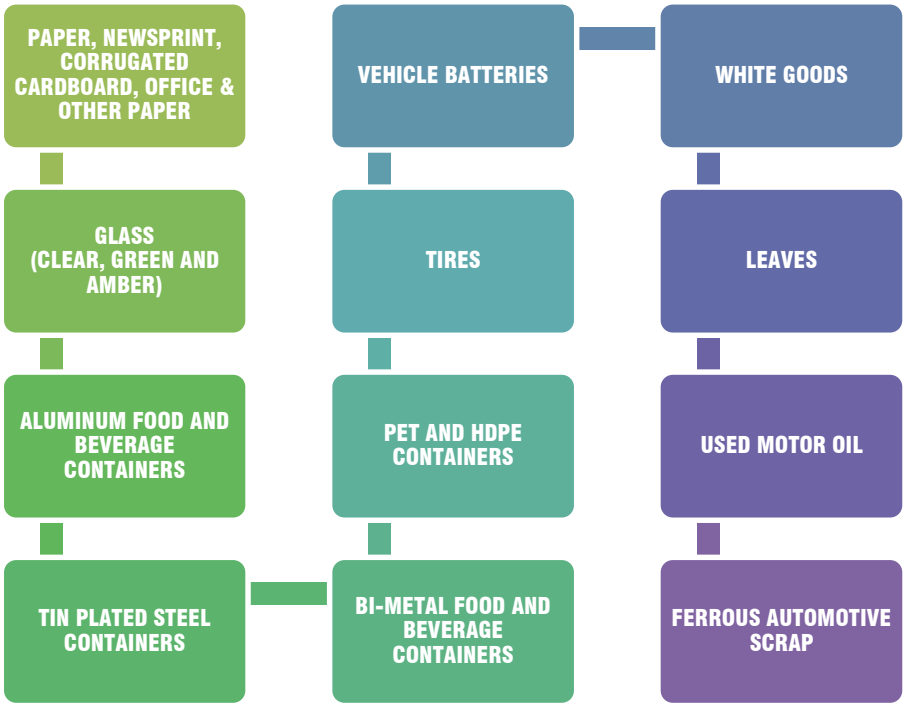
The State of New Jersey has tasked all counties to develop integrated and comprehensive SWMPs for their respective districts. In Mercer County, the MCIA is the entity responsible for the implementation of this SWMP. The MCIA has developed a plan to reduce, reuse, recycle, and dispose the County's solid waste. This plan has a specific minimal target to recycle 60% of the entire waste stream and 50% of the municipal solid waste.

According to the most recent data provided by the NJDEP, Mercer County generated 889,616 tons of all types of solid waste in 2011. Of that total, 542,062 tons were recycled (61%) meeting the State's mandated 60% target for total waste.

However, in 2011 the County generated 405,994 tons of MSW and recycled only 168,934 tons (42%). This falls short of the 50% MSW recycling goal (Refer to Appendix 6).

The Mercer County SWMP includes comprehensive strategies for the management and reduction of all waste. Additionally, the plan requires the recycling of a number of waste categories. Table 1 is a list of the designated materials for recycling under the SWMP.

TABLE 1 | MERCER COUNTY DESIGNATED MATERIALS FOR RECYCLING



The Mercer County Recycling Plan (RP) requires the materials listed above to be recycled from all generators, not just residential waste. The plan details the establishment of programs for small business, multi-family units, colleges and universities, commercial establishments, multi-family property owners, public buildings, and arenas.

The Mercer County RP includes a component for residential curbside collection of recyclables, known as the curbside recycling program. Nine of the twelve communities in Mercer County are serviced through a third-party contract. This program covers most of the County residences and small businesses. Communities, which are not included in the MCIA curbside program, administer their own programs.

The plan discusses specific management and recycling targets, including food waste. According to 2004 NJDEP data, as cited in "Amendment to the Mercer County District Solid Waste Management Plan (Dec 2006)", food waste in Mercer County was estimated to account for 25,000 tons of the municipal waste stream. This composition study will update and clarify that data. Our findings will show that the *tonnage* of food waste has more than doubled since 2004, with 55,186 tons in 2013. The MCIA is currently pursuing an innovative approach to managing the County's food waste component. According to the latest revision of the SWMP, as certified by the NJDEP in May 2014, discussions are currently underway with a third-party private venture to develop a 450 ton per day facility capable of accepting food waste and other organics. This study will determine the actual composition of the solid waste stream and enable the MCIA to develop the other strategies necessary to meet the NJDEP recycling goals.

METHODOLOGY

GENERAL

Municipal solid waste collected in Mercer County is directed to and managed at the MCIA Transfer Station in Ewing Township. Waste Type 10 (municipal solid waste), Type 13 (bulky waste), Type 23 (vegetative waste), Type 27 (dry industrial waste) and Type 27A (waste with asbestos content) are all directed to the transfer station for weighing. The NJDEP has defined MSW as Type 10. Only Type 10 waste is tipped at the transfer station. The composition and characterization of Type 10 waste are the focal point of this study.

Additional waste categories managed by the MCIA are Type 27, 27A, Type 23, and Type 13. A full description of the NJDEP Type definitions and waste categories are provided in Appendix 5.

Waste other than Type 10 that enters the transfer station grounds is weighed, inspected, and sent directly to the disposal facility. This waste was not considered in this study due to the inherent waste management limitations such as regulatory approvals and separation requirements.

Only waste actually tipped on the transfer station floor was sampled as part of this study. Although various waste types are directed to the transfer station, only Type 10 waste is deposited on the floor and transferred to the designated disposal facility. Occasionally, due to permitting restrictions, certain loads of Type 10 waste are not tipped at the transfer station and are sent directly to the disposal facility. Although these loads were not sampled, the volume is included in the Type 10 waste totals.

This study was accomplished over a one-year period in 2013 by sampling MSW during a one-week period once for each of the four annual seasons. The sampling and statistical analysis of the results was performed in accordance with ASTM D5231 concerning the procedures for characterizing unprocessed municipal waste.

BASIS OF STUDY | ASTM D5231

The test/sorting method to determine the MSW composition is designated by the ASTM Specification D5231 – 92. This test method is the standard for solid waste characterization studies. The sampling procedures were reviewed and re-approved by ASTM in 2008. This test method describes procedures and the statistical basis for measuring the composition of unprocessed MSW. Random sampling and manual sorting conducted via D5231 will accurately predict the overall composition of the waste stream.

ASTM recommends conducting the sorting operation over a continuous one-week period covering four quarters in one year. Each week will represent a season of the year. By this method, seasonal variations in the waste composition will not affect the overall results of the characterization.

The MCIA Transfer Station represents the focal point of the solid waste management system in Mercer County. Therefore, no other sorting locations were necessary to characterize accurately the waste stream in question.

The ASTM Specification describes all aspects of the sampling and sorting operation. The number of discrete samples necessary for the desired statistical confidence level and the random selection procedures are described in the

specification. The ASTM specification recommends and lists the number of samples required to develop a confidence level between 90 and 95%. T&M selected 72 samples per week as the target to predict accurately the components of the waste stream.

Random selection of the loads/samples varied slightly from the specification. However, the random nature of the sampling was maintained as prescribed by the ASTM specification. The 200 to 300 pounds of commingled waste samples were collected as outlined in the ASTM specification. At the sorting area, the materials were separated into categories as shown in Table 2.

Either mechanical or electrical scales are acceptable according to ASTM. The scale is required to have the capacity of at least 200 pounds and precision of at least one tenth of a pound. The line 674 digital scale was utilized in the study. This scale has a capacity of 330 pounds and accuracy of one tenth of a pound. The digital readout was easy to read and record.

TABLE 2 | STUDY CATEGORY & COMPONENTS

Category	Components
Paper	newsprint; corrugated cardboard; white office paper; box board; magazines; telephone books; other paper
Plastics	PET bottles; HDPE bottles; PVC containers; polypropylene containers; polystyrene containers; film plastic in plastic bags; other plastic
Textiles, Rubber, and Leather	cloth material such as cotton, linen, wool, nylon; rubber products; leather products
Wood	oriented strand board/particle board; plywood; furniture; pallets; tree parts; other untreated wood; other treated wood
Yard Waste	leaves, grass clippings, stumps, brush
Food Waste	food plate waste, food processing wastes
Other Organics	diapers
Metals	aluminum cans; tin plated steel cans; aerosol containers; other ferrous metals; other nonferrous metals
Glass	flint containers; green containers; amber containers; other glass
Inorganics	asphalt materials; masonry materials; wallboard; ceiling tiles; electronic waste; soil/ash; other inorganics; fines/sweepings
Hazardous Materials	lead acid batteries; dry cell batteries; paints/solvents; other hazardous, corrosive, or flammable material

T&M PERSONNEL AND TRAINING

T&M solid waste professionals staffed the supervisory team that would perform all oversight, supervision, and operations management during the sampling and sorting field work. These individuals were well versed in solid waste management and waste component identification. The sorting team, consisting of non-supervisory staffing, would sample, sort, and perform ancillary field operations. These individuals consisted of T&M employees, as well as temporary and/or subcontracted labor. The supervisory and sorting teams combined to form the T&M solid waste management team specific to this study.

T&M safety professionals developed a Health and Safety Plan (H&S Plan) specific to the Ewing transfer station and the operations associated with this study. The H&S Plan is available from the MCIA for review. Each member of the T&M solid waste management team was trained in the provisions of the H&S Plan, and the T&M site supervisor was responsible for the H&S Plan procedures, assurance, and compliance during all field operations.

The sorting team was trained to identify waste components and to understand proper sorting procedures. The T&M site supervisor oversaw and was responsible for waste classification determinations.

The supervisory team supervised the truck selection, sample selection, and sample sorting operations during the study. Additionally, these individuals were responsible for coordinating the safe hand sorting of potentially dangerous materials.

SAMPLING PROCEDURES

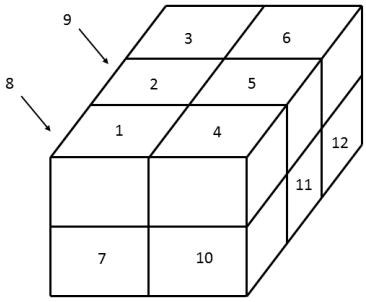
The MCIA transfer station accepts approximately 100 collection trucks per day. These vehicle loads average approximately 8 tons per vehicle. The ASTM specification suggests that trucks are sampled using every Nth truck where N is random. Due to the nature of the truck flow patterns, a combination of the Nth and timed random selection was used.

In the early morning, numerous vehicles were available for sampling. Therefore, the first two loads were selected on the Nth basis. After the morning rush, trucks were staggered and were selected based on a 45-minute time interval. This time interval matched the time required for the sorting and weighing operation to be completed. This time interval also maintained the production schedule necessary to sort approximately 12 sample-loads per day.

Prior to unloading on the tipping floor, the designated sample vehicle was directed to a portion of the floor away from the transfer operation. A 12-part imaginary grid was superimposed on the load and a randomly selected number (1-12) corresponding to a location on the grid was selected as the sample point (refer to Diagram 1). The sample point was dissected from the load and placed on a vehicle for sorting. Photos were taken of the entire load, the sample, and the truck. A sample Vehicle/Load Selection Form is provided in the Appendix 2.

Waste types accepted at the transfer station included 10T 10N, 27A, 13 and 13RB and 20R. Vehicles arrive at the weigh station early each morning and wait for the 7 am opening. Trucks loaded with waste designated as 10T, for Type 10 waste tipping, were directed to the tipping floor of the transfer station. Total vehicle weights were recorded at the scale house. Tare weights for most vehicles have been recorded and used to develop the net weights.

DIAGRAM 1 | SAMPLING GRID



Due to permitted volume restrictions at the transfer station, some loads of Type 10 waste were sent directly to the disposal facility rather than the tipping floor. These vehicle weights were included in the characterization analysis, but not sampled. According to the MCIA, 10N trucks are selected randomly based on daily intake volume.

T&M employee interviewing waste collection vehicle driver

MCIA 2012 reports of scale house tickets were reviewed to formalize a truck selection process. Net weights ranged from a high of 16 tons to less than 1 ton. Review of these data shows that approximately 100 trucks per day passed through the scale house. Approximately 70 loads are directed to the tipping floor. Therefore, samples should be taken from every 6th tipping vehicle in the Nth random selection process or every 45 minutes in the Tth (time) selection process. The requirements of the study are to select vehicles randomly for sampling while selecting a sufficient number of samples to meet the production goals; i.e., 12 samples per day. An example of the 2012 ticket analysis is provided in the Appendix 8.

These ticket reports were analyzed and tabulated to show unloading times, time between loads, waste types, and vehicle/load weights. The tabulated results showed several characteristics of the waste flow at the MCIA Transfer Station. Early mornings were typically heavy flow times. Between 12 and 16 loads arrived during this period. After the morning rush, trucks maintained a relatively consistent flow throughout the day. However, there were times between deliveries of loads that reached 25 minutes.

The following loads were selected on 45-minute intervals. This interval coincided with the time to sort a sample and return that sorted waste to the tipping floor. The first vehicle to enter the transfer station canopy at the 45-minute mark was the designated vehicle. This maintained the random nature of the selection process.

Once the vehicle was identified for sampling, the T&M supervisor directed the driver to the designated floor space to extrude the load for sampling. The driver was questioned about the location served by the vehicle and the primary waste type; residential or commercial. Photos were taken of the vehicle, license plate, and load. This information was recorded on the Truck Selection Form. A sample of this form is attached in Appendix 2.

Prior to the truck selection, a random number between 1 and 12 was selected to determine the location in the load, where the sample would be collected. This number coincided with an artificial grid superimposed over the load (see Diagram 1). The grid represented upper and lower halves of the load and left and right sample locations. The grid pattern is 2 high by 2 wide by 3 long. The sample location was recorded on the Truck Selection Form.

Once the sample location was selected, the equipment operator was directed to collect the designated sample and load it onto the pickup truck for transfer to the sorting area. These samples should be between 200 and 300 pounds. In the event the samples were more or less than 200-300 pounds, the entire sample was still sorted.

The sampling and loading operation required mechanized equipment for safety and practical reasons. Anomalies or bulky items found in the designated sample portion of the load were noted.

SORTING PROCEDURES

The sorting area on the site of the transfer station was located at the far end of the transfer station property in an area designated by the MCIA. During inclement weather, the sorting table was moved to the storage building associated with the old incinerator structure.

This area included a sorting table and individual bins in which the categorized waste was placed. A tarp was used to line the bed of the pick-up truck. This served two purposes: it kept the bed relatively clean, and it allowed the sorters to pull the tarp onto the sorting table to access the waste sample. Sorters separated the materials by hand. If the waste was contained in plastic trash bags, these bags were opened before the contents were segregated.

Any materials that did not fit the designated waste components was placed in bins and weighed as miscellaneous materials or with the component that most closely matched the contents.

The T&M site supervisor inspected each bin to verify that the contents were categorized correctly. Each bin was weighed and the weights recorded on the MCIA Sorting Form. A sample of this form is attached in Appendix 2.

Prior to the sorting operation, each bin was weighed empty to determine tare weights. Tare weights were posted on each bin as well as the bin number. The net weight of the contents was calculated and recorded on the Sort Form.

Initial plans for the sort table included a 1/2" mesh screen for fines. However, the samples were consistently moist and did not produce fines. Therefore, the screen was eliminated.

After the entire sample was sorted and weighed, the material was returned to the tipping floor for disposal.

Each day during the sort week, the weather conditions were recorded. Wet waste or waste which had been contaminated by other material such as food waste was separated into bins that most closely resembled the waste category. General conditions of the waste sample, sorted components, and other conditions were also recorded.

The sort bins were watertight plastic containers, approximately 30 gallons in size. Throughout the week, bins were randomly selected to check tare weights. When necessary, the bins were cleaned.

The goal for the sorting process was to collect 72 samples during the six-day week. On some days, more or fewer samples were collected. On Saturdays, the transfer station received less than 20 trucks. Therefore, only four vehicles were designated for sampling. During the February 2013 sort week, a snow storm severely affected waste collection on that Saturday and only one truck was sampled. Only four waste collection trucks tipped on that day.

SORT AND DATA RESULTS

The waste sampling and sorting operation was carried out at the MCIA Transfer Station on the four weeks of February 4 to 9, 2013, June 3 to 8, 2013, July 29 to August 3, 2013 and December 9 to 14, 2013. These dates were chosen to obtain sample data from each of the four annual seasons. Seasonal sampling provides a more accurate depiction of the annual waste stream because it captures the variations in the waste through the course of the year. The procedures for collecting the samples and sorting the waste materials were conducted in accordance with the procedures outlined above.

The data from the Truck Selection Forms and Sort Forms was entered into spreadsheets for each of the sample weeks. The data for each week was summarized and presented on the *MCIA Waste Characterization Study 2013 Summary* table (see Appendix 1). Component weights and corresponding ratios were tallied on this spreadsheet for each sort week.

The MCIA Waste Characterization *Quarterly Data Summary Sheets* for 2013 is presented below as Table 3. This table lists the sorted components and the category ratios. Weights for each component were calculated by applying the measured ratios to the MCIA annual Type 10 waste flow in 2013. Type 10 waste is a combination of 10T and 10N (198,804 + 23,721=222,525 tons) *(source: 2013 MCIA tonnage data)*. Appendix 3 provides the *Quarterly Data Summary Sheets* for the four weeks.

Paper, plastics, and food waste make up 62.1% of all waste transferred to the disposal facility. Glass and metals, potential recyclable materials, are relatively low fractions of the overall waste stream. These components combine to 5.9%. This indicates that efforts to recycle these materials from the waste stream are effective. The remainder of the waste stream, including textiles, wood, other organics, inorganics, and hazardous materials comprises 32% of the waste stream. Food waste is the largest single component found in the MCIA MSW stream at 24.8% or 55,212 tons.

The major subcomponents of the paper portion include materials that can be recycled, such as boxboard, cereal and food packaging, and corrugated cardboard. The Other Paper component includes materials such as paper towels, plates, napkins, and paper that did not fit into another category. Food waste and scraps contaminated much of this material.

PET and HDPE containers were found to be a small percentage of the stream. Plastic film (6.5%) was the predominant plastic material. Plastic film, in the form of garbage bags and wrapping materials, is generally a poorly managed portion of the waste. Most loads tipped at the transfer station are a pile of waste filled plastic trash bags. The bag breaking proved to be necessary during all sorting operations.

Plastic film in some cases is recyclable. However, it needs to be clean and uncontaminated with other waste. The nature of the garbage bag is that it is an efficient repository for the collection of waste in the home or business. Therefore, the film may not meet the strict standards for recycling once used as a waste receptacle.

Other plastics included items like hard plastic toys and yogurt cups. Original sort plans included PVC (#3) and polypropylene (#5) as separate subcategories. However, it became immediately apparent in the sorting process that these materials produced insignificant weights and were frequently contaminated with residual food.

TABLE 3 | 2013 MCIA WASTE CHARACTERIZATION

COMPONENT	COMPONENT WEIGHT (TONS)		COMPONENT PERCENTAGE	
PAPER	**47,385**		**21.3%**	
NEWSPRINT		3,775		1.7%
CORRUGATED CARDBOARD		8,407		3.8%
WHITE OFFICE PAPER		5,617		2.5%
BOX BOARD		9,063		4.1%
MAGAZINES		2,610		1.2%
TELEPHONE BOOKS		730		0.3%
OTHER PAPER		17,183		7.7%
PLASTICS	**35,550**		**16.0%**	
PET BOTTLES		4,949		2.2%
HDPE BOTTLES		2,374		1.1%
PVC CONTAINERS		8		0.0%
POLYPROPYLENE CONTAINERS		116		0.1%
POLYSTYRENE CONTAINERS		2,657		1.2%
FILM PLASTIC IN PLASTIC BAGS		14,461		6.5%
SUBCATEGORY: PLASTIC SHOPPING BAGS[1]		(3,337)		(1.5%)
OTHER PLASTICS		10,985		4.9%
TEXTILES, RUBBER, LEATHER	**22,632**	**22,632**	**10.2%**	**10.2%**
WOOD	**14,301**		**6.4%**	
ORIENTED STRANDBOARD/ PARTICLE BOARD		121		0.1%
PLYWOOD		489		0.2%
FURNITURE		5,525		2.5%
PALLETS		433		0.2%
TREE PARTS		48		0.0%
OTHER UNTREATED WOOD		4,437		2.0%
OTHER TREATED WOOD		3,248		1.5%
YARD WASTE	**13,404**	**13,404**	**6.0%**	**6.0%**
FOOD WASTE	**55,212**	**55,212**	**24.8%**	**24.8%**
OTHER ORGANICS	**7,901**	**2,857**	**3.6%**	**1.3%**
DIAPERS		5,044		2.3%
METALS	**7,799**		**3.5%**	
ALUMINUM CANS		2,147		1.0%
TIN PLATED STEEL CANS		2,214		1.0%
AEROSOL CONTAINERS		357		0.2%
OTHER FERROUS METALS		162		0.1%
OTHER NONFERROUS METALS		2,919		1.3%
GLASS	**5,419**		**2.4%**	
FLINT CONTAINERS		3,517		1.6%
GREEN CONTAINERS		918		0.4%
AMBER CONTAINERS		794		0.4%
OTHER GLASS		190		0.1%
INORGANICS	**11,957**		**5.4%**	
ASPHALT MATERIALS		1,160		0.5%
MASONRY MATERIALS		2,235		1.0%
WALLBOARD		2,127		1.0%
CEILING TILES		96		0.0%
ELECTRONIC WASTE		4,425		2.0%
SOIL/ASH		19		0.0%
OTHER INORGANICS		1,895		0.9%
FINES/SWEEPINGS		-		0.0%
HAZARDOUS MATERIALS	**965**		**0.4%**	
LEAD ACID BATTERIES		-		0.0%
DRY CELL BATTERIES		84		0.0%
PAINTS/SOLVENTS		491		0.2%
OTHER HAZARDOUS CORROSIVE OR FLAMMABLE MATERIAL		390		0.2%
TOTAL	**222,525**	**222,525**	**100.0%**	**100.0%**

[1] This subcategory was not directly measured in the study, and is introduced here based on the application of national averages of shopping bag waste rates.

These categories were subsequently combined with Other Plastics. Due to the variations in resin and relatively tiny fraction, recycling these materials would not be cost effective.

Some of the textiles found in the waste were discarded clothing, however, reuse in many instances seemed unlikely. This category, as seen in the sort, was dispersed and not very consistent.

Wood waste was 6.4% of the stream. Furniture and other painted wood were 4%. Therefore, the remaining 2.4% of the wood waste was untreated wood and lumber. Untreated wood can be composted with the yard waste; however, treated wood cannot be composted due to potential contamination of the finished product.

Yard waste fluctuated based on the seasons. Winter and spring rates were low at 1.9% and 2.4% respectively. Summer and fall rates were 10.4% and 7.8%, respectively. Diligence in the separation can help reduce the portion of summer yard waste. Yard waste alternatives for the warmer months such as segregated collections, public education, in home/yard disposal information and compliance measures could eliminate these seasonal variations and reduce the summer volumes.

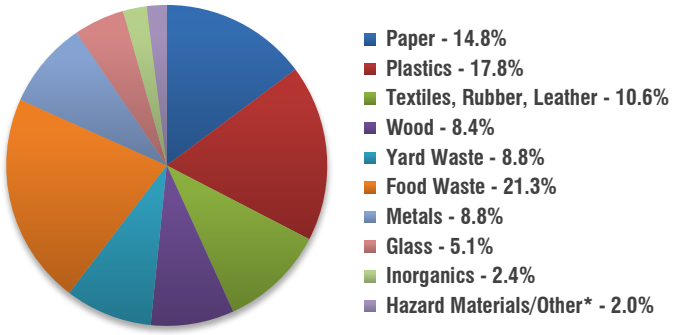
Other organics included materials that are not food waste and not considered yard waste. This included disposable diapers. On the first day of the sort in February 2013, it was apparent that diapers should be weighed as a separate component. It also became evident that the percentage of adult diapers was a significant portion of the category. Other organics accounts for 3.6% of the waste stream. Although relatively small, this fraction will increase as the use of disposable personal hygiene products increases.

Metals, glass, inorganics, and hazardous materials represent a small fraction of the waste stream. Improved participation in the recycling effort could lower these fractions. E-waste was 2% of the stream. Although this is a small fraction of the stream, further reduction can be achieved by increased participation and exposure to drop-off centers.

Chart 2 shows a comparison of the component fractions of the National SW (US EPA 2011) waste discards and the MCIA MSW stream. These pie charts are presented to show similarities and differences in waste category ratios.

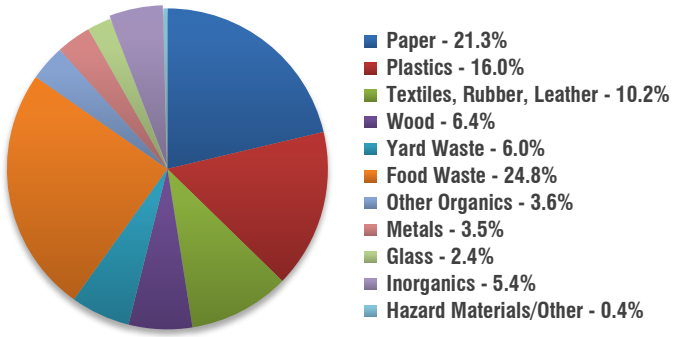
CHART 2 | US EPA DISCARDS VS. MCIA TYPE 10 WASTE CATEGORIES

US EPA 2011



* Includes electrolytes in batteries and fluff pulp, feces, and urine in disposable diapers.

MCIA 2013



Food waste (24.8%) is the obvious target for management in the MCIA waste stream. Even if 50% of the food waste was diverted, it would result in 28,000 tons of material removed from the disposal stream and added to the recycling side of the ledger. Food waste diversion alone would produce almost enough reduction and recycling to meet the goals of the

NJDEP. In 2011, Mercer County was 34,000 tons short of meeting the MSW recycling goal. We believe this is an achievable goal, as discussed later.

Subsequent to the sorting operation, the MCIA conducted a survey of the drivers with Type 10 waste utilizing the transfer station. According to the MCIA, *"During the two week period of 1/20/2014 – 2/1/2014 the scale personnel asked the drivers of Type 10 waste loads the percentages of the loads. A total of 982 transactions consisting of 6,898.34 tons was recorded. Review of the data reveals the loads consisted of 59.5% residentially generated waste and 40.5% commercially generated waste."* This residential-to-commercial ratio was applied the present and future waste streams (projected for 5, 10, and 15 years out) to generate the table "MCIA Municipal Solid (Type 10) Waste Characterization 15-Year Projections" found in Appendix 1.

T&M reviewed the *Truck Selection* forms to determine if there was a correlation between commercial and residential sample loads (refer to Appendix 7). The first and second quarters showed commercial load food waste as 11% and 15%, respectively. During the third quarter, it was determined that 20% of the commercial waste was food. The combined rate was 24.4% in the third quarter. During the fourth quarter, the overall food waste component was 29.2% of the stream. Commercial food waste was 25.6%. All four quarters' commercial loads produced an average of 20.3% food waste compared to the total combined residential and commercial ratio of 24.8%.

In the future, the MCIA can periodically monitor food waste ratios for residential and commercial derived waste can for any changes versus the ratios found in this study. Doing so would permit adjustments to the management mechanisms. Such monitoring may consist of hauler and generator surveys.

Table 4 shows the food waste generation (Discards) in the US (US EPA 2011) for the period 1960 to 2011. Per capita rates increased from 0.31 PPD (per person per day) in 1960 to 0.61 PPD in 2011. The national per capita rate after 2000 has remained flat at approximately 0.60 PPD. The per capita food waste generation for Mercer County is 0.81 PPD (see Table 11). In 2011, the ratio of food waste in discards for the US EPA was 21.3%. It is 24.8% for Mercer County in 2013. This table demonstrates trends in national food waste generation per capita, and thus, that Mercer County is not experiencing unusual trends.

TABLE 4 | FOOD WASTES DISCARDED IN MSW IN THE US (1,000 TONS) SOURCE US EPA

	1960	1970	1980	1990	2000	2005	2007	2009	2010	2011
FOOD WASTE	12,200	12,800	13,000	23,860	30,020	32,240	32,750	34,420	34,770	34,910
PERCENTAGE	14.8	11.3	9.5	13.6	17.3	18.5	19.1	21.3	21.0	21.3
POPULATION (1,000)	179,979	203,984	227,255	249,907	281,422	296,410	301,621	307,007	309,051	311,592
PPD	0.37	0.34	0.31	0.52	0.58	0.60	0.59	0.61	0.62	0.61

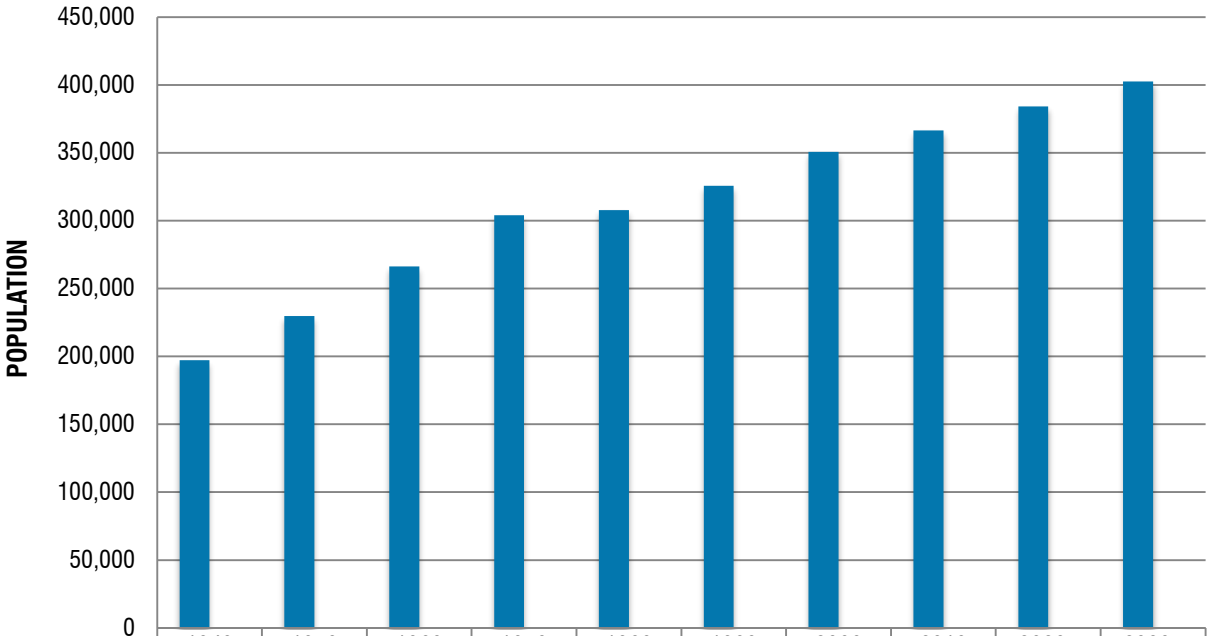
There can be many explanations for the increase in food waste generation on a per capita basis over this period. Packaging, most assuredly has an influence. The individual no longer selects portions. Portions are determined by marketing and packaging options. This factor may cause the increased disposal of unwanted food from packaging of portions too large for the serving. Additionally, as more materials are diverted from the overall waste stream, the food waste component ratio increases as a mathematical factor.

SOLID WASTE TRENDS

MERCER COUNTY DEMOGRAPHICS AND POPULATION TRENDS

According to the US Census of 2010, 366,513 people lived in Mercer County, New Jersey. All of these figures show an increase from the 2000 US Census. Since the 1980 census, the average population for Mercer County has increased 4.8% every decade. Based on this trend, it is estimated that the population in Mercer County will increase to approximately 403,000 by 2030 (see Table 5 below).

TABLE 5 | HISTORICAL POPULATION BY YEAR, MERCER COUNTY, NJ



	1940	1950	1960	1970	1980	1990	2000	2010	2020*	2030*
Population	197,318	229,781	266,392	304,116	307,863	325,824	350,761	366,513	384,115	402,563
Increase		16.50%	15.90%	14.20%	1.20%	5.80%	7.70%	4.50%	4.80%	4.80%

4.8% AVERAGE OF THE PREVIOUS FOUR CENSUSES

***ESTIMATE**

SOLID WASTE VOLUME TRENDS (MERCER COUNTY)

According to the MCIA, the County managed 250,871 tons of waste (all types) in 2013. Based on the population, the waste generation rate is 3.70 pounds per person per day (PPD) without regard for recycling. The national average for waste generation is calculated at 4.4 PPD. The MCIA rate includes some bulky and industrial waste types that are not counted in the US EPA figures. The rate of 3.70 PPD represents the "MCIA managed waste stream." These figures cannot be compared directly, but are useful to determine trends.

Table 6 presents the waste type tabulation for all managed waste for 2005 through 2013 provided by MCIA.

TABLE 6 | MCIA SOLID WASTE GENERATION *(SOURCE: MERCER COUNTY IMPROVEMENT AUTHORITY)*

WASTE TYPE		2005	2006	2007	2008	2009	2010	2011	2012	2013
10N	NON TIP	53,289	49,029	42,688	41,328	34,041	28,045	26,458	24,249	23,721
10T	TIP	218,406	227,082	227,783	215,448	212,449	207,695	210,443	201,959	198,804
13N	BULKY	22,901	9,999	14,520	14,904	20,778	6,560	7,723	9,074	7,177
13RB	BULK RETURNED	19,009	33,606	22,502	11,258	9,375	7,047	13,393	13,531	12,391
25N	ANIMAL	209	214	163	110	108	130	123	121	101
27A	ASBESTOS	1,863	1,642	996	814	735	968	3,165	3,148	3,637
27N	NON HAZARDOUS	4,206	5,032	4,148	3,630	4,991	1,991	2,151	2,790	5,040
TOTAL		**319,883**	**326,604**	**312,812**	**287,491**	**282,483**	**252,435**	**263,455**	**254,873**	**250,871**

TOTAL INCREASE/DECREASE	2.1%	-4.2%	-8.1%	-1.7%	-10.6%	4.4%	-3.3%	-1.6%	
2005 TO 2013								-21.6%	

10T & 10N INCREASE/DECREASE	1.6%	-2.0%	-5.1%	-4.0%	-4.4%	0.5%	-4.5%	-1.6%
2005 TO 2013								-18.1%

RATIO 10T& 10N TO TOTAL	84.9%	84.5%	86.5%	89.3%	87.3%	93.4%	89.9%	88.8%	88.7%
2005 TO 2013									88.1%
2008 TO 2013							WEIGHTED AVERAGE	88.9%	89.6%

Overall, the waste generation rates have decreased from 2005 through 2013. Including all of the waste types, the generation rate has dropped 21.6% in 9 years. For Type 10 (MSW), that rate has decreased by 18.1% over the same period. Type 10 includes both 10T and 10N designations. Population trends have increased through the same period. Therefore, waste reduction, reuse, recycling, and diversion are trending in the desired direction.

In 2011, the County weighed 263,455 tons of waste at the transfer station. The NJDEP estimated that 168,934 tons were recycled from the MSW waste stream in the same year. As of this report, estimates are not yet available for 2013. Using 2011 NJDEP MSW data (refer to Appendix 6) including 237,060 tons disposed and 168,934 tons recycled (405,994 tons), the per capita generation rate is 6.06 PPD. Although this rate is above the national rate (4.4 PPD) these values cannot be compared directly based upon variations in waste types and accounting procedures.

The MCIA conducted a two-week survey of all Type 10 haulers using the transfer station. The results of this survey show that 59.5% of the Type 10 is residential waste and 40.5% is commercial waste. This information was based on 982 transactions over the two weeks. This information can be helpful to predict generally the residential/commercial composition of the waste stream over the course of the year. The results of this survey in conjunction with the results of the study were used to produce the findings in Appendix 1 entitled "MCIA Municipal Solid (Type 10) Waste Characterization 15-Year Projections."

SOLID WASTE VOLUME TRENDS (NATIONALLY)

The US EPA prepares a *Municipal Solid Waste in the United States: Facts and Figures* report each year. They report this data on their website and in a published technical report. Their study is conducted by measuring material production and market data. The US EPA does not perform waste characterization studies such as the study conducted herein by the MCIA.

This report is useful because the EPA looks at trends of products in the waste stream. As these product categories fluctuate, the recycling and disposal components of these goods fluctuate. The EPA also reports a slight drop in waste generation rates based on population. In 2000, the per capita generation rate (less recycling) was 4.74 PPD. In 2005, this rate dropped to 4.69 PPD. In 2011, the rate decreased again to 4.40 PPD. This trend shows a 7.17% decrease in the municipal waste generation rate.

MERCER COUNTY TRENDS IN POPULATION AND SOLID WASTE

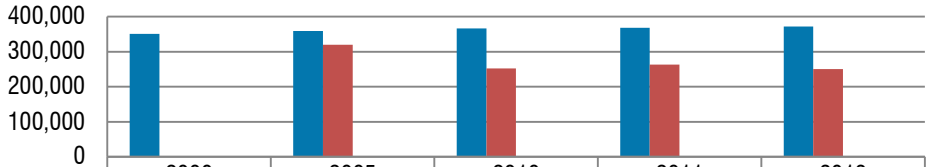
The population of Mercer County has increased from 307,863 residents in 1980 to 366,513 residents in 2010. This calculates to be an average population increase of 4.8% per decade. Therefore, by applying that population increase percentage over the next two decades (2020 and 2030), the population should reach slightly above 400,000 by 2030 (refer to Table 5).

Solid waste generation, including all waste types weighed at the MCIA transfer station, was 319,883 tons in 2005. By 2013, that rate dropped to 250,871 tons. This represents a 21.6% decrease in the waste generated even though the population was increasing. The combination of Type 10T and 10N over the same period shows an 18.1% decrease. These decreases are indicative of a trend in Mercer County that waste generation is dropping and are likely resultant of efforts such as source reduction and recycling.

Table 7 shown below compares the Mercer County population and per capita solid waste generation trends versus the National trends for the period between 2000 and 2013. From this comparison, Mercer County shows a decrease in the per capita generation rate similar to the national average. The actual numbers are not as important as the indication of a trend toward reuse, diversion, and recycling in Mercer County.

An estimate of the per capita generation rate in Mercer County can be assumed to be close to 3.70 PPD over the next 15 years. The drop in per capita generation between 2005 and 2010 can be the result of the economic downturn in 2008 and 2009. The generation rate decreased 8.1% in 2008 alone. The 2013 total waste generation and per capita rates may be more indicative of a flat economy.

TABLE 7 | PER CAPITA WASTE GENERATION – MERCER COUNTY VS UNITED STATES



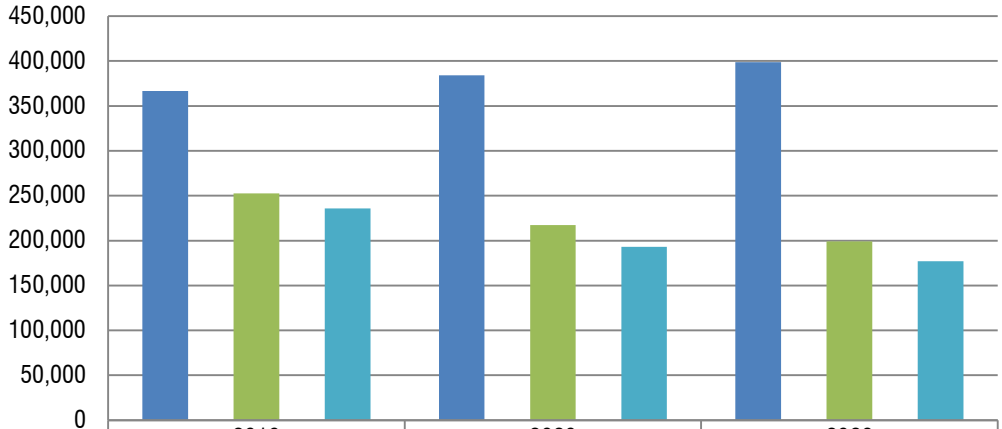
	2000	2005	2010	2011	2013
Population Mercer County	350,761	358,653	366,513	368,272	371,808
Mercer County Total Annual Tons Disposed	0	319,883	252,435	263,455	250,871
Mercer County PPD	0	4.89	3.77	3.92	3.7
USEPA Estimated PPD	0	4.69	4.44	4.4	4.1

Estimated from previous four censuses at 0.48% per year

PPD = Pound per person per day

This study developed 15-year (2013-2028) waste projections in Appendix 1. By utilizing these estimates of per capita waste generation and population, the total waste managed by MCIA in 2028 is estimated to be 199,259 tons and the portion designated for transfer is 177,141 tons. Table 8 below shows the population, and total and Type 10 waste generation rates for the estimate.

TABLE 8 | MERCER COUNTY SOLID WASTE GENERATION ESTIMATES – CALCULATED



	2010	2020	2028
Population	366,513	384,115	398,873
PPD	3.77	3.7	3.7
Total - All Types	252,435	217,215	199,259
Type 10	93.40%	88.90%	88.90%
Type 10 Tons	235,740	193,104	177,141

3.70 POUND PER PERSON PER DAY (3.77 PPD ACTUAL 2010)

CATEGORY AND PRODUCT TRENDS IN SOLID WASTE (NATIONALLY)

The US EPA waste report entitled *Municipal Solid Waste in the United States: 2011 Facts and Figures* represents the current study conducted by the EPA to characterize solid waste generated in the US. This report utilizes the latest available data released in May 2013. Discussions in the report were relied upon to predict the future trends in solid waste management, generation, and characterization of Mercer County.

In general, this report uses the production data of materials and goods that eventually find their way into the solid waste stream. Therefore, the trend data and implications were used instead of the actual tonnage figures.

Table 9 presents US EPA component data for materials "discarded" in the MSW. Discarded means materials that will be disposed through incineration or landfilling, after recycling, composting, and processing. The categories studied by the US EPA are similar to the categories in this study. The US EPA data is tabulated from 1960 through 2011.

Figures 1 and 2 are provided to show additional category and product trends in solid waste on a national level. The review of these trends is important as it relates to the future solid waste composition. For example, these tables show trends away from paper use and toward plastics. The "Discards" would compare to the MCIA Type 10 waste stream. The trends noted in the US EPA report can be applied to the estimates for future component management important to this study.

TABLE 9 | MATERIALS DISCARDED IN THE MUNICIPAL WASTE STREAM 1960-2011

(% OF TOTAL GENERATED)* SOURCE US EPA

	1960	1970	1980	1990	2000	2005	2007	2009	2010	2011
PAPER	30.2%	33.2%	31.7%	30%	28.8%	24.7%	22.2%	16.0%	16.2%	14.8%
PLASTICS	0.5%	2.6%	5.0%	9.6%	13.8%	15.9%	16.8%	17.3%	17.4%	17.8%
TEXTILES, RUBBER, LEATHER	3.9%	4.2%	4.7%	6.0%	8.1%	9.2%	9.7%	10.5%	10.4%	10.6%
WOOD	3.7%	3.3%	5.1%	6.9%	7.0%	7.5%	7.7%	8.3%	8.2%	8.4%
YARD WASTE	24.4%	20.5%	20.1%	17.6%	8.5%	7.0%	6.8%	8.2%	8.6%	8.8%
FOOD WASTE	14.8%	11.3%	9.5%	13.6%	17.3%	18.5%	19.1%	21.3%	21.0%	21.3%
METALS	13.1%	11.8%	10.4%	7.2%	7.1%	7.7%	8.1%	8.6%	8.8%	8.8%
GLASS	8.0%	11.1%	10.5%	6.0%	5.7%	5.7%	5.6%	5.4%	5.1%	5.1%
INORGANICS	1.6%	1.6%	1.6%	1.7%	2.0%	2.1%	2.2%	2.4%	2.3%	2.4%
HAZARDOUS MATERIALS/ OTHER **	0.1%	0.4%	1.5%	1.4%	1.7%	1.8%	1.9%	2.1%	2.0%	2.0%
TOTAL SAMPLE %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

* Discards after materials recovery and combustion. Does not include construction and demolition debris, industrial waste and certain other waste.

** Includes electrolytes in batteries and fluff pulp, feces, and urine in disposable diapers.

FIGURE 1 | COMPONENT TRENDS

PAPER | Discarded paper has decreased by 50% since 1960. As the world moves to a "paperless" society, this trend should continue lower.

PLASTICS | Plastics in the waste stream have increased slightly over the past several years. Since 2000, plastics have increased by 4%. This may be an indication of the increased use of plastic packaging and products including plastic garbage bags. This may provide an opportunity for increased recycling options.

TEXTILES, RUBBER AND LEATHER | This category shows an overall increase since 1960 but relatively flat levels after 2000.

WOOD | Wood as a component of the waste stream has been fairly flat. This is due to the numerous opportunities for reuse at the consumer level.

YARD WASTE | Yard waste as part of the waste stream has been dropping. This component, like wood, can be managed at the source or through local compost facilities.

FOOD WASTE | Food waste as a component of the overall waste stream has increased during the past 45 years. In 1990, food waste generation reached more than one half pound per person per day. Since 2000, food waste has held flat at 0.60 PPD. As a percentage of the overall waste stream, food waste is 21% on a national level. Food waste is the largest component of the US EPA and the MCIA waste streams. Table 4, shows the US EPA tonnage data for food waste as it relates to population and per capita generation rates.

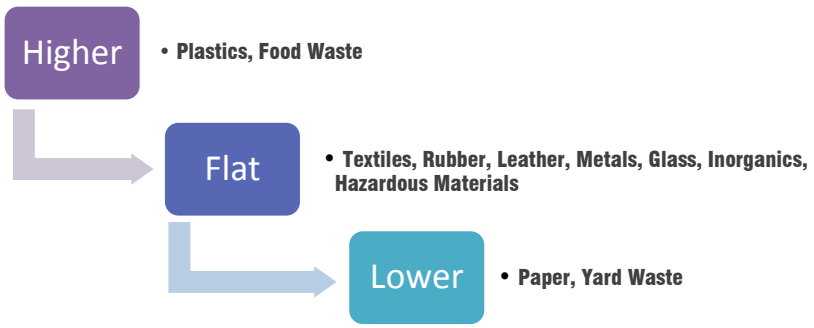
METALS | Metals in the waste stream have decreased over time. Since 1990 metals in waste has been flat at 7-8%.

GLASS | The glass component of the waste stream has remained flat since 1990 at just over 5%.

INORGANICS | Inorganics are a small and flat trending component.

HAZARDOUS WASTE/ OTHER | This category includes materials such as paints and chemicals and related containers. This component remains relatively flat at 2%.

FIGURE 2 | NATIONAL SOLID WASTE TRENDS



TARGET WASTE CATEGORIES BASED ON APPLYING TREND DATA

The tonnages and components of the Mercer County waste stream must be adjusted for population growth and component product trends to develop a plan to meet the desired recycling goals. Population in Mercer County between 2010 and 2028 is estimated to grow by a rate of 0.48% per year. Table 8 shows that the planned population for the year 2028 is 398,873 residents. By utilizing this population and the Mercer County MSW generation rate of 3.70 PPD, the overall volume is estimated to be approximately 200,000 tons per year. On average, the Type 10 waste destined for landfill disposal is 88.9% of the overall waste stream. Applying the combined Type 10T and 10N factor, 88.9% yields the expected municipal tonnage of 177,141 tons in 2028.

Now, by applying the trend information above for each component of the waste stream, an effective fraction ratio and component tonnage can be estimated. These individual component tonnages are calculated, not measured. However, for planning purposes, these figures can guide the MCIA to strategic solid waste management decisions.

Table 10 shows the municipal tonnage estimates and corresponding component weights estimated for 2028.

TABLE 10 | MCIA WASTE CHARACTERIZATION 2028 ESTIMATED TONNAGE SUMMARY

	COMPONENT WEIGHT (TONS)	COMPONENT %	COMPONENT %
	2028 EST. TYPE 10	2028 TREND	2013
COMPONENTS	**177,141**		
PAPER	**26,748**	**15.1%**	**21.3%**
PLASTICS	**31,885**	**18.0%**	**16.0%**
TEXTILES, RUBBER, LEATHER	**18,068**	**10.2%**	**10.2%**
WOOD	**11,337**	**6.4%**	**6.4%**
YARD WASTE	**10,628**	**6.0%**	**6.0%**
FOOD WASTE	**49,599**	**28.0%**	**24.8%**
OTHER ORGANICS (DIAPERS)	**8,148**	**4.6%**	**3.6%**
METALS	**6,200**	**3.5%**	**3.5%**
GLASS	**4,251**	**2.4%**	**2.4%**
INORGANICS	**9,566**	**5.4%**	**5.4%**
HAZARDOUS MATERIALS	**709**	**0.4%**	**0.4%**
TOTAL	**177,141**	**100.0%**	**100.0%**

REDUCE, REUSE, RECYCLE, AND RETHINK

This section caption is the program named by the US EPA for a sustainable approach to solid waste management. In short, that means that waste generation is affected by a product's manufacturing, life cycle, use, and disposal. The EPA's program suggests that the concept of "zero waste" can be a reality only if a product is managed from manufacturing through disposal. The sustainability program mantra is: "reduce, reuse, recycle, and rethink".

Solid waste management in Mercer County has been strategically developed to handle efficiently and effectively various waste types from numerous generators. The plan for the MCIA is to develop a more integrated and strategic approach to solid waste management that targets certain waste components, thereby increasing recycling and decreasing disposal fees. The following discussion outlines various management strategies for the component categories.

FOOD WASTE DIVERSION

Management strategies for the MCIA waste stream should start with the largest component and obvious target: food waste. In 2013, food waste generation in Mercer County was estimated as 55,212 tons. Small individual choices to manage food products will accomplish much to divert tonnage from the waste stream.

The first step is to manage food purchases to limit discards. Next, when excess food is purchased, charitable redistribution to food banks can reduce waste while helping others.

If disposal is necessary, segregation of the food waste component from the other waste components will limit contamination. It was often observed during the field operations of this study that boxboard, plastic film, paper, and many other potentially recyclable materials were smeared with moist food and garbage that would restrict further separation and/or increase processing costs.

Source separation of food waste will divert the component into an alternate processing method. Diversion though a curbside collection program is recommended for residential generators. Commercial diversion techniques need to be site-specific (i.e., depending on the type and quantity of food waste). Diversion programs are numerous, but participation is paramount. Methods that encourage participation include "Blue Bag" programs where the food waste is placed in blue plastic, compostable bags. The bags are collected with the normal waste or recyclable for separation downstream at a materials recovery facility (MRF) or some other processing point. This method is effective in single stream recycling programs. However, MCIA does not currently plan to operate an MRF.

Programs that stagger normal recycling and waste collections to every other week encourage participation in food waste diversion by using once a week food only collections. The concept is to nudge participation by making storage of putrescible waste undesirable. This method could save collection fees by making normal waste and recycling collections less frequently.

Once diverted, food waste can be processed by aerobic composting or anaerobic digestion. The process can produce usable quantities of methane gas and fertilizer products. Food waste composting and anaerobic digestion help divert the waste stream away from disposal facilities and their higher tipping fees. In addition to energy, anaerobic digestion facilities generate fewer GHG (greenhouse gas) emissions than aerobic composting sites.

Tipping fees for composting facilities can (should) be less than landfill rates. However, currently, the number of operating third-party food waste composting facilities is limited. Transfer/ trucking costs can offset lower tipping fees.

As of 2013, three facilities were found in BioCycle Magazine that reported capital expenditures for composting facilities. These include Rumpke Recycling, Chesapeake Compost Works, and Peninsula Compost Group. Capital development costs for these facilities ranged from $20 to $32 million. Each of these facilities can accept between 500 and 550 tons per day food waste. Given a 20-year life cycle, these facilities range from $7.70 to $12.31/ton in capital costs.

Another option would be to combine the food waste with yard waste at the yard waste composting facility. This would require an upgrade of the facility permit. However, given the potential for contamination from food waste and packaging materials, the product quality would suffer and may inhibit the current distribution market. Leaf waste would help the air flow for an aerobic compost operation. It also helps the carbon to nitrogen ratios (C:N) for the compost reaction. So for a yard waste facility that is operating successfully, there is a certain risk of complication and adverse impact of introducing food waste.

Still another option, for large generators like commercial cafeterias, public venues and institutions, is on-site, in-vessel composting units. This technology has been developed to the point where these units are effective and reliable. The actual volume of food waste generated through these types of facilities can vary dramatically from location to location. Site-

specific generator surveys or waste hauler-specific surveys could provide valuable data at the source where the food waste is being generated.

CURBSIDE RECYCLING

The Curbside Recycling Program instituted in Mercer County is effective. Most designated and targeted recyclable materials in the characterization samples were limited. In fact, very little glass and metal recyclables were found in any of the samples. However, there is always room for improvement. Expansion of the program could provide higher participation and recovery rates. By instituting a food waste diversion program, the curbside program could provide higher participation and recovery rates, and yield more recyclables that are cleaner (i.e., absent of food smear).

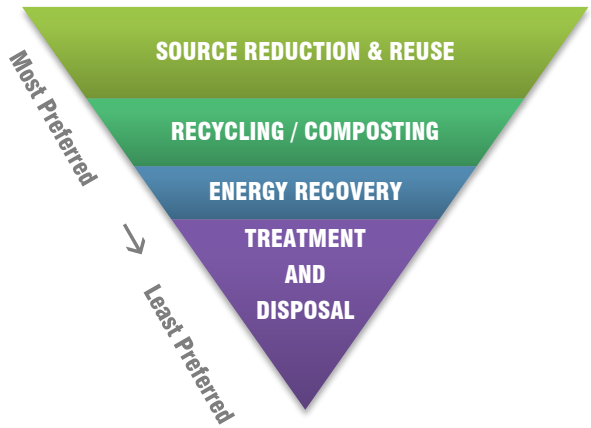
Through further education, compliance inspections and enforcement, the rate of recycling can be increased by targeting paper and plastics. Deeper and expanded recycling at the source for "Other Plastics" and "Other Paper" will provide a two-fold benefit to the program. Cross contamination of paper and plastics from food waste was noted throughout the characterization process. By removing these materials at the source, the commingled recyclable materials will be cleaner and more desirable for recycling. Included in the "other plastics" category is plastic film. The markets for this material are limited currently. Markets for this material are expected to be developed in the future.

The second benefit is derived from the "cleaner" food waste. When a segregation program is implemented, food waste too should be free of materials that would otherwise contaminate the final product. Paper and plastics introduced into the composting process will not degrade at the same rate as organics if at all. Therefore, the product will contain materials that are undesirable for compost product distribution chains.

Expanding the recycling program into previously untapped commercial and institutional establishments will also increase the recycling rates.

The solid waste management hierarchy triangle shown in Figure 3 depicts the preferred management strategies from most to least. Most preferred strategy is source reduction and reuse and least is incineration and landfill disposal. These also happen to converse to the least expensive and most expensive management options. These are also the hierarchy for environmental impact. With respect to Figure 3, MCIA is already managing Mercer County's waste via the "most preferred" strategies versus the "least preferred" strategies.

FIGURE 3 | SOLID WASTE PREFERRED MANAGEMENT STRATEGIES



Source: U.S. EPA Waste Hierarchy Pyramid. (http://www.epa.gov/osw/nonhaz/municipal/hierarchy.htm)

PLASTIC FILM AND POLYSTYRENE

Plastic film and polystyrene make up approximately 7.7% of the waste stream. Recycling of these commodities is possible; however, markets are not yet readily available. A number of municipalities have chosen to attack these components through the legislative process to limit or ban the material.

Another method is to process the entire waste stream through a "bag breaker." These mechanisms are typically seen at the front end of dirty MRF processing plants. Though "bag breakers" tend to restrict the transfer operations, they are effective at removing plastic film. The increased operational cost and mechanical complications may be prohibitively expensive for the return in diverted or recycled materials.

RECOMMENDATIONS

The purpose of this study is to determine the characteristics and composition of the solid waste stream and with that information develop solid waste management strategies necessary to meet the recycling goal of 50% of the MSW generated in Mercer County. The results of the study indicate that Food Waste, Other Plastics, and Other Paper are the targeted categories. Better management of these waste categories will serve to increase the current recycling results.

Based on the study results and recommendations, Appendix 1 presents 15-year MSW (Type 10) waste quantity projections for Mercer County. From 42% MSW recycling in 2013, 38,238 tons of additional recycling are required to meet the 50% MSW goal. Increasing recycling by an average of 4,780 tons per year (Additional 8% recycled tons) will meet the goal in eight years. The following recommendations are designed to meet the additional recycling.

RECOMMENDED PRACTICES

The following recommendations cannot be accomplished in a single year. Therefore, a phased approach is necessary to advance recycling and diversion. Additionally, more information must be acquired to fine tune the strategy to manage food waste.

- Develop a monitoring and data reporting program by municipality for curbside recycling and organics (yard and food wastes) management.
- Conduct generator and hauler surveys to verify the generation rates and potential participation levels for food waste management.
- Expand the current Curbside Recycling Program to increase recycling of all types of paper and plastics based on available secondary materials users.
- Discourage the use of Styrofoam containers and plastic waste bags (plastic film).
- Develop a comprehensive Food Waste Diversion (FWD) program that prioritizes source separation and reuse/redistribution (food banks).
- Solicit third party private food waste processing system developers to establish a FWD program that provides the collection and potential available processing schemes, focusing on the commercial and institutional (university/government) sectors.
- Promote diligence in separation by encouraging or requiring, residents to separate yard waste and/or food waste in an appropriate container.

The schedule for the implementation of these recommended procedures should take place over a 5- to 10-year period. Results will trail the implementation of these programs. To meet the 10-year goal, the MCIA needs to advance and implement these programs well before the desired deadline. During this time, MCIA must track the effectiveness of the programs so to revise as necessary.

YEARS ONE-TWO

- Develop a monitoring and data reporting program by municipality for curbside recycling and organics (yard and food wastes) management.
- Conduct generator and hauler surveys to verify the generation rates and potential participation levels for food waste management. The survey data should include food waste volume estimates, sources and types (pre- and post-consumer), geographic locations, and participation estimates for residential, commercial, and institutional generators.
- Conduct the site-specific food waste survey through haulers and generators. Compile the results and develop a Request for Qualification (RFQ) package for potential food waste collection and processing technologies.
- Expand the analysis completed with this study, but focus on the commercial and institutional sectors. Initiate a periodic organics (yard and food wastes) commercial waste survey at the MCIA Transfer Station by interviewing

collection vehicle drivers identify general sources and visually survey the delivered materials with photo and /or video recording.

- Request specifications for institutional-sized food waste composting unit manufacturers. Develop a pilot program to test the effectiveness of the units through system developer sponsored or grant sponsored demonstrations.
- Expand the recycling components to include more types of plastic and paper. Coordinate with the designated recycling haulers for potential conflicts with current operations and marketability of the materials. Optimize the recycling collection program.
- Develop the monitoring/reporting program and implement the launch to haulers and generators. Develop a compliance program for newly mandated recycling and reporting activities by municipality.
- Develop a comprehensive Food Waste Diversion (FWD) program that includes source separation and reuse or redistribution (food banks). The FWD program could possibly be included in the Curbside Recycling Program. In doing so, collection schedules for food waste, recyclables and waste can be staggered to optimize participation rates. The FWD program should use strategies and tactics to address the differences in the residential and commercial sources, and to maximize participation from each type of waste generator. It is recommended to prioritize the FWD program in the commercial and institutional sectors.
- Network and integrate the food banks of the County capable of collecting, storing, and distributing food.
- Develop and distribute educational materials concerning the expanded curbside program, the food bank program, self- management techniques for yard waste, and the long-term goals of the MCIA.

YEARS THREE-FIVE

- Collect reporting data and determine the effectiveness of Years One-Two. Optimize the programs where necessary. Focus the support and educational assistance to the municipalities with the lowest recycling rates.
- Use the data from the food waste survey and demonstration to develop a formal food waste management plan for Mercer County. Solicit qualified bids for the collection and management of diverted food waste. Solicit third party private food waste systems developers to provide the basis in establishing a food waste diversion program that meets the potential available processing schemes. If a food waste processing facility was implemented in Mercer County, the recycling projections would change significantly and the County would achieve the 50% MSW recycling goal sooner than 8 years.
- Select a system developer to collect and manage the food waste in Mercer County, focusing on the commercial and institutional sectors. Implement the food waste management program for all commercial and institutional generators. Phase this program into the plan by generator type or geographic location.

YEARS FIVE-TEN

- Conduct a waste quantification and characterization study to determine the effects of increasing recycling.
- Collect reporting data and determine the effectiveness of Years Three-Five. Optimize the programs where necessary. Focus the support and educational assistance to the municipalities with the lowest recycling rates.
- Optimize the Curbside Recycling Program based on the reporting data.

CONCLUSIONS

After the recommended programs are implemented, data collection, review, and revisions will advance the program.

By implementing these strategies, recycling volumes should increase slightly in the first five years. 12,000 tons of additional curbside recycling represents a reduction of only 15% of the paper and plastics still found in the waste stream.

Once the FWD program is implemented, the total tons recycled will increase significantly. Currently food waste represents 24.8% of the MSW (55,957 tons per year). For example, a 50% diversion of food waste (27,979 tons), via a FWD program for both commercial and institutional sources, would add to the 12,000 tons from the increased curbside program and

would total 39,979 tons of additional recycling volume. This will exceed the required volume (38,238 tons) that is necessary to meet the recycling goal of 50% MSW.

APPENDIX

1. 2013 MCIA Solid Waste and Recycling Quantification and Characterization Data Summary
    - MCIA Waste Characterization Study 2013 Summary
    - MCIA Municipal Solid Waste (Type 10) 15-Year Waste Projections
2. Vehicle/Load Selection Form and Sorting Form
3. Quarterly Data Summary Sheets
4. Waste Category Types and Definitions
5. NJDEP Solid Waste Types and Definitions
6. NJDEP Solid Waste Report 2011
7. MCIA Food Waste Analysis - Commercial Samples Only
8. MCIA Ticket Report Analysis, February 2012
9. Sampling & Sorting Equipment List, and Personal Protective Equipment List

1. 2013 MCIA Solid Waste and Recycling Quantification and Characterization Data Summary
   - MCIA Waste Characterization Study 2013 Summary
   - MCIA Municipal Solid Waste (Type 10) 15-Year Waste Projections

MCIA WASTE CHARACTERIZATION STUDY 2013 SUMMARY

	2013 SUMMARY				February 4 to 9, 2013				June 3 to 8, 2013				July 29 to August 3, 2013				December 9 to 14, 2013			
	Summary				Summary				Summary				Summary				Summary			
Waste Type	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**	**Weight (lbs)**	**%**
Paper	12,183.4	**21.3%**			2,373.9	20.3%			3,178.5	19.7%			2,953.8	19.1%			3,677.2	26.4%		
Newsprint			970.6	1.7%			185.6	1.6%			260.6	1.6%			178.7	1.2%			345.7	2.5%
Corrugated cardboard			2,161.5	3.8%			495.0	4.2%			562.7	3.5%			443.7	2.9%			660.1	4.7%
White office paper			1,444.1	2.5%			352.3	3.0%			335.4	2.1%			346.2	2.2%			410.2	2.9%
Box board			2,330.3	4.1%			418.6	3.6%			431.0	2.7%			649.8	4.2%			830.9	6.0%
Magazines			671.0	1.2%			176.8	1.5%			106.8	0.7%			170.4	1.1%			217.0	1.6%
Telephone Books			187.7	0.3%			115.4	1.0%			58.1	0.4%			12.9	0.1%			1.3	0.0%
Other paper			4,418.2	7.7%			630.2	5.4%			1,423.9	8.8%			1,152.1	7.5%			1,212.0	8.7%
Plastics	9,140.4	**16.0%**			1,596.9	13.7%			2,626.1	16.3%			2,390.0	15.5%			2,527.4	18.1%		
PET bottles			1,272.5	2.2%			241.1	2.1%			436.3	2.7%			285.3	1.8%			309.8	2.2%
HDPE bottles			610.5	1.1%			187.0	1.6%			112.5	0.7%			118.3	0.8%			192.7	1.4%
PVC containers			2.1	0.0%			2.1	0.0%			-	0.0%			-	0.0%			-	0.0%
Poly propylene containers			29.9	0.1%			29.9	0.3%			-	0.0%			-	0.0%			-	0.0%
Polystyrene containers			683.2	1.2%			134.0	1.1%			205.4	1.3%			162.8	1.1%			181.0	1.3%
Film plastic in plastic bags			3,717.8	6.5%			524.2	4.5%			990.0	6.1%			984.6	6.4%			1,219.0	8.7%
Other plastics			2,824.4	4.9%			478.6	4.1%			881.9	5.5%			839.0	5.4%			624.9	4.5%
Textiles, rubber, leather	5,819.0	**10.2%**	5,819.0	10.2%	1,822.1	15.6%	1,822.1	15.6%	1,344.6	8.3%	1,344.6	8.3%	1,711.5	11.1%	1,711.5	11.1%	940.8	6.7%	940.8	6.7%
Wood	3,677.1	**6.4%**			618.5	5.3%			1,358.5	8.4%			1,192.8	7.7%			507.3	3.6%		
Oriented strandboard/ particle board			31.1	0.1%			31.1	0.3%			-	0.0%			-	0.0%			-	0.0%
Plywood			125.7	0.2%			58.7	0.5%			-	0.0%			67.0	0.4%			-	0.0%
Furniture			1,420.7	2.5%			26.3	0.2%			534.3	3.3%			495.6	3.2%			364.5	2.6%
Pallets			111.4	0.2%			-	0.0%			17.7	0.1%			93.7	0.6%			-	0.0%
Tree parts			12.3	0.0%			12.1	0.1%			-	0.0%			0.2	0.0%			-	0.0%
Other untreated wood			1,140.7	2.0%			245.4	2.1%			366.1	2.3%			386.4	2.5%			142.8	1.0%
Other treated wood			835.2	1.5%			244.9	2.1%			440.4	2.7%			149.9	1.0%			-	0.0%
Yard waste	3,446.4	**6.0%**	3,446.4	6.0%	226.5	1.9%	226.5	1.9%	1,673.5	10.4%	1,673.5	10.4%	1,206.0	7.8%	1,206.0	7.8%	340.4	2.4%	340.4	2.4%
Food waste	14,195.9	**24.8%**	14,195.9	24.8%	3,077.2	26.3%	3,077.2	26.3%	3,270.6	20.3%	3,270.6	20.3%	3,774.0	24.4%	3,774.0	24.4%	4,074.1	29.2%	4,074.1	29.2%
Other organics	2,031.3	**3.6%**	734.5	1.3%	315.1	2.7%	65.0	0.6%	691.6	4.3%	329.1	2.0%	634.4	4.1%	285.8	1.9%	390.2	2.8%	54.6	0.4%
Diapers			1,296.8	2.3%			250.1	2.1%			362.5	2.2%			348.6	2.3%			335.6	2.4%
Metals	2,005.0	**3.5%**			414.0	3.5%			552.0	3.4%			526.2	3.4%			512.8	3.7%		
Aluminum cans			552.1	1.0%			89.8	0.8%			159.4	1.0%			129.9	0.8%			173.0	1.2%
Tin plated steel cans			569.1	1.0%			129.3	1.1%			118.3	0.7%			159.5	1.0%			162.0	1.2%
Aerosol containers			91.9	0.2%			14.1	0.1%			23.0	0.1%			22.1	0.1%			32.7	0.2%
Other ferrous metals			41.7	0.1%			38.4	0.3%			-	0.0%			3.3	0.0%			-	0.0%
Other nonferrous metals			750.2	1.3%			142.4	1.2%			251.3	1.6%			211.4	1.4%			145.1	1.0%
Glass	1,393.4	**2.4%**			237.1	2.0%			462.2	2.9%			332.2	2.2%			361.9	2.6%		
Flint containers			904.3	1.6%			153.5	1.3%			253.5	1.6%			250.7	1.6%			246.6	1.8%
Green containers			236.1	0.4%			20.0	0.2%			126.8	0.8%			42.8	0.3%			46.5	0.3%
Amber containers			204.2	0.4%			50.5	0.4%			49.2	0.3%			36.9	0.2%			67.6	0.5%
Other glass			48.8	0.1%			13.1	0.1%			32.7	0.2%			1.8	0.0%			1.2	0.0%
Inorganics	3,074.4	**5.4%**			891.6	7.6%			946.1	5.9%			710.3	4.6%			526.4	3.8%		
Asphalt materials			298.3	0.5%			9.4	0.1%			288.1	1.8%			-	0.0%			0.8	0.0%
Masonry materials			574.7	1.0%			184.9	1.6%			140.5	0.9%			202.3	1.3%			47.0	0.3%
Wallboard			546.8	1.0%			203.9	1.7%			74.6	0.5%			164.8	1.1%			103.5	0.7%
Ceiling tiles			24.6	0.0%			24.6	0.2%			-	0.0%			-	0.0%			-	0.0%
Electronic waste			1,137.9	2.0%			327.2	2.8%			256.7	1.6%			251.8	1.6%			302.2	2.2%
Soil/Ash			4.8	0.0%			-	0.0%			-	0.0%			4.8	0.0%			-	0.0%
Other inorganics			487.3	0.9%			141.6	1.2%			186.2	1.2%			86.6	0.6%			72.9	0.5%
Fines/sweepings			-	0.0%			-	0.0%			-	0.0%			-	0.0%			-	0.0%
Hazardous materials	248.2	**0.4%**			123.6	1.1%			19.8	0.1%			10.1	0.1%			94.7	0.7%		
Lead acid batteries			-	0.0%			-	0.0%			-	0.0%			-	0.0%			-	0.0%
Dry cell batteries			21.6	0.0%			8.2	0.1%			3.8	0.0%			5.8	0.0%			3.8	0.0%
Paints/solvents			126.4	0.2%			105.0	0.9%			9.2	0.1%			4.3	0.0%			7.9	0.1%
Other hazardous, corrosive or flammable material			100.2	0.2%			10.4	0.1%			6.8	0.0%			-	0.0%			83.0	0.6%
Totals	57,214.5	**100.0%**	57,214.5	100%	11,696.5	100.0%	11,696.5	100.0%	16,123.7	100.0%	16,123.5	100.0%	15,441.3	100.0%	15,441.3	100%	13,953.2	100.0%	13,953.2	100.0%

MCIA Municipal Solid Waste (Type 10) Characterization
15-Year Projections

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
(A) MSW: Residential	132,402	130,700	128,998	127,296	125,594	123,892	122,093	120,294	118,495	116,696	114,896	112,997	111,098	109,199	107,300	105,399
(B) MSW: Commercial	90,123	88,964	87,805	86,646	85,487	84,330	83,106	81,882	80,658	79,434	78,208	76,915	75,622	74,329	73,036	71,742
(C) Total MSW Disposed (A+B)	222,525	219,665	216,805	213,945	211,085	208,222	205,199	202,176	199,153	196,130	193,104	189,912	186,720	183,528	180,336	177,141
(D) MSW Waste Recycled	161,139	165,841	170,543	175,245	179,947	184,650	189,559	194,468	199,377	204,286	209,197	214,321	219,445	224,569	229,693	234,815
(E) MSW Total Waste Generated (C+D)	383,664	385,506	387,348	389,190	391,032	392,872	394,758	396,644	398,530	400,416	402,301	404,232	406,163	408,094	410,025	411,956
(F) MSW Total Recycling Rates (100% x D/E)	42%	43%	44%	45%	46%	47%	48%	49%	50%	51%	52%	53%	54%	55%	56%	57%

2. Vehicle/Load Selection Form and Sorting Form

MCIA Vehicle/ Load Selection Form

Date		Day			
Estimated Vehicles		Total		# to be selected	
Weather					
Random Numbers		(1 to 12)			
Trucks selected every nth					

Truck #						
Hauler						
Source/ Area						
Waste Type		Residential		Commercial		Other
Type of Vehicle		FEL		REL		Other
Vehicle Size		CY		Tons		
Time						
Sample Location		(1-12)				

Top	1	2	3
	4	5	6
Bottom	7	8	9
	10	11	12

Photos	
Truck	
Load 1	
Load 2	
Sample	

Load Coments:

Truck #						
Hauler						
Source/ Area						
Waste Type		Residential		Commercial		Other
Type of Vehicle		FEL		REL		Other
Vehicle Size		CY		Tons		
Time						
Sample Location		(1-12)				

Top	1	2	3
	4	5	6
Bottom	7	8	9
	10	11	12

Photos	
Truck	
Load 1	
Load 2	
Sample	

Load Coments:

MCIA Sorting Form

Sample #

Date: Time:

Comments:

Photos:

	Components	Weight	Bin #	Tare	Net	TOTAL
	Paper					
1	Newsprint					
2	Corrugated cardboard					
	White office paper					
	Box board					
	Magazines					
	Telephone books					
3	Other paper					
	Plastics					
6	PET bottles					
	HDPE bottles					
	PVC containers					
5	Poly propylene containers					
5	Polystyrene containers					
4	Film plastic in plastic bags					
	Other plastics					
7	**Textiles, rubber leather**					
9	**Wood**					
	Oriented strandboard/ particle board					
	Plywood					
	Furniture					
	Pallets					
	Tree parts					
	Other untreated wood					
	Other treated wood					
10	**Yard waste**					
8	**Food waste**					
	Other organics					

MCIA Sorting Form

Sample # Page 2

Date: Time:

	Metals						
	14	Aluminum cans					
	13	Tin plated steel cans					
		Aerosol containers					
	13	Other ferrous metals					
	15	Other nonferrous metals					
12	**Glass**						
		Flint containers					
		Green containers					
		Amber containers					
		Other glass					
	Inorganics						
		Asphalt materials					
	16	Masonry materials					
		Wallboard					
		Ceiling tiles					
		Electronic waste					
		Soil/Ash					
		Other inorganics					
	11	Fines/sweepings					
	Hazardous materials						
		Lead acid batteries					
		Dry cell batteries					
		Paints/solvents					
		Other hazardous corrosive or flammable material					
		Total Sample				0	0

3. Quarterly Data Summary Sheets

MCIA Waste Characterization Study

T&M Associates

February 4 through 9, 2013	Summary				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday			
Components	**Waste Type**	**%**	**Waste Type (2)**	**%**	**Waste Type**	**%**	**Waste Type (2**	**%**	**Waste Type**	**%**	**Waste Type (2**	**%**	**Waste Type**	**%**	**Waste Type (2)**	**%**	**Waste Type**	**%**	**Waste Type (2**	**%**	**Waste Type**	**%**	**Waste Type (2)**	**%**	**Waste Type**	**%**	**Waste Type (2)**	**%**
Paper	2373.9	20.3%			264.4	22.2%			277.2	17.6%			624.1	27.5%			564.3	19.0%			575	16.9%			68.9	23.7%		
1 Newsprint			185.6	1.6%			10.1	0.8%			19	1.2%			107.1	4.7%			26.2	0.9%			18.8	0.6%			4.4	1.5%
2 Corrugated cardboard			495	4.2%			80.1	6.7%			52.4	3.3%			129.1	5.7%			83.7	2.8%			133.6	3.9%			16.1	5.5%
White office paper			352.3	3.0%			38.4	3.2%			12.1	0.8%			84.8	3.7%			89.4	3.0%			102.4	3.0%			25.2	8.7%
Box board			418.6	3.6%			44.5	3.7%			60.8	3.9%			92.8	4.1%			100.6	3.4%			110.4	3.2%			9.5	3.3%
Magazines			176.8	1.5%			6.5	0.5%			32.9	2.1%			49.3	2.2%			34.1	1.1%			44.6	1.3%			9.4	3.2%
Telephone Books			115.4	1.0%			0	0.0%			20.9	1.3%			0	0.0%			80.5	2.7%			14	0.4%			0	0.0%
3 Other paper			630.2	5.4%			84.8	7.1%			79.1	5.0%			161	7.1%			149.8	5.0%			151.2	4.4%			4.3	1.5%
Plastics	1596.9	13.7%		0.0%	217.1	18.3%			297.9	18.9%			313.3	13.8%			305.9	10.3%			422.1	12.4%			40.6	14.0%		
6 PET bottles			241.1	2.1%			37.7	3.2%			27.9	1.8%			51.5	2.3%			49.8	1.7%			65.4	1.9%			8.8	3.0%
HDPE bottles			187	1.6%			37.3	3.1%			30.6	1.9%			35.3	1.6%			44.3	1.5%			34.8	1.0%			4.7	1.6%
PVC containers			2.1	0.0%			0	0.0%			2.1	0.1%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5 Poly propylene containers			29.9	0.3%			9	0.8%			19.7	1.3%			1.2	0.1%			0	0.0%			0	0.0%			0	0.0%
5 Polystyrene containers			134	1.1%			23	1.9%			13.7	0.9%			24.6	1.1%			31.8	1.1%			37.2	1.1%			3.7	1.3%
4 Film plastic in plastic bags			524.2	4.5%			87.9	7.4%			72.1	4.6%			112.5	5.0%			95.4	3.2%			137.7	4.0%			18.6	6.4%
Other plastics			478.6	4.1%			22.2	1.9%			131.8	8.4%			88.2	3.9%			84.6	2.8%			147	4.3%			4.8	1.7%
Textiles, rubber leather	1822.1	15.6%	1822.1	15.6%	81.2	6.8%	81.2	6.8%	148	9.4%	148	9.4%	185.4	8.2%	185.4	8.2%	836.6	28.1%	836.6	28.1%	546.8	16.1%	546.8	16.1%	24.1	8.3%	24.1	8.3%
Wood	618.5	5.3%		0.0%	47	4.0%			67.7	4.3%			58.9	2.6%			156.6	5.3%			272	8.0%			16.3	5.6%		
Oriented strandboard/ particle board			31.1	0.3%			1.1	0.1%			28.5	1.8%			1.5	0.1%			0	0.0%			0	0.0%			0	0.0%
Plywood			58.7	0.5%			0	0.0%			0	0.0%			0	0.0%			23.3	0.8%			35.4	1.0%			0	0.0%
Furniture			26.3	0.2%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			26.3	0.8%			0	0.0%
Pallets			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Tree parts			12.1	0.1%			0	0.0%			12.1	0.8%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other untreated wood			245.4	2.1%			2.7	0.2%			26.1	1.7%			0	0.0%			17.4	0.6%			199.2	5.9%			0	0.0%
Other treated wood			244.9	2.1%			43.2	3.6%			1	0.1%			57.4	2.5%			115.9	3.9%			11.1	0.3%			16.3	5.6%
Yard waste	226.5	1.9%	226.5	1.9%	12.5	1.1%	12.5	1.1%	20.5	1.3%	20.5	1.3%	58.2	2.6%	58.2	2.6%	66.7	2.2%	66.7	2.2%	68.6	2.0%	68.6	2.0%	0	0.0%	0	0.0%
Food waste	3077.2	26.3%	3077.2	26.3%	426.9	35.9%	426.9	35.9%	571.1	36.3%	571.1	36.3%	709.7	31.3%	709.7	31.3%	582	19.6%	582	19.6%	686.9	20.2%	686.9	20.2%	100.6	34.6%	100.6	34.6%
Other organics	315.1	2.7%	65	0.6%	22.2	1.9%	10.6	0.9%	63.3	4.0%	0	0.0%	17.5	0.8%	3.1	0.1%	91.8	3.1%	29	1.0%	95.2	2.8%	7.6	0.2%	25.1	8.6%	14.7	5.1%
Diapers			250.1	2.1%			**11.6**	1.0%			63.3	4.0%			14.4	0.6%			62.8	2.1%			87.6	2.6%			10.4	3.6%
Metals	414	3.5%			76.8	6.5%			44.9	2.9%			67.2	3.0%		0.9%	83.2	2.8%			128.9	3.8%			13	4.5%		
14 Aluminum cans			89.8	0.8%			22.1	1.9%			6	0.4%			20.6	1.3%			9.8	0.3%			28	0.8%			3.3	1.1%
13 Tin plated steel cans			129.3	1.1%			15.6	1.3%			16.6	1.1%			29.2	0.1%			11.8	0.4%			46.4	1.4%			9.7	3.3%
Aerosol containers			14.1	0.1%			0.2	0.0%			4.7	0.3%			2.2	0.0%			4.2	0.1%			2.8	0.1%			0	0.0%
13 Other ferrous metals			38.4	0.3%			6.5	0.5%			4.9	0.3%			0	0.7%			26	0.9%			1	0.0%			0	0.0%
15 Other nonferrous metals			142.4	1.2%			32.4	2.7%			12.7	0.8%			15.2				31.4	1.1%			50.7	1.5%			0	0.0%
Glass	237.1	2.0%		0.0%	21.8	1.8%			38.2	2.4%			59.7	2.6%			57.7	1.9%			57.8	1.7%			1.9	0.7%		
Flint containers			153.5	1.3%			15.7	1.3%			19.8	1.3%			34.5	1.5%			41.3	1.4%			40.3	1.2%			1.9	0.7%
Green containers			20	0.2%			0.4	0.0%			4.3	0.3%			7.8	0.3%			2.1	0.1%			5.4	0.2%			0	0.0%
Amber containers			50.5	0.4%			1.9	0.2%			5.1	0.3%			17.1	0.8%			14.3	0.5%			12.1	0.4%			0	0.0%
Other glass			13.1	0.1%			3.8	0.3%			9	0.6%			0.3	0.0%			0	0.0%			0	0.0%			0	0.0%
Inorganics	891.6	7.6%			18.1	1.5%			35.4	2.3%			163.4	7.2%			154.1	5.2%			520.6	15.3%			0	0.0%		
Asphalt materials			9.4	0.1%			0.2	0.0%			1.7	0.1%			7.5	0.3%			0	0.0%			0	0.0%			0	0.0%
16 Masonry materials			184.9	1.6%			5.1	0.4%			3.2	0.2%			26.7	1.2%			61.8	2.1%			88.1	2.6%			0	0.0%
Wallboard			203.9	1.7%			2.7	0.2%			9.5	0.6%			0	0.0%			0	0.0%			191.7	5.6%			0	0.0%
Ceiling tiles			24.6	0.2%			0	0.0%			2.9	0.2%			0	0.0%			21.7	0.7%			0	0.0%			0	0.0%
Electronic waste			327.2	2.8%			0.7	0.1%			9.5	0.6%			88.1	3.9%			60.1	2.0%			168.8	5.0%			0	0.0%
Soil/Ash			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other inorganics			141.6	1.2%			9.4	0.8%			8.6	0.5%			41.1	1.8%			10.5	0.4%			72	2.1%			0	0.0%
11 Fines/sweepings			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%							0	0.0%
Hazardous materials	123.6	1.1%			1.1	0.1%			8.8	0.6%			12.2	0.5%			73.9	2.5%			27.6	0.8%			0	0.0%		
Lead acid batteries			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Dry cell batteries			8.2	0.1%			1.1	0.1%			0.7	0.0%			1.9	0.1%			1.9	0.1%			2.6	0.1%			0	0.0%
Paints/solvents			105	0.9%			0	0.0%			6.8	0.4%			1.2	0.1%			72	2.4%			25	0.7%			0	0.0%
Other hazardous corrosive or flammable material			10.4	0.1%			0	0.0%			1.3	0.1%			9.1	0.4%			0	0.0%			0	0.0%			0	0.0%
Total Sample	**11,697**	**100.0%**	**11,697**	**100.0%**	**1,189**	**100%**	**1,189**	**100%**	**1,573**	**100%**	**1,573**	**100%**	**2,270**	**100%**	**2269.6**	**100%**	**2,973**	**100%**	**2,973**	**100%**	**3,402**	**1**	**3,402**	**100%**	**291**	**100%**	**291**	**100%**

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MCIA Waste Characterization Study

T&M Associates

June 3 through 8, 2013

Components	Summary				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday			
	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%
Paper	3177.1	19.7%			538.7	17.4%			447.8	16.0%			511.4	17.9%			718.6	23.4%			731.3	21.7%			229.3	24.4%		
1 Newsprint			234.3	1.5%			7.7	0.2%			33.5	1.2%			26.2	0.9%			122.9	4.0%			36.6	1.1%			7.4	0.8%
2 Corrugated cardboard			592.6	3.7%			136.6	4.4%			83.5	3.0%			107.9	3.8%			106	3.4%			140.6	4.2%			18	1.9%
White office paper			327.1	2.0%			24	0.8%			29.9	1.1%			60	2.1%			80.2	2.6%			73.3	2.2%			59.7	6.4%
Box board			434	2.7%			58.1	1.9%			56.7	2.0%			94.3	3.3%			100.1	3.3%			94.2	2.8%			30.6	3.3%
Magazines			109.9	0.7%			35.9	1.2%			7.7	0.3%			14.8	0.5%			28.2	0.9%			19.5	0.6%			3.8	0.4%
Telephone Books			58.1	0.4%			2.4	0.1%			10.9	0.4%			3.2	0.1%			2.6	0.1%			39	1.2%			0	0.0%
3 Other paper			1421.1	8.8%			274	8.9%			225.6	8.0%			205	7.2%			278.6	9.1%			328.1	9.8%			109.8	11.7%
Plastics	2530.9	15.7%			534.3	17.3%			372	13.3%			481.1	16.9%			457.3	14.9%			501.9	14.9%			184.3	19.6%		
6 PET bottles			432.6	2.7%			112.4	3.6%			79.1	2.8%			80	2.8%			67.3	2.2%			69.8	2.1%			24	2.6%
HDPE bottles			115.1	0.7%			24.6	0.8%			21.8	0.8%			20.7	0.7%			28.7	0.9%			13.3	0.4%			6	0.6%
PVC containers			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5 Poly propylene containers			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5 Polystyrene containers			201.2	1.2%			50.9	1.6%			21.1	0.8%			30.4	1.1%			21.4	0.7%			58.9	1.8%			18.5	2.0%
4 Film plastic in plastic bags			990.1	6.1%			199.3	6.4%			162.4	5.8%			171.6	6.0%			166.3	5.4%			225.4	6.7%			65.1	6.9%
Other plastics			792.7	4.9%			147.9	4.8%			87.6	3.1%			178.4	6.3%			173.6	5.6%			134.5	4.0%			70.7	7.5%
Textiles, rubber leather	1509.2	9.4%	1509.2	9.4%	188.9	6.1%	188.9	0.06	285	10.2%	285	10.2%	292.2	10.3%	292.2	10.3%	326.1	10.6%	326.1	10.6%	314	9.3%	314	9.3%	103	11.0%	103	11.0%
Wood	1358.5	8.4%			404.5	13.1%			177.1	0.06			234.9	8.2%			249	8.1%			249.4	7.4%			43.6	4.6%		
Oriented strandboard/ particle board			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Plywood			0	0.0%			0	-			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Furniture			552	3.4%			224.6	7.3%			61.1	2.2%			81.8	2.9%			5	0.2%			173.1	5.1%			6.4	0.7%
Pallets			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Tree parts			0	0.0%			0	-			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other untreated wood			366.7	2.3%			4.5	0.1%			2.3	0.1%			17.3	0.6%			244	7.9%			61.4	1.8%			37.2	4.0%
Other treated wood			439.8	2.7%			175.4	5.7%			113.7	4.1%			135.8	4.8%			0	0.0%			14.9	0.4%			0	0.0%
Yard waste	1672.8	10.4%	1672.8	10.4%	227.5	7.4%	227.5	7.4%	533.4	19.0%	533.4	19.0%	286.6	10.1%	286.6	10.1%	396	12.9%	396	12.9%	229.3	6.8%	229.3	6.8%	0	0.0%	0	0.0%
Food waste	3267.2	20.3%	3267.2	20.3%	718.6	23.3%	718.6	23.2%	553	19.7%	553	19.7%	607.2	21.3%	607.2	21.3%	518.3	16.8%	518.3	16.8%	602.9	17.9%	602.9	17.9%	267.2	28.4%	267.2	28.4%
Other organics	533.3	3.3%	170.9	1.1%	81.6	2.6%	46.9	1.5%	97.3	3.5%	1.1	0.0%	129.6	4.5%	74.4	2.6%	73.7	2.4%	18.9	0.6%	130.4	3.9%	29.6	0.9%	20.7	2.2%	0	0.0%
Diapers			362	2.2%			**34.3**	1.1%			96.2	3.4%			55.2	1.9%			54.8	1.8%			100.8	3.0%			20.7	2.2%
Metals	551.6	3.4%			79.5	2.6%			89.7	3.2%			100.8	3.5%			132.3	4.3%			118.1	3.5%			31.2	3.3%		
14 Aluminum cans			160.3	1.0%			43.8	1.4%			25.2	0.9%			29.2	1.0%			20.5	0.7%			29.4	0.9%			12.2	1.3%
13 Tin plated steel cans			115.3	0.7%			25.8	0.8%			16.1	0.6%			17.7	0.6%			28.7	0.9%			13.2	0.4%			13.8	1.5%
Aerosol containers			24.9	0.2%			6.2	0.2%			2.8	0.1%			2.2	0.1%			7.1	0.2%			5.5	0.2%			1.1	0.1%
13 Other ferrous metals			0.6	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0.6	0.0%			0	0.0%
15 Other nonferrous metals			250.5	1.6%			3.7	0.1%			45.6	1.6%			51.7	1.8%			76	2.5%			69.4	2.1%			4.1	0.4%
Glass	461.2	2.9%			108	3.5%			54.4	1.9%			77.8	2.7%			113.6	3.7%			76.7	2.3%			30.7	3.3%		
Flint containers			255.1	1.6%			36.1	1.2%			40.4	1.4%			49.9	1.8%			59.9	1.9%			44.1	1.3%			24.7	2.6%
Green containers			121.8	0.8%			70.6	2.3%			6.2	0.2%			15.1	0.5%			14.7	0.5%			12.6	0.4%			2.6	0.3%
Amber containers			51.6	0.3%			1.3	0.0%			7.8	0.3%			9.6	0.3%			10.4	0.3%			20	0.6%			2.5	0.3%
Other glass			32.7	0.2%			0	0.0%			0	0.0%			3.2	0.1%			28.6	0.9%			0	0.0%			0.9	0.1%
Inorganics	874.2	5.4%			208.8	6.8%			67.1	2.4%			97.2	3.4%			83.9	2.7%			388	11.5%			29.2	3.1%		
Asphalt materials			2.7	0.0%			0	0.0%			0	0.0%			1	0.0%			1.7	0.1%			0	0.0%			0	0.0%
16 Masonry materials			140.5	0.9%			127.3	4.1%			11.9	0.4%			1.3	0.0%			0	0.0%			0	0.0%			0	0.0%
Wallboard			74.6	0.5%			0	0.0%			3.4	0.1%			38.8	1.4%			0	0.0%			32.4	1.0%			0	0.0%
Ceiling tiles			285.4	1.8%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			285.4	8.5%			0	0.0%
Electronic waste			262.3	1.6%			64.2	2.1%			45.2	1.6%			35.5	1.2%			33.6	1.1%			58.8	1.7%			25	2.7%
Soil/Ash			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other inorganics			108.7	0.7%			17.3	0.6%			6.6	0.2%			20.6	0.7%			48.6	1.6%			11.4	0.3%			4.2	0.4%
11 Fines/sweepings			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Hazardous materials	187.6	1.2%			0.3	0.0%			126.9	4.5%			31.9	1.1%			7.6	0.2%			20.4	0.6%			0.5	0.1%		
Lead acid batteries			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Dry cell batteries			3.8	0.0%			0.3	0.0%			0.5	0.0%			0.5	0.0%			1.8	0.1%			0.2	0.0%			0.5	0.1%
Paints/solvents			9.2	0.1%			0	0.0%				0.0%			0	0.0%			0	0.0%			9.2	0.3%			0	0.0%
Other hazardous corrosive or flammable material			174.6	1.1%			0	0.0%			126.4	4.5%			31.4	1.1%			5.8	0.2%			11	0.3%			0	0.0%
Total Sample	**16,124**	**100.0%**	**16,124**	**100.0%**	**3,091**	**100%**	**3,091**	**100%**	**2,804**	**100%**	**2,804**	**100%**	**2,851**	**100%**	**2850.7**	**100%**	**3,076**	**100%**	**3,076**	**100%**	**3,362**	**1**	**3,362**	**100%**	**940**	**100%**	**940**	**100%**

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MCIA Waste Characterization Study

Third Quarter Results

July 29 to August 3, 2013

	Components	Summary				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday			
		Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2	%	Waste Type	%	Waste Type (2)	%
	Paper	2953.8	19.1%			383.6	19%			618.8	21.8%			581.5	18%			541.5	18%			661.8	19%			166.6	19%		
1	Newsprint			178.7	1.2%			34.3	1.7%			26.5	0.9%			18.6	0.6%			28.6	0.9%			69.6	2.0%			1.1	0.1%
2	Corrugated cardboard			443.7	2.9%	0	0%	16.8	0.8%	0	0.0%	94.2	3.3%	0	0%	67.1	2.1%	0	0%	120.2	4.0%	0	0%	103.2	3.0%	0	0%	42.2	4.8%
	White office paper			346.2	2.2%			36.2	1.8%			86.4	3.0%			30.2	0.9%			63	2.1%			119.3	3.5%			11.1	1.3%
	Box board			649.8	4.2%			115.2	5.7%			87.7	3.1%			163.3	5.0%			118.3	3.9%			141.9	4.1%			23.4	2.7%
	Magazines			170.4	1.1%			25	1.2%			33.3	1.2%			54.7	1.7%			41	1.4%			12.4	0.4%			4	0.5%
	Telephone Books			12.9	0.1%			0	0.0%			0	0.0%			4.1	0.1%			0	0.0%			8.8	0.3%			0	0.0%
3	Other paper			1152.1	7.5%			156.1	7.8%			290.7	10.3%			243.5	7.5%			170.4	5.7%			206.6	6.0%			84.8	9.7%
	Plastics	2390	15.5%			287	14%			432.1	15.3%			520.7	16%			494.7	16%			533.1	15%			122.4	14%		
6	PET bottles			285.3	1.8%			42.4	2.1%			53.6	1.9%			51.1	1.6%			56.2	1.9%			73.6	2.1%			8.4	1.0%
	HDPE bottles			118.3	0.8%			6	0.3%			17.5	0.6%			31.5	1.0%			31.7	1.1%			16.3	0.5%			15.3	1.8%
	PVC containers			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5	Poly propylene containers			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5	Polystyrene containers			162.8	1.1%			18.1	0.9%			33.2	1.2%			29.5	0.9%			51.4	1.7%			21.7	0.6%			8.9	1.0%
4	Film plastic in plastic bags			984.6	6.4%			131.6	6.6%			184	6.5%			200.6	6.1%			211.8	7.0%			205	5.9%			51.6	5.9%
	Other plastics			839	5.4%			88.9	4.4%			143.8	5.1%			208	6.4%			143.6	4.8%			216.5	6.3%			38.2	4.4%
7	**Textiles, rubber leather**	1711.5	11.1%	1711.5	11.1%	229.5	11%	229.5	11.4%	163.7	5.8%	163.7	5.8%	251.7	8%	251.7	7.7%	458.9	15%	458.9	15.2%	466.7	14%	466.7	13.5%	141	16%	141	16.2%
9	**Wood**	1192.8	7.7%			132.1	7%			105.5	3.7%			295.2	9%			136.7	5%			431.6	13%			91.7	11%		
	Oriented strandboard/ particle board			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
	Plywood			67	0.4%			0	0.0%			12.5	0.4%			38.4	1.2%			16.1	0.5%			0	0.0%			0	0.0%
	Furniture			495.6	3.2%			16	0.8%			72.3	2.6%			85.7	2.6%			88.7	2.9%			142.4	4.1%			90.5	10.4%
	Pallets			93.7	0.6%			2.6	0.1%			5	0.2%			0	0.0%			5.3	0.2%			80.8	2.3%			0	0.0%
	Tree parts			0.2	0.0%			0	0.0%			0	0.0%			0.2	0.0%			0	0.0%			0	0.0%			0	0.0%
	Other untreated wood			386.4	2.5%			94.7	4.7%			15.7	0.6%			62.4	1.9%			24.6	0.8%			187.8	5.4%			1.2	0.1%
	Other treated wood			149.9	1.0%			18.8	0.9%			0	0.0%			108.5	3.3%			2	0.1%			20.6	0.6%			0	0.0%
10	**Yard waste**	1206	7.8%	1206	7.8%	100.4	5%	100.4	5.0%	299.1	10.6%	299.1	10.6%	441.4	14%	441.4	13.5%	293.8	10%	293.8	9.7%	45.5	1%	45.5	1.3%	25.8	3%	25.8	3.0%
8	**Food waste**	3774	24.4%	3774	24.4%	571.4	28%	571.4	28.4%	584.3	20.6%	584.3	20.6%	777.9	24%	777.9	23.8%	639	21%	639	21.2%	937.1	27%	937.1	27.2%	264.3	30%	264.3	30.3%
	Other organics	634.4	4.1%	285.8	1.9%	146.1	7%	45.8	2.3%	234.6	8.3%	182	6.4%	97.4	3%	32.8	1.0%	83.5	3%	1.1	0.0%	68.1	2%	24.1	0.7%	4.7	1%	0	0.0%
	Biohazard			0	0.0%																								
	Diapers			348.6	2.3%			100.3	5.0%			52.6	1.9%			64.6	2.0%			82.4	2.7%			44	1.3%			4.7	0.5%
	Metals	526.2	3.4%			79.4	4%			105.7	3.7%			88.7	3%			114.5	4%			116.9	3%			21	2%		
14	Aluminum cans			129.9	0.8%			14.8	0.7%			25.2	0.9%			33.1	1.0%			29.1	1.0%			24.8	0.7%			2.9	0.3%
				0	0.0%																								
13	Tin plated steel cans			159.5	1.0%			43.4	2.2%			16.7	0.6%			27.2	0.8%			24.9	0.8%			41.6	1.2%			5.7	0.7%
	Aerosol containers			22.1	0.1%			2.8	0.1%			3.5	0.1%			5.7	0.2%			4.4	0.1%			3.8	0.1%			1.9	0.2%
13	Other ferrous metals			3.3	0.0%			0	0.0%			0	0.0%			0	0.0%			3.3	0.1%			0	0.0%			0	0.0%
15	Other nonferrous metals			211.4	1.4%			18.4	0.9%			60.3	2.1%			22.7	0.7%			52.8	1.8%			46.7	1.4%			10.5	1.2%
12	**Glass**	332.2	2.2%			45.8	2%			49.1	1.7%			72.5	2%			76.9	3%			78.4	2%			9.5	1%		
	Flint containers			250.7	1.6%			25.6	1.3%			41.7	1.5%			52.7	1.6%			61.7	2.0%			61.1	1.8%			7.9	0.9%
	Green containers			42.8	0.3%			5	0.2%			3.3	0.1%			9.5	0.3%			11.5	0.4%			12.4	0.4%			1.1	0.1%
	Amber containers			36.9	0.2%			15.2	0.8%			4.1	0.1%			10.3	0.3%			1.9	0.1%			4.9	0.1%			0.5	0.1%
	Other glass			1.8	0.0%			0	0.0%			0	0.0%			0	0.0%			1.8	0.1%			0	0.0%			0	0.0%
	Inorganics	710.3	4.6%			32.6	2%			240.1	8.5%			138.5	4%			169.5	6%			104.9	3%			24.7	3%		
	Asphalt materials			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
16	Masonry materials			202.3	1.3%			0	0.0%			182.9	6.5%			15.6	0.5%			3.8	0.1%			0	0.0%			0	0.0%
	Wallboard			164.8	1.1%			0	0.0%			0.9	0.0%			2.5	0.1%			102	3.4%			59.4	1.7%			0	0.0%
	Ceiling tiles			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
	Electronic waste			251.8	1.6%			31.8	1.6%			41.9	1.5%			48.5	1.5%			63.7	2.1%			43.1	1.3%			22.8	2.6%
	Soil/Ash			4.8	0.0%			0	0.0%			0	0.0%			4.8	0.1%			0	0.0%			0	0.0%			0	0.0%
	Other inorganics			86.6	0.6%			0.8	0.0%			14.4	0.5%			67.1	2.1%			0	0.0%			2.4	0.1%			1.9	0.2%
11	Fines/sweepings			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
	Hazardous materials	10.1	0.1%			0.6	0%			0	0.0%			1.1	0%			5.1	0%			3.1	0%			0.2	0%		
	Lead acid batteries			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
	Dry cell batteries			5.8	0.0%			0.6	0.0%			0	0.0%			1.1	0.0%			1.7	0.1%			2.2	0.1%			0.2	0.0%
	Paints/solvents			4.3	0.0%			0	0.0%			0	0.0%			0	0.0%			3.4	0.1%			0.9	0.0%			0	0.0%
	Other hazardous corrosive or flammable material			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
	Total Sample	15441.3	100%	15441.3	100%	2008.5	100%	2008.5	100.0%	2833	100.0%	2833	100.0%	3266.6	100%	3266.6	100.0%	3014.1	100%	3014.1	100.0%	3447.2	100%	3447.2	#####	871.9	100%	871.9	100.0%
						2008.5	100%	2008.5	100.0%																				

MCIA Waste Characterization Study

Fourth Quarter Results

December 9 to 14, 2013

Components	Summary				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday			
	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2)	%	Waste Type	%	Waste Type (2	%	Waste Type	%	Waste Type (2)	%
Commercial/ Residential																												
Paper	3,677.2	26.4%			563.4	28%			771.8	29.1%			738.4	24%			689.4	29%			704.1	24%			210.1	24%		
1 Newsprint	3,677.2		345.7	2.5%			102.9	5.2%			103.3	3.9%			46.6	1.5%			60.7	2.5%			18.4	0.6%			13.8	1.6%
2 Corrugated cardboard			660.1	4.7%	0	0%	79.7	4.0%	0	0.0%	146.2	5.5%	0	0%	146.3	4.7%	0	0%	119.9	5.0%	0	0%	116.2	4.0%	0	0%	51.8	5.9%
White office paper			410.2	2.9%			49.5	2.5%			60.4	2.3%			78.9	2.5%			104	4.3%			101.3	3.5%			16.1	1.8%
Box board			830.9	6.0%			162.2	8.1%			142.1	5.4%			145.7	4.7%			145.5	6.0%			176.5	6.1%			58.9	6.7%
Magazines			217.0	1.6%			17.8	0.9%			54.9	2.1%			70.3	2.3%			37.6	1.6%			28.9	1.0%			7.5	0.9%
Telephone Books			1.3	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			1.3	0.0%			0	0.0%
3 Other paper	-		1,212.0	8.7%			151.3	7.6%			264.9	10.0%			250.6	8.0%			221.7	9.2%			261.5	9.0%			62	7.1%
Plastics	2,527.4	18.1%			343.9	17%			463.5	17.5%			527.9	17%			481.7	20%			549.8	19%			160.6	18%		
6 PET bottles			309.8	2.2%			50.4	2.5%			65	2.5%			64.8	2.1%			45.5	1.9%			57	2.0%			27.1	3.1%
HDPE bottles	-		192.7	1.4%			38	1.9%			29.4	1.1%			20.5	0.7%			10.9	0.5%			80.8	2.8%			13.1	1.5%
PVC containers			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5 Poly propylene containers			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
5 Polystyrene containers			181.0	1.3%			19.7	1.0%			32.4	1.2%			31.3	1.0%			25.2	1.0%			58.6	2.0%			13.8	1.6%
4 Film plastic in plastic bags			1,219.0	8.7%			168.5	8.4%			235	8.9%			263.6	8.4%			234.2	9.7%			247.2	8.5%			70.5	8.0%
Other plastics			624.9	4.5%			67.3	3.4%			101.7	3.8%			147.7	4.7%			165.9	6.9%			106.2	3.7%			36.1	4.1%
Textiles, rubber leather	940.8	6.7%	940.8	6.7%	135.9	7%	135.9	6.8%	219.1	8.3%	219.1	8.3%	236.4	8%	236.4	7.6%	160.4	7%	160.4	6.7%	120.2	4%	120.2	4.1%	68.8	8%	68.8	7.8%
Wood	507.3	3.6%			63.1	3%			52.4	2.0%			70	2%			60.4	3%			188.8	7%			72.6	8%		
Oriented strandboard/ particle board			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Plywood			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Furniture			364.5	2.6%			20.3	1.0%			46	1.7%			58.2	1.9%			44.3	1.8%			155.5	5.4%			40.2	4.6%
Pallets			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Tree parts			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other untreated wood	-		142.8	1.0%			42.8	2.1%			6.4	0.2%			11.8	0.4%			16.1	0.7%			33.3	1.1%			32.4	3.7%
Other treated wood			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Yard waste	340.4	2.4%	340.4	2.4%	32.2	2%	32.2	1.6%	56.1	2.1%	56.1	2.1%	209.9	7%	209.9	6.7%	7.9	0%	7.9	0.3%	34.3	1%	34.3	1.2%	0	0%	0	0.0%
Food waste	4,074.1	29.2%	4,074.1	29.2%	568.1	28%	568.1	28.5%	761.4	28.7%	761.4	28.7%	975.9	31%	975.9	31.3%	601.3	25%	601.3	25.0%	926.7	32%	926.7	31.9%	240.7	27%	240.7	27.4%
Other organics	390.2	2.8%	54.6	0.4%	36.1	2%	10.4	0.5%	109.1	4.1%	0	0.0%	62.8	2%	0	0.0%	82.2	3%	20.2	0.8%	71.8	2%	23.7	0.8%	28.2	3%	0.3	0.0%
BioHazard			-																									
Diapers			335.6	2.4%			25.7	1.3%			109.1	4.1%			62.8	2.0%			62	2.6%			48.1	1.7%			27.9	3.2%
Metals	512.8	3.7%			78.7	4%			75.5	2.8%			74.7	2%			116.8	5%			121.3	4%			45.8	5%		
14 Aluminum cans			173.0	1.2%			26.8	1.3%			28.8	1.1%			30.2	1.0%			24	1.0%			52.3	1.8%			10.9	1.2%
13 Tin plated steel cans			162.0	1.2%			17	0.9%			29.5	1.1%			27.9	0.9%			24.5	1.0%			40.5	1.4%			22.6	2.6%
Aerosol containers			32.7	0.2%			9.6	0.5%			6.6	0.2%			6.5	0.2%			1.3	0.1%			5.4	0.2%			3.3	0.4%
13 Other ferrous metals			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
15 Other nonferrous metals			145.1	1.0%			25.3	1.3%			10.6	0.4%			10.1	0.3%			67	2.8%			23.1	0.8%			9	1.0%
Glass	361.9	2.6%			58.2	3%			71.3	2.7%			67.2	2%			44.6	2%			79.1	3%			41.5	5%		
Flint containers			246.6	1.8%			47.7	2.4%			48.6	1.8%			38.8	1.2%			33.4	1.4%			50.7	1.7%			27.4	3.1%
Green containers			46.5	0.3%			6	0.3%			13.1	0.5%			14	0.4%			7.1	0.3%			1.6	0.1%			4.7	0.5%
Amber containers			67.6	0.5%			4.5	0.2%			9.6	0.4%			14.4	0.5%			4.1	0.2%			25.6	0.9%			9.4	1.1%
Other glass			1.2	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			1.2	0.0%			0	0.0%
Inorganics	526.4	3.8%			105.3	5%			69.4	2.6%			155.4	5%			82.1	3%			105	4%			9.2	1%		
Asphalt materials			0.8	0.0%			0.8	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
16 Masonry materials			47.0	0.3%			0	0.0%			0	0.0%			10.2	0.3%			36.8	1.5%			0	0.0%			0	0.0%
Wallboard			103.5	0.7%			0	0.0%			25.4	1.0%			50.5	1.6%			2.7	0.1%			22.5	0.8%			2.4	0.3%
Ceiling tiles			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Electronic waste			302.2	2.2%			85.9	4.3%			42.5	1.6%			61.2	2.0%			25.5	1.1%			80.3	2.8%			6.8	0.8%
Soil/Ash			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Other inorganics			72.9	0.5%			18.6	0.9%			1.5	0.1%			33.5	1.1%			17.1	0.7%			2.2	0.1%			0	0.0%
11 Fines/sweepings			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Hazardous materials	94.7	0.7%			10.6	1%			0	0.0%			1.8	0%			81.2	3%			1.1	0%			0	0%		
Lead acid batteries			-				0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%			0	0.0%
Dry cell batteries			3.8	0.0%			3.5	0.2%			0	0.0%			0	0.0%			0.3	0.0%			0	0.0%			0	0.0%
Paints/solvents			7.9	0.1%			7.1	0.4%			0	0.0%			0.8	0.0%			0	0.0%			0	0.0%			0	0.0%
Other hazardous corrosive or flammable material			83.0	0.6%			0	0.0%			0	0.0%			1	0.0%			80.9	3.4%			1.1	0.0%			0	0.0%
Total Sample	13,953.2	100.0%	13,953.2	100.0%	1995.5	100%	1995.5	100.0%	2649.6	100.0%	2649.6	100.0%	3120.4	100%	3120.4	100.0%	2408	100%	2408	100.0%	2902.2	100%	2902.2	100.0%	877.5	100%	877.5	100.0%
	1763040.0%	100.0%	13,953.20	100.0%																								
			-																									

4. Waste Category Types and Definitions

WASTE CATEGORY TYPES AND DEFINITIONS

(Expanded definitions as needed)

PAPER

Newsprint: All paper marketed as newsprint or newspaper, printed ground wood newsprint, minimally bleached, for example, American Paper Institute grades numbers 6, 7 and 8.

Corrugated cardboard: Containers and similar paper items, usually used to transport supplies, equipment, parts, or other merchandise. Waxed or unwaxed.

White Office Paper: All computer paper, all high-grade white paper, including letterhead typing paper copier paper onion skin tissue and notepad.

Boxboard: Liner board, cereal boxes, etc.

Magazines: All magazine stock, white and color paper and envelopes.

Telephone Books: Category includes paper between coded covers. These items are bound with the glue seem. Examples include telephone books, real estate listings and other non-glossy mailings.

Other Paper: All other paper other than white ledger category when mixed with envelopes manila folders and colored paper. Materials generated by commercial/industrial sources.

PLASTICS

PET bottles: Clear or colored PET bottles, such as soft drink, water and similar containers. The number one appears in the triangular recycling symbol. These may also bear the initials PETE or PET. The color is usually transparent green or clear. PET does not turn white when bent.

HDPE bottles: HDPE bottles can be colored or natural. This plastic is either a cloudy white or a solid color and prevents light from passing through. The triangular recycling symbol includes a number 2. HDPE can also be present in containers other than bottles, such as 5 gallon buckets. Examples include milk, water and juice containers.

PVC containers: Clear food packaging, shampoo bottles, wire and cable insulation and similar materials with PVC or number 3 in the recycling triangle.

Polypropylene containers: Examples include catsup bottles, yogurt containers and margarine tubs. The number 5 is inscribed in the recycling triangle.

Polystyrene containers: Includes non-food packaging and finished products. Exclude Styrofoam.

Film plastic and plastic bags: Plastic wraps, trash bags, dry cleaning bags, etc.

Other plastics: This category includes all other plastics not previously mentioned.

TEXTILES/RUBBER/LEATHER

No further definition

WOOD

Oriented Strand Board/Particleboard: No further definition

Plywood: No further definition

Furniture: No further definition

Pallets: No further definition

Tree Parts: No further definition

Other Untreated Wood: No further definition

Other Treated Wood: No further definition

YARD WASTE

No further definition

FOOD WASTE

No further definition

OTHER ORGANICS

No further definition

METALS

Aluminum Cans: Includes aluminum beverage cans and other aluminum containers.

Tin Plated Steel Cans: Includes metal containers made primarily of steel. These items will stick to a magnet.

Aerosol Containers: No further definition

Other Ferrous Metals: All other ferrous metals. Examples would include structural steel beams, boilers, metal pipes, cookware, scrap ferrous and galvanized items.

Other Non-Ferrous Metals: This category includes all other metals other than aluminum, which are not magnetic. Examples include copper wire, brass and brass pipe.

GLASS

Flint Containers: No further definition

Green Containers: No further definition

Amber Containers: No further definition

Other Glass: No further definition

INORGANICS

Asphalt materials: No further definition

Masonry materials: No further definition

Wallboard: No further definition

Ceiling Tiles: No further definition

Electronic Waste: Computer-related products such as personal computers and laptops, notebook computers, processors, keyboards, etc. Small consumer electronics such as cell phones, television, computer monitors, and small electronic appliances.

Soil/Ash: No further definition

Other Inorganics: No further definition

Fines/sweepings: No further definition

HAZARDOUS MATERIALS

Lead Acid Batteries: Car and car like batteries.

Dry Cell Batteries: Any other type of battery other than automotive battery. Examples include AA, AAA and D batteries.

Paints/Solvents: This category includes paint and solver containers with product still inside.

Other hazardous/corrosive/flammable material: This category includes all household commercial products characterized as toxic, corrosive, flammable, ignitable, radioactive, poisonous or reactive. This category also includes sharps, vehicle and equipment fluids, and empty containers that contained hazardous materials.

5. NJDEP Solid Waste Types and Definitions

SOLID WASTE TYPES N.J.A.C. 7:26-2.13(g) (*source: http://www.nj.gov/dep/dshw/lrm/type.htm*)

ID - DEFINITIONS

10 - Municipal (household, commercial and institutional): Waste originating in the community consisting of household waste from private residences, commercial waste which originates in wholesale, retail or service establishments, such as, restaurants, stores, markets, theaters, hotels and warehouses, and institutional waste material originated in schools, hospitals, research institutions and public buildings.

12 - Dry sewage sludge: Sludge from a sewage treatment plant which has been digested and dewatered and does not require liquid handling equipment.

13 - Bulky waste: Large items of waste material, such as appliances and furniture. Discarded automobiles, trucks and trailers and large vehicle parts, and tires are included under this category.

13C - Construction and Demolition waste: Waste building material and rubble resulting from construction, remodeling, repair, and demolition operations on houses, commercial buildings, pavements and other structures. The following materials may be found in construction and demolition waste: treated and untreated wood scrap; tree parts, tree stumps and brush; concrete, asphalt, bricks, blocks and other masonry; plaster and wallboard; roofing materials; corrugated cardboard and miscellaneous paper; ferrous and nonferrous metal; non-asbestos building insulation; plastic scrap; dirt; carpets and padding; glass (window and door); and other miscellaneous materials; but shall not include other solid waste types.

23 - Vegetative waste: Waste materials from farms, plant nurseries and greenhouses that are produced from the raising of plants. This waste includes such crop residues as plant stalks, hulls, leaves and tree wastes processed through a wood chipper. Also included are non-crop residues such as leaves, grass clippings, tree parts, shrubbery and garden wastes.

25 - Animal and food processing wastes: Processing waste materials generated in canneries, slaughterhouses, packing plants or similar industries, including animal manure when intended for disposal and not reuse. Also included are dead animals. Animal manure, when intended for reuse or composting, is to be managed in accordance with the criteria and standards developed by the Department of Agriculture as set forth at N.J.S.A. 4:9-38.

27 - Dry industrial waste: Waste materials resulting from manufacturing, industrial and research and development processes and operations, and which are not hazardous in accordance with the standards and procedures set forth at N.J.A.C. 7:26G. Also included are nonhazardous oil spill cleanup waste, dry nonhazardous pesticides, dry nonhazardous chemical waste, and residue from the operations of a scrap metal shredding facility.

27A – Asbestos waste: Waste material consisting of asbestos or asbestos containing waste.

27I – Ash waste: Waste material consisting of incinerator ash or ash containing waste.

CATEGORY/DEFINITION OF RECYCLABLE MATERIALS (*source: http://www.state.nj.us/dep/dshw/recycling/material.htm*)

The following are the definitions of revised and expanded categories of recycled materials eligible for tonnage report submission. The definitions are not meant to be all-inclusive, but rather attempt to identify the majority of materials reported in previous submittals, as identified by current markets for those materials. It is recognized that market changes may dictate altering these definitions.

Aluminum Cans (06) - Food and beverage containers made entirely of aluminum.

Antifreeze (12) - An automotive engine coolant consisting of a mixture of ethylene glycol and water, or propylene glycol and water.

Computer Printout/White Ledger (02) - All computer paper, all high grade white paper (including letterhead, typing paper, copier paper, onionskin, tissue, and notepad).

Concrete, Asphalt, Masonry and Paving Material (22) - Asphalt, concrete, brick, cinder block, "patio blocks," ceramic materials, stones and other masonry and paving materials. Note that the regulations at N.J.A.C. 7:26A allow for asphalt to be handled in two ways: incorporated into the asphalt production process (milled asphalt) ; or asphalt is taken to a Class B recycling center and used to produce construction aggregate. Either form of the material is acceptable for reporting purposes.

Consumer Batteries (21) - Any type of button, coin, cylindrical, rectangular or other shaped, enclosed device or sealed container which is utilized as an energy source for commercial, industrial, medical, institutional or household use. (Does not include lead-acid batteries from vehicles.)

Corrugated (01) - Containers and similar paper items, usually used to transport supplies, equipment, parts, or other merchandise.

Food Scraps (23) - Food plate waste and food processing wastes. Food processing wastes include food processing vegetative waste (material generated in trimming and reject sorting operations from the processing of fruits and vegetables in canneries or similar industries, e.g., tomato skins, pepper cores, bean snips, cranberry hulls, etc.), food processing residuals and animal processing wastes. If the material is transported and processed as animal feed, it may be identified as such.

Glass Containers (05) - All glass containers used for packaging food or beverages.

Heavy Iron (09) - All structural steel or ferrous metal, cast iron components.

Lead-Acid Batteries (13) - Batteries from automobiles, trucks, other vehicles, machinery and equipment. (Does not include consumer batteries.)

Magazines & Junk Mail (04) - All magazine stock, white and colored paper and envelopes.

Miscellaneous Recyclable Materials (24) - Includes any other non-hazardous material which would otherwise be classified as a solid waste, and is not otherwise defined in this section and documented as recycled.

Mixed Office Paper (02) - Items listed in computer printout/white ledger category when mixed with envelopes, manila folders and colored paper. Material is generated by commercial/institutional sources.

Newspaper (03) - All paper marketed as newsprint or newspaper and containing at least 70% newsprint or newspaper (American Paper Institute grades #6, #7 and #8 news).

Other Aluminum Scrap, Non-Ferrous Scrap (10) - All non-container aluminum including auto parts, siding, aircraft parts, lawn chairs, window and door frames, pots and pans, foils and pie plates. Non-ferrous scrap consists primarily of copper and zinc. Copper generally takes the form of cable (utility wires), plumbing, wiring harnesses, motors, house wiring and bulky items.

Other Bulky Materials (24) - Furniture (plastic, wood, or items constructed of a combination of the above materials), wallboard, carpeting, padding, asphalt-based roofing scrap (including shingles, built up roofing, tarpaper, other roofing materials), and insulation.

Other Glass (25) - All non-container glass such as plate glass, drinking glasses, and automotive glass.

Other Paper (04) - All paper that is not corrugated, office, magazines, white and colored bond paper, or newspaper, such as telephone directories, wrapping paper, chip board, books, papers coated with plastic, film or foil, paper contaminated with food, and grocery bags.

Other Plastic (26) - Low density polyethylene (LDPE) film or bags, other film and plastic closures.

Petroleum Contaminated Soil (27) - Non-hazardous soils containing petroleum hydrocarbons resulting from spills, leaks or leaking underground storage tanks used for gasoline or any other commercial fuel, and which are recycled in accordance with the requirements of N.J.A.C 7:26A-1.1 et seq.

Plastic containers (08) - Containers such as polyethylene terephthalate (PETE - #1) soda bottles, high density polyethylene (HDPE - #2) milk, water or detergent bottles, low density polyethylene (LDPE - #4) containers, vinyl (V - #3) or polyvinyl chloride (PVC - #5) bottles and rigid and foam polystyrene (PS - #6).

Plastic Scrap (26) - Durable goods (appliances, furniture, automobile parts), and plastic pallets (provided they are melted down or chipped, and not simply reused).

Process Residue (28) - Includes ferrous metals ash recovered from any form of incinerator power plant, and any other process residue which is non-hazardous and meets the definition of an ID-27 dry industrial waste. Not included in this definition is sludge.

Scrap Autos (14) - Crushed or shredded automobile or truck bodies, excluding auto shredder residue, or "fluff".

Steel Cans (07) - Rigid containers made exclusively or primarily of steel, tin-plated steel, and composite steel and aluminum cans used to store food, beverages, paint, and a variety of other household and consumer products.

Stumps, Logs and Tree Parts (20) - Unfinished wood from land clearing projects or storm damage.

Textiles (29) - Cloth material such as cotton, linen, wool, nylon, polyester, etc., derived from clothing, cloth diapers, linens, etc.

Tires (15) – Rubber-based scrap automotive, truck, and specialty tires (e.g., forklift tires).

Used Motor Oil (16) - A petroleum based or synthetic oil whose use includes, but is not limited to, lubrication of internal combustion engines, which through use, storage or handling has become unsuitable for its original purpose due to the presence of impurities or loss of original properties.

White Goods & Light Iron (11) - All large appliances such as washers, dryers, refrigerators, etc., as well as products made from sheet iron, such as shelving, file cabinets, metal desks, recycled or reconditioned steel drums, stainless steel and other non-structural ferrous scrap.

Wood Scrap (30) - Finished and unfinished lumber from construction/demolition projects. Included in this category are telephone poles, railroad ties and wooden pallets.

Yard Trimmings - Leaves (19), grass clippings (18), stumps (20), brush (17), and other lawn and garden trimmings from homes, institutions, commercial or industrial sources.

6. NJDEP Solid Waste Report 2011

2011 GENERATION, DISPOSAL AND RECYCLING RATES IN NEW JERSEY (Tons)

COUNTY	POPULATION	GENERATION	DISPOSAL			RECYCLING			
		Disposal and Recycling					MSW %	Total Recycled w/Add-ons	Total % Recycled
	2011		MSW	BULKY	TOTAL	MSW			
Atlantic	274,549	782,052	232,726	75,292	308,019	137,733.90	37%	474,033.86	61%
Bergen	905,116	2,129,144	629,249	333,838	963,087	524,520.94	45%	1,166,056.98	55%
Burlington	448,734	1,028,703	315,786	79,132	394,918	221,050.12	41%	633,785.29	62%
Camden	513,657	1,001,885	354,462	71,841	426,303	213,980.30	38%	575,581.93	57%
Cape May	97,265	409,368	89,389	65,778	155,167	66,776.38	43%	254,201.08	62%
Cumberland	156,898	466,320	109,507	71,048	180,555	123,969.80	53%	285,765.00	61%
Essex	783,969	1,601,948	450,143	126,551	576,694	347,631.75	44%	1,025,253.85	64%
Gloucester	288,288	893,321	185,019	168,280	353,298	180,213.63	49%	540,023.00	60%
Hudson	634,266	1,226,523	361,895	139,213	501,108	133,460.52	27%	725,414.81	59%
Hunterdon	128,349	256,674	75,035	37,933	112,968	43,633.28	37%	143,706.34	56%
Mercer	366,513	889,616	237,060	98,317	335,377	168,934.49	42%	554,239.39	62%
Middlesex	809,858	2,089,312	549,632	223,843	773,476	410,262.44	43%	1,315,836.69	63%
Monmouth	630,380	1,576,697	431,954	220,420	652,375	318,805.68	42%	924,322.09	59%
Morris	492276	1,112,111	302,808	98,291	401,098	270,167.92	47%	711,012.39	64%
Ocean	576,567	1,488,906	398,331	151,923	550,254	254,566.88	39%	938,651.90	63%
Passaic	501,226	1,281,674	433,002	248,200	681,202	183,374.17	30%	600,472.21	47%
Salem	66,083	143,602	39,379	25,570	64,950	26,666.33	40%	78,652.32	55%
Somerset	323,444	901,659	253,328	141,778	395,106	101,832.70	29%	506,552.62	56%
Sussex	149,265	250,040	78,285	34,393	112,678	44,564.96	36%	137,362.05	55%
Union	536,499	1,366,141	326,506	143,161	469,667	181,525.76	36%	896,474.24	66%
Warren	108,692	260,092	70,799	30,582	101,381	29,376.44	29%	158,711.13	61%
TOTAL	**8,791,894**	**21,155,787**	**5,924,294**	**2,585,384**	**8,509,678**	**3,983,048**	**40%**	**12,646,109**	**60%**

NOTES: Totals subject to rounding.
Last Updated on 06/13/2013 By JDavis

Source: *NJDEP Solid Waste Report 2011*

Calculations:

1. 237,060 (MSW) + 163,934 (Recycling) = 405,994 MSW Generated

2. 168,934/405,994 = 0.42 = 42% Recycled

7. MCIA Food Waste Analysis - Commercial Samples Only

MCIA Food Waste- Commercial Sample Loads

Quarter	Food Waste	Sample Total	%	Food Waste	Sample Total	%	Food Waste	Sample Total	%	Food Waste	Sample Total	%	Food Waste	Sample Total	%	Food Waste	Sample Total	%
1																		
Monday																		
Tuesday																		
Wednesday																		
Thursday	55.56	201.3	28%	4.2	251.2	2%												
Friday	16.2	266.3	6%															
Saturday																		
2																		
Monday																		
Tuesday	17.3	167.7	10%	18.5	213.1	9%	9	215.7	4%	0	205.7	0%						
Wednesday	22.2	230.6	10%	103.8	258.7	40%	39.8	216.2	18%	30.7	226.8	14%						
Thursday	34.1	221.1	15%	32.8	213.3	15%	43.8	221.5	20%									
Friday	14.5	234.3	6%	46.5	286.5	16%	44.2	227.1	19%									
Saturday																		
3																		
Monday																		
Tuesday	20.5	227.8	9%	17.9	179.0	10%												
Wednesday	18.8	170.9	11%	50.8	254.0	20%	118.2	257.0	46%									
Thursday	21.5	153.6	14%	41.5	172.9	24%	23.1	231.0	10%	45.8	305.3	15%	40.8	194.3	21%			
Friday	67.8	260.8	26%	59	245.8	24%	21.2	235.6	9%	150.7	289.8	52%	32.6	250.8	13%			
Saturday																		
4																		
Monday	27.2	247.3	11%	51.9	216.3	24%												
Tuesday	40.9	227.2	18%	32.7	218.0	15%	37.50	178.6	21%	44.30	201.4	22%	62.00	206.7	30%			
Wednesday	47.4	206.1	23%	80.9	237.9	34%	63.8	163.6	39%	46.5	193.8	24%						
Thursday	15.4	256.7	6%	37.8	180.0	21%												
Friday	148.8	240.0	62%	65.7	199.1	33%	49.4	214.8	23%	69.1	197.4	35%	43.3	196.8	22%	60.7	275.9	22%
Saturday	52	208.0	25%															
Food Waste Total	620.2			644.0			450.0			387.1			178.7			60.7		
Sample Total		3519.6			3125.8			2161.0			1620.2			848.5			275.9	
	Average	Total FW		Total Sample														
	20%	2340.7		11551.0														

8. MCIA Ticket Report Analysis February 2012

MCIA Ticket Report
2/13/2012

	Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	Waste Types					
								10T	10N	27A	13N	13RB	20R
	1		654			10T	0.43	1					
	2		655	1	1	10T	5.4	1					
	3	1	655	0	0	10T	5.4	1					
	4		656	1	1	10T	15.29	1					
	5		700	4		10N	0.01		1				
	6		702	2	6	10T	9.93	1					
	7		726	24	24	10T	10.06	1					
	8		731	5		10N	0		1				
	9		749	18	23	10T	13.22	1					
	10		751	2		27A	0			1			
x	11		755	4	6	10T	5.3	1					
	12		757	2		13N	0				1		
	13		800	3		10N	0		1				
	14		805	5		13RB	0					1	
	15		812	7		10N	0.01		1				
	16	1	813	1	19	10T	7.94	1					
	17		813	0	0	10T	0.42	1					
	18		815	2	2	10T	14.53	1					
	19		816	1	1	10T	10.63	1					
	20	1	817	1	1	10T	2.42	1					
	21		817	0	0	10T	2.42	1					
	22		842	25	25	10T	14.94	1					
x	23		844	2	2	10T	9.62	1					
	24		849	5	5	10T	13.66	1					
	25	1	851	2	2	10T	5.27	1					
	26		851	0	0	10T	5.27	1					
	27	1	858	7	7	10T	8.39	1					
	28		858	0	0	10T	2.8	1					
	29		904	6	6	10T	6.89	1					
	30		913	9	9	10T	6.66	1					
x	31		914	1	1	10T	7.51	1					
	32		920	6	6	10T	14.58	1					
	33		924	4		10N	0		1				
	34	1	925	1	5	10T	10.62	1					
	35		925	0	0	10T	0.56	1					
	36		928	3	3	10T	10.73	1					
	37		930	2		10N	0		1				
	38		940	10		10N	0		1				
	39		947	7		13N	0.01				1		
	40		948	1		10N	0		1				
	41		950	2	22	10T	4.13	1					
	42		959	9		10N	0		1				
	43		1009	10		10N	0		1				
	44		1012	3		10N	0.01		1				
	45		1014	2		13RB	0.01					1	
	46		1022	8	32	10T	12.54	1					
	47		1029	7	7	10T	9.67	1					
	48		1040	11		27A	0			1			
	49		1042	2		10N	0		1				
	50		1045	3	16	10T	13.2	1					
x	51		1103	18	18	10T	6.37	1					
	52		1110	7	7	10T	7.11	1					
	53		1118	8	8	10T	8.46	1					
	54		1119	1		10N	0		1				
	55		1120	1	2	10T	8.05	1					
	56		1126	6	6	10T	8.35	1					
	57		1133	7		10N	0		1				
	58		1139	6		13N	0				1		
	59		1140	1		13N	0				1		
	60	1	1142	2	16	10T	3.76	1					
	61		1142	0	0	10T	3.76	1					
	62		1143	1	1	10T	8.26	1					
	63		1144	1	1	10T	11.1	1					
x	64		1149	5	5	10T	7.98	1					
	65		1151	2		10N	0		1				
	66	1	1152	1	3	10T	1.47	1					
	67		1152	0	0	10T	1.47	1					
	68		1153	1	1	10T	12.43	1					

	69		1158	5	5	10T	4.27	1							
	70		1159	1	1	10T	7.89	1							
	71		1210	11		10N	0		1						
	72		1211	1		10N	0		1						
	73		1212	1	13	10T	8.87	1							
	74		1214	2	2	10T	7.42	1							
	75		1215	1	1	10T	8.1	1							
x	76		1216	1	1	10T	7.71	1							
	77		1217	1	1	10T	13.97	1							
	78	1	1218	1	1	10T	2.11	1							
	79		1218	0	0	10T	2.11	1							
	80		1235	17	17	10T	6.16	1							
	81		1241	6		10N	0		1						
	82		1242	1	7	10T	2.14	1							
	83		1244	2	2	10T	12.4	1							
	84		1249	5	5	10T	6.51	1							
	85		1254	5		10N	0		1						
x	86		1255	1	6	10T	4.32	1							
	87		1300	5	5	10T	1.65	1							
	88	1	1300	0	0	10T	4.94	1							
	89		1303	3		13N	0					1			
	90		1308	5	8	10T	8.74	1							
	91		1318	10		13N	0					1			
	92		1319	1	11	10T	8.19	1							
	93		1320	1	1	10T	8.74	1							
	94		1322	2		20R	2.42								1
	95		1333	11	13	10T	0.99	1							
	96		1336	3	3	10T	5.23	1							
	97	1	1336	0	0	10T	5.23	1							
	98		1340	4	4	10T	11.39	1							
	99		1341	1		13N	0					1			
x	100		1345	4	5	10T	12.75	1							
	101		1346	1	1	10T	8.22	1							
	102		1353	7	7	10T	8.44	1							
	103		1405	12	12	10T	12.23	1							
	104		1412	7	7	10T	9.13	1							
	105		1424	12	12	10T	12.58	1							
	106		1426	2	2	10T	6.26	1							
	107		1427	1	1	10T	6.7	1							
x	108		1438	11	11	10T	4.33	1							
	109		1439	1	1	10T	14.26	1							
	110		1444	5	5	10T	9.45	1							
	111		1445	1	1	10T	13.35	1							
	112		1446	1	1	10T	6.8	1							
	113	1	1446	0	0	10T	6.8	1							
	114		1447	1	1	10T	7.36	1							
	115	1	1447	0	0	10T	7.36	1							
	116		1452	5	5	10T	4.3	1							
x	117		1456	4	4	10T	4.65	1							
	118		1501	5	5	10T	6.74	1							
		13		487	488	0	662.26	87	19	2	7	2	1		
	105	Corrected for dupicates						74							

Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	10T	10N	27A	13N	13RB	20R

t	Time between transactions		7:00	15:00	8:00	60	480.00	
t1	Time between tipping trucks	Open	Close				4.57	loads every x minutes
	Waste other than 10T						13.125	Loads per hour
	Duplicate Tickets, weight may vary				13		8	Every x load

MCIA Ticket Report
2/15/2012 Wednesday

	Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	Waste Types					
								10T	10N	27A	13N	13RB	20R
	1		641			13RB	0					1	
	2		642	1	1	10T	11.48	1					
	3		643	1	1	10N	0		1		1		
	4		648	5	5	13N	0						
	5		709	4		10T	9.22	1					
	6		710	1	6	10N	0		1				
	7		712	2	2	10T	9.83	1					
	8		725	13		13N	0				1		
	9		733	8	23	13N	0				1		
	10		744	11		10N	0		1				
x	11		748	4	6	27A	0			1			
	12		750	2		10T	6.03	1					
	13		752	3		10N	0		1				
	14		754	2		10N	0		1				
	15		758	4		10T	5.97	1					
	16	1	758	0	19	10T	5.97	1					
	17		816	18	18	10T	5.29	1					
	18		817	1	1	13N	0				1		
	19		830	13	13	13RB	0					1	
	20		838	8	8	10T	13.63	1					
	21		840	2	2	13N	0				1		
	22		843	3	3	13N	0.01				1		
x	23		845	2	2	10T	7.29	1					
	24	1	845	0	0	10T	2.43	1					
	25		847	2	2	10N	0		1				
	26		851	4	4	10T	8.3	1					
	27		917	26	26	10T	8.18	1					
	28		918	1	1	10T	6.5	1					
	29		933	6	6	13N	0				1		
	30		934	1	1	13N	0				1		
x	31		936	2	2	10N	0.01		1				
	32		938	2	2	10T	0.87	1					
	33		952	14		10T	4.98	1					
	34	1	952	0	5	10T	4.98	1					
	35		955	3	3	13N	0				1		
	36		1003	8	8	10N	0		1				
	37		1005	2		10N	0		1				
	38		1016	11		10T	6.11	1					
	39		1018	2		13N	0				1		
	40		1019	1		13RB	0.01					1	
	41		1034	15	22	10T	15.02	1					
	42		1035	1		10T	16.11	1					
	43		1038	10		13N	0				1		
	44		1059	21		10T	2.58	1					
	45	1	1059	0		10T	2.58	1					
	46		1107	8	32	10T	7.34	1					
	47		1108	1	1	10T	15.43	1					
	48		1109	1		10T	7.09	1					
	49		1126	17		10T	8.45	1					
	50		1130	4	16	10T	10.12	1					
x	51		1132	18	18	10T	12.48	1					
	52		1134	2	2	10T	7.83	1					
	53		1139	5	5	10T	8.2	1					
	54		1141	2		10T	0	1					
	55	1	1141	0	2	10T	4.99	1					
	56		1143	2	2	13N	0				1		
	57		1144	1		10N	0		1				
	58		1151	7		13N	0				1		
	59		1152	1		10T	8.59	1					
	60		1153	1	16	10T	6.03	1					
	61		1157	4	4	10T	10.35	1					
	62		1200	3	3	10T	7.2	1					
	63		1204	4	4	10T	6.05	1					
x	64	1	1204	0	0	10T	6.05	1					
	65		1206	2		10T	9.35	1					
	66		1207	1	3	10T	10.6	1					
	67		1208	1	1	10N	0		1				
	68		1209	1	1	10T	8.82	1					

	69		1216	7	7	13N	0				1			
	70		1217	1	1	10T	10.14	1						
	71		1218	11		10T	10.92	1						
	72		1223	5		13RB	0						1	
	73		1237	14	13	10N	0		1					
	74		1238	1	1	10T	7.42	1						
	75		1243	5	5	10T	13.85	1						
x	76		1250	7	7	10N	0.01		1					
	77		1255	5	5	10T	9.72	1						
	78		1300	5	5	10T	9.66	1						
	79		1301	1	1	10T	13.04	1						
	80		1306	5	5	10T	8.19	1						
	81		1307	1		10T	12.42	1						
	82		1308	1	7	10T	8.06	1						
	83		1312	4	4	10T	9.73	1						
	84		1318	6	6	10T	7.54	1						
	85		1319	1		10T	9.93	1						
x	86		1321	2	6	13N	0				1			
	87		1324	5	5	10T	13.77	1						
	88		1325	1	1	10T	1.33	1						
	89		1339	14		10T	0	1						
	90		1341	2	8	13N	10.49				1			
	91		1345	4		10T	0	1						
	92		1346	1	11	13N	9.48				1			
	93		1350	4	4	10T	0	1						
	94		1400	10		10N	15.15		1					
	95		1405	5	13	10T	6.99	1						
	96		1422	17	17	10T	8.39	1						
	97		1423	1	1	10N	0		1					
	98		1425	2	2	10T	7.94	1						
	99		1426	1		10T	8.12	1						
x	100		1427	1	5	10T	7.99	1						
	101		1444	17	17	27N	0.01			1				
	102		1522	38	38	10T	8.41	1						
	103		1522	12	12	10T	2.1	1						
	104		1534	12	12	10T	4.86	1						
	105	1	1534	0	0	10T	4.86	1						
		7		555	521	0	548.87	67	15	2	17	4	0	
	98	Corrected for dupicates						60					105	

Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	10T	10N	27A	13N	13RB	20R

t	Time between transactions		7:00	15:00	8:00	60	480.00
t1	Time between tipping trucks	Open	Close				4.90 loads every x minutes
	Waste other than 10T						12.25 Loads per hour
	Duplicate Tickets, weight may vary				13		8 Every ***nth*** load

MCIA Ticket Report
2/18/2012 Saturday

	Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	Waste Types					
								10T	10N	27A	13N	13RB	20R
	1		714			10T	6.83	1					
	2		715	1	1	10T	6.93	1					
	3		721	6	6	10T	6.63	1					
	4		741	20	20	10T	6.01	1					
	5		747	4		10T	4.64	1					
	6		749	2	6	10T	6.13	1					
	7	1	749	0	0	10T	6.13	1					
	8		803	14		10T	6.07	1					
	9		813	10	23	10T	2.56	1					
	10		922	109		10T	10.37	1					
x	11		926	4	6	27N	0			1			
	12		1001	33		10T	10.98	1					
	13		1006	3		10T	9.44	1					
	14		1016	10		10T	4.71	1					
	15	1	1016	0		10T	4.71	1					
	16		1018	2	19	10T	5.68	1					
	17		1030	18	18	10T	11.91	1					
	18		1036	6	6	10T	14.75	1					
	19	1	1036	0	0	10T	1.64	1					
	20		1050	14	14	10T	11.3	1					
	21		1053	3	3	10T	6.87	1					
	22		1057	4	4	10T	9.01	1					
x	23		1101	4	4	10T	6.2	1					
	24		1102	1	1	10T	6.61	1					
	25		1113	11	11	10T	10.28	1					
	26		1121	8	8	10T	7.02	1					
	27		1122	26	26	10T	7.18	1					
	28		1126	4	4	10T	7.78	1					
	29		1127	6	6	10T	9.11	1					
	30		1156	29	29	10T	9.32	1					
		3		352	215	0	216.8	29	0	1	0	0	0
	27	Corrected for dupicates						26					30

Trans #	Duplicate	Time	*t Delta (min)*	*t1 Delta (min)*	Material	Quantity	10T	10N	27A	13N	13RB	20R

t	Time between transactions		7:00	15:00	8:00	60
t1	Time between tipping trucks	Open	Close			
	Waste other than 10T					
	Duplicate Tickets, weight may vary				13	

480.00		
17.78	loads every x minutes	
3.375	Loads per hour	
2	Every ***nth*** load	

9. Sampling & Sorting Equipment List, and Personal Protective Equipment List

SAMPLING & SORTING EQUIPMENT LIST

Sorting Table/Box

Sorting Baskets, Bins/Laundry Bins

Hand Tools

Water Supply

Canopy, Canopy Enclosure

Magnets

Portable Generator

Digital Camera Extra Storage Disks/Cards

Nitrile Gloves

Work Gloves

Skid Steer Loader

Portable Scale Uline 670 330 Pound Capacity, 1/10 Pound Accuracy

Magic Markers

D Batteries

Paper Towels

First Aid Kit

Purell Liquid Hand Sanitizer

Standing Comfort Mats

Stools

Plastic Trash Cans

Whisk Broom

½ Inch Screen

Leaf Rake

Hand Trowels

Three Tine Cultivators

Heavy Duty Tarps 10’ X 12’

Heavy Duty Tarps, 6’ X 8’

PERSONAL PROTECTIVE EQUIPMENT LIST

White Tyvek Suits

Leather Gloves

Safety Glasses

Latex Booties

Earplugs

Hardhats

Respirators/Air Masks