

Audit of Solid Waste Management Practices and Generation at the University of Florida

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Executive Summary

The Office of Sustainability at the University of Florida (UF) commissioned an audit of the solid waste management practices and generation campus wide. This waste audit was conducted by students in UF's Department of Environmental Engineering Sciences (EES) under guidance of EES faculty. The objectives of the audit were to summarize current solid waste characteristics and management practices on campus, to benchmark current recycling and waste reduction efforts, and to identify potential steps to further decrease the amount of UF waste destined for disposal. In addition to compiling existing information, the audit team performed several studies to collect new data helpful for estimating the current composition of solid waste on campus.

Solid waste at UF has traditionally been characterized into five main categories: municipal solid waste (MSW), recycled material, construction and demolition (C&D) debris, medical waste, and hazardous waste. UF's Physical Plant Division (PPD) maintains records of monthly generation associated with each category. Currently, a combination of UF personnel and outside contractors collect the MSW from containers on campus and haul it to the Alachua County transfer station, where it is then transported to the New River Regional Landfill. Recyclables are collected and transported to appropriate handling facilities by a similar blend of UF personnel and outside contractors. UF currently recycles paper, cardboard, cans, glass and plastic bottles and jars, scrap metal, masonry, yard waste, electronics, wastewater treatment sludge, and other miscellaneous items (e.g., toner cartridges, carpet, and automotive batteries).

UF presently produces approximately 18,000 tons of waste annually. Approximately 11,000 tons are landfilled, while about 6,600 tons are recycled. Yearly, there are roughly 330 tons of medical waste and 95 tons of hazardous waste that require special disposal. Accordingly, the composition of UF's solid waste as reflected by the primary categories is: 48.25% MSW, 36.50% recycled material, 12.91% C&D debris, 1.81% medical waste, and 0.52% hazardous waste (Figure 1).

Since landfill-disposed MSW contributes almost half of the waste on campus, the audit team conducted several waste composition studies to better assess the primary components of the MSW currently being disposed. While not an exhaustive composition study, data were collected that provide a good first look at MSW composition (Figure 1). The five largest MSW contributors are organics¹ at 15.28%, paper at 14.26%, non-recyclable² materials 9.39%, plastic at 3.93%, and finally products³ 2.55%.

The average recycling rate from 2001 through 2008 for UF solid waste of 36.50% is similar to (though at the higher end of the range) typical recycling rates achieved by municipalities in Florida and the US. Although comparing results to other colleges and universities is fraught with uncertainty due to

¹ Organic material refers to all food waste (e.g., generated incomplete meals, food preparation waste from cafeterias, disposed, etc), animal by-products (e.g., litter from cages, feces, remaining food scraps, etc), yard waste, and composite or other organic materials like wax and leather.

² Non-recyclable waste is materials for which there is either no method or no currently feasible method of recovery.

³ Products are materials that had the potential for reuse, auction, or donation. This includes, but is not limited to, binders, apparel, textiles, rubber, personal entertainment devices, etc.

availability of data and differences in data collection and recording methods, UF's techniques and success are comparable. The results of the waste audit suggest several opportunities for additional progress. The relatively high percentage of organics (food waste, food contaminated paper, and paper products such as paper towels) suggests that implementation of an organics treatment system such as anaerobic digestion or composting is logical next for further investigation. Such technologies are currently employed to a limited extent on parts of campus and to a very large level at other universities. The relatively high percentage of paper in the currently landfilled waste stream suggests that additional efforts to promote use of the existing paper recycling program are warranted. Given the relative contribution it makes to the landfilled waste stream, additional recycling of C&D debris should also be further evaluated.

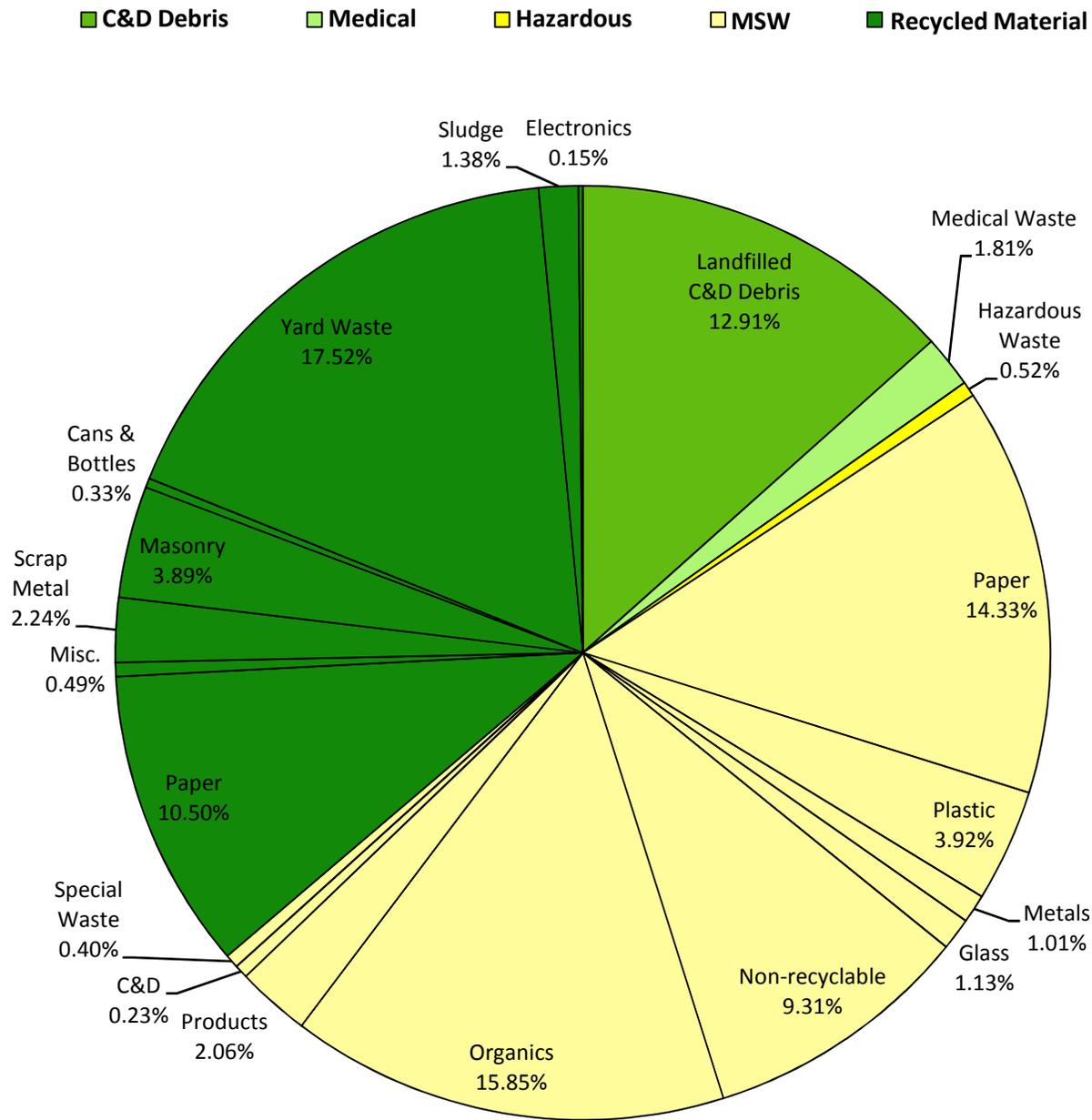


Figure 1: Comprehensive diagram of the waste stream generated by the University of Florida. The five waste categories monthly recorded by PPD are depicted by colors and are MSW (48.25%, 8,740 tons annually), C&D Debris (12.91%, 2,339 tons annually), Recyclable Material (36.50%, 6,613 tons annually), Medical Waste (1.81%, 328 tons annually), and Hazardous Waste (0.52%, 95 tons annually). Percent contribution determined from the 2001 through 2008 data collected by PPD. The components of the MSW, determined from the MSW composition study, and recyclable material, which is recorded monthly by PPD, streams are denoted in detail.

1. INTRODUCTION

1.1. MOTIVATION

The University of Florida (UF) has committed to improve campus wide operations to minimize its impact on the environment and to foster environmental awareness, knowledge, and responsibility. UF encourages and endorses sustainable initiatives, and with the creation of the Office of Sustainability in 2006, has helped maintain and promote the objective of greening the University. In accordance with their pursuit of a sustainable campus, the University of Florida set a goal of Zero Waste by 2015.

A vital component in attaining a sustainable campus is the efficient management, reduction, and recycling of its solid waste. To effectively manage solid waste generated at the University of Florida it is essential to understand and identify the waste types and quantities disposed, the sources of these materials, and the possible opportunities for further reduction and recycling. Furthermore, it is important to identify and analyze the quantity of waste currently captured by recovery efforts versus the quantity disposed.

1.2. SCOPE

The Office of Sustainability supported activity by the Department of Environmental Engineering Sciences to audit the current solid waste management practices and generation on campus and to make suggestions for possible changes to increase reduction and recovery. This involved identifying an appropriate audit methodology for attaining all the necessary information, which is detailed below.

First, the area of campus to be considered for the duration of the solid waste audit was established with the Office of Sustainability and is the portion of campus that the Physical Plant Division (PPD) manages and documents waste. This includes all the waste generated on the main campus bound by 34th Street, University Avenue, 13th Street, and Archer Road as well as the campus south of Archer Road, the Coastal Engineering Lab, PK Young School, Treeo Center, Lake Wauberg, Austin Cary Memorial Forest, and other UF locations in the vicinity. The audit included Shands Health Care center, but not satellite locations outside of Gainesville. Figure 1 displays the majority of the campus managed by PPD. With the boundaries for analysis determined, information on the current solid waste management system utilized was investigated.

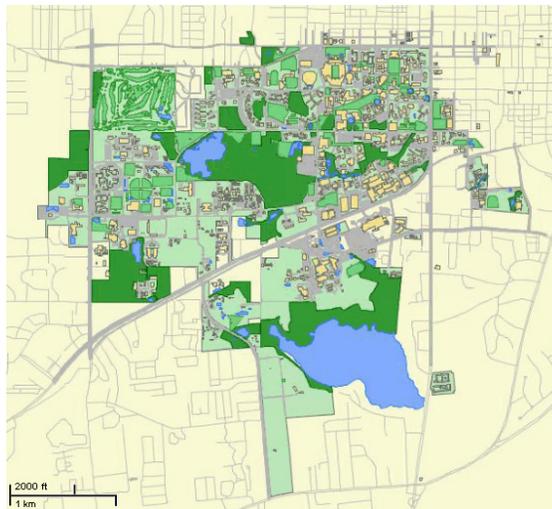


Figure 1: Map of the University of Florida, displaying over 95% of the campus managed by Physical Plant Division

Information on the techniques employed for managing the solid waste on the main campus was collected and assessed by both reviewing publications from the University and interviewing staff members. Information on how waste is managed on campus, how the campus recycling program works, and other reduction, recovery and educational approaches the University utilizes was gathered. This included accumulating information on the number, location, volume, and collection frequency of solid waste receptacles available on campus, such as trash receptacles, recycling containers, dumpsters, compactors, and roll-off containers. Moreover, historical data on the weights of solid waste disposed monthly, recorded by PPD, was also gathered and analyzed for generation numbers and trends. Primary information sources included the PPD, specifically the Solid Waste Coordinator and Lands/Grounds Superintendent, and the Office of Sustainability. This information was vital for providing a general understanding of the complex system in place for management and generation of solid waste. Moreover, with the techniques fully detailed, recommendations were able to be considered.

Once a basic understanding of the solid waste management system was obtained, the campus was divided into the contributing sources of solid waste (e.g., dining, academic, and housing). The campus was categorized based on both the data collected above and the types of wastes anticipated to be disposed of from each source. For instance, dining sources would primarily contain food waste, containers for food, and compostable paper whereas administration sources would consist of compostable paper, office paper, food waste, and recyclable plastics. Every roll-off container, compactor and dumpster emptied by the PPD or contracted out to a private hauler was classified as contributing to a campus source.

Historically, solid waste at UF is denoted into five recorded categories, which are municipal solid waste (MSW), construction and demolition debris (C&D debris), recyclable material, hazardous waste, and medical waste. The monthly weight generated for each category is recorded by PPD. In addition, recyclable material is denoted into eight subcategories which are also weighted monthly. Of these waste categories, MSW is the category with the most potential for improvement, since as MSW is the primary

contributor to the UF waste stream and is composed of non-hazardous waste. Thus, the composition was investigated through MSW composition evaluations.

These evaluations were designed and conducted on the University's MSW from the main campus. Samples of waste from each source were extracted and the waste was sorted into waste component categories and subcategories. The primary waste component categories were paper, plastic, glass, metal, organics, products, construction and demolition debris, and special waste. These categories were further broken down into subcategories and parts, when necessary. These are detailed by the MSW composition sort method utilized in Appendices __. At each MSW sort, weight and volume measurements were taken to determine the percentage that each waste category contributed to the sample and ultimately the UF waste stream.

Waste management and reduction techniques at other universities were evaluated by researching their solid waste management and recycling strategies. Successful techniques offered insight on how UF could better manage, reduce, and recover the waste generated. Also, the difficulties encountered at other universities identified problematic areas for consideration as well as supplied a forewarning on what to expect when implementing recommendations.

Proposals and recommendations on viable alternatives for waste management were based on the information accumulated through research, data analysis, and MSW composition studies completed for this audit. Once the greatest opportunities for recovery were identified, alternate management techniques were advised that would promote greater capture, diversion, and recommendations were offered on further research and efforts that would promote sustainable waste management at UF.

1.3. ORGANIZATION OF AUDIT

This audit report is organized into five primary chapters with appendices containing the supporting information, detailed work, and results. The first chapter presents the introduction, which details the purpose and scope of the audit. The second chapter is an overview of solid waste generation at the University of Florida, introducing the different types of solid wastes generated on campus and identifying the sources of waste. The third chapter details the current practices of waste management at UF, including who manages, collects, disposes and/or recovers each waste type. In the fourth chapter, the waste generation and composition of the University's waste stream is investigated. Overall waste generation trends are identified and the MSW and recyclables stream is examined in detail. In the final chapter, observations and recommendations are presented.

The appendices commence with the glossary describing the terminology utilized within the report then the campus sources are identified. This includes information on how the campus sources were determined, their significance the campus categories as well as eight years worth of historic data. Then the methodology for the different phases of the MSW sorts is described. This includes the waste category identifications, sampling and sorting protocols, and detailed results of each phase. Next the compiled results of all of the MSW sorts are detailed. Finally, the literature review details waste management strategies on other campuses.

2. Solid Waste at the University of Florida

The main campus of the University of Florida is made up of over 2,000 acres in Gainesville, Florida. UF is composed of 16 colleges and more than 150 research centers and institutes with over 50,000 students, 12,000 staff, and 4,000 faculty members utilizing these facilities. As such, the University generates a large amount and a wide variety of solid waste. Solid waste is defined as any garbage, refuse, sludge or other discarded material¹. Solid waste results from a number of different sources, including typical residential refuse produced by dormitories to on-campus dining halls, academic buildings, as well as the medical and hazardous waste produced by the medical and research institutions and labs.

The University of Florida manages solid waste through the Physical Plant Division. In order to manage and track the solid waste appropriately, PPD classifies the UF waste stream into five waste categories, based on their composition, source, and characteristics. The categories recorded in this tracking scheme are MSW, C&D debris, recyclable material, medical waste, and hazardous waste. An overview of the UF waste categories produced is provided in Table 1.

Table 1: Summary of the recorded waste categories at UF

Waste Category	Description
Municipal Solid Waste (MSW)	Waste produced in dormitories, academic buildings, dining halls, recreational facilities and other campus buildings that is primarily composed of paper, organics, and plastic and disposed of by students, faculty and staff during standard activities.
Construction and Demolition (C&D) Debris	Waste produced during the construction, renovation, or demolition of campus structures. These structures include buildings, sidewalks, roads, and any other man made edifice.
Recyclable Material	Waste that is able to be and is recycled, reused, or donated. This includes paper, scrap metal, cans and bottles, sludge, yard waste, masonry, electronics as well as miscellaneous products such as batteries, carpets, paints and oils.
Medical Waste	Waste produced at the medical institutions on campus, such as Shands and the Veterinary Hospital. This is special waste that could contain bodily fluids, pharmaceutical waste, and any wastes that could possibly present a biohazard
Hazardous Waste	Any waste that could be considered harmful that is produced on campus. This includes fuels, chemicals, solvents, and any other material that is disposed in any of the laboratories or research institutions on campus ² .

¹ National Archives and Records Administration. (2009, September 3). *Title 40: Protection of Environment*. Retrieved September 6, 2009, from Electronic Code of Federal Regulations: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=305f91b17ec541820b9e4948af6f35af&rqn=div8&view=text&node=40:25.0.1.1.2.1.1.2&idno=40>

² University of Florida. (2009, July 28). *Hazardous Material Management*. Retrieved August 15, 2009, from Environmental Health & Safety: <http://www.ehs.ufl.edu/HMM/default.asp>

To estimate the composition of the University of Florida's waste stream, it was necessary to identify, evaluate and quantify the contributing waste categories. In this chapter, each waste category is described in detail. The management as well as the generation and composition of the waste categories is detailed in Chapters Three and Four, respectively.

2.1. MUNICIPAL SOLID WASTE (MSW)

MSW is a term used in the solid waste industry to describe those wastes produced by residential, commercial, and institutional activities. It is most commonly associated with the garbage that is collected from single-family homes, multi-family dwellings, businesses, and institutions. The primary components of MSW include paper, plastic, food waste, glass, metals, textiles, and other discarded products.

In the context of this report, MSW is the landfilled waste generated from classrooms, libraries, offices, laboratories, recreational facilities, as well as on-campus commercial establishments and residences. Moreover, it includes waste generated from standard maintenance activities such as the litter collected by PPD and street sweepings³. Some components of MSW (e.g., office paper, cans and bottles) are recyclable; if diverted, these recycled materials are recorded by PPD in the recycled material category. Therefore, in this report, MSW does not include recycled material. Moreover, MSW does not include hazardous nor other regulated waste.

Since the MSW stream had yet to be fully characterized, MSW was investigated in depth in this report. MSW is the waste stream that most individuals associate with solid waste, it is the largest single component of the UF waste stream at 48.25%, it is highly variable, and it is a good target for recycling and reduction activities. In order to appropriately assess the MSW generated on campus, the campus was categorized by the source or generator of the waste.

The campus sources reflect the composition of waste disposed at a particular building, which would differ depending on the activities performed in the building. Every roll-off container, compactor and dumpster which is emptied by PPD or contracted out was then classified. This was done by examining the building descriptions where the containers were located. For instance, the dumpster on the south side of the New Engineering Building (NEB) was categorized as Academic: Mixed since the dumpster is most conveniently located for waste from NEB. Within NEB are classrooms, laboratories, and offices, hence the Academic: Mixed categorization. In some areas, multiple buildings will utilize one dumpster and the buildings may represent different campus sources. In these instances, one source was assumed the primary contributor. The sources and sub-sources determined for the UF campus and are listed and described in Table 2.

With each dumpster, compactor, and roll-off container classified as contributing to a single source, maximum volume estimates were determined for each source. This information gave insight on how each source contributed to the UF MSW stream. This will be detailed further in Chapter Four. The complete assessment of dumpsters, compactors, and roll-off containers is provided in Appendix B.

³ Street sweepings are composed of soil, leaves, litter, and other debris collected from the paved roads on campus using a mechanical sweeping device.

Table 2: The University of Florida was separated into sources of MSW, referred to as campus sources

Campus Source	Description
Academic: Animal Lab	Laboratories whose research activities involve animals
Academic: Plant Lab	Laboratories whose research activities predominantly involve plants
Academic: Library	Exclusively involves library
Academic: Mixed	Includes a combination of lecture halls, laboratories, libraries, and offices
Administration	Mostly composed of offices
Dinning	Food service locations
Recreational	Recreational facilities and fields
Housing: Dorms	Exclusively involves dorms
Housing: Family	Exclusively involves family housing
Housing: Greek	Sororities and fraternities
Miscellaneous	Unclassifiable, such as storage units, hay barns, building services, etc
Medical	Waste produced in buildings where research is primarily medical in nature (not to be confused with the medical waste type) This would include any waste that is thrown in regular containers that are not specifically for bio-hazardous or any other special waste.

2.2. CONSTRUCTION AND DEMOLITION DEBRIS (C&D)

C&D debris is known as any waste that is produced as a result of construction, renovation, or demolition of any man-made structure. This includes items such as concrete, wood, asphalt, sheetrock, glass, plastics, fiberglass, ceramics, and any other building material. In Florida, C&D debris can be separated from MSW or disposed in either Class III or C&D landfills that charge less expensive tipping fees.

In UF’s tracking scheme C&D refers to C&D materials disposed at a landfill. Although, certain C&D materials are recycled (e.g., masonry); these are included as part of the recycled materials category. On campus, C&D debris is collected in roll-off containers designated exclusively for C&D debris and located where construction, demolition, or renovation activities are being carried out. The roll-offs are located at each construction, demolition, and renovation projects completed by PPD or contracted.

2.3. RECYCLABLE MATERIAL

Recyclable materials are referred to as any product or material that can be processed into new products. This applies to a wide range of materials from paper, metal, plastic, glass, textiles, electronics, and C&D debris like wood, concrete, and bricks. Other important products to recycle included

automotive products like motor oil, tires, and car frames as well as hazardous materials such as fluorescent light bulbs, paints, batteries, and pesticides⁴.

Currently, recyclable materials weighed at UF include paper, scrap metal, cans, bottles, wastewater treatment sludge, yard waste, masonry, electronics as well as miscellaneous products such as batteries, carpets, paints, and oils. Many of these items, such as cans, bottles, paper and masonry may also be components of the MSW and C&D debris streams. However, if they are diverted from the landfill waste stream and recovered through recycling or reuse, these materials are classified as recyclable material. The recycling data does not reflect small scale recovery efforts such as composting at the Butterfly Garden or Diamond Village. Moreover, UF currently does not track certain products that are recycled such as toner cartridges and wooden pallets.

The weight of each recyclable material subcategory is recorded monthly in addition to the five waste categories discussed earlier. Consequently, UF has been characterizing recyclable material for over a decade. The material recycled is a function of the availability of appropriate outlets and markets.

2.3.1. PAPER

Campus wide, in each campus source identified, paper waste is generated and composes one of the largest contributors to the UF waste and recycling stream. Currently, UF classifies recyclable paper as office paper, mixed paper, corrugated cardboard, newspaper, junk mail, phonebooks, and magazines. Paper products that are currently not recycled are compostable paper like napkins, paper plates, paper towels, paper soiled with food, as well as composite paper products such as packaging materials where plastic and paper are present. Moreover, neither paperboard nor pasteboard containers are recycled.

2.3.2. SCRAP METAL

Products containing metal such as filing cabinets, desks, wire, eve troughs, and rebar are easily dismantled for the metal and recycled. IFAS projects and PPD maintenance contribute to the scrap metal frequently. Metal has one of the highest recycling markets because it is simpler as well as less expensive and resource intensive to make metal products from secondary production, where metal is reused, than primary production where metal is extracted and processed from ores which are sources of metal in the earth that occur naturally.

2.3.3. CANS AND BOTTLES

Recyclable food and drink containers are brought to or purchased at school from vending machines or commercial establishment during daily business and school activities. Plastic, glass, and metal drink containers as well as certain food containers, denoted as cans and bottles, are recyclable. Number one through seven plastic containers, with a pourable spout up to two gallons, are accepted campus wide. This also includes yogurt cups and margarine tubs. The numbers on the plastic containers identify the type of resin material utilized, for instance number one plastic is polyethylene terephthalate

⁴ U.S. Environmental Protection Agency. (2009, February 18). *Recycling*. Retrieved June 30, 2009, from Wastes - Resource Conservation - Reduce, Reuse, Recycle: <http://www.epa.gov/epawaste/conserve/rrr/recycle.htm>

(PET, #1) and number two plastic is high density polyethylene (HDPE, #2). Unbroken glass or metal food and beverage containers are also accepted.

2.3.4. WASTEWATER TREATMENT SLUDGE

UF operates a water reclamation facility to treat wastewater produced by campus buildings. Solids and dissolved materials in the wastewater are treated using a variety of physical and biological methods. One of the byproducts of this treatment operation is wastewater treatment sludge, commonly referred to as sludge or biosolids. These biosolids are composed primarily of microbial biomass that has been separated from the wastewater treatment process and concentrated, as well as some inorganic material such as sand and grit. Biosolids contain nutrients and organic matter which often make it a valuable material for application to soils for agriculture. This is the case with biosolids from the UF reclamation facility. The biosolids are collected by Gainesville Regional Utilities (GRU) and managed as part of the land application program.

2.3.5. YARD WASTE

Yard waste is defined as waste composed of leaves, branches, and soil⁵. This describes various kinds of woody or organic debris that are a result of manicuring outside areas. In Florida, yard waste is banned from Class I and II Landfills. This reflects that the materials are inert and biodegradable and therefore should not take up space in a landfill that accepts MSW and other wastes.

UF's yard waste is produced during routine landscape maintenance of the campus. This includes mowing, trimming trees and shrubs, landscaping, land clearing, and any other activities that would produce waste composed of soils, leaves, and woody debris. Much of this waste is easily compostable; therefore, recovery can be attained.

2.3.6. MASONRY

Masonry waste is generated from construction, renovation, and demolition projects on campus and may be composed of concrete and bricks. These materials are highly recyclable, thus they are collected separately from other C&D debris and sent to be recovered. Historically, the masonry reported as recycled is just from PPD project, however, the UF Facilities Planning and Construction (FP&C) is now reporting recycling figures from Leadership in Energy and Environmental Design (LEED) projects.

2.3.7. ELECTRONIC WASTE

Electronic waste has recently become a regulated and a recyclable waste. It is generally described as discarded, surplus, obsolete, broken electrical or electronic devices. Included in the electronic waste category are any items such as computers, entertainment device electronics, mobile

⁵ Townsend, Timothy. (2008). *Organic Waste Management*. [Powerpoint]. Presented in Solid and Hazardous Waste Management. University of Florida, Gainesville, FL.

phones, and other items such as television sets and projectors⁶. If the disposal is not handled properly, the items pose a risk to environmental and human health because they contain heavy metals such as lead and cadmium and possibly other environmental contaminants.

2.3.8. MISCELLANEOUS

UF recycles a variety of other wastes that are generated irregularly and/or in smaller quantities. Miscellaneous items include, but are not limited to batteries, carpets, paints, and oils.

2.4. MEDICAL WASTE

Medical waste is defined as waste that is generated in the diagnosis, treatment, or immunization of humans or animals⁷. This includes tissue, bodily fluids, pharmaceuticals, syringes, and any other wastes that could possibly present a biohazard. There are different types of medical wastes such as those that could be potentially infectious and those that are considered non-infectious.

UF medical waste is produced in research labs and medical institutions on campus (e.g Shands Hospital and the Veterinary Medical Center). For the purpose of this report, medical waste refers only to the waste disposed of in specially marked red bags. This waste has specific handling and disposal procedures that are listed in later sections of the report. Any other wastes produced at these facilities falls under the MSW category.

2.5. HAZARDOUS WASTE

Hazardous wastes are materials that could cause or contribute to serious illness or death. They are also defined as wastes that could pose substantial risk to human health or the environment⁸. Wastes are considered hazardous if they are listed by the Resource Conservation and Recovery Act (RCRA), or if they show one (or more) of four hazardous characteristics. For a waste to have a hazardous characteristic it would be ignitable, corrosive, reactive, and/or toxic.

⁶University Controller. (2006, May 18). *Reducing, Re-Using and/or Recycling University of Florida Electronic Equipment*. Retrieved August 26, 2009, from Directives and Procedures: <http://fa.ufl.edu/uco/handbook/handbook.asp?doc=1.4.9.17>

⁷ U.S. Environmental Protection Agency. (2008, September 9). *Medical Waste*. Retrieved August 29, 2009, from Wastes - Non-Hazardous Waste - Industrial Waste: <http://www.epa.gov/waste/nonhaz/industrial/medical/index.htm>

⁸ National Archives and Records Administration. (2009, September 3). *Title 40: Protection of Environment, Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste*. Retrieved September 6, 2009, from Electronic Code of Federal Regulations: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;sid=0c206ac884496dc640fc104e2f31f76a;rgn=div5;view=text;node=40%3A25.0.1.1.2;idno=40;cc=ecfr#PartTop>

UF's hazardous waste is composed of spent solvents, solutions, and other wastes containing toxic chemicals that are discarded from campus laboratories and other facilities as part of the research infrastructure. Due to the chemicals they contain and their characteristics, these chemicals are managed differently than other wastes to protect the safety of UF's students, staff, and visitors in addition to the environment. They are managed following special requirements that are detailed more in the current management section.

3. CURRENT SOLID WASTE MANAGEMENT AT THE UNIVERSITY OF FLORIDA

The staff at the Physical Plant Division manages and records the waste generated in the five waste categories outlined. Collection and disposal is either performed by PPD or contracted out. PPD is responsible for maintaining equipment, contracts, and agreements to ensure that solid waste is managed in an acceptable manner. Waste is managed depending on its characteristics and where it is sent for final disposal. The total weight of waste that is disposed of at landfills (i.e. MSW and C&D debris), the weight of recyclable material sent to appropriate handling facilities, the medical waste sent to Stericycle, and the hazardous waste sent to Environmental Health and Safety (EH&S) are documented monthly. Table 3 summarizes the current management strategies for the recorded UF waste categories.

Table 3: Summary of management strategies for major UF categories

Waste Category	Management
Municipal Solid Waste	<p>MSW receptacles are placed in all major offices, residential areas, and classrooms around campus. These containers are emptied by the building staff into dumpsters, compactors, and roll-off containers located outside of buildings.</p> <p>Approximately 600 trash receptacles and 300 dumpsters are dispersed throughout the campus and collected by UF PPD. Seventeen compactors are on campus and serviced by Southland Waste Systems (SWS) and ten roll-off containers serviced by ___. The MSW is disposed at a New River Regional Landfill.</p>
Construction and Demolition Debris	<p>C&D debris is managed differently depending on who handles the project. When the project is contracted it is the responsibility of the contractor to dispose and recycle the waste properly. Since 2001, all major construction and renovation projects must be LEED certified and, starting this year, all waste and recycling data must be reported to PPD. When projects are managed by PPD, the wastes are either recovered or disposed of in Florence Landfill, which is a C&D landfill.</p>
Recyclable Material	<p>Indoor and/or outdoor collection containers are available for the various recyclable materials. The collection and transportation of recyclables is completed by UF PPD, contractors, or vendors depending on the explicit recyclable.</p>
Medical Waste	<p>All medical wastes are deposited at the source in biohazard containers for disposal. Treatment prior to disposal depends on the type of medical waste. The waste is collected, managed, and disposed by Stericycle.</p>
Hazardous Waste	<p>All hazardous wastes on campus are sent to Environmental Health and Safety. The waste is then managed in a manner that is dictated by the characteristics of the waste. Once a hazardous waste is identified, it is marked with a placard detailing how it is dangerous. These wastes are ultimately sent to a disposal facility that accepts hazardous wastes.</p>

Additional discussion of the landfilled, recycled, medical, and hazardous waste infrastructure and management are provided in this chapter. Detailed are the disposal containers available, vehicles utilized and collection methods utilized. Current diversion and reduction programs in place or under investigation are also detailed under recyclable material.

With the historical data provided by PPD from 2001 through 2008 on the monthly weights of each waste category recorded, the average contributions to the UF waste stream were determined. Consequently, MSW (48.25%), recyclable material (36.51%), and C&D debris (12.91%) were investigated thoroughly since these three waste categories combine to account for 97.67% of the UF waste stream. Medical waste (1.81%) and hazardous waste (0.52%) contribute approximately 2.33% to the UF waste stream, since the contribution is low in comparison, the disposal containers, vehicles, and techniques are only summarized.

3.1. MSW

MSW disposal containers are dispersed indoors and outdoors throughout the UF campus. Details on the containers available to students, staff and faculty as well as the containers used to accumulate the waste before disposal at the Alachua County Transfer Station (ACTS) or New River Regional Landfill (NRRL) is provided in this chapter. Moreover, the standard collection and disposal methods utilized are specified.

3.1.1. DISPOSAL CONTAINERS

3.1.1.1. Indoor

There are small MSW containers available inside offices, classrooms, and laboratories. Larger MSW containers are available in hallways and common areas within buildings. Figure 2 presents an example of a standard hallway and office MSW containers. Also available are restroom receptacle which are mounted on walls, Figure 3, or within stalls. The refuse from each of these indoor receptacles is collected by building staff and deposited into the nearest dumpster.

(A)



(B)



Figure 2: Examples of standard indoor MSW receptacles from (A) hallways and common areas as well as (B) offices, classroom, and laboratories



Figure 3: A wall mounted garbage receptacle for bathrooms

3.1.1.2. *Outdoor*

PPD designates all outdoor trash cans as trash receptacles (TRs). Trash receptacles consist of open containers with wooden slats, as seen in Figure 4. Approximately 600 TRs are dispersed throughout the main campus. Trash receptacles are available for the use of commuting students, faculty, staff, and visitors and are emptied daily. These receptacles are maintained by the PPD grounds crew and the waste is placed in the nearest dumpster.



Figure 4: Examples of trash receptacles placed around the UF campus

Dumpsters on the campus vary in size from 4 cubic yd to 8 cubic yd. Approximately 256 MSW dumpsters are located campus wide, Figure 5. Dumpsters are in close proximity to the source of refuse, specifically buildings. The waste within each building is disposed of in the nearest dumpster, along with the waste from the trash receptacles in the vicinity of the dumpster. The campus is divided into three dumpster collection routes, the north, central, south, and one recycling route. MSW dumpsters are on average collected twice a week by UF, however, some dumpsters, such as those at dining halls, are emptied daily.



Figure 5: Example of a MSW dumpster

Compactors, like the one displayed in Figure 6, are available for high volume sources, such as Shands Medical Center and Reitz Union. As of August 2009, there are a total of seventeen compactors campus wide, fourteen of which are for garbage. Compactors are collected by Southland Waste Systems (SWS). The compactors range from 12 cubic yards to 35 cubic yards; however, the majority is 34 cubic yard compactors. In addition to these standard compactors, there are specialty mini compactors that compact trash prior to being deposited into the garbage dumpsters located at Gator Corner and Broward Dining, Figure 7.



Figure 6: Example of a MSW compactor



Figure 7: Example of a specialty MSW compactor

Typically roll-off containers are used for temporary collection of waste, for instance at C&D sites, and on campus roll-off containers range from 10 to 40 cubic yards. Currently, roll-off containers are occasionally in place for bulk MSW items that are routinely disposed, but do not fit in a dumpster or compactor, as well as for the Veterinary Medicine building for the sterilized stall material. Roll-off containers are also utilized during the end of spring semesters when students are moving out of the on campus housing. Primarily, roll-off containers are used for C&D debris and recyclable material generated on campus.

3.1.2. DISPOSAL VEHICLES

The University of Florida owns and utilizes a vehicle fleet to collect and transport solid waste. Solid waste management vehicles are primarily utilized by PPD, however, other departments/units such as Surplus Warehouse handle solid waste as well. The vehicles are used to pick up refuse, concrete, yard waste, electronic waste, and other forms of solid waste.

Grounds Department uses utility vehicles such as bobcats and gators to collect the outdoor refuse from TRs. There are three different TR routes for the entire campus which are the northeast, northwest, and south campus routes. When the cart is full, Grounds staff deposits the garbage in the nearest dumpster. An example of a bobcat is pictured in Figure 8.



Figure 8: Example of a Bobcat vehicle

PPD owns four front loading refuse trucks, Figure 9, to empty dumpsters on campus. PPD then hauls the waste to the Transfer Station. Also, SWS provides UF with a rear loader refuse truck following home football games to increase the ease of



Figure 9: Example of a front loading truck

PPD owns their own street sweeper, Figure 10, which cleans campus streets and roads. The sweepings are collected in the sweeper truck and then are deposited into a roll-off container until it is

full and can be disposed in a landfill. Due to contamination from for instance litter and automotive oils, greases, and gasoline, recovery options like composting are not available for street sweepings. However, if the contamination is low enough, the sweepings may be discarded at a Class III Landfill, which is less expensive than the Class I and II landfills that MSW must be deposited.



Figure 10: The campus street sweeper

3.1.3. DISPOSAL AND RECOVERY TECHNIQUES

Both MSW and C&D from UF are disposed in landfills. The landfill facility utilized depends on the type of waste. In Florida, MSW must be placed in Class I or II landfills. PPD front loading trucks collect MSW from the containers on campus and deliver it to the Alachua County Transfer Station. This waste is then hauled from ACTS to the New River Regional Landfill by Alachua County in large transfer trailers. The NRRL is a permitted Class I landfill. In a few cases, a UF collection vehicle will take a MSW load directly to NRRL.

3.2. C&D DEBRIS

C&D debris disposal containers are located on site as well as in the PPD Recycle Yard on campus. C&D debris is kept separate from MSW because in Florida it can be disposed of in Class III or C&D Landfills. The method in which this material is collected and disposed is detailed below.

3.2.1. DISPOSAL CONTAINERS

C&D debris is managed in three different manners depending on the size of the project. If the project is small, such as patching a portion of a sidewalk, the C&D debris is stored in a roll-off in the PPD Recycle Yard, until there is enough to transport to the C&D landfill. If the job is larger, the waste can be

directly contained in a truck and hauled to the C&D landfill upon completion. Lastly, on medium to large scale projects, such as building renovation, demolition, and construction, the waste is deposited into a roll-off container on site. Roll-off containers are used for C&D debris because of the large volume and ease of disposal. Roll-off containers can also be rented by construction contractors for C&D debris collection, as displayed in Figure 11. Currently, there are eight C&D roll-Off containers utilized on campus which range from 10 to 40 cubic yards.



Figure 11: Example of a roll-off container

3.2.2. DISPOSAL VEHICLES

PPD uses front loading trucks to load concrete, yard waste, soil, scrap metal, and any other bulky or heavy material. These trucks differ from the refuse front loading trucks pictured in Figure 9, for instance they may include a grapple for retrieving heavy and/or bulky material.

3.2.3. DISPOSAL AND RECOVERY TECHNIQUES

In Florida, C&D debris can be placed in a Class I landfill, but it may also be disposed in a Class III landfill or a C&D disposal facility⁹. Currently, C&D debris from UF is disposed at Florence Landfill, a permitted C&D landfill in Alachua County. C&D debris is also diverted from the landfill waste stream through concrete and brick recovery efforts.

The waste generated from renovation, construction, and demolition projects completed by UF is documented monthly. Historically, these were the only numbers C&D debris numbers recorded, however, the UF Facilities Planning and Construction (FP&C) is now reporting the figures from LEED projects to PPD.

⁹ Class III landfills and C&D disposal facilities do not require the same degree of environmental protection as MSW landfills; C&D debris are considered more inert compared to MSW. The disposal cost at Class III landfills and C&D disposal facilities is less than Class I landfills.

3.3. RECYCLABLE MATERIAL

The availability of containers for proper disposal of recyclable material is increasing campus wide. Containers are located in areas where high volumes are generated, for instance paper recycling containers are often located in copy rooms, high traffic areas inside and outside, as well as upon request.

3.3.1. DISPOSAL CONTAINERS

Detailed below are the recycling containers available for standard household recyclable such as paper and cans and bottles. Container and/or collection methods are also in place throughout campus for highly recyclable materials such as scrap metal, printer cartridges, and batteries. Specialized collection for materials like masonry and biosolids are in place, but are not detailed in disposal containers since the generation is explicit to C&D sites and the water reclamation facility.

3.3.1.1. *Indoor*

Indoor recycling for cans and bottles as well as paper is now readily available around UF. The indoor paper recycling program is a well established effort, whereas the indoor can and bottle recycling initiative is a recent and well received addition.

The indoor containers for can and bottle recycling are a recent investment by PPD. There are over 600 can & bottle 19 gallon Bullseye bins, Figure 12, dispersed in buildings campus wide. Moreover, the Reitz Union has funded the dispersal of 36 compartmentalized (three-tiered) containers throughout the Reitz Union which have a slot for waste, paper, and containers such as cans & bottles, Figure 13.



Figure 12: Indoor 19 gallon recycling container for cans & bottles



Figure 13: Indoor compartmentalized recycling containers with paper, can and bottle, and MSW slots.

Currently, there are free desk trays for recyclable paper available from PPD, Figure 14, as well as over 1000 large paper recycling containers, which are either 95-gallon carts or 40-gallon consoles, Figure 15. The large paper recycling containers are strategically located in key areas such as copy rooms and outside of elevators. There are also bins that are emptied on an on-call basis by PPD.



Figure 14: Example of desk tray for paper recycling



Figure 15: Example of indoor 40-gallon console and 95-gallon recycling cart for paper

3.3.1.2. *Outdoor*

Outdoor paper and can and bottle recycling are offered in three different forms to commuting traffic. These are for pedestrian use, and are placed throughout the high traffic areas around the campus. First, there are 150 metal containers that are clearly marked for mixed can and bottle recyclables as seen in Figure 16 A. A map with the majority of metal containers identified campus wide is provided in Appendix C. Second, there are 250 plastic 95-gallon carts, Figure 16 B, that are placed outside of select buildings such as the dorms and dining halls for mixed can and bottle recyclables. Third, approximately 10 outdoor compartmentalized containers, Figure 17, have been introduced on campus and have a section for waste, paper, and mixed container recyclables. These three-tiered compartmentalized containers are available in the Reitz Lawn and Turlington area.

(A)



(B)



Figure 16: Outdoor recycling containers for can and bottle; (A) a metal bin dispersed campus wide for commuting traffic, (B) a 95 gallon container located by on campus housing facilities



Figure 17: Outdoor three-tiered compartmentalized bins for paper, can and bottle recyclables as well as MSW disposal, bins located around the Reitz Lawn and Turlington.

Dumpsters for recyclable are available campus wide and vary in size from 4 cubic yd to 8 cubic yd. Dumpsters provide ease of proper disposal for high volume sources within buildings. There are 92 paper dumpsters dispersed through the campus, Figure 18 A. In addition, there six dumpsters for cans and bottles, Figure 18 B, which are located at the Shands loading dock, Shands Kitchen, Broward Dining, Reitz loading dock, O'Connell Center, and at Veterinary Medicine. The campus has one recycling route, which is in addition to the previously discussed dumpster routes (i.e. north, central, and south). Paper/cardboard dumpsters are collected by UF twice weekly. The can and bottle dumpsters are collected by UF as well, but collection frequency collection is need based.



Figure 18: Example of dumpsters for recyclable material, (A) paper and cardboard dumpster and (B) can and bottle dumpsters

Compactors, like the one displayed in Figure 19, are available for high volume sources, such as Shands Medical Center and Reitz Union. Campus wide there are a total of seventeen compactors, three of which are for paper/cardboard recycling. The three paper compactors are all 34 cubic yard and are collected by SWS. In addition to these standard compactors, there are specialty mini compactors that compact paper/cardboard, Figure 20, located at dining facilities and recreational facilities like the University Alumni Association at the Stadium.



Figure 19: Example of a paper/cardboard compactor



Figure 20: Example of a specialty paper/cardboard compactor

At UF, roll-off containers are also used in the PPD Recycle Yard to temporarily store materials until they are sent for recovery. Two roll-off containers, Figure 21, are used to store the can and bottle recyclables from the containers inside buildings, the five dumpsters, as well as about half of the outdoor

containers. There are also roll-off containers used in the Recycle Yard to store wooden pallets, masonry, and metals. A roll-off container is provided and serviced by SP Recycling during home football games to assist with the increased generation of recyclables.



Figure 21: Example of a can and bottle roll-off container

3.3.2. DISPOSAL VEHICLES

PPD utilizes pickup trucks to collect half of the outdoor metal and indoor can and bottle recycling containers. Surplus Warehouse uses a truck and a large semi-trailer to collect electronics, furniture, and other reusable products. When items are no longer able to be reused these vehicles are used to transport materials to their appropriate disposal/recovery sites. An example of a truck is presented in Figure 22.



Figure 22: Example of a truck for surplus products

PPD's Solid Waste Division has a semi-trailer, Figure 23, which is used to collect and store carpet. The carpet is stored at the recycle yard prior to proper recovery.



Figure 23: PPD semi-trailer used to store recyclable carpet

3.3.3. DISPOSAL AND RECOVERY TECHNIQUES

The University has implemented a recycling program where recyclable items can be deposited in specific areas for pick up and recovery. Most of the recycling is outsourced via contracts and vendor agreements. The recyclables by material and how they are managed is summarized in this section. The collection frequency and the locations of the containers are decided on an as needed basis. Certain containers are collected daily while others may only be collected monthly or for special events.

In addition to the traditional recycling program, the UF Office of Sustainability has established an infrastructure for sustainable initiatives and communication through the Green Team. The Green Team is composed of over 100 Green Team Captains (GTCs) in departments and units, such as the museum, dining halls, and academic departments, campus wide. GTCs help promote sustainable practices such as source reduction and recycling in departments and units and communication among the teams. Moreover, GTCs encourage participation in campus sustainable initiatives and identify as well as inform about departmental and University progress towards sustainability goals¹⁰. There are also representatives in housing that promote sustainable practices in dorms.

3.3.3.1. Paper

Paper recycling at UF is handled depending on the container. Indoor paper is collected, transported and recycled by Recycling Services of America, Inc. Paper is collected from the indoor recycling containers inside buildings (Figure 15). The paper is then taken to their facility for recovery. Cintas was hired to collect and shred all campus confidential documents. These are then transported to their warehouse to be sent to their preferred recycler.

¹⁰ University of Florida. (2009, March). *The Green Team*. Retrieved July 21, 2009, from Office of Sustainability: <http://sustainable.ufl.edu/greenteam/>

Outdoor cardboard dumpsters are collected by UF front loading trucks and transported to RSA. Outdoor cardboard compactors are collected by Southland Waste Systems and transported to RSA for recovery.

3.3.3.2. *Scrap Metal*

Products containing metal such as desks, filing cabinets, wire, and rebar are easily dismantled for the metal and recycled. Metal is accumulated in the PPD Recycle Yard until there is enough to be collected by Commercial Metals for recovery.

3.3.3.3. *Cans and Bottles*

Indoor can and bottle containers are emptied by the Building Staff and left in a specified area for PPD solid waste staff to collect on their outdoor route. They are then deposited in the can and bottle roll-off container in the Recycle Yard until recovery.

PPD collects half of the metal outdoor can and bottle containers as well as the three-tiered compartmentalized recycling containers. The materials collected by PPD are temporarily stored in the PPD Recycle Yard until there is enough material for economical transport to Southeast Paper. Waste Pro collects the other half of the metal outdoor can and bottle containers as well as all of the 95-gallon carts. The materials collected by Waste Pro are sent directly to Southeast Paper for recovery.

3.3.3.4. *Wastewater Treatment Sludge*

The wastewater treatment sludge generated at the UF water reclamation facility is collected by Gainesville Regional Utilities and taken to one of GRU's facilities for processing. The sludge is then applied to farmland as a soil amendment.

3.3.3.5. *Yard Waste*

Yard waste is collected by either the PPD Grounds Crew or SWS. When collected by the Grounds Crew, the waste is stored until economically feasible to transport to Wood Resource Recovery (WRR) for composting. SWS hauls the waste directly to WRR where it is processed and composted.

3.3.3.6. *Masonry*

The PPD Grounds Crew manages the masonry to be recycled at Florida Concrete. Depending on how much is generated, masonry will either be transported directly to Florida Concrete after projects or temporarily stored in the PPD Recycle Yard until it can be transported to Florida Concrete for recovery.

3.3.3.7. *Electronic Waste*

Campus electronics are managed by Asset Management. First, the electronics are retained by the department in a storage area, where others departmentally can access the electronics, if they are still unwanted, and then Asset Management collects and logs all electronics on the Surplus Property

online database. If the electronics cannot be redistributed on campus, they are auctioned. Any remaining electronics are donated or recycled via Creative Recycling¹¹.

3.3.3.8. *Miscellaneous*

UF recycles a variety of other wastes that are generated in substantially smaller quantities. The weights of these recyclables may or may not be recorded. Auto batteries are sent to Motor Pool for exchange. Motor Pool then sends them to their preferred vendor for recovery. EH&S collects and recycles the rechargeable batteries from campus. Items such as standard sized wooden pallets and spent toner cartridges are not recorded, though they are recycled.

3.3.3.9. *Diversion Opportunities*

There are a variety of efforts toward enhancing and initiating sustainable practices at the University. Moreover, UF encourages departments and units to integrate sustainable practices. Initiatives range from education programs, source reduction plans, to utilizing applicable recovery techniques.

Education and outreach programs about how and where to recycle (e.g. Sustainability Hut and Green Team) are prevalent on campus. These initiatives help to implement UF's recycling program. Student Green Team members and other organizations help on game days to inspire tailgaters to properly dispose of recyclables in designated bins. The University supports competitions like Recyclemania¹² and Focus the Nation¹³ as well as provides incentives such as trophies and celebrations with food and prizes for competitions (e.g. One Less Car Challenge). Moreover, PPD is continually working to enhance the management system, including special event management. For instance, PPD has commenced a new game day recycling initiative, supplementing their current strategy and Green Team efforts, to assist fans in properly disposing of their recyclables. This entails gator themed recycle stations that are dispersed in parking lots and have holders for clear plastic bags, which fans can use to dispose their recyclable waste. The clear bags allow PPD employees to clearly identify the waste as recyclable and handle it appropriately. Moreover, the stations are readily accessible and have plaques informing fans about recycling.

The University of Florida supports source reduction by promoting sustainable products and programs. Asset Management is used to exchange working electronics and accessories, or to recycle components that are outdated or broken. The University created a supply swap site through Asset Management, which is a free online exchange for unwanted, useable supplies, furniture and other

¹¹University of Florida. (2006, May 18). *E-Waste Directive*. Retrieved July 22, 2009, from UF Controllers Office: <http://fa.ufl.edu/uco/handbook/handbook.asp?doc=1.4.9.17>

¹² RecycleMania is a competition and benchmarking tool for college and university recycling programs to both promote waste reduction activities on campus communities and diffuse information nationally. Over a 10-week period, schools report recycling and trash data which are then ranked according to who collects the largest amount of recyclables per capita, the largest amount of total recyclables, the least amount of trash per capita, or have the highest recycling rate. In 2009, 510 schools representing all 50 states participated.

¹³ Focus the Nation is a non-profit organization dedicated to educating about Global Climate Change and clean energy while supporting these initiatives.

items¹⁴. Purchasing and Disbursement Services has set guidelines directing the UF community to buy recycled products, hence supporting sustainable products that ensure markets for recyclables.¹⁵ Best practices are set for interdepartmental mailings and printing that discourages overuse of paper. For instance, publicity encouraging the use of reusable interdepartmental envelopes at department meetings and on university login pages (e.g. MyUFL). Vendor agreements help to make sure that products are reused such as packaging peanuts and bubble wrap¹⁶, printer cartridge recycling¹⁷, and pipet tip racks¹⁸.

Campus wide there are pilot scale experiments that are being investigated. Historically, waste vegetable oil for cooking from the dining halls was collected twice a week for conversion to bio-diesel fuel. This bio-diesel was then used to fuel a PPD pickup truck and several lawnmowers on campus. The project is currently scaling up and is proposed to complete the biodiesel cycle at a maximum rate of 5000 gallons per month¹⁹. Composting is utilized by the Butterfly Garden and the option is being investigated for on campus residents²⁰. Currently, composting is available to Diamond Village residents, a family housing establishment, as part of a sustainability project for housing, and the Campus Composting Cooperative, supported by Bioenergy and Sustainable Technology Laboratory, is exploring providing on campus residents with composting opportunities. Housing has established the University of Florida Housing Recycling Guidelines, which dictates the recycling opportunities available to students living on campus.

Moreover, the University is a member of and actively promotes the U.S. Green Building Council, which develops and administers the LEED Green Building Rating System. The University of Florida is one of the few participants nationwide to take the challenge of constructing high performance green buildings that will maximize efficiency, productivity, and comfort of the students, staff, and faculty. Moreover, UF integrates sustainable measures such as waste reduction and recycling into contracts and vendor agreements to reinforce their commitment²¹.

¹⁴ University of Florida. (2006, May 18). *Finance and Accounting: Asset Management*. Retrieved August 28, 2009, from Directives. and Procedures: <http://fa.ufl.edu/uco/handbook/handbook.asp?doc=1.4.9.17>

¹⁵ University of Florida. (2007, June 29). *Finance and Accounting: Purchasing*. Retrieved August 28, 2009, from Directives. and Procedures: <http://fa.ufl.edu/uco/handbook/handbook.asp?doc=1.4.12.16>

¹⁶ University of Florida. (n.d.). *Campus Copy Fax & Pack*. Retrieved August 28, 2009, from Reitz Union: <http://www.union.ufl.edu/campuscopy/>

¹⁷ University of Florida. (2008, October 9). *University Contract for Recycled Toner Cartridge Program*. Retrieved June 5, 2009, from Purchasing: http://www.purchasing.ufl.edu/main_contracts-recycled_toner.asp

¹⁸ University of Florida. (2009, August 21). *UF Contract for Scientific Equipment, Lab and Safety Supplies*. Retrieved August 24, 2009, from Purchasing: http://www.purchasing.ufl.edu/main_contracts-fisher.asp

¹⁹ Bruce Welt, PhD. (2009, August). Associate Professor and Undergraduate Coordinator University of Florida Agricultural and Biological Engineering, Packaging Science Program. (K.Hodoval, Interviewer)

²⁰ Hartman, C. D. (2009, July). Campus Composting Cooperative Coordinator. (K. Hodoval, Interviewer)

²¹ University of Florida. (2009, May 21). *University of Florida "LEED"s by Example*. Retrieved June 5, 2009, from Facilities Planning and Construction: <http://www.facilities.ufl.edu/sustain/>

3.4. MEDICAL WASTE DISPOSAL

Medical wastes are produced on campus in laboratories and at Shands Hospital. All medical wastes are deposited in red biohazard bags prior to disposal. Some of the wastes require further treatment while others go untreated for collection. Any waste that is potentially infectious or is infectious must be inactivated via autoclave or bleach treatment before it leaves that facility that generated it. Other medical wastes that are not potentially infectious do not have to be inactivated, but do have to be deposited in red biohazard bags. Bags are then placed into corrugated cardboard boxes that are labeled with the biohazard symbol. All sharps must be placed in red, hard plastic biohazard boxes prior to disposal²². Biohazard boxes are then transported by lab staff to a secure storage/pick up area. All medical waste at UF is then collected and disposed by Stericycle.

3.5. HAZARDOUS WASTE DISPOSAL

The university encourages all departments and laboratories to minimize production of hazardous wastes. This is accomplished through source reduction, recycling, and treatment. Source reduction involves not producing a particular hazardous waste, while recycling entails re-using a material. Treatment must result in the waste not being classified as hazardous afterward²³. All hazardous wastes on campus are sent to Environmental Health and Safety. They are then managed in a manner that is dictated by regulations and/or the characteristics of the waste.

²² University of Florida. (n.d.). University of Florida Biological Waste Disposal Policy. Retrieved July 23, 2009, from <http://www.ehs.ufl.edu/Bio/biowaste.htm#Top>

²³ University of Florida. (n.d.). *Hazardous Waste Minimization Guide*. Retrieved August 26, 2009, from Environmental Health and Safety: <http://www.ehs.ufl.edu/HMM/wmin.htm>

4. WASTE GENERATION AND COMPOSITION AT THE UNIVERSITY OF FLORIDA

The University of Florida provides a variety of services to at least 70,000 community members daily. UF serves as place of employment, education, dining, entertainment, recreation, residence, and even a care giving facility. Accordingly, the generation and composition of UF's waste stream varies appropriately. In this chapter, information on the overall waste steam components and the generation rates are first presented. Subsequently, composition and generation trends of municipal solid waste and recycling are examined. Lastly, a cumulative summary displaying the overall components as a function of the waste and recovery stream categories and subcategories is provided.

4.1. COMPOSITION OF THE UF WASTE STREAM

As detailed in Chapter Two, the UF Physical Plant Division separates the UF waste stream into five categories for ease of recording the monthly weights generated. According to these categories, the composition of the UF waste stream is denoted as MSW, C&D, recyclable material, as well as medical and hazardous waste. MSW and C&D debris are disposed of in separate dumpsters, compactors, and roll-offs since in Florida they may be disposed at different class landfills. Recyclable material, such as paper, metal, cans, and bottles are collected in recycling containers, dumpsters, and compactors. Other wastes accounted for under recyclable material are biosolids, which are collected in transportable truck containers, and yard waste, which is collected in trucks. All recyclable materials are sent to appropriate handling facilities after collection. The medical waste is collected and treated to landfill standards by Stericycle. The hazardous waste is sent to EH&S for proper management.

Table 4 presents the weights from 2008 for these five primary recording categories. The categories are classified by their disposal method. As discussed earlier, both C&D debris and MSW are landfilled, while recyclable material is sent to be recovered. Waste that must first undergo treatment, before disposal at a landfill, such as medical waste and hazardous waste, is classified in the "other" category.

Table 4: Total weight of waste generated on campus for 2008 by the category and disposal method

Category	Tons Landfilled	Tons Recovered	Tons Other*	Total Tons Generated
MSW	9,209.32			
C&D debris	1,452.12			
Recycled		5,570.34		
Medical			269.76	
Hazardous			85.44	
Totals	10,661.44	5,570.34	355.20	16,586.98

*The other category refers to waste requiring special management practices prior to disposal.

As indicated in Table 4, landfilling is the dominant means of waste management. Approximately, 64% of the waste generated in 2008 at UF was landfilled, with 8.8% contributed by C&D debris and 55.5% from MSW. However, over 33% of the UF waste stream is recovered through the campus wide diversion techniques such as recycling. Moreover, a component of these diversion techniques not considered in this table is the quantity of waste not generated due to reduction and reuse efforts encouraged on campus.

4.2. HISTORICAL GENERATION TRENDS

The UF PPD maintains records tracking the weight of refuse generated on campus. For the past decade, these records identify the monthly weight of the previously described categories: MSW, C&D, recyclables, medical, and hazardous waste. The data collected from 2001 to 2008 were analyzed for cumulative generation rates and disposal trends. The data was furnished by PPD.

4.2.1. TOTAL GENERATION TRENDS

Figure 24 provides the total generation rates with respect to the last eight years of data.. The five categories are totaled in order to observe any trends with respect to the overall waste stream. On average, approximately 18,000 tons per year of waste are generated from campus activities, approximately 50 tons per day. In 2004, there was a peak of roughly 21,000 tons; due to the nearly 3,000 ton increase in yard waste resulting from the severe hurricane season. This peak of yard waste in 2004 is noted in future figures as well. Overall, the data show a slight downward trend, meaning the quantity of waste generated yearly is decreasing.

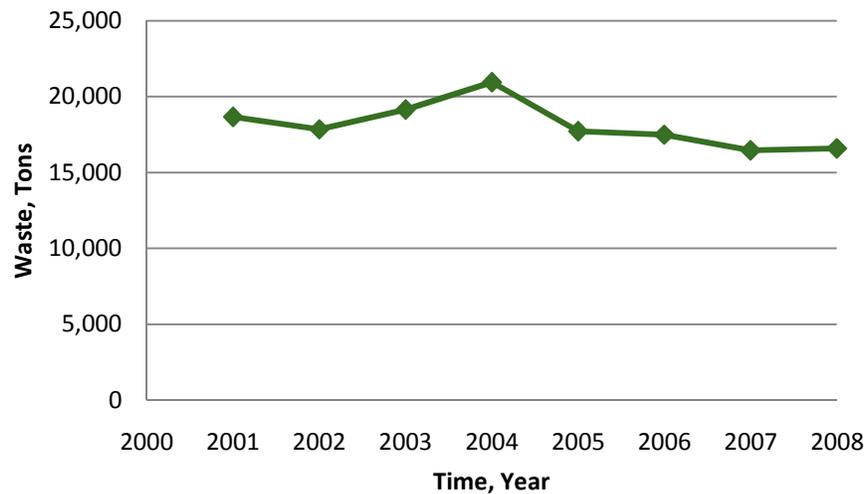


Figure 24: Yearly waste generation from 2001 through 2008 at UF

The monthly generation data for 2001 through 2008 is provided in Figure 25. The rates remain relatively steady in the 200 to 300 ton range. A decrease in the generation rate regularly occurs in July during the summer months. Other monthly fluctuations do not synchronize as distinctly, however, there

is typically a peak and a dip within each the fall and spring semester. This trend is illustrated better when just looking at MSW.

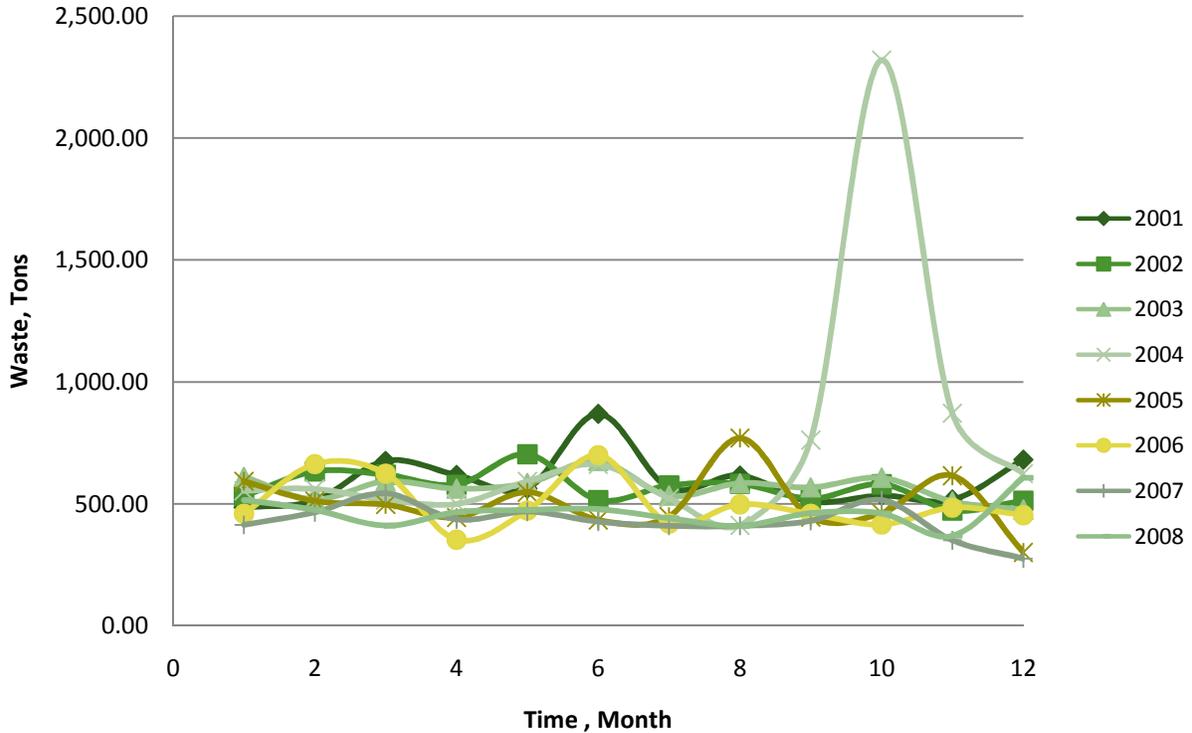


Figure 25: Total waste generation at the University of Florida defined by month and tonnage, with each year from 2001 through 2008 displayed

4.2.2. RECORDED WASTE CATEGORY GENERATION TRENDS

The historical generation of MSW, C&D debris, recycled, medical, and hazardous waste was identified in Figure 26 and analyzed for 2001 through 2008. The weight of MSW disposed of at a landfill was approximately around 8,740 tons with a peak of approximately 9,200 tons in 2008. The yearly tonnage of C&D debris fluctuates around 2,300 tons with a peak in 2003 and a low in 2008. The tons of waste diverted from the landfill as recycled material decreased from approximately 7,100 tons in 2001 to 5,600 tons in 2008, with an exception in 2004 when the recycled material peaked around 9,100 tons. The yearly tonnage of medical waste fluctuates around 330 tons with a peak of 400 tons in 2005 and a low of 270 tons in 2008. Hazardous waste generation remains relatively constant with a yearly average of 95 tons, fluctuating over a 10 ton range.

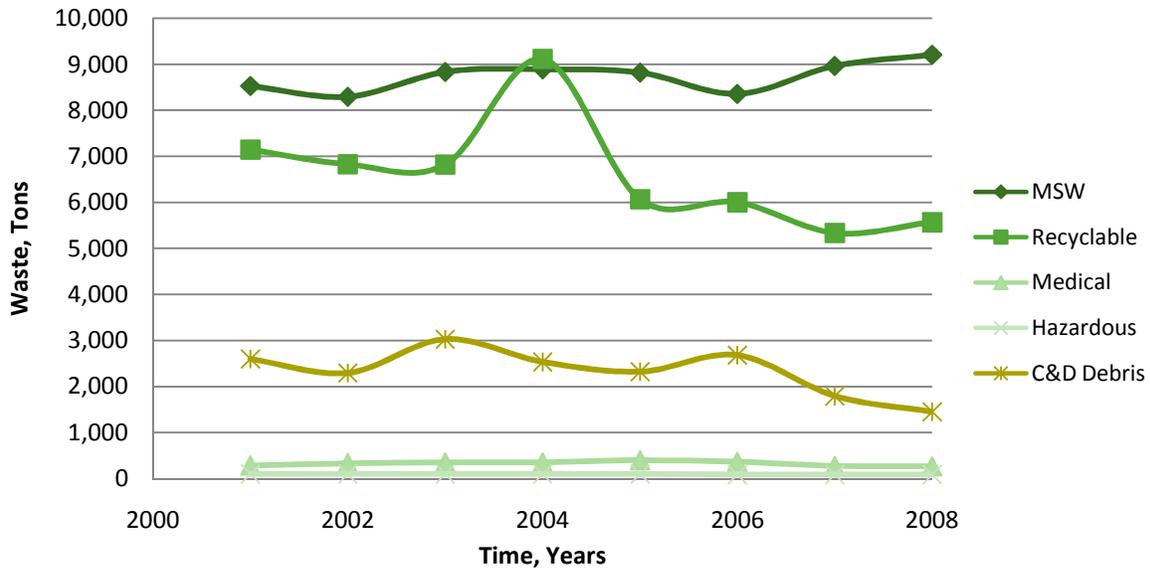


Figure 26: The total waste generated at the University of Florida in tons for each year from 2001 through 2008 by the recorded waste category

The peaks of C&D debris and recycled material in 2004 are a result of the damage caused by the active hurricane season in the fall of 2004. The downward trend in C&D as well as the medical and hazardous waste categories from 2001 to 2008 is likely a function of the current economic situation. That is, there is less funding available for renovations and construction, hence decreasing the consequent C&D debris. Given the expense associated with proper disposal of medical and hazardous waste, reduction techniques have been implemented as well as more attention paid to exclusively disposing of medical and hazardous materials in the specified containers. This could account for the slight upward trend seen for MSW generation from 2001 to 2008. Moreover, only since 2006 have the weights of each category been tracked, prior to this estimates were often used. Hence, these values could have been inflated.

The downward trend in recycling, by weight, may reflect both the variation in recyclables generated on campus as well as the physical changes of recyclable material. Since Pepsi has been on campus, the volume of aluminum cans has been replaced by PET plastic bottles. With respect to the physical alterations in recyclables, newspapers are smaller, cardboard is thinner, the paper stock is lighter weight, and smaller fonts are utilized to decrease the amount of paper necessary. Moreover, recycling weights are affected by new technology (e.g on-line phone books, magazines, two-sided printing, etc) and reduction campaigns (e.g. "Think before you ink," two-sided printing, etc).

The average UF waste stream by ton was determined from the yearly tons per recorded category data. This information is displayed in Figure 27. On average, the UF waste stream is composed of MSW (48.25%), C&D debris (12.91%), recyclable material (36.51%), medical waste (1.81%), and hazardous waste (0.52%). With respect to disposal methods utilized, both MSW and C&D are collected and immediately sent to be landfilled, thus an average of 61.16% is landfilled versus other final disposal means, such as landfill diversion through recycling (36.51%).

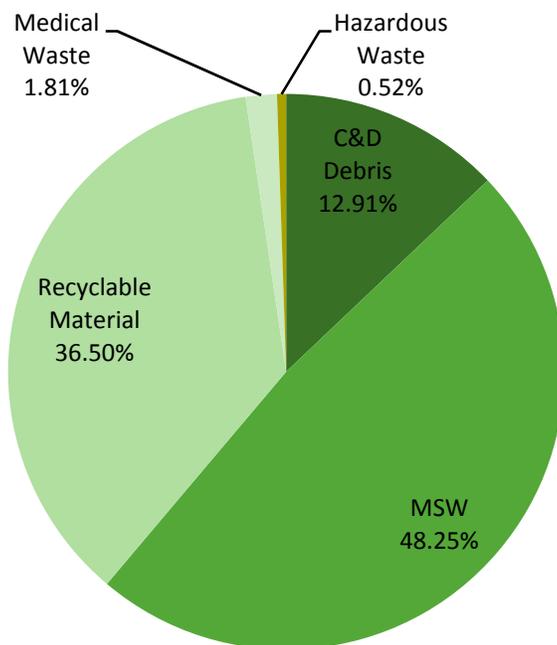


Figure 27: The average contribution of each recorded waste category to the University of Florida's total waste stream

The total weight of waste generated from 2001 through 2008 is classified by the disposal method utilized in Table 5. The percent of the total associated with each disposal method is presented. As seen earlier, the *tons landfilled* is composed of both the MSW and C&D debris, the *tons recycled* is composed of all the materials that are recycled or sent for reuse, and *tons other* account for waste requiring special management practices prior to disposal (medical and hazardous waste).

Table 5: Total tons of waste generated at the University of Florida from 2001 through 2008 by the disposal method, yearly total tonnage provided

Year	Tons Landfilled	% Landfilled	Tons Recycled	% Recycled	Tons Other*	% Other*	Yearly Total Tons Generated
2001	11,131.71	59.7%	7,148.56	38.3%	380.38	2.0%	18,660.65
2002	10,596.08	59.3%	6,830.49	38.3%	428.00	2.4%	17,854.57
2003	11,865.41	62.0%	6,823.62	35.6%	454.00	2.4%	19,143.03
2004	11,380.80	54.3%	9,118.04	43.5%	452.69	2.2%	20,951.53
2005	11,148.32	62.9%	6,069.98	34.3%	500.37	2.8%	17,718.66
2006	11,042.49	63.1%	6,004.48	34.3%	452.71	2.6%	17,499.67
2007	10,760.84	65.4%	5,336.10	32.4%	360.93	2.2%	16,457.87
2008	10,661.44	64.3%	5,570.34	33.6%	355.20	2.1%	16,586.98
Average	11,073.39	61.16%	6,612.70	36.52%	423.03	2.33%	18,109.12

*The other category refers to waste requiring special management practices prior to disposal.

As with the 2008 data already reviewed, the dominant disposal method utilized by the university is landfilling. The landfilled portion of the waste stream is on average 21% C&D debris and 79% MSW. Yearly, at least 30% of the waste stream is recycled, thus diverted from the landfill. Once more, this does not account the reduction of waste due to reuse and reduction techniques implemented on campus.

4.3. COMPOSITION OF MSW

As discussed, UF PPD classifies and records the weight of the waste generated at the University by five waste categories, known as MSW, C&D debris, recyclable material, hazardous waste and medical waste. Currently, the recycled material is further characterized into eight subcategories which are also weighted monthly. The composition of C&D debris varies on the project, while hazardous waste and medical waste vary depending on the research, laboratory, and campus source. Moreover, there is largely no means of regulating the waste generated or an accurate method to characterize these recorded waste categories since they are source dependent. Accordingly, MSW is the primary waste category of interest since it is the largest recorded component of the UF waste stream contributing approximately 48.25% and has yet to be characterized at the University level. Furthermore, of the recorded waste categories, MSW is the most feasible to alter since it is composed of non-hazardous waste that is generated from standard business, academic, and social activities.

Consequently, in properly assessing, managing, and recommending improvements to the campus solid waste management system, it is crucial to quantify and qualify the MSW portion of the UF waste stream. Identifying the components of the MSW stream and the proportion provided essential information regarding the quantity of refuse that is recoverable or even reducible. Moreover, it gave insight on the success of current campus wide recovery efforts.

The first element of this investigation involved reviewing historical data and identifying trends resulting from the university operating schedule. During the spring and fall semesters, approximately eight months out of every year, the campus is in full session with over 50,000 students, 12,000 staff, and 4,000 faculty members. Moreover, sports, theater, and other entertainment opportunities exist, drawing crowds of over 90,000 for pivotal gator football games. During the summer months, the student and professor numbers decrease, however, the campus is still active. Staff and faculty busily clean, maintain, and prepare for the spring and fall semesters. Additionally, UF is alive with tournaments and summer camps for academics, athletics, theatre, and other arts, as well as incoming students and their parents for Preview activities.

Figure 28 below presents the monthly MSW generation trends for 2001 through 2008. It can be observed that there is a historical small peak near the end of the spring semester in April within the 800 tons range followed by a dip in the summer, with waste disposal in June wavering around 600 tons. The first peak may result from a combination of academic exams and housing move-outs. During the exam period, libraries, dining and coffee options, academic buildings, and the Reitz remain open for extended hours while students spend an increased duration of time on campus preparing for exams, and thus generating and disposing of waste for longer periods of time. Moreover, housing move-out overlaps and extends longer than the exam period. Students moving out of dorms, family housing, and Greek housing

at the end of the academic school year cause an increase in waste disposal as students clean and move out of their living quarters. A second peak occurs during the fall semester which is caused by an incoming class of new students; 'fall' cleaning by faculty, staff, and returning students; and the commencement of the football season. Tailgating events alone can draw crowds of over 50,000 non-university fans until the beginning November when the season is nearly over.

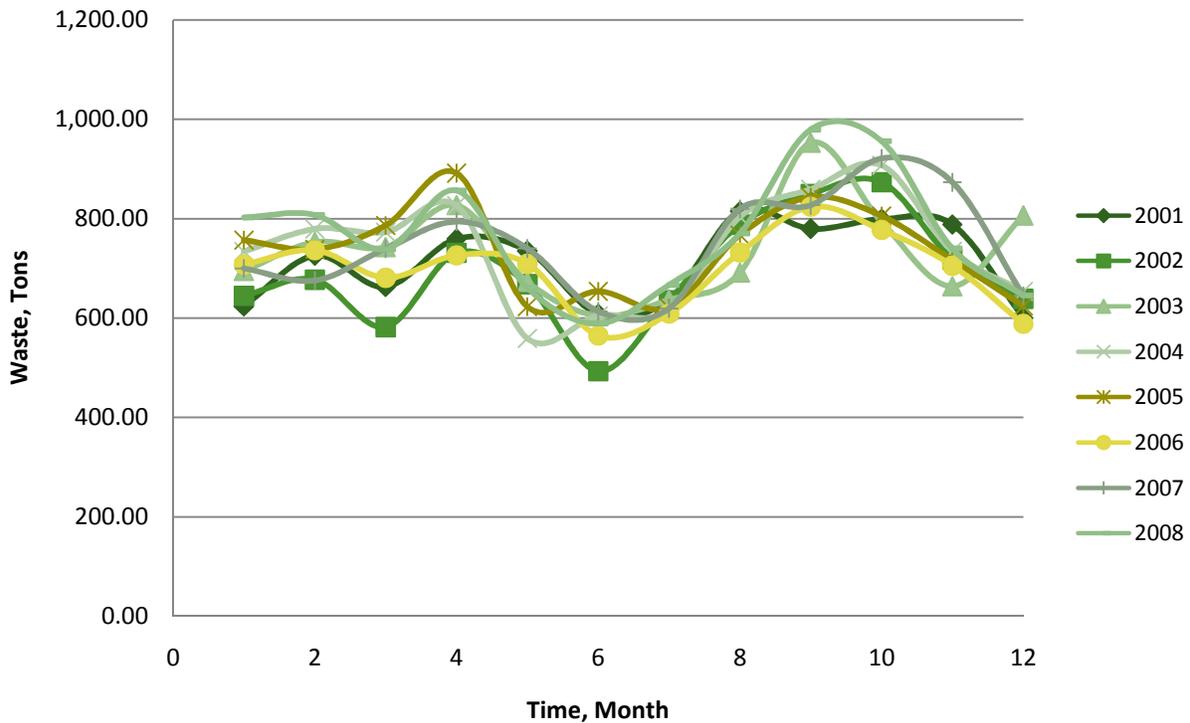


Figure 28: Monthly tonnage trends for the MSW generated at the University of Florida from the data collected by PPD during 2001 through 2008

4.3.1. CAMPUS SOURCES

To characterize the University of Florida’s MSW stream, it was necessary to evaluate and quantify the contributing sources. Accordingly, the campus was categorized by the source of the waste, denoted as campus sources. The contribution of each campus source was estimated by classifying each MSW dumpster, compactor, and roll-off as primarily receiving waste from one campus sources discussed in earlier Chapter Two.

The data provided by the UF PPD, noting the location, volume, and weekly collection frequency of roll-off containers, compactors and dumpsters, were used to approximate the maximum volume of MSW generated by each campus source and sub-source. This is detailed in Appendix B. This was estimated by assuming each dumpster, compactor, and roll-off was filled to the maximum capacity of the particular container upon collection, hence, providing the maximum volume of MSW contributed by each source and sub-source. Accordingly, the values calculated were not necessarily representative of

how each campus source contributes to the UF MSW stream, since each were assumed full and it was purely volume based. However, it was assumed that the refuse receptacles are placed on a need basis. Thus, the volume estimates would provide a baseline for how each source affects the UF MSW stream. With this information, the loads of waste that would best represent the University of Florida’s MSW stream were selected. The volume estimates are provided in Figure 29 and it is apparent that housing (37%), academic (23%), and administration (13%) are the dominant components of the UF MSW stream.

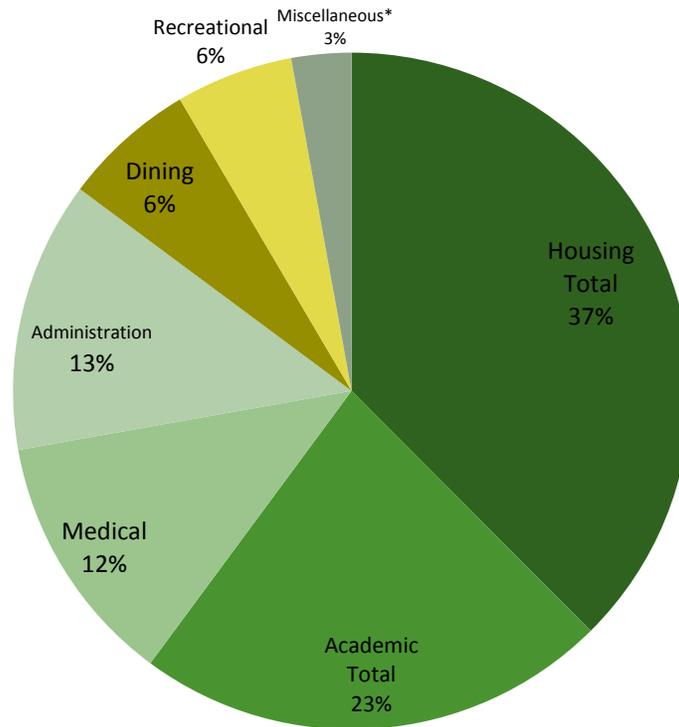


Figure 29: Maximum volume estimates for each campus source of MSW

The data annually recorded by PPD on the five waste categories is weight based and the estimates established from the location, volume, and collection frequency of dumpster detailed in Figure 29 is volume based. Thus, in order to compare this information, it was necessary to approximate densities for the waste generated at each campus source and sub-source. Each source and sub-source density was estimated from the combination of generally accepted densities provided by the US Environmental Protection Agency (USEPA) as well as the composition established in the MSW composition sorts. In general, a base of 200 pounds per cubic yard was assumed for portion of each source and sub-source MSW stream that paralleled the composition of the 2006 US MSW stream²⁴, depicted in Figure 30.

²⁴ U.S. Environmental Protection Agency. (2008, November 8). *Municipal Solid Waste (MSW) in the United States*. Retrieved April 24, 2009, from Wastes - Non-Hazardous Waste - Municipal Solid Waste: <http://www.epa.gov/osw/nonhaz/municipal/msw99.htm>

Food waste accounted for only 12.4% of the MSW generated by the US, which was generally lower than what was ascertained in the waste composition study. Since food waste has a significant weight associated with its volume, it was the component of primary concern in the campus MSW. Paper was also considered since it composed 33.9% of the US MSW generated which was equivalent to, or lower than the composition percentages identified. If the food waste portion was higher than in the US study, the excess percent was accounted for in the density calculations. A detailed description of density calculations is found in Appendix B.

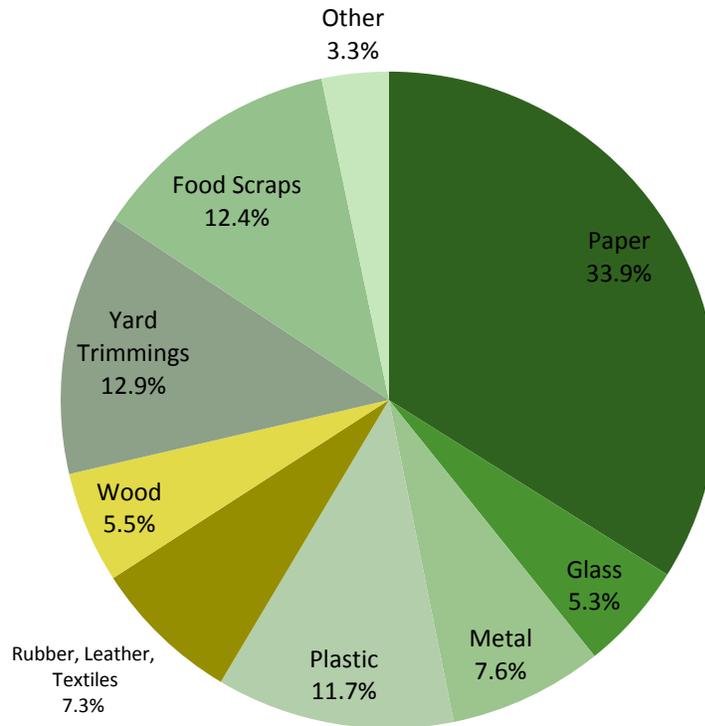


Figure 30: The US MSW composition by waste category from the 2006 USEPA study

According to these density calculations, the weight and volume contributed by each source and sub-source to the UF MSW stream was determined and is presented in Table 6. The major contributors to the UF MSW stream in both weight and volume are first housing and then academic sources, Table 6. By weight housing (47%), academic (20%), and dining (10%) are the three largest contributors, By volume housing (38%), academic (23%), and administration (13%) are the dominant contributors to the UF MSW stream. The remaining 23% in weight is represented by administration, medical, recreational, and miscellaneous sources whereas in volume the remaining 26% is accounted for by dining, medical, recreational, and miscellaneous sources

Table 6: The weight (tons) and volume (cubic yards) of MSW contributed by each campus source to the University of Florida MSW stream

Campus Sources	Campus Sub-Sources	Estimated Weight Contribution to the UF MSW Stream (tons)	Estimated Weight % Contribution to UF MSW Stream	Estimated Volume Contribution to the UF MSW Stream (yd ³)	Estimated Volume % Contribution to UF MSW Stream
Housing Total		439.4	47.2%	1864.9	37.5%
	Dorm	251.2	27.0%	1147.9	23.1%
	Greek	126.6	13.6%	377.0	7.6%
	Family	61.7	6.6%	340.0	6.8%
Academic Total		182.5	19.6%	1122.0	22.6%
	Mixed	86.6	9.3%	751.4	15.1%
	Plant Lab	21.5	2.3%	69.6	1.4%
	Animal Lab*	53.6	5.8%	133.0	2.7%
	Library	20.8	2.2%	168.0	3.4%
Medical		77.3	8.3%	599.8	12.1%
Administration		75.4	8.1%	644.3	13.0%
Dining		92.0	9.9%	316.0	6.4%
Recreational		44.7	4.8%	277.8	5.6%
Miscellaneous*		18.8	2.0%	142.7	2.9%
Totals		930.1	100.0%	4967.5	100.0%

*These Sources were not manually sorted, but visually assessed to determine an appropriate composition.

4.3.2. MSW SORT STUDY

A MSW composition study was completed as a component of this audit to characterize the MSW disposed at the University of Florida. In this study, the generator was exclusively UF and the solid waste examined was only the non-hazardous trash, refuse and other waste – denoted as MSW - that is deposited into dumpsters, compactors, and roll-off containers campus wide. Investigations were not completed on the entire reported UF waste stream which, as the historical data reports, includes not only MSW, but also C&D debris, recycled materials as well as medical and hazardous waste.

Three different methods were utilized for assessing the components of the garbage waste stream generated on campus. These methods are:

- Phase I: Large Scale MSW Sorts conducted at the Transfer Station
- Phase II: Small Scale MSW Sorts conducted at the University of Florida
- Phase III: Visual MSW Sorts conducted on site at campus dumpsters

The first two methods, denoted as Phase I and II, consisted of large and small scale manual MSW sorts completed by research team members and volunteers. The MSW sorted was selected from a

predetermined source and brought to a specified sort location. The large scale sorts were completed at the Transfer Station and the small scale sorts were completed at the PPD recycle yard. Supervisors would then examine the sample of waste for any material that would pose a risk to volunteers, ranging from sharps like needles and razors to noxious chemicals. The entire sample would then be sorted into the predetermined MSW categories and subcategories. The third method, Phase III of the study, entailed selecting dumpsters that represent each campus source and verifying if the manual MSW sorts completed during the first two phases were representative. This entailed removing bags of waste, tearing them open, and visually sorting them on location.

In Table 7 the number of campus sources sampled during the waste composition study is provided, along with total weight and volume associated with each sample. The weight and volume samples are not equal because volumes were not reported during the first manual sort of Phase I. The mean weight sampled is also reported. Since the largest contributors to the MSW portion of the UF waste stream were the housing and academic sources, 13 of the 22 weight samples and 11 of the 19 volume samples were from these sources.

Table 7: Summary of the sampled campus sources, featuring the total weight and volume of all samples taken as well as the mean sample weight for each campus source

Campus Sources	Campus Sub-Sources	# Weight Based Samples	Total Sampled Weight (lbs)	Mean Sample Weight (lbs)	# Volume Based Samples	Total Sampled Volume (gals)
Housing Total		6	759.42	118.94	5	1004.09
	Dorm	3	453.91	151.30	2	452.71
	Greek	2	200.00	100.00	2	335.80
	Family	1	105.51	105.51	1	215.57
Academic Total		7	1094.95	126.25	6	1336.44
	Mixed	5	895.25	179.05	4	1037.61
	Plant Lab	1	105.20	105.20	1	147.30
	Animal Lab*	0			0	
	Library	1	94.50	94.50	1	151.53
Medical		1	240.51	240.51	0	0.00
Administration		2	267.20	133.60	2	484.08
Dining		4	729.35	182.34	4	763.51
Recreational		2	250.33	125.17	2	316.42
Miscellaneous*		0			0	
Total		22	3341.75	154.01	19	3904.55

*These Sources were not manually sorted, but visually assessed to determine an appropriate composition.

In the following sections, composition, weight, and volume percent profiles resulting from the manual and visual sorts are provided for the portion of UF's waste stream that is recorded as MSW.

Thus, the data represents the composition of MSW, which is 48.25% of the UF waste stream. The percent of each category and subcategory sum to 100% because they are not weighted with respect to the five recorded categories that compose the UF waste stream as a whole. The results for Phase I and II sorting methods are first presented. Subsequently, the data from the large scale sorts is condensed into the small scale sort format. Therefore, the data is comparable and the overall profile of the MSW portion of the UF waste stream is generated. The data is displayed as non-weighted and weighted percents. The non-weighted percents assume that all sources, such as academic, housing, and recreational, contribute equally to the MSW portion of the UF waste stream. The weighted percents were determined by categorizing each garbage receptacle; specifically dumpsters, compactors, and roll-off containers, and denoting which campus source and/or sub-source contributed to the majority of the waste deposited in the receptacle. It was assumed that the waste in the receptacle was most influenced by the nearest building source.

4.3.2.1. *Phase I: Large Scale MSW Sorts at the Transfer Station*

The purpose of the Phase I sorts were to completely characterize the UF MSW stream and visually inspect how the collection method affects the collected waste. When sorting, supervisors and volunteers assessed how the MSW likely entered the refuse receptacle and consequent dumpster. However, in the process, whether the MSW was soiled or wet was noted. The quality of the MSW upon arrival to the Transfer Station not only affected the weights of each waste category, but it is important to consider since recovery efforts are less successful when the waste is highly affected by the collection and transfer method. For instance, the county recycler, SP, will not accept old corrugated cardboard if it is wet and/or soiled with other waste, such as organic matter, because it is too heavy and difficult to process. Accordingly, if the potential recyclables are not captured by the campus recovery efforts, the recyclables will not be recovered prior to landfill disposal.

Phase I MSW sorts were completed in the spring at the Transfer Station. Representative samples of 200 to 300 pounds of MSW were extracted from preselected trucks. The MSW was then sorted into over 70 categories and subcategories. The summary of the loads sampled and cumulative results of Phase I are presented in Table 8 and Table 9, respectively. The individual MSW sort data is provided in Appendix F.

Since in Phase I, samples were taken from front loading trucks that collect MSW from multiple campus sources, a summary of the loads is provided. A total of six loads were sorted and for each one weight of the MSW categories and subcategories were recorded. Volumes were not recorded until the fourth load of waste, after the importance of having volume information was identified. Since certain MSW categories like plastics are not well represented by weight measurements. Accordingly, each bin was weighed and the volume was estimated. Volume measurements were made by assessing the fullness each bin of waste. The methodology for Phase I MSW sorts is detailed in Appendix F.

In Phase I, a variety of campus sources were investigated in order to get an indication of the primary components of the UF MSW stream. In Table 8, the campus sources sampled are identified and range from housing to academic buildings to Shands Medical Center. The total weight sampled from all

six loads was roughly 1400 pounds and the total volume for the last three loads was approximately 1260 gallons.

Table 8: Summary of the loads sampled during Phase I of the MSW sorts

Sample	Locations	Campus Source	Sample Weight (lbs)	Sample Vol (gals)
1	Broward, Jennings, Beaty Towers, Sorority Row, Fresh Food, Broward Dinner, PK Young, Vet School	Housing, Dining, Academic	213.78	-
2	South Campus	Academic	268.00	-
3	Shands Compactor	Medical	220.57	-
4	Shands Kitchen	Dining	442.81	489.78
5	Weimer	Academic: Mixed	283.19	404.82
6	Administration	Administration	213.13	370.56
Total			1428.35	1265.16

In Table 9, each waste category and subcategory sorted for during the Phase I sorts are listed. The total weight and volume recorded for each six loads is provided by category and subcategory. The percent of total for weight and volume is also provided. By weight, food waste, old corrugated cardboard (OCC), film²⁵, and compostable/soiled paper material constitute 50% of the MSW stream. By volume, each film and OCC represent approximately 22% of the MSW stream, at total of 44%, and the next highest contributors are other rigid plastic – food service and compostable/soiled paper at roughly 5% each. Accordingly, it is important to note the large weight but low volume associated with food waste in contrast to the large volume contributed by plastics, though the weight is not as significant.

²⁵ Is woven together (e.g. grain bags); contains multiple layers of film or other materials that have been fused together (e.g. potato chip bags). This category includes supermarket and shopping bags that were contaminated with food, liquid, or grit during use and used garbage bags. Also included are photographic negatives, shower curtains, re-sealable bags, newspaper bags, etc.

Table 9: Phase I composition profile of University of Florida’s MSW stream by waste category and subcategory in terms of weight (pounds) and volume (gallons)

Category/Subcategory		Weight (lbs)	W %	Volume (gals)*	V % *
Paper	Newspaper	24.06	1.68%	13.50	1.07%
	Old Corrugated Cardboard (OCC)	184.50	12.92%	280.80	22.19%
	High Grade	52.69	3.69%	32.50	2.57%
	Mixed Recyclable	11.19	0.78%	5.75	0.45%
	Mixed Recyclable - junk mail	16.75	1.17%	14.00	1.11%
	Composite	33.82	2.37%	44.13	3.49%
	Compostable/ Soiled	148.00	10.36%	72.50	5.73%
	Boxboard	40.50	2.84%	39.38	3.11%
	Miscellaneous	56.00	3.92%	19.50	1.54%
	Other	0.69	0.05%	0.00	0.00%
	Total	568.19	39.8%	522.05	41.26%
Plastic	#1 PET bottles	17.69	1.24%	45.72	3.61%
	#2 HDPE	6.50	0.46%	7.38	0.58%
	#3-#7	4.75	0.33%	0.00	0.00%
	Other Rigid plastic	27.25	1.91%	9.00	0.71%
	Other Rigid plastic - #2,4, and 5	10.50	0.74%	18.00	1.42%
	Other Rigid plastic - #1,3,6, and 7	22.00	1.54%	49.50	3.91%
	Other Rigid plastic - nonfood Expanded Polystyrene (EPS)	7.50	0.53%	54.00	4.27%
	Other Rigid plastic - food service	34.81	2.44%	73.25	5.79%
	Film	164.44	11.51%	288.40	22.80%
	Plastic products	1.75	0.12%	0.00	0.00%
	Composite	6.44	0.45%	19.50	1.54%
	Other	0.16	0.01%	0.00	0.00%
	Total	303.78	21.27%	564.75	44.64%
Organics	Yard waste	24.94	1.75%	9.00	0.71%
	Food	215.00	15.05%	50.17	3.97%
	Animal By-products	19.00	1.33%	0.00	0.00%
	Composite/ other organic	35.50	2.49%	0.00	0.00%
	Total	294.44	20.61%	59.17	4.68%
Disposable Diapers		0.50	0.04%	0.00	0.00%

*Only accounts for the last three loads sampled at the Transfer Station, numbers 4, 5, and 6

Category/Subcategory		Weight (lbs)	W %	Volume (gals)*	V % *
Metal	aluminum drink containers	10.75	0.75%	11.21	0.89%
	aluminum foil/ containers	2.50	0.18%	0.00	0.00%
	other aluminum	1.50	0.11%	0.00	0.00%
	food and beverage	3.44	0.24%	2.35	0.19%
	other ferrous metals	2.78	0.19%	0.00	0.00%
	other non-ferrous scrap	0.41	0.03%	0.00	0.00%
	empty paint & aerosol	2.81	0.20%	2.50	0.20%
	empty propane & other tanks	0.00	0.00%	0.00	0.00%
	composite/ other metals	15.19	1.06%	5.00	0.40%
	Total	39.38	2.76%	21.06	1.66%
Glass	Clear	18.25	1.28%	2.57	0.20%
	Colored	0.50	0.04%	0.00	0.00%
	Flat	0.00	0.00%	0.00	0.00%
	comp/other mixed cullet	0.63	0.04%	0.00	0.00%
	Total	19.38	1.36%	2.57	0.20%
C&D	Clean Wood	1.38	0.10%	0.00	0.00%
	Gypsum	2.50	0.18%	0.00	0.00%
	Fiberglass Ins	0.00	0.00%	0.00	0.00%
	Rock/concrete/bricks	0.00	0.00%	0.00	0.00%
	Asphaltic Roofing	0.00	0.00%	0.00	0.00%
	Ceramics	0.19	0.01%	0.00	0.00%
	PVC	0.00	0.00%	0.00	0.00%
	Composite/other C&D	49.00	3.43%	0.00	0.00%
	Total	53.06	3.71%	0.00	0.00%
Other Products	Tires	0.00	0.00%	0.00	0.00%
	Rubber	2.75	0.19%	0.00	0.00%
	Textiles & leather	80.81	5.66%	18.36	1.45%
	Apparel	15.00	1.05%	0.00	0.00%
	Electrical Appliances	73.56	5.15%	19.08	1.51%
	Computers, Related Electronics	7.00	0.49%	0.63	0.05%
	Portable Electronics	0.00	0.00%	0.00	0.00%
	Total	179.13	12.54%	38.07	3.01%

*Only accounts for the last three loads sampled at the Transfer Station, numbers 4, 5, and 6

Category/Subcategory		Weight (lbs)	W %	Volume (gals)*	V % *
HHW	Auto Products/Fluids	1.00	0.07%	0.00	0.00%
	Paints & Solvent	0.75	0.05%	0.00	0.00%
	Pesticides, Herbicides, Fungicides	0.00	0.00%	0.00	0.00%
	Household cleaners	1.00	0.07%	0.90	0.07%
	Lead Acid Batteries	0.00	0.00%	0.00	0.00%
	Other Batteries	0.50	0.04%	0.00	0.00%
	Other HHM	0.13	0.01%	0.00	0.00%
	Hg Containing Products	0.00	0.00%	0.00	0.00%
	Cathode Ray Tubes	0.00	0.00%	0.00	0.00%
	Total	3.38	0.24%	0.90	0.07%
Bulk	Carpet/ Upholstery	0.00	0.00%	0.00	0.00%
	Furniture	0.00	0.00%	0.00	0.00%
	Mattresses	0.00	0.00%	0.00	0.00%
	Total	0.00	0.00%	0.00	0.00%
Pharmaceuticals		0.38	0.03%	0.00	0.00%
CFLs		0.00	0.00%	0.00	0.00%
Sharps		0.50	0.04%	0.00	0.00%
Residuals >2"		79.25	5.55%	10.40	0.82%
Residuals >1"		30.00	2.10%	25.20	1.99%
Fines/ Super mix		63.50	4.45%	21.00	1.66%
Other (See Notes)		2.63	0.18%	0.00	0.00%

*Only accounts for the last three loads sampled at the Transfer Station, numbers 4, 5, and 6

4.3.2.2. Phase II: Small Scale on Campus

In Phase II, the objective was to represent each campus source. The sorts were completed on campus at the Physical Plant and where research team members withdrew the samples directly from predetermined dumpsters. The sample size was half that of the large scale sorts and the sort categories and subcategories were decreased from over 70 to just over 20, allowing more samples of waste to be processed by supervisors and student volunteers. Accordingly, a more accurate, though less detailed, characterization of each campus source was generated since multiple contributors to each major campus source were sampled.

The results of the Phase II MSW characterization study are presented in Table 10. A composition profile of UF's MSW stream based on these results can be observed, including the weight and volume of each waste category and subcategory as well as the weight and volume percents. By weight, food waste, compostable/soiled paper, and non-recyclable material constitute nearly 70% of the MSW stream. It is interesting to note that both #1-7 Plastic that is recyclable (2.96%) and is not currently recyclable (2.13%) are the top five and seven components, respectively. Unlike in the loads sampled at the Transfer

Station, C&D (0.0%) and special waste (0.2%) are appropriately minor constituents. By volume, non-recyclable material, compostable/soiled paper, and #1-7 Recycled plastics constitute nearly 45% of the MSW stream. Plastic which is not currently recycled on campus (#1-7 Not Recycled) is the fifth highest contributor at 7.1% and paper products such as composite (6.6%), boxboard (5.3%), and newspaper (4.2%). Products represent the 11th highest component with respect to volume. These products are materials that could have been donated for reuse instead of being disposed. Such examples found were helmets, clothes, calculators, binders, etc.

Table 10: Phase II composition profile of University of Florida’s MSW stream by weight (pounds) and volume (gallons), these values are not weighted by campus source information

Category/Subcategory		Weight (lbs)	W %	Volume (gals)	V %
Paper	Newspaper	83.3	4.38%	132.1	4.1%
	OCC	22.0	1.2%	100.2	3.1%
	High Grade White	50.1	2.63%	84.1	2.6%
	High Grade Colored	9.0	0.5%	27.7	0.9%
	Mixed Recyclable	48.3	2.5%	71.1	2.2%
	Boxboard	33.0	1.7%	166.0	5.2%
	Compostable/ Soiled	315.4	16.6%	646.5	20.2%
	Composites/ Other	41.1	2.2%	191.1	6.0%
Plastic	#1-7 Recycled	60.7	3.19%	299.6	9.3%
	#1-7 Not Recycled	46.2	2.43%	238.5	7.4%
	Food Service	18.2	1.0%	116.1	3.6%
	Nonfood EPS	2.7	0.1%	25.0	0.8%
	Rigid Plastic/Other	8.8	0.5%	64.2	2.0%
Metals	Aluminum cans	7.2	0.4%	46.3	1.4%
	Food and Beverage	14.6	0.8%	27.5	0.9%
	Scrap Metal/ Other	6.9	0.4%	20.8	0.6%
Recyclable Glass		38.8	2.0%	18.1	0.6%
Non-recyclable		258.4	13.6%	444.6	13.9%
Organics	Food/Plant Lab Waste	696.6	36.6%	247.5	7.7%
	Animal Byproducts/other	63.6	3.3%	48.0	1.5%
	Yard Waste	18.0	0.9%	76.8	2.4%
Products		61.1	3.2%	118.5	3.7%
C&D		0.4	0.0%	0.4	0.0%
Special Waste		3.2	0.2%	3.1	0.1%

4.3.2.3. *Phase III: Visual MSW Sorts at specified locations*

The third phase of the study was conducted to corroborate the information collected in Phase I and II. Accordingly, dumpsters that represented each campus source were preselected, visited, and visually sorted to determine if the MSW composition paralleled the data from the first two phases. MSW was removed from the dumpsters and dispersed on a tarp, then visually assessed. The waste components were compared to the weighted percent averages determined from combining the Phase I and II data.

4.3.2.4. *Phase Data Commingled*

Total weight and volume profiles were generated by condensing the over 70 categories and subcategories of the Phase I study into the 23 categories and subcategories of the Phase II study. This was completed in order to compare the data collected and more thoroughly characterize MSW streams generated by the campus sources.

For ease of comparison, Figure 31 presents both the weight and volume percentages of each of the nine MSW categories used for the UF MSW sorts. In Figure 31 A, the percentages depicted are a weight percent of the total. The major components are paper (33.0%), organics (30.2%), non-recyclable (17.5%), as well as plastics (7.8%) and products²⁶ (6.0%). It is significant to note that plastic, a relatively low weight, but high volume component of the MSW stream is within the top 5 contributors. Figure 31 B presents the volume percent of total. The volumes were determined by estimating how filled an 18 gallon recycling bin or a 5 gallon bucket, specifically for food waste, were with each waste category. The major components are paper (43.9%), plastics (22.5%), non-recyclable (17.2%), as well as organics (9.8%). In comparison to the weight percentage, these results are similar, though the organics and plastics have switched the order of contribution.

²⁶ Products are materials that had the potential for reuse, auction, or donation. This includes, but is not limited to, binders, apparel, textiles, rubber, personal entertainment devices, etc.

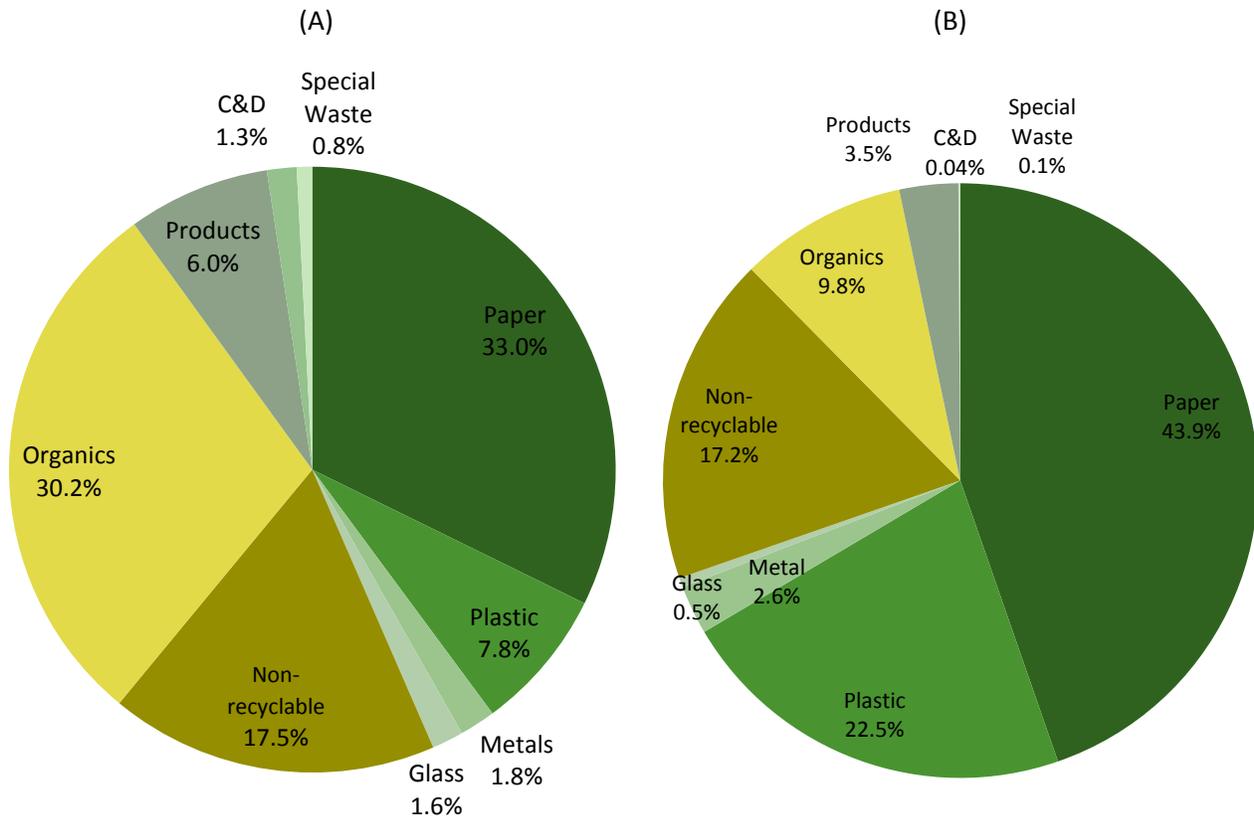


Figure 31: The weight (A) and volume (B) percents of the nine MSW categories from the MSW sort commingled phase data

Multiple categories consist of subcategories that more thoroughly characterize the composition. The division of the paper and plastic categories are subsequently depicted since paper is the primary contributor by weight and volume and since plastic influences the volume of the UF MSW stream significantly. Between paper and plastic combined, nearly 40% of the weight and over 65% of the volume of the MSW stream is represented. Organic waste is the second highest contributor by weight and fourth highest by volume. The breakdown is not displayed because the organic category only has two subcategories of food waste and yard waste/other. Food waste represents the majority of the organic category.

With regard to paper, in Figure 32 A, the largest subcategory by weight is compostable/soiled paper (39.5%), doubling the second highest contributor of OCC (17.8%). Compostable/soiled paper consists of the paper towels from bathrooms, napkins, paper plates as well as cups. Unfortunately, even with a well developed, campus wide paper recycling program only 9.2% and 8.8% of the paper waste stream was newspaper and high grade white paper. Pertaining to volume, Figure 32 B shows compostable/soiled paper (37.1%) and OCC (20%) are the largest contributors.

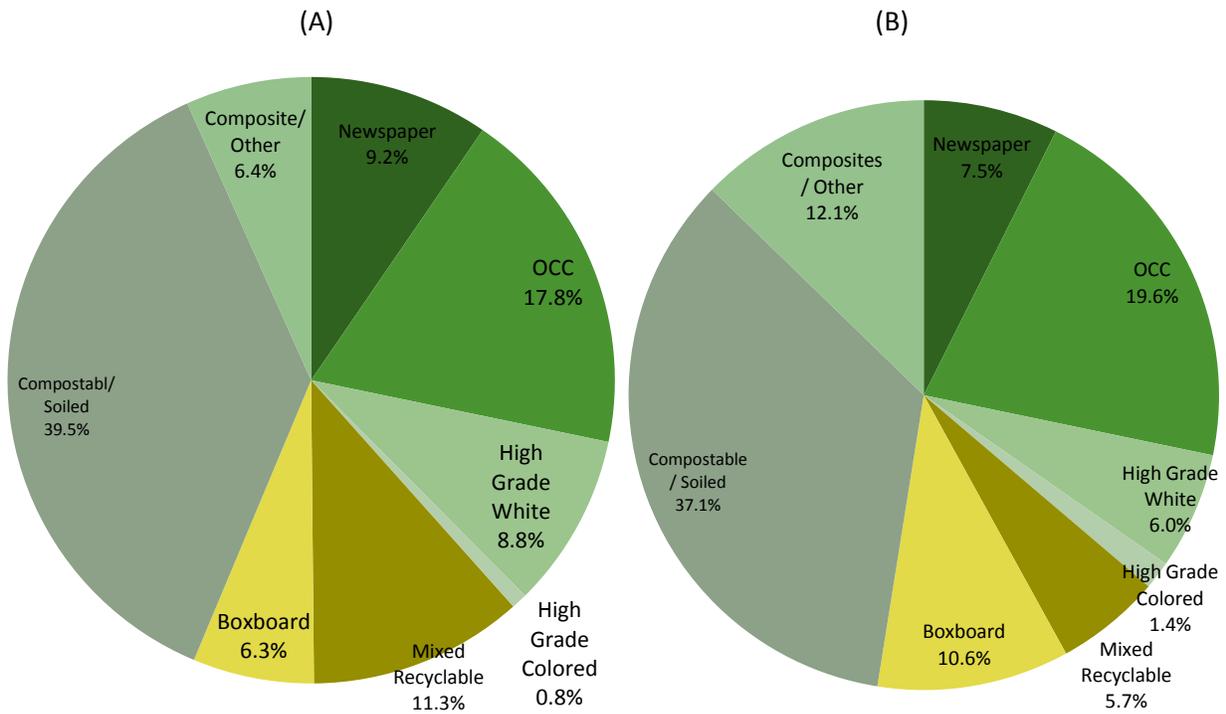


Figure 32: The weight (A) and volume (B) percent of each paper subcategory in the University of Florida's MSW stream

Figure 33 A and B present the weight and volume percents of each plastic subcategory is presented respectively. The largest components contributing to the weight and volume of plastic are number one through seven recycled plastic (32.2% by weight and 34.2% by volume) and number one through seven not recycled (32.5% by weight and 31.5% by volume).

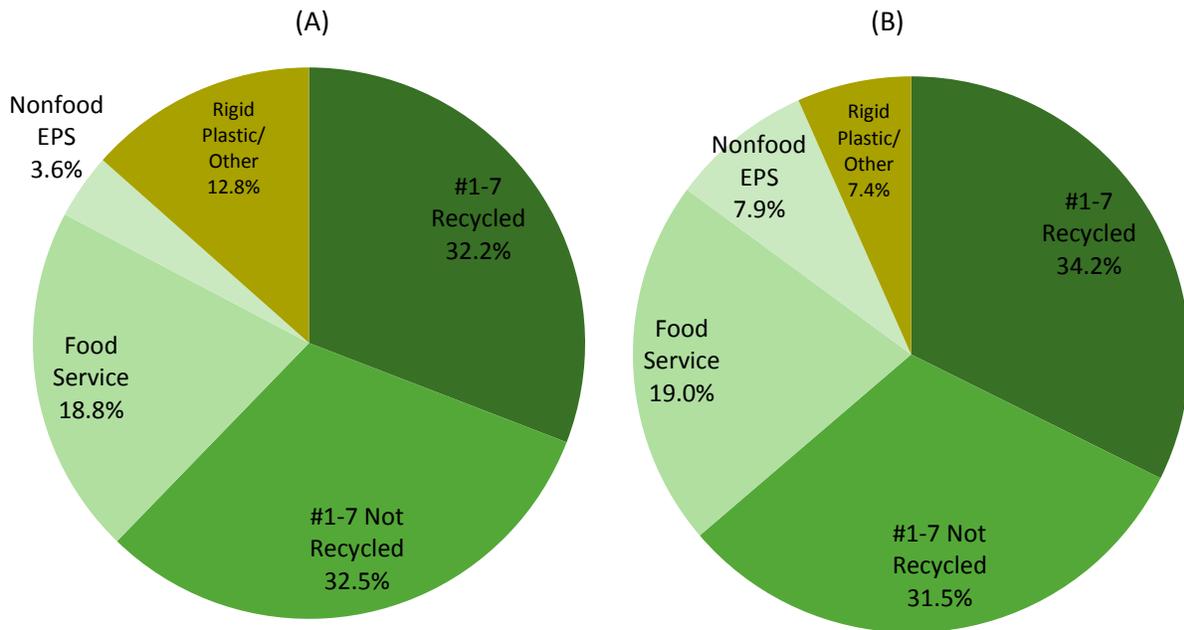


Figure 33: The Weight (A) and Volume (B) Percent of each Plastic Subcategory

A detailed profile of UF's overall MSW is provided in Table 11, the weight and volume of each waste category and subcategory as well as the weight and volume percents. This data represents the MSW stream, which is approximately 48.25%, of the UF waste stream as a whole. As can be observed, food waste, non-recyclable material, and compostable/soiled paper constitute over 50% of UF's MSW by weight. Again, it is interesting to note that both #1-7 Plastic that is not currently recycled (2.58%) and is recyclable (2.55%) are the top ten and eleven components, respectively. The C&D (1.3%) and special waste (0.8%) are high due to loads from the Transfer Station that had significant quantities in comparison to the subsequent 20 loads where the weights were consistently below 0.5%, if not 0%. By volume, non-recyclable material, compostable/soiled paper, and OCC constitute nearly 45% of the UF MSW stream. Plastic which is currently recycled on campus (#1-7 Recycled) is the fourth highest contributor at 7.7%. Products represent the tenth highest component with respect to volume. These products are materials that could have been donated for reuse instead of being disposed. Such examples found were helmets, clothes, calculators, binders, etc.

Table 11: Composition profile of University of Florida’s overall MSW stream by weight and volume, these values are not weighted by the campus source information.

Category/Subcategory		Weight (lbs)	W %	Volume (gal)	V %
Paper	Newspaper	107.4	3.02%	145.6	3.3%
	OCC	208.0	5.8%	381.0	8.6%
	High Grade White	102.7	2.89%	116.3	2.6%
	High Grade Colored	9.6	0.3%	27.7	0.6%
	Mixed Recyclable	132.2	3.7%	110.4	2.5%
	Boxboard	73.5	2.1%	205.3	4.6%
	Compostable/ Soiled	463.4	13.0%	719.0	16.3%
	Composites/ Other	74.9	2.1%	235.2	5.3%
Plastic	#1-7 Recycled	90.8	2.55%	340.1	7.7%
	#1-7 Not Recycled	91.7	2.58%	313.5	7.1%
	Food Service	53.0	1.5%	189.3	4.3%
	Nonfood EPS	10.2	0.3%	79.0	1.8%
	Rigid Plastic/Other	36.2	1.0%	73.2	1.7%
Metals	Aluminum cans	17.9	0.5%	57.5	1.3%
	Food and Beverage	18.0	0.5%	29.1	0.7%
	Scrap Metal/ Other	29.6	0.8%	28.3	0.6%
Recyclable Glass		57.6	1.6%	21.0	0.5%
Non-Recyclable		623.3	17.5%	761.4	17.2%
Organics	Food/Plant Lab Waste	911.6	25.6%	297.7	6.7%
	Animal Byproducts/other	63.6	1.8%	48.0	1.1%
	Yard Waste	97.4	2.7%	85.8	1.9%
Products		213.5	6.0%	156.0	3.5%
C&D		45.0	1.3%	1.6	0.0%
Special Waste		29.0	0.8%	3.1	0.1%

4.3.3. RESULTS WITH RESPECT TO CAMPUS SOURCE AND MSW CATEGORY

The campus source estimations were merged with the commingled results from Phase I and II of the MSW composition study to illustrate the individual composition of each campus source. In the following tables, each campus source and sub-source is presented with the affiliated MSW composition as a weight percent. For example, from the manual sorts and the visual verifications over 80% of the dormitory MSW stream is organics (31.1%), paper (28.3%), and non-recyclable (23.8%), as displayed in Table 12. However, dorm waste is a subset of housing as a whole. In this table, the percent in which each campus source is estimated to contribute to the MSW stream is not considered. However, it is clear which MSW categories – paper, organics, and Non-recyclable – primarily influence the composition of the MSW stream generated from each source.

Table 12: Comparison of University of Florida’s MSW by source and MSW category presented as non-weighted weight based percents

Campus Sources	Campus Sub-Sources	Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste	Totals
Housing Total		25.0%	7.7%	2.8%	3.6%	22.6%	34.8%	3.2%	0.0%	0.7%	100%
	Dorm	28.3%	8.4%	3.0%	0.9%	23.8%	31.1%	4.4%	0.0%	0.2%	100%
	Greek	15.8%	7.5%	2.8%	11.3%	12.3%	48.3%	1.8%	0.0%	0.5%	100%
	Family	28.8%	5.5%	2.2%	0.9%	37.0%	24.8%	0.8%	0.0%	0.0%	100%
Academic Total		37.4%	9.5%	1.3%	1.3%	15.7%	21.1%	9.2%	4.1%	0.3%	100%
	Mixed	38.5%	9.0%	1.5%	1.4%	16.4%	18.3%	9.7%	5.0%	0.2%	100%
	Plant Lab	16.7%	12.4%	0.0%	0.0%	9.9%	46.8%	13.7%	0.0%	0.6%	100%
	Animal Lab*	16.7%	12.4%	0.0%	0.0%	9.9%	60.5%	0.0%	0.0%	0.0%	100%
	Library	50.3%	11.1%	1.1%	1.6%	15.9%	19.6%	0.0%	0.0%	0.5%	100%
Medical		29.1%	9.7%	1.1%	0.0%	31.4%	16.8%	3.0%	0.0%	8.8%	100%
Administration		48.9%	10.8%	2.9%	2.4%	19.2%	15.0%	0.4%	0.0%	0.4%	100%
Dining		29.6%	4.9%	2.5%	1.2%	14.9%	41.5%	5.2%	0.0%	0.1%	100%
Recreational		34.2%	3.3%	0.6%	0.2%	8.0%	45.1%	8.4%	0.0%	0.0%	100%
Miscellaneous*		46.4%	5.3%	0.1%	0.3%	13.3%	17.2%	17.2%	0.0%	0.0%	100%

*These sources were not manually sorted, but visually assessed to determine an appropriate composition. It was determined that there were comparable loads.

An assumption that each source of MSW on campus contributes equally to the UF MSW stream is inaccurate, therefore, efforts were made to identify the sources of waste. Upon categorizing each waste receptacle under a specific campus source, a contribution to the MSW portion of the UF waste stream was established. The percent contribution was discussed earlier and is presented again in Table 13. The weighted weight based percent demonstrates how the waste category from each campus source contributed to the MSW stream and is presented in Table 13.

Table 13: Comparison of University of Florida’s MSW by source and MSW category, these weight based percents are weighted by the campus source contribution

Campus Sources	Campus Sub-Sources	Estimated Weight % Contribution to UF MSW Stream	Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
Housing Total		47.20%	11.80%	3.67%	1.33%	1.84%	10.63%	16.74%	1.47%	0.00%	0.12%
	Dorm	27.00%	7.71%	2.27%	0.81%	0.24%	6.48%	8.46%	1.18%	0.00%	0.05%
	Greek	13.60%	2.16%	1.03%	0.38%	1.54%	1.68%	6.62%	0.24%	0.00%	0.07%
	Family	6.60%	1.93%	0.37%	0.15%	0.06%	2.47%	1.66%	0.05%	0.00%	0.00%
Academic Total		19.60%	6.15%	2.12%	0.17%	0.17%	2.72%	6.78%	1.24%	0.48%	0.05%
	Mixed	9.30%	3.66%	0.86%	0.14%	0.13%	1.56%	1.73%	0.92%	0.48%	0.02%
	Plant Lab	2.30%	0.39%	0.29%	0.00%	0.00%	0.23%	1.09%	0.32%	0.00%	0.01%
	Animal Lab*	5.80%	0.97%	0.72%	0.00%	0.00%	0.57%	3.51%	0.00%	0.00%	0.00%
	Library	2.20%	1.14%	0.25%	0.02%	0.04%	0.36%	0.44%	0.00%	0.00%	0.01%
Medical		8.30%	2.01%	0.67%	0.07%	0.00%	2.17%	1.16%	0.21%	0.00%	0.61%
Administration		8.10%	3.99%	0.88%	0.24%	0.20%	1.57%	1.22%	0.03%	0.00%	0.03%
Dining		9.90%	2.95%	0.49%	0.25%	0.12%	1.48%	4.14%	0.52%	0.00%	0.01%
Recreational		4.80%	1.85%	0.18%	0.03%	0.01%	0.43%	2.44%	0.45%	0.00%	0.00%
Miscellaneous*		2.00%	0.94%	0.11%	0.00%	0.01%	0.27%	0.35%	0.35%	0.00%	0.00%

*These sources were not manually sorted, but visually assessed to determine an appropriate composition. It was determined that there were comparable loads.

4.4. RECYCLING

According to the UF PPD monthly weight records, recyclable material accounts for an average of 36.51% of the entire UF waste stream. In addition to these five categories, UF PPD records the monthly weight of the eight recyclable material components recycled campus wide. Currently, the University of Florida tracks and recycles paper, scrap metal, cans and bottles, sludge, yard waste, masonry, as well as miscellaneous products such as batteries, toner cartridges, paints, and oils. Recyclable materials are collected in recycling containers, dumpsters, and compactors. The two exceptions are sludge which is handled by GRU and yard waste which is collected by front loading trucks. After collection, all materials are sent directly to the appropriate handling facilities or stored until transport, as discussed in Chapter Three.

The categories of recyclables that are diverted from the landfill and the composition of the MSW stream as determined by the MSW composition study were examined to identify the potential for increasing campus wide collection efforts as well as expanding the categories recycled. The average

weight percent was calculated for the categories contributing to recycled material and the results are displayed in Figure 34. From 2001 to 2008, yard waste, paper and masonry were the chief components of the recyclable material at 47%, 28% and 10%, respectively.

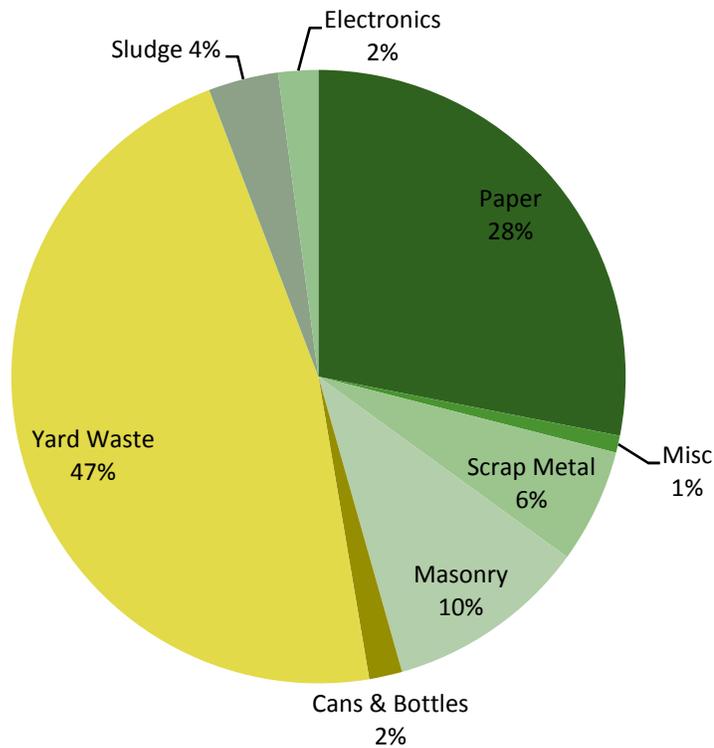


Figure 34: Mass percent average of recycled material categories for 2001 through 2008

The cumulative monthly recycling rate remains relatively steady, ranging between 400 and 650 tons recycled each month, Figure 35 . The peak of nearly 2,400 tons in October 2004, which was triple the monthly average, was a direct product of yard waste weighing over 2,000 tons as a result of an active hurricane season. In June 2001, masonry generated from renovation and demolition work caused a 900 ton peak. Masonry consisted of concrete and bricks which can be recycled.

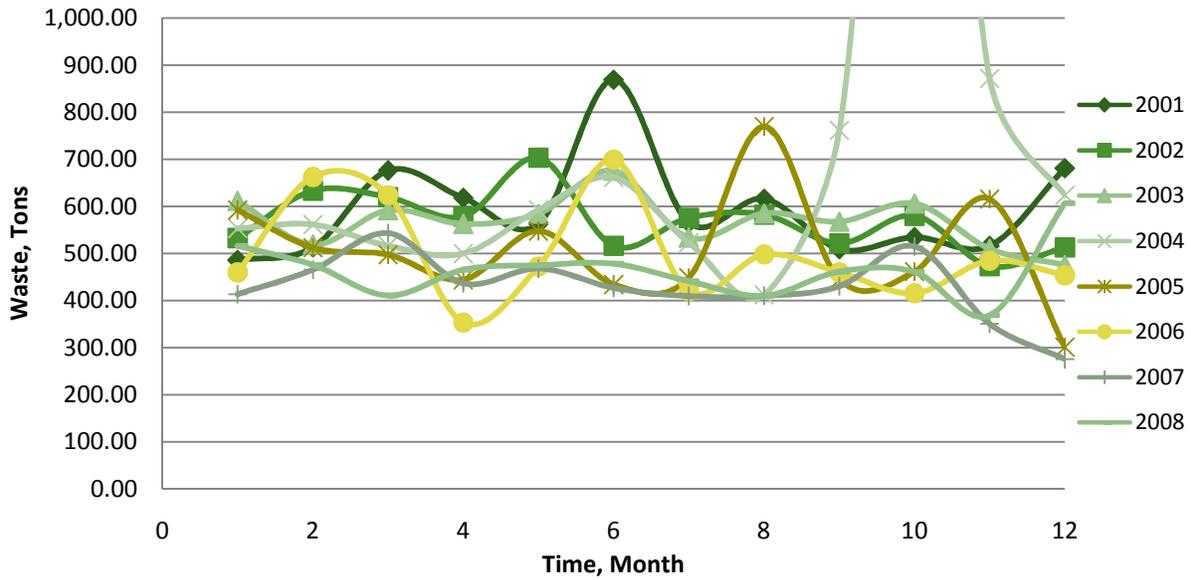


Figure 35: Monthly recycling for each year from 2001 through 2008 by weight and month

The yearly fluctuations of each component of recyclable material are displayed in Figure 36. The primary fluctuations, especially monthly, result from the highly variable yard waste component. Also note the peak in 2004 is from an active hurricane season. The second major contributor to the deviation in recycling is paper, which is observable in the detailed yearly data provided in Appendix D. Most categories remain relatively constant through the years, though a decrease in Masonry from 2001 to 2008 is apparent.

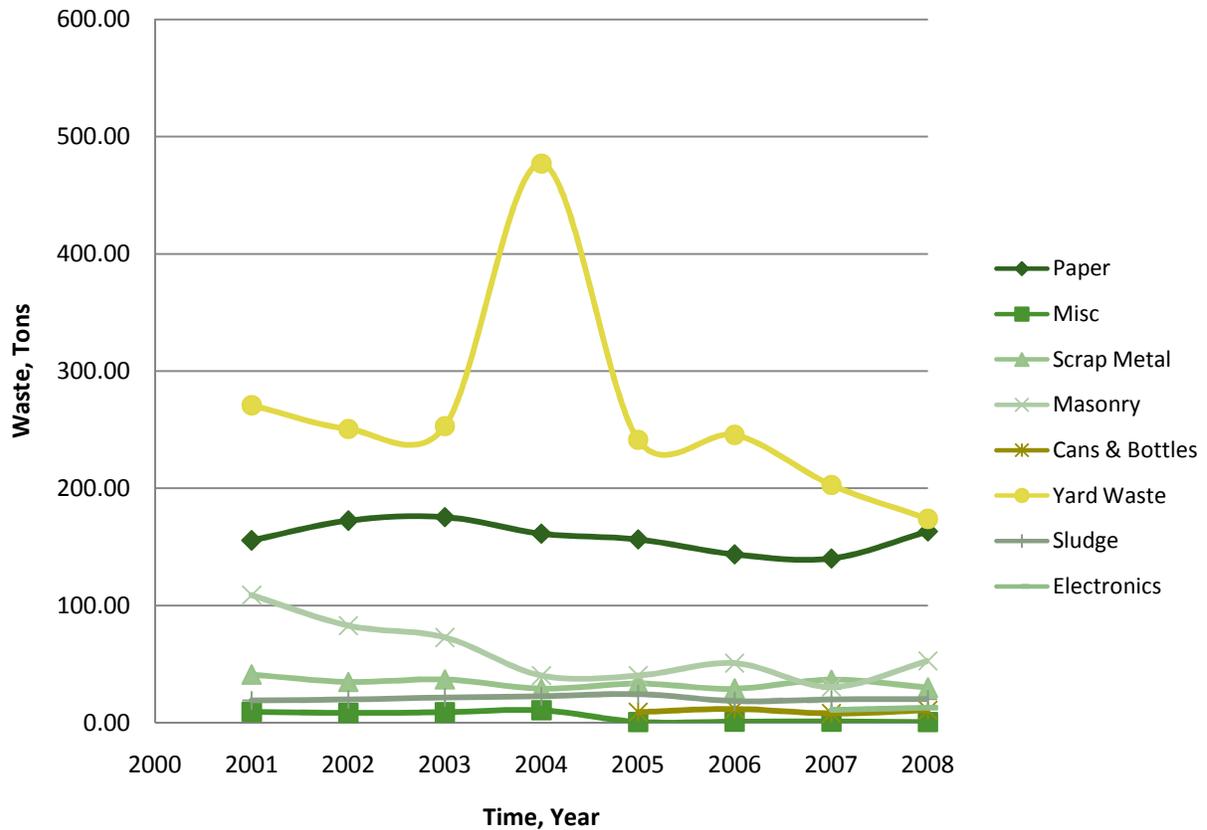


Figure 36: Average weight recycled by component from 2001 through 2008

4.5. COMPREHENSIVE SUMMARY/ANALYSIS

To identify each component of the UF waste stream, it was necessary to characterize the MSW generated from campus wide activities that accounted for 48.25% of the waste stream. The MSW weight percents were determined by first separating the data into campus sources and weighting them accordingly. The data was then weighted by the UF Waste Stream (48.25% MSW); the results of this are displayed in Table 14 for weight.

By weight, Housing (22.97%), Academic (9.60%), Dining (4.81%) sources are the primary contributing campus sources, with dormitories (13.13%) and Greek housing (6.62%) contributing the most waste from any single campus sub-source. In the waste category column, the percent contributed by each source or sub-source is denoted. For instance, with regard to paper waste which amounts to 14.33% of the UF waste stream, the majority of paper waste is contributed by dormitories (3.72%), Administration (1.93%), Mixed Academic (1.76%) and Dining (1.42%).

Table 14: Weight based average percents weighted by influence of the campus source and then the UF waste stream (48.25%)

Campus Sources	Campus Sub-Sources	Estimated Weight % Contribution to UF waste Stream	Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
Housing Total		22.97%	5.69%	1.77%	0.64%	0.89%	5.13%	8.08%	0.71%	0.00%	0.06%
	Dorm	13.13%	3.72%	1.10%	0.39%	0.11%	3.13%	4.08%	0.57%	0.00%	0.03%
	Greek	6.62%	1.04%	0.50%	0.18%	0.74%	0.81%	3.19%	0.12%	0.00%	0.03%
	Family	3.22%	0.93%	0.18%	0.07%	0.03%	1.19%	0.80%	0.02%	0.00%	0.00%
Academic Total		9.60%	2.97%	1.02%	0.08%	0.08%	1.31%	3.27%	0.6%	0.23%	0.04%
	Mixed	4.58%	1.76%	0.41%	0.07%	0.06%	0.75%	0.84%	0.44%	0.23%	0.01%
	Plant Lab	1.13%	0.19%	0.14%	0.00%	0.00%	0.11%	0.53%	0.15%	0.00%	0.01%
	Animal Lab*	2.80%	0.47%	0.35%	0.00%	0.00%	0.28%	1.69%	0.00%	0.00%	0.02%
	Library	1.09%	0.55%	0.12%	0.01%	0.02%	0.17%	0.21%	0.00%	0.00%	0.01%
Medical		3.34%	0.97%	0.32%	0.04%	0.00%	1.05%	0.56%	0.10%	0.00%	0.29%
Administration		3.94%	1.93%	0.42%	0.12%	0.10%	0.76%	0.59%	0.01%	0.00%	0.02%
Dining		4.81%	1.42%	0.24%	0.12%	0.06%	0.72%	2.00%	0.25%	0.00%	0.01%
Recreational		2.61%	0.89%	0.09%	0.02%	0.00%	0.21%	1.18%	0.22%	0.00%	0.00%
Miscellaneous*		0.98%	0.45%	0.05%	0.00%	0.00%	0.13%	0.17%	0.17%	0.00%	0.00%
Totals		48.25%	14.3%	3.9%	1.0%	1.1%	9.3%	15.9%	2.1%	0.2%	0.4%

*These sources were not manually sorted, but visually assessed to determine an appropriate composition. It was determined that there were comparable loads.

The composition of the UF waste stream was estimated via the combination of historical data and the MSW composition study data. The average historical data for C&D debris, medical waste, hazardous waste, and each recyclable component was combined with the average weighted data from the MSW composition study. These five recorded waste stream categories are color coded in Figure 37. The MSW sort categories were totaled and were then used to represent the overall composition of MSW for the comprehensive diagram, displayed in Figure 37, of the waste stream generated by the University of Florida. Only the weight data was utilized for the comprehensive figure because the historical data only details the weights of each category and not the volume. This comprehensive overview provided insight for the assessment and recommendation process.

In Figure 37, the five major contributors to the UF waste stream are identifiable as yard waste (17.52%) from the recyclable material category, organics (15.85%) and then paper (14.33%) from the MSW category, then the C&D debris category (12.91%), and finally paper (10.50%) from the recyclable material category. Accordingly, paper waste composes approximately 24.8% of the UF waste stream.

Since landfill tipping fees are derived from weight, reducing or recovering the organic waste stream would provide a noticeable decrease in the annual landfilling cost.

Of the recyclable material generated and recorded, the five largest contributors are yard waste (17.52%), paper (10.50%), masonry (3.89%), and sludge (1.38%). Can and bottle recycling accounts for approximately 0.3% of the UF waste stream.

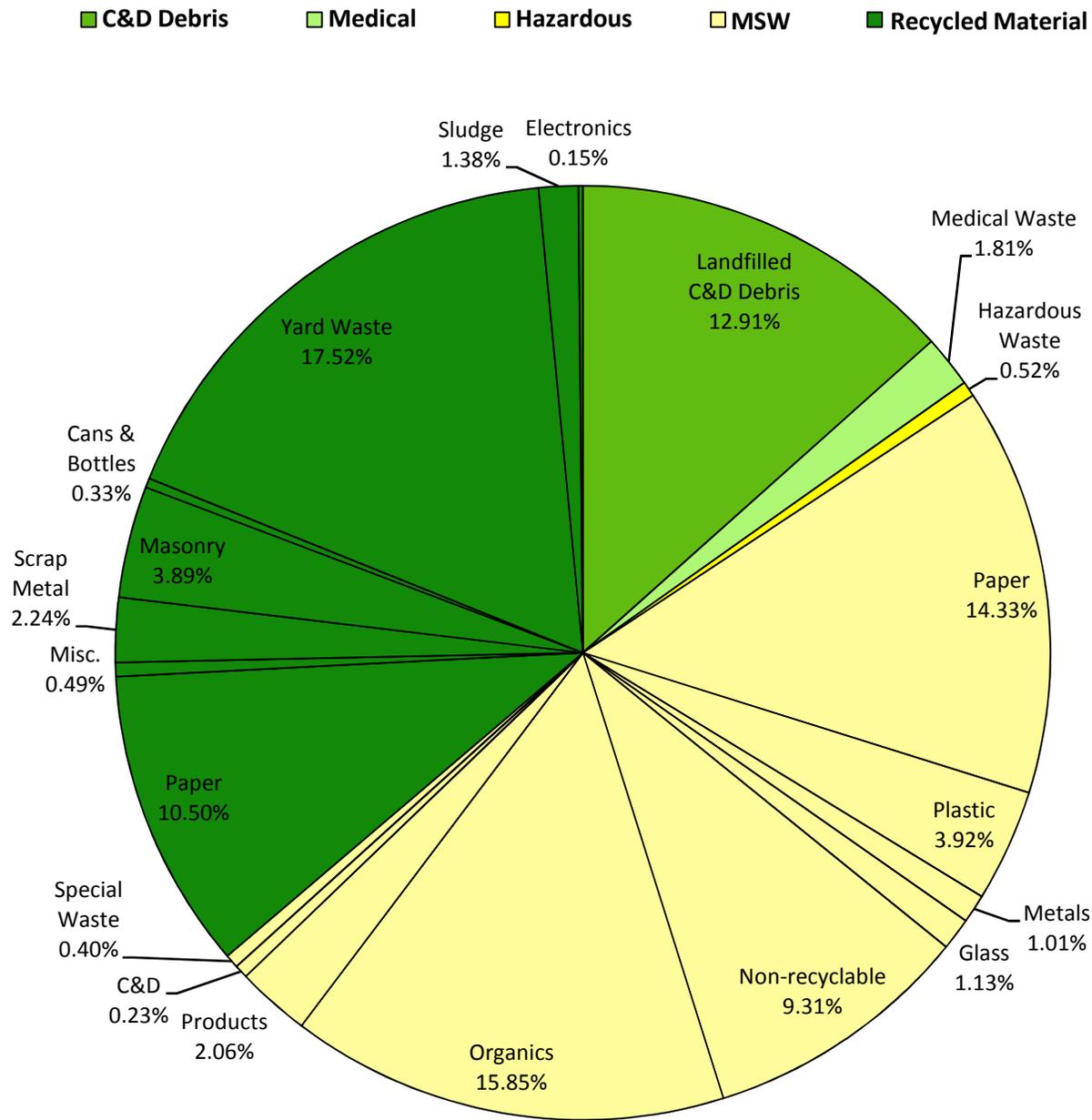


Figure 37: Comprehensive diagram of the waste stream generated by the University of Florida. The five waste categories monthly recorded by PPD are depicted by colors and are MSW (48.25%, 8,740 tons annually), C&D Debris (12.91%, 2,339 tons annually), Recyclable Material (36.50%, 6,613 tons annually), Medical Waste (1.81%, 328 tons annually), and Hazardous Waste (0.52%, 95 tons annually). The components of the MSW, determined from the MSW composition study, and recyclable material, which is recorded monthly by PPD, streams are denoted in detail.

The currently and potentially recyclable components of the MSW stream were identified by the MSW sorts. The materials that are currently recyclable in Alachua County, but are escaping the UF diversion techniques, are denoted as *Currently Recoverable*. Thus, the *Currently Recoverable* portion of the MSW stream is definitely recoverable with the recycling provided by SP Recycling Corp. Conversely, the waste that is feasible to recycle or recover, but is not currently accepted on campus or in the county, is denoted by *Potentially Recoverable*. The results are displayed in Table 15 and detail how the currently or potentially recoverable waste categories and sub-categories contribute by weight to the UF waste stream.

As displayed in Figure 37, the top two waste categories that influence the UF waste stream are organics (15.85%) and paper (14.33%). Table 15 details the tonnage and percent by which the recyclable stream can be increased through successfully capturing recoverable wastes. If the *Currently Recoverable* organic (1.44%) and paper (6.85%) wastes were completely recovered, a recycling rate increase of nearly 8% would result. If all *Currently Recoverable* items were recovered, a recycling rate increase of 15% would occur. Accordingly, with a baseline recycling rate of 36.5% and an increase of 15%, the potential recycling rate would be just over 50%.

Similarly, if the *Potentially Recoverable* organic (14.41%) and paper (7.48%) wastes were completely recovered, a recycling rate increase of over 21% would result. If both the *Currently Recoverable* and *Potentially Recoverable* wastes were captured by diversion techniques, the recycling rate would reach nearly 75%.

Table 15: Percent of UF waste stream that is escaping the diversion techniques for current recyclables and other waste that is potentially recyclable

Category	Subcategory	Weight (tons/year)		Percent by Weight	
		Currently Recoverable	Potentially Recoverable	Currently Recoverable	Potentially Recoverable
Paper	Newspaper	114.74	-	1.31%	-
	Old Corrugated Cardboard (OCC)	222.30	-	2.54%	-
	High Grade White	109.79	-	1.26%	-
	High Grade Colored	10.22	-	0.12%	-
	Mixed Recyclable	141.33	-	1.62%	-
	Compostable/ Soiled	-	495.25	-	5.67%
	Boxboard	-	78.55	-	0.90%
	Composite/Other	-	80.07	-	0.92%
	TOTALS: Paper	598.37	653.87	6.85%	7.48%
Plastic	#1-7 Recycled	110.25	-	1.26%	-
	#1-7 Not Recycled	-	111.31	-	1.27%
	Food Service	-	64.34	-	0.74%
	Nonfood EPS	-	12.38	-	0.14%
	Rigid Plastic/Other	-	43.95	-	0.50%
	TOTALS: Plastic	110.25	231.98	2.54%	1.38%
Organic	Yard waste	125.84	-	1.44%	-
	Animal Byproducts/Other	-	82.14	-	0.94%
	Food/Plant Lab waste	-	1177.34	-	13.47%
	TOTALS: Organics	125.84	1259.48	1.44%	14.41%
Metal	Aluminum drink cont.	24.14	-	0.28%	-
	Food and beverage	24.30	-	0.28%	-
	Scrap Metal/ Other	39.85	-	0.46%	-
	TOTALS: Metal	88.29	-	1.01%	-
Recyclable Glass		113.61	-	1.30%	-
Products		180.07	-	2.06%	-
Potential Increase in Recycling Rate		1216.45	2145.33	13.92%	24.54%
Potential Recycling Rate, including baseline		7829.45	8758.33	50.42%	61.04%
Cumulative Potential Recycling Rate		9974.78		74.96%	

4.5.1. ORGANICS

Organics is the single largest contributor to UF’s waste stream (33%) and MSW stream (15.85%). The UF waste stream includes both the 17.52% recovered as yard waste and the 15.85% organics lost as MSW. Organic MSW ranges from food waste, both pre and post consumer, to plant waste generated at greenhouses or from lab experiments to the animal byproducts and yard waste discarded.

4.5.1.1. Composition

The composition of the organics portion of the MSW stream is predominately food and plant waste (80.3%) as visible in Figure 38. Recovery efforts exist for yard waste (9%) through Wood Resource Recovery, hence the minimal contribution to the organic MSW stream. Animal byproducts (6%) and Plant Lab Waste (4.6%) represent the lowest portion of the organic MSW stream.

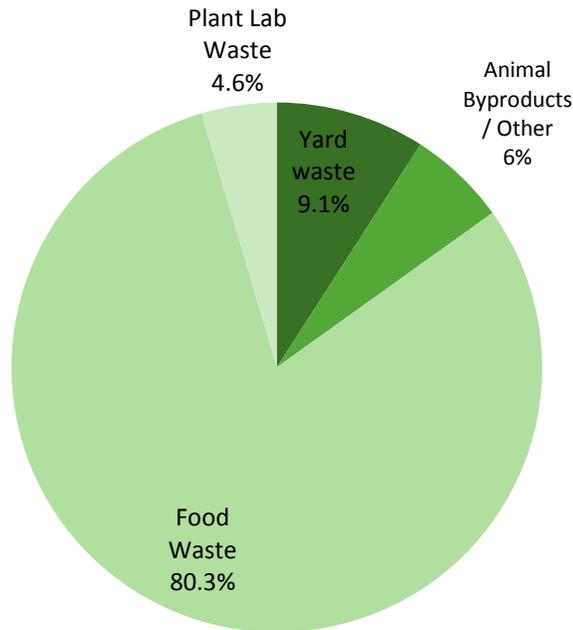


Figure 38: Composition of Organics in the University of Florida MSW stream

4.5.1.2. Campus Sources

According to Table 14 (where the values are weighted by how the campus source contributes to the MSW stream and how the MSW stream contributes to the UF waste stream), the majority of the 15.85% organic MSW stream is generated at dormitories (4.08%), Greek housing (3.19%), and dining halls (2.00%). However, with respect to Table 12 (where the exact percent of total is not weighted), the source streams composed of primarily organic MSW are animal labs (60.5%), Greek housing (48.3%), plant labs (46.8%), recreational (45.1%), and dining (41.5%). The organic fraction of Greek housing, recreational, and dining waste is primarily food waste where as for animal labs it is animal byproducts and for plant labs it is plant waste (e.g. clippings, fruit, plants, etc).

4.5.2. PAPER

Paper is the second largest contributor to the UF waste stream at 24.83%, with 10.5% recycled through campus recovery efforts and 14.33% lost as MSW. Paper also ranks second to organics in terms of contribution to the MSW stream

4.5.2.1. Composition

The composition of the paper MSW stream is detailed in Figure 39. The primary component of the paper waste stream is compostable paper (39.5%), which is currently not recovered. Highly recyclable paper components OCC (17.8%), mixed recyclable (11.3%), and newspaper (9.2%) are the next highest contributors to the paper portion of the MSW stream.

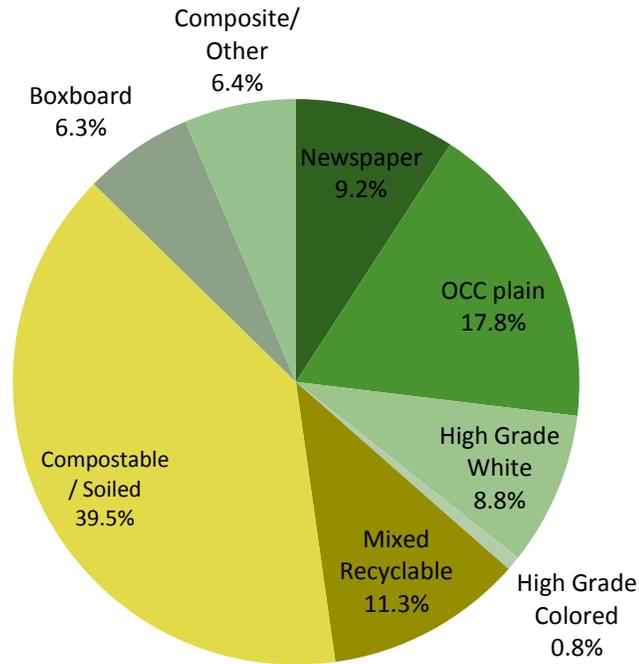


Figure 39: Composition of Paper in the University of Florida MSW stream

4.5.2.2. Campus Sources

According to Table 14 (where the values are weighted by how the campus source contributes to the MSW stream and how the MSW stream contributes to the UF waste stream), the majority of the 14.33% paper MSW stream is generated at dormitories (3.72%), administration (1.93%), and mixed academic (1.76%). However, with respect to Table 12 (where the exact percent of total is not weighted), the source streams composed of primarily paper MSW are library (50.3%), administration (48.9%), miscellaneous (46.4%), and mixed academic (45.1%). Compostable paper is primary component of the paper fraction in each of these instances.

4.5.3. PLASTICS

Plastic is the third largest contributor to the MSW stream at 3.92% weight based. The composition and major sources of the plastic are discussed below.

4.5.3.1. Composition

Figure 40 details the plastic composition. The largest component of the plastic waste stream, according to the MSW Sorts, is number one through seven not recycled plastic (32.5%). Directly after that is the recyclable number one through seven plastics (32.2%) and then food service plastics (18.8%).

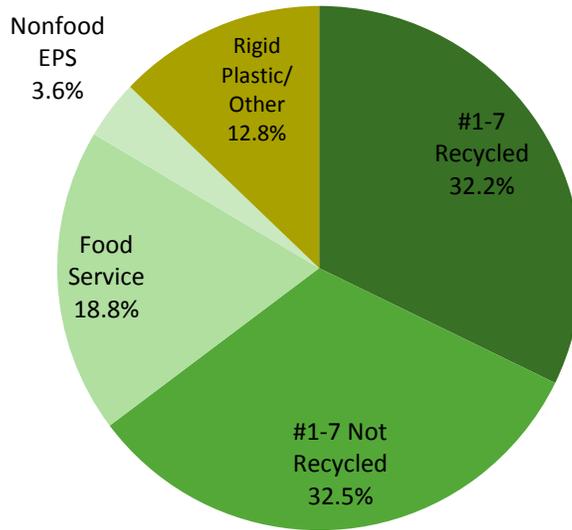


Figure 40: Composition of Plastics in the University of Florida MSW stream

4.5.3.2. Campus Sources

According to Table 14 (where the values are weighted by how the campus source contributes to the MSW stream and how the MSW stream contributes to the UF waste stream), the majority of the 3.92% plastic MSW stream is generated at dormitories (1.10%), Greek housing (0.50%), and administration (0.42%). However, with respect to Table 12 (where the exact percent of total is not weighted), the source streams with higher plastic MSW components are plant labs (12.4%), animal labs (12.4%), libraries (11.1%), administration (10.8%), medical (9.7%), and mixed academic (9.5%).

5. OBSERVATIONS AND RECOMMENDATIONS

Currently, there are campus wide efforts to reduce consumption, improve reuse and recycling, as well as foster knowledge and impart skills through education and outreach activities. However, to meet UF's waste reduction goals, the current management and diversion techniques must be supplemented. The results of the waste audit reveal materials that are either escaping current recovery efforts or are not currently being targeted for recovery. For certain materials (e.g. high grade paper, PET, and aluminum), feasible recovery techniques already exist; while for other materials (e.g. dirty film, other rigid plastic, non-standard sized pallets), markets and availability of appropriate recycling facilities will require further assessment before the viability of recycling can be determined. This chapter details the following: how recycling rates at UF compare to other benchmarks set in the nation, how the diversion techniques implemented by UF compare to other universities nationwide, and the implications and recommendations associated with the MSW sorts, as well discuss general recommendations.

5.1. COMPARISON OF RECOVERY BENCHMARKS

This section illustrates how the University of Florida compares to the recovery benchmarks set at the national, state, county, and university level. The average recycling rate from the historical data collected by PPD was compared to the average recycling rates for the nation, state, and county. Only years 2004 through 2007 were examined since recycling rates for years 2001-2003 were not completed nationally. At the university level, the recycling rates and waste management techniques were investigated to evaluate UF's current management strategy as well as identify any successful and potentially implementable practices.

5.1.1. NATIONAL, STATE, AND COUNTY RECYCLING RATES

The recycling rates were estimated for the United States (US), Florida (FL), Alachua County (AC), and UF from the total MSW generated yearly and the fraction of MSW that was reported as recycled by the USEPA, the Florida Department of Environmental Protection, and UF PPD. Table 16 depicts the results of this investigation. The tonnage associated with MSW and recycled material is provided to quantify the yearly percentages of recycled material. From 2004 through 2007, UF had the highest recycling rates with an average of 36.5% and a low of 32.4% in 2007 and a peak in 2004 at 43.5%. The 2004 peak was due to the severe hurricane season which increased yard waste recycling. The United States as a whole has the next highest recycling rates with an average of 32.2% and ranging between 31.2% in 2004 and 33.5% in 2007. Alachua County, then Florida follow with recycling rate averages of 28.7% and 26.2%, respectfully.

Table 16: The total tons of MSW generated, of recycled material, and the consequent percent recycled with respect to the United States, Florida, Alachua County, and the University of Florida during 2004 to 2007

Year	United States			Florida			Alachua County			University of Florida		
	Total MSW (tons)	Recycled (tons)	% Recycled	Total MSW (tons)	Recycled (tons)	% Recycled	Total MSW (tons)	Recycled (tons)	% Recycled	Total MSW (tons)	Recycled (tons)	% Recycled
2004	249,800,000 ²⁷	78,000,000 ²⁷	31.2%	31,803,599 ²⁸	8,468,779 ²⁸	26.6%	250,768 ²⁸	74,624 ²⁸	29.8%	20,951.53	9,118	43.5%
2005	250,400,000 ²⁷	79,400,000 ²⁷	31.7%	36,577,715 ²⁹	9,240,097 ²⁹	25.3%	235,350 ²⁹	76,270 ²⁹	32.4%	17,718.66	6,070	34.3%
2006	254,200,000 ²⁷	82,200,000 ²⁷	32.3%	35,106,792 ³⁰	8,561,903 ³⁰	24.4%	284,614 ³⁰	62,831 ³⁰	22.1%	17,499.67	6,004	34.3%
2007	254,100,000 ²⁷	85,000,000 ²⁷	33.5%	32,340,964 ³¹	9,270,719 ³¹	28.7%	412,260 ³¹	125,248 ³¹	30.4%	16,457.87	5,336	32.4%
Totals	1,008,500,000	324,600,000	32.2%	135,829,070	35,541,498	26.2%	1,182,992	338,973	28.7%	72,628	26,529	36.5%

Figure 41 more clearly compares the average recycling rates achieved. It is visible that the recycling rate attained by UF (36.5%) is comparable and higher than those attained by the county (28.7%), state (26.2%), and nation (32.2%). However, it is important to note that the reporting method and recyclable materials counted may be different for UF verses AC, FL, and the US. For instance, only FL businesses which exceed 600 tons per year of any recovered material (paper, glass, plastic, metals, textiles, and/or non-tire rubber) are required by law report their recovered materials

²⁷ U.S. Environmental Protection Agency. (2008, November 10). *Municipal Solid Waste (MSW) in the United States, 2007 Facts and Figures*. Retrieved August 29, 2009, from Wastes - Non-Hazardous Waste - Municipal Solid Waste: <http://www.epa.gov/osw/nonhaz/municipal/msw99.htm>

²⁸ Florida Department of Environmental Protection. (2009, July 9). *Recycling - 2004 Solid Waste Annual Report Data*. Retrieved September 1, 2009, from Bureau of Solid & Hazardous Waste: http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/04_data.htm

²⁹ Florida Department of Environmental Protection. (2009, July 9). *Recycling - 2005 Solid Waste Annual Report Data*. Retrieved September 1, 2009, from Bureau of Solid & Hazardous Waste: http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/05_data.htm

³⁰ Florida Department of Environmental Protection. (2009, July 9). *Recycling - 2006 Solid Waste Annual Report Data*. Retrieved September 1, 2009, from Bureau of Solid & Hazardous Waste: http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/06_data.htm

³¹ Florida Department of Environmental Protection. (2009, July 9). *Recycling - 2007 Solid Waste Annual Report Data*. Retrieved September 1, 2009, from Bureau of Solid & Hazardous Waste: http://www.dep.state.fl.us/waste/categories/recycling/SWreportdata/07_data.htm

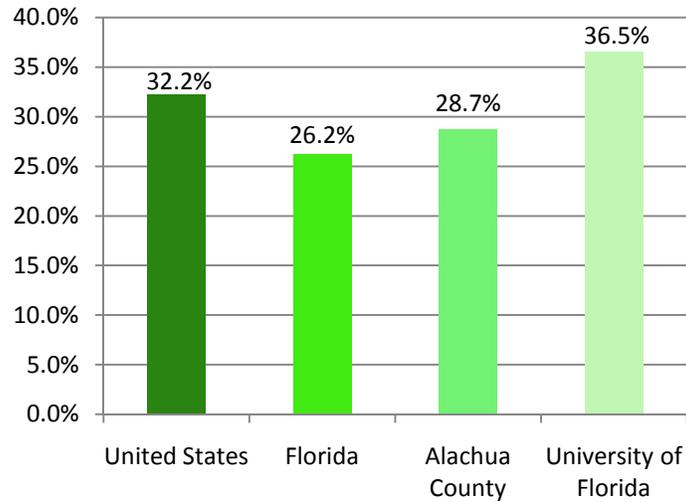


Figure 41: Comparison of the average recycling rates achieved by the United States, Florida, Alachua County, and UF during 2004 through 2007

5.1.2. UNIVERSITY

At the university level, both the recycling rates and methods utilized to manage the waste generated were examined. Waste generation and recycling rate information at other campuses were not readily available, thus the UF data from UF PPD 2008 records was compared to other university information reported for the 2009 RecycleMania competition. Universities that excelled in the MSW generation per capita and recycling per capita were investigated to identify any method(s) of success. Moreover, the waste management strategies were researched to distinguish differences that may support the successful programs.

5.1.2.1. *Recycling Rate*

The RecycleMania program proved to be the most efficient resource for gaining comparative data on university recycling rates as well as amount of waste and recyclables per capita. This is because RecycleMania sets rules and standards on which materials are considered recyclables. The only materials considered recyclable are glass, metal and plastic containers, and paper. All data are reported as weights as opposed to volumes. This weight must be based on actual observed trash and recycling generation, unless schools receive infrequent waste results or have a hard time tracking sections of campus. For the latter, RecycleMania administrators must be contacted and approved estimates may be used for up to 25% of their reported weights. Whenever possible, actual weights are preferred. Where weights cannot be obtained, volumes may be estimated using observed container volumes and the approved weight to volume conversion factors.

Utilizing RecycleMania and UF PPD data exclusively for the comparison has drawbacks, resulting in varying degrees of error. For instance, the materials considered in the recycling calculations are narrow, thus numerous innovative recycling programs are neglected (e.g. UF recycles masonry and scrap

metal, but this cannot be included). Issues may also arise in the reporting methodology utilized, since there is no means of corroborating the figures reported. For instance, whether or not schools report the waste that is recycled, but is not included under the recycling category, as MSW. Moreover, the only schools available for comparison are those that participate in RecycleMania.

Ultimately, when only considering recyclables as glass, metal and plastic containers, and paper, UF still appeared to rank average to above average among other schools across the nation. UF was not setting benchmarks; however, UF was clearly ahead of the curve. Considering the universities setting benchmarks had one tenth the population of UF and less, UF is competing well.

Top institutions may capture more recyclables due to a higher ratio of collection receptacles to campus population. Unfortunately, this information was not available for comparison. There are also differences in the variety of recyclables that schools accept. An additional non-measurable variable is the campus attitude toward waste reduction and recycling. This can be affected by both education and outreach programs. Lastly, as noted, a clear difference is that benchmark institutions are much smaller in population than UF.

It was found that some institutions accept a larger variety of recyclables than UF. For example, California State University³², Franklin W. Olin College³³, Kalamazoo College³⁴, and New Mexico State University³⁵ collect and recycle boxboard. If UF collected boxboard, an approximate 1% increase in the recycling rate would be seen. California State University collects some food service plastics, whereas, Olin College collects aseptic packages and #3 plastics. New Mexico State does not collect #2 plastic or glass. More recyclables can be collected if there is greater campus participation. The schools listed above have very good education/outreach programs that promote a sustainable attitude on campus. Also many of the communities may be moving towards a more sustainable trend. These programs and attitudes are difficult to compare.

5.1.2.2. *Management*

When comparing the University of Florida's waste management to other universities the MSW and recycling techniques were investigated. The chief observable differences are the size of UF in comparison to other universities and that UF coordinates solid waste management primarily through the Physical Plant Division. Often schools manage their waste via contracts and agreements with private companies such as Waste Management. Institutions have adopted similar recycling programs and implemented diversion techniques. However, the degree of participation and cooperation between

³² California State University San Marcos. (2008). *CSUSM:Recycling*. Retrieved September 2, 2009, from <http://www.csusm.edu/facilities/sustainability/recycling.html>

³³ Franklin W. Olin College of Engineering. (2009). *Sustainability: Recycling Program*. Retrieved September 2, 2009, from <http://www.olin.edu/sustainability/recycling.aspx>

³⁴ Kalamazoo College. (2006, January 23). *Kalamazoo College/recycling*. Retrieved September 2, 2009, from <http://www.kzoo.edu/recycle/old/index.htm>

³⁵ New Mexico State University. (2008). *NMSU: Aggie Recycling*. Retrieved September 2, 2009, from <http://www.nmsu.edu/aggierecycling/index.html>

departments differs among schools. Overall, the waste management approach adopted by UF is empowering and more easily adaptable to new regulations and more sustainable initiatives.

Of the universities investigated, the majority hire private companies to collect and dispose the generated solid waste. This leaves the management details at the discretion of the private company, not the university. Moreover, if the institution wants to record data (e.g. monthly weights generated) on the campus solid waste, the university must rely on the company to provide the information.

Since UF not only oversees the campus waste, but also directly collects and transports waste to proper disposal (e.g. MSW dumpster collection and disposal, can and bottle recycling, etc), UF has more control over how the campus waste is managed and greater leverage to implement changes. UF has the ability to tailor the waste management strategies to the campus needs and goals, which is an aspect that private companies may be unwilling to accommodate. Thus, UF has the leverage of self-management and can negotiate agreements depending on the type of waste, hence adopting solutions that are the most economically feasible and/or environmentally responsible.

Institutions worldwide have adopted recycling programs and initiatives; however, each program differs in structure and support. Many schools contract private companies to manage their recyclables much like they do for their waste. Though the degree of cooperation differs, source reduction and diversion techniques are implemented and/or recommended at many other universities. The degree of cooperation differs though. UF has developed infrastructure such as, the Office of Sustainability, to coordinate efforts campus wide. This is much more effective in assessing the feasibility of small scale experimental procedures and implementing them across the entire campus. Many of the schools that lack this infrastructure seem to be missing diversion opportunities. Additionally, this infrastructure helps unite the campus making education and outreach programs much more successful.

Diversion of organics is the next step in sustainable waste management among the more advanced campuses. Many schools have experimented with composting food waste, but most have found that the program as a whole proves to be too difficult to manage and, thus, unsuccessful. UF does successfully recover their yard wastes through a private company, but is not currently diverting food waste. UF departments and organizations are experimenting with converting organics to energy through digestion, and small scale food waste composting initiatives are underway. Furthermore, UF has been converting oil from dining halls into biodiesel. These programs are in their infancy and are still being assessed as an opportunity for campus wide organics recovery.

While UF is ahead of many universities in their waste management strategies, there are a few institutions that have tried innovative solutions. The University of Colorado at Boulder (CU) has constructed and employed their own materials recovery facility to process recyclables before selling them to a private company for recovery. The University of Oregon, CU, Penn State, and the University of California-Davis (UC) had some success with zero waste events where they collect recyclables and compostables, and encourage reusable serve ware. Penn State and UC have successful composting programs where they metabolize food waste into a product that is then land applied. See Appendix J for more detailed information on other university practices.

Based on the management and diversion techniques employed at other campuses, UF is moving in the right direction. Quantitatively, comparing UF's management to other universities is difficult, since most universities do not publish their recycling/diversion rates. When rates are calculated, discrepancies arise on how materials are measured and which materials are included. Currently, no standard for measuring diversion rates exist. Even the RecycleMania program has its faults in benchmarking institutions as seen in the previous section. Furthermore, as noted earlier in this report, it is difficult to measure the impacts of source reduction programs.

5.2. MSW SORT IMPLICATIONS AND DIVERSION OPPORTUNITIES

Investigating and characterizing the municipal solid waste portion of the UF waste stream, accounting for approximately 48.25% of the waste stream, was a critical component of properly assessing, managing, and recommending improvements to the campus solid waste management system. Currently, the PPD tracks the weight of MSW disposed monthly; however, the composition of this MSW had yet to be qualified and quantified by component. Detailing the component and proportion contributed to the MSW stream gave necessary information regarding the quantity of refuse that is recoverable or even reducible. Moreover, it provided a means of assessing the success of current campus wide recovery efforts.

The investigations completed on the MSW stream identified the primary components as well as an overall composition. Paper, organics, non-recyclable items, and plastics account for 90.0% of the MSW stream and, thus, approximately 43.4% of the 48.25% contributed to the UF waste stream. The data received from the MSW sort subcategories demonstrate that recyclable goods are escaping campus wide recovery efforts. These four principal contributing wastes are further examined by identifying which campus source disposes the highest quantity of each waste, which subcategories most significantly compose each waste category, and finally, present potential diversion techniques that could be utilized. The percents discussed are all weight averages.

5.2.1. ORGANICS

Organics compose the largest portion of UF's MSW stream at 15.85%, as seen in Figure 37. The campus sources that contribute most to this MSW portion are housing (8.08%), academic (3.27%), and dining sources (2.00%). Of the academic sources, 0.53% is exclusively from plant labs. The organics found in the MSW were primarily food waste related products (12.84%). The detailed analysis in terms of the UF waste stream is available in Table 15 and Table 11 has the categories and subcategories listed in terms of the MSW stream.

Potential diversion techniques for organics include conversion to energy and composting. Anaerobic digestion could also be employed for the food waste portion of the organics. However, compostable paper is not as efficiently managed through digestion because it is difficult for the anaerobes to breakdown cellulous. Small scale composting, like that started by the Butterfly Garden, could be pursued for the campus sources that were identified as high quantity or high density contributors. During the MSW sorts, the waste disposed of by the Florida Museum of Natural History and Butterfly Garden was examined. Approximately 61% by weight (81.0 pounds) and 32% by volume

(54.0 gallons) of the sampled load (132.57 pounds and 170.96 gallons) was food waste. With the addition of composting, 52% by weight (69.2 pounds) and 27% (46.1 gallons) by volume of the load was diverted from the MSW stream.

Composting feasibility studies could be performed given the encouraging recovery rate from just the FMNH and Butterfly Garden. A prime location to initially implement composting would be in close proximity to plant labs and greenhouses, since there is green space available, they are low traffic areas, and would be in close proximity to an immediate source of organic waste (0.53%). In the case of dining halls, a composting area may not be readily available, but the plant labs, greenhouses, and dining halls could partner in the composting initiative. This would entail determining the logistics of collecting and transporting the food waste from dining halls to the composting mechanism in the greenhouse and plant lab area. If a more remote location is selected, for instance near the swine unit, collection bins and transportation would need to be determined for both the food and plant waste.

Moreover, since compostable paper is a substantial contributor to the paper MSW stream, it may behoove UF to consider integrating this component with composting initiative. Initially convenient academic buildings (e.g. buildings that are already on the transportation route determined for dining halls and plant labs) could be added to the composting study. When selecting academic buildings to participate, the location – for instance the proximity to either the compost devices or the dining halls - and the presence of a food source or vendor should be considered. For instance, in the New Engineering Building (NEB) a vendor, Java City, is located downstairs that sells drinks and food; such as coffee, tea, and sandwiches. During the MSW sorts, NEB was sampled and the MSW was found to have nearly 40% by weight and 5% by volume organic food waste components. This included unfinished meals, drinks, and waste from the vendor such as an 18 pound bag of coffee grounds.

Additionally, it is important to identify who will fund and manage the composting operation, which could entail funding the composting devices, collection containers, vehicles, employees, maintenance and/or organizing volunteer efforts. For dining halls, the collection could be focused on pre-consumer food waste whereas for academic buildings, collection could be focused on waste generated at vendor facilities and bathroom waste. In order minimize the contamination in the bathroom waste, proper signage would be required and announcements made. The best collection and transportation route can be determined once the location(s) for the composting devices is established and approval from all participating units is gained.

5.2.2. PAPER

Paper is the second largest contributor to the UF waste stream at 24.83%, with 10.5% recycled through campus recovery efforts and 14.33% lost as MSW. The campus sources that contribute most to paper waste are housing (5.69%) and academic (2.97%) sources, as seen in Table 14. With regard to the paper disposed of as MSW, the most substantial contributor was compostable/soiled paper, composing 5.67% of the MSW stream. However, readily recycled paper products such as OCC (2.54%), high grade (1.37%), and newspaper (1.31%) were among the top contributors to the MSW stream. The detailed analysis in terms of the UF waste stream is available in Table 15 and Appendix I. Table 11 has the categories and subcategories listed in terms of the MSW stream.

Potential diversion techniques for the compostable/soiled paper would be composting or replacing the bathroom paper towel dispensers with electric hand driers or the textile hand wipe machines. With regard to capturing the recyclable portion of the paper MSW stream, education on both available recovery techniques (i.e. OCC dumpsters, indoor office paper recycling receptacles, etc) and the importance of properly recovering recyclable goods would be the priority.

5.2.3. NON-RECYCLABLE

Non-recyclable items represent the fraction of the UF waste stream that will be difficult to recover through recycling, reuse, repair, re-sale, or donation due to the lack of applicable recovery options, markets available, and contamination. According to the MSW composition study, approximately 9.31% of the UF waste stream is non-recyclable. The items denoted as non-recyclable include, but were not limited to dirty film, used feminine products and diapers, glass that is broken or from a lab, as well as residuals and fines. Currently, there are either no or limited recovery options available for these items.

The non-recyclable quantity disposed could be reduced, however, if the residuals and fines portion received appropriate filtering. The residuals and fines could then be diverted from the landfilled waste through use as cover soil for landfills or, with adequate treatment, composted. Encouraging source reduction could reduce this component. For example, the building staff should be instructed to consolidate partially filled containers while leaving the original bags. This would reduce the film produced on campus while saving the university materials.

5.2.4. PLASTICS

Plastics, a light weight, but often larger volume waste category, was found to be the fourth largest contributor to the UF MSW waste stream at 3.92%, which is weighted by the load and the UF waste stream. The primary campus sources that contribute to the plastic waste are housing (1.77%), academic (1.02%), and administration (0.42%). The plastics found in the MSW portion of the UF waste stream primarily consisted of currently not recycled number one through seven plastic (1.27%), currently recycled plastic (1.26%), and food service (0.74%). Table 15 has the detailed analysis in terms of the UF waste stream and Table 11 has the categories and subcategories listed in terms of the MSW stream.

5.2.5. CONCLUSION

Ultimately, since UF has the solid waste collection and disposal infrastructure established, the fundamental recommendation to enhance recovery efforts is through the coupling of campus wide education, increased awareness, and budgeting to accommodate the departmental and unit solid waste needs. Education would primarily involve identifying the current goods that are recyclable, available recycling programs campus wide, reduction and reuse techniques, and most importantly detailing the benefits of reusing, reducing, and recycling as well as recovering.

Increased awareness would result from improving the communication within the hierarchal network by encouraging or supplementing job requirements of employees who collect the refuse and recyclables to include an active and observant role in the solid waste management system. Accordingly, their observations would be relayed to their supervisors and the cumulative information would give insight on how to better provide for campus faculty, staff, and students.

Lastly, it is important to note though the MSW stream was investigated in detail in this audit, it is not the only waste category with room for improvement. Construction and demolition debris account for 12.91% of the UF waste stream. As detailed in prior chapters, C&D debris is ultimately disposed of in a landfill; however, there are still many recyclable or recoverable components in the C&D debris stream.

5.3. RECOMMENDATIONS

To amplify current recovery efforts and secure a more sustainable future for campus wide activities, there are distinct areas necessitating improvement. UF as well as universities nationwide need to develop and/or improve their communication and cooperation between academic departments, units, administrative bodies and levels of authority in regards to waste management, recovery efforts, and sustainable initiatives. This would include augmenting as well as enhancing and targeting education and outreach programs.

Another opportunity for further research would be to expand the list of accepted recyclables. Finally, formulating and updating maps with locations of refuse and recycling containers would support in assessing success in capturing recyclables.

5.3.1. COMMUNICATION AND ACCOUNTABILITY

Communication, cooperation, and accountability are critical components of a successful recycling program. The UF Office of Sustainability has established the infrastructure through Green Team Captains (GTCs) in over 100 departments and units, such as the museum, dining halls, and academic departments around campus. Since an infrastructure is in place, UF needs to both promote green initiatives and increase the ease of communication within this infrastructure. Empowering faculty, staff, and students by announcing sustainability as a priority and publicizing a sustainable campus will be achieved through the combined efforts of the University and each individual within.

A grassroots approach of setting goals through awareness and education should be established as well as providing support and incentives from the University. This could commence by formulating a uniform method of reporting successes as well as failures experienced, including document formats and

terminology, for the GTCs. Reporting encourages departmental accountability by providing a means to assess progress. Once in place, all efforts would be recorded and shared with the solid waste coordinator, OOS, and archived in an online database all departments can access.

Accordingly, with UF establishing a green campus as a priority, which includes supporting sustainable initiatives whether by appropriately budgeting so to endorse and/or providing incentives such as competitions, and cultivating responsibilities on both individual and departmental levels, the GTCs will be adequately empowered in their departments. For instance, GTCs can promote awareness, generate discussion about recovery techniques, and present sustainable initiatives that could be investigated or implemented at departmental meetings. These efforts and information can then be documented for evaluation.

5.3.2. EDUCATION AND OUTREACH

Education and outreach programs should be implemented in a similar way. Once a diversion technique is found to be successful, advertise this practice for implementation over the entire campus. Many programs such as double sided printing defaults have been found successful, but are not implemented in all departments or accepted by all faculty members.

As an education initiative, the program directives need to help everyone understand the harm caused by contamination. Volunteers should be well informed so their efforts are not counterproductive. For example, if a paper load is contaminated with too much boxboard, the value drops significantly, and may even need to be landfilled. By advertising success and encouraging departments as well as individuals to get involved and educated, greater capture rates could be achieved.

5.3.3. RECYCLABLES ACCEPTED

While communication between university facilities and proper education would encourage better capture of recyclables and implementation of source reduction as well as diversion techniques, expanding the list of materials that are accepted by the campus recycling program would increase the opportunity for recovery. This would require investigating not only local recycling options, but the availability of markets.

Currently, there are few local recyclers, thus options on what can be recycled are limited. Research exploring new recyclers would require analyzing the cost and benefit of sending recyclable materials greater distances. Another possibility would be to examine the potential for a campus or county materials recovery facility to compete with the local recycler. This would be a capital intensive initiative; therefore, it would be best to investigate partnering with Alachua County or other government programs. Furthermore, an awareness of recycling markets is imperative to determine the feasibility and sustainability of such a facility.

5.3.4. SPATIAL IDENTIFICATION

The final recommendation involves mapping the location and type of disposal/recovery containers as well as the necessity according to both the MSW sorts and observations completed upon

collection. This initiative enables UF to assess the current logistics and identify opportunities for capturing more recyclables. UF would then need to maintain this information by recording when containers are removed, added, or moved and tracking how much use each bin receives.

With respect to the outdoor bins, the majority of the recycling bins available to commuting traffic and buildings/units are detailed on the UF map. Figure 42, visible to UF website visitors, displays the can and bottle bins for commuting traffic (blue) as well as the paper dumpsters and compactors (orange). These existing records would only need to be updated with the recent additions, including the three-tiered bins, and maintained.

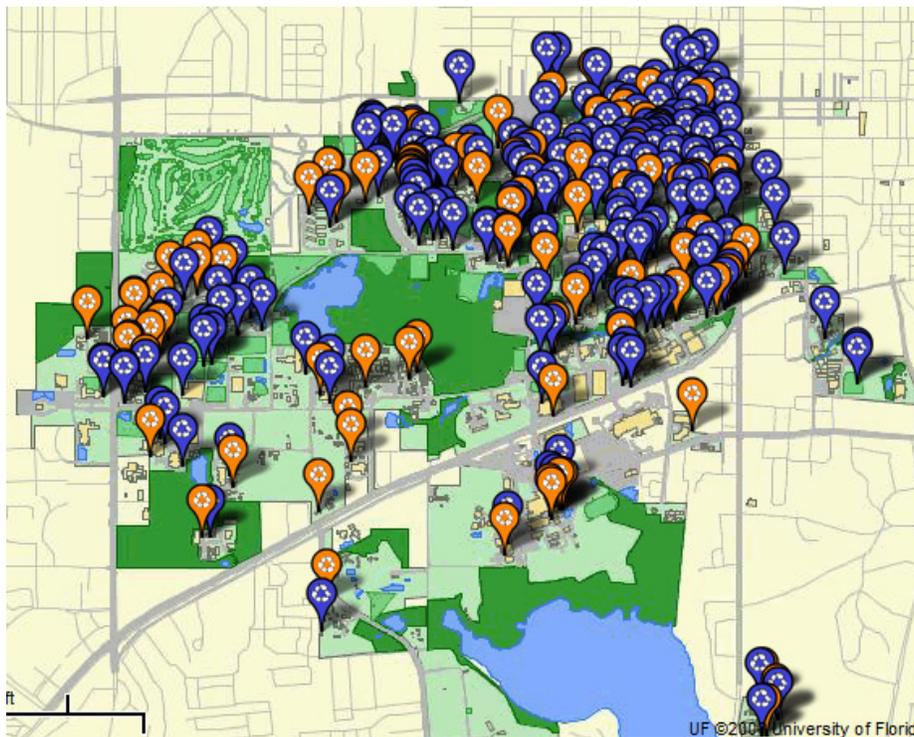


Figure 42: Map of the University of Florida identifying recycling opportunities

The employees of PPD who empty these receptacles should be encouraged or required to take an active role in assessing and recording the effectiveness of current placements, hence, identifying locations that need improvement. This could be completed with a form where employees select how full or empty containers are or simply by providing them with instructions to make note of containers that are repeatedly overfull or under used. Labeling all containers by GPS coordinates provides a manageable method for coordinating and tracking changes. Moreover, the information provided from the PPD employees could be recorded and tracked to further assess the bin usefulness.

To enhance the optimization of indoor bin locations, the information from the MSW sorts could be integrated in the mapping system. This would allow the University to more readily identify appropriate locations for trash, paper, can and bottle bins. For instance, in Table 12 the composition of each source is detailed as a percent of the total loads that reflect each source. In considering the

composition of the Academic sub-source waste streams the necessity of different types of solid waste disposal containers is displayed. According to the composition identified from the 2009 MSW sorts, Mixed Academic (38.5%) and Libraries (50.3%) necessitate more paper recycling containers than the Plant (16.7%) and Animal (16.7%) Labs. However, Plant (46.8%) and Animal (60.5%) labs generate more organic waste, such as plant, food, and animal byproducts that may be readily diverted from the landfill stream, if composting or digestion initiatives are pursued. Ultimately, the MSW sort information can be utilized in assessing specific disposal/recovery bins that should be available in buildings representing each source or sub-source.

The University of Florida could spatially identify the need of bins more effectively, if the location and type of bin information is commingled with the usefulness of each bin according to employee and sort assessments. Bins receiving low use can be relocated to problematic areas identified by employees, optimizing the use of existing bins. If the current receptacle placement is sufficient, then the low use bins may be emptied on a less frequent schedule, hence saving employee time. In optimizing bin placement, UF will be providing sufficient structural support to the Zero Waste initiative.

APPENDICES

A. GLOSSARY

- Aseptic container**- container that is composed of paper, plastic, and metal that holds the shelf life of food without refrigeration (e.g., juice boxes, milk cartons).
- Class I Landfill** –In Florida, facilities that are used to dispose MSW and receive an average of 20 tons or more waste a day.
- Class II Landfill**–In Florida, facilities that are used to dispose MSW that receive less than 20 tons of waste a day
- Class III Landfill**– Class III landfills are those which receive only yard trash, construction and demolition debris, waste tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials approved by the FDEP which are not expected to produce leachate which poses a threat to public health or the environment. Class III landfills do not accept household waste(Townsend, Determination of Appropriate Waste Management Options, 2008).
- Construction and demolition (C&D) debris** – waste generated at construction, renovation, and demolitions sites. This includes, but is not limited to, lumber, wire, sheetrock, broken brick, shingles, glass, pipes, concrete, paving materials. Paint, solvents, asbestos, any liquid, compressed gases or semi liquids, and garbage are not included in C&D debris.
- Diversion technique** – any method of that decreases the waste sent to a landfill. Includes reduction, reuse, recycling, as well as methods that retrieve energy from waste like anaerobic digestion or waste to energy.
- Hazardous Waste** - Waste that could cause or contribute to mortality or serious illness. Any waste that could pose substantial risk to human health or environment. (10)
- LEED Certification**- LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts (US Green Building Council, 2008).
- Medical Waste** - .Waste generated in the diagnosis, treatment, or immunization of humans or animals. (9)
- Municipal solid waste** – garbage, refuse and other solid waste from residential, commercial, industrial and community activities that the generator of the waste aggregates for collection. MSW does not include autos, street sweepings, ash, dedicated construction debris, mining waste, sludge, agricultural wastes, and other materials collected, processed and disposed of as separate waste streams.

Recycle Mania - RecycleMania is a friendly competition and benchmarking tool for college and university recycling programs to promote waste reduction activities to their campus communities. Over a 10-week period, schools report recycling and trash data which are then ranked according to who collects the largest amount of recyclables per capita, the largest amount of total recyclables, the least amount of trash per capita, or have the highest recycling rate (Welcome to the Recyclemania Web Site, 2009).

Resource Conservation and Recovery Act (RCRA) – primary statute governing solid waste.

Solid Waste – garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industries, commercial, mining and agricultural operations and from community activities. ,

Special Waste – waste items that are deemed difficult or pose a danger when handled by the onsite volunteers.

Yard trash - Waste composed of leaves, branches, and soil. (7)

B. CAMPUS SOURCES

B.1. CAMPUS SOURCES IDENTIFICATION

The campus was categorized by the source or generator. Every roll-off, compactor and dumpster which is emptied by the Physical Plant or contracted out was then classified. The following categories were established for the UF campus. These categories were determined based on the types of wastes anticipated from each source. Table B.1.A lists and describes these campus sources.

Table B.1.A The University of Florida was separated into sources of MSW, referred to as campus sources

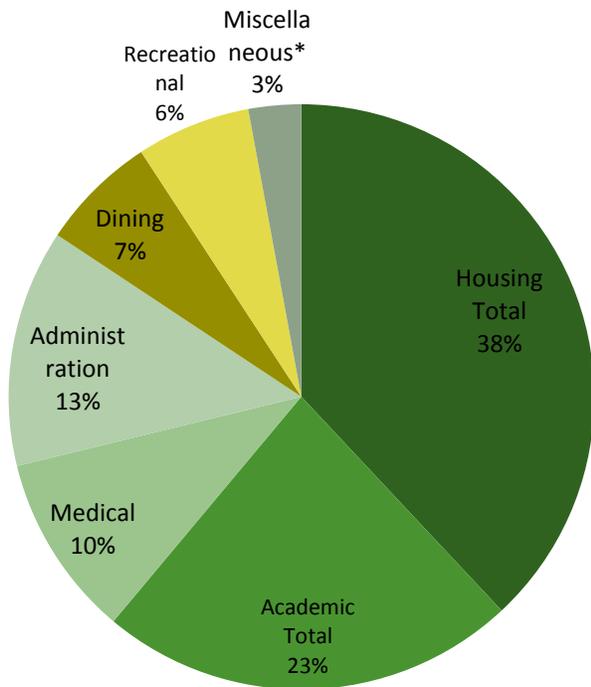
Campus Source	Description
Academic: Animal Lab	Laboratories whose research activities involve animals
Academic: Plant Lab	Laboratories whose research activities predominantly involve plants
Academic: Library	Exclusively involves library
Academic: Mixed	Includes a combination of lecture halls, laboratories, libraries, and offices
Administration	Mostly composed of offices
Dinning	Food service locations
Recreational	Recreational facilities and fields
Housing: Dorms	Exclusively involves dorms
Housing: Family	Exclusively involves family housing
Housing: Greek	Sororities and fraternities
Miscellaneous	Unclassifiable, such as storage units, hay barns, building services, etc
Medical	Waste produced in buildings where research is primarily medical in nature (not to be confused with the medical waste type) This would include any waste that is thrown in regular containers that are not specifically for bio-hazardous or any other special waste.

Table B.1.B indicates how each campus category contributes to the UF waste stream, as well as the total weight and volumes that each source contributes. The calculations for weight determination are detailed in Appendix C. Figure B.1 shows the percent that each campus category and sub category contributes to the UF waste stream.

	Campus Sources	Campus Sub-Sources	Volume (yd ³)	Volume %	Weight (lbs)	Weight %
	Housing Total		1864.9	38.0%	878,851.5	47.6%
1		Dorm	1147.9	23.4%	502,378.3	27.2%
2		Greek	377.0	7.7%	253,114.3	13.7%
3		Family	340.0	6.9%	123,358.9	6.7%
	Academic Total		1131.3	23.1%	367,192.2	19.9%
4		Mixed	760.6	15.5%	175,262.8	9.5%
5		Plant Lab	69.6	1.4%	43,092.3	2.3%
6		Animal Lab*	133.0	2.7%	107,149.4	5.8%
7		Library	168.0	3.4%	41,687.6	2.3%
8	Medical		495.2	10.1%	127,652.5	6.9%
9	Administration		644.3	13.1%	150,845.9	8.2%
10	Dining		316.0	6.4%	183,944.3	10.0%
11	Recreational		310.0	6.3%	99,900.8	5.4%
12	Miscellaneous*		142.7	2.9%	37,521.1	2.0%

	TOTAL	
Assuming Containers Filled	4,904.23 yd ³ wkly	1,845,908.40 lbs wkly
		922.95 tons wkly
Actual Average	3,870.22 yd ³ mo	1,456,715.63 lbs mo
		728.36 tons mo

Waste from Campus Categories by Volume



Waste from Campus Categories by Weight

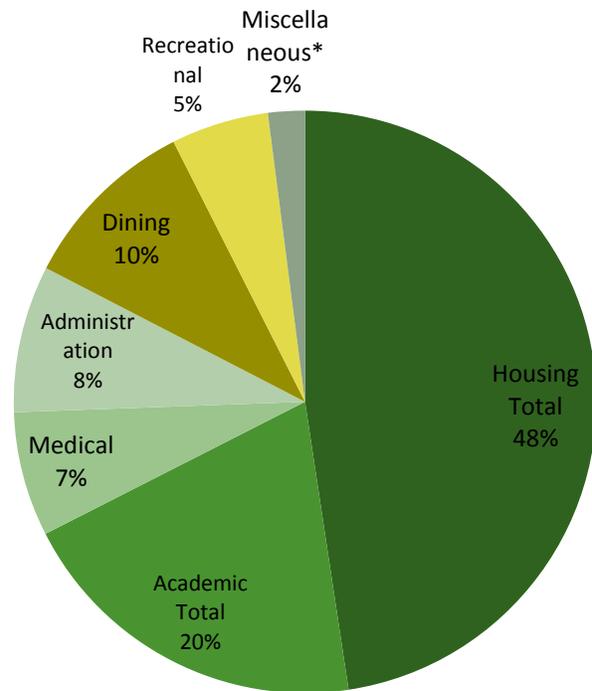


Figure B.1 Campus categories contribution to the UF Waste stream

B.2. WASTE CHARACTERIZATION BY CAMPUS SOURCE

The University of Florida waste stream was categorized by the source of the waste detailed in Chapter Two of this audit. The waste was also characterized by the container type and the type of waste it contained (e.g., garbage, paper, cans & bottles, etc). Using known container volumes and the frequency collected, we were able to estimate a baseline for how much waste each category contributed. All containers were assumed to be full during this analysis. The following tables present this waste characterization by building. For special arrangement reasons, the table was divided into two parts. Both parts list the building number and description, but the rest of the characterization is broken into two tables. This characterization did not include any containers whose contents would ultimately end up in a dumpster or compactor. This kept volumes from double counting.

This file is available for direct use on the attached compact disc (CD) as “Comingled.Waste.Recycling.Infrastructure.2009.xlsx.”

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthv	CY	Collector
1329-001	1329 GLASS BUILDING		1		1			8.60	8.00	UF
1329-002	1329 GLASS BUILDING		1		1			8.60	8.00	UF
0019-001	Academic Advisement	1	1	1	1	1		21.50	6.00	UF
0019-002	ACADEMIC ADVISING CENTER		1		1			8.60	6.00	UF
0252-001	Agricultural Eng. Field Lab			1				4.30	4.00	UF
1237-001	Agronomy Field Office		0.23					1.00	2.00	UF
0413-001	Alpha Chi Omega	1		1		1		12.90	6.00	UF
0409-001	Alpha Delta PI	1		1		1		12.90	6.00	UF
0417-001	Alpha Epsilon Phi	1		1		1		12.90	6.00	UF
0408-001	Alpha Omicron PI	1		1		1		12.90	6.00	UF
1371-001	Animal Care # I - BARC					1		4.30	4.00	UF
0459-002	Animal Science		1			1		8.60	8.00	UF
0459-003	ANIMAL SCIENCE BUILDING		1		1			8.60	3.00	UF
0268-001	Architecture Building	1	1	1	1	1		21.50	8.00	UF
0436-001	Austin Cary			1				4.30	8.00	UF
0142-001	Austin Cary Conference Bldg.			1				4.30	8.00	UF
0292-001	Baby Gator		1			1		8.60	6.00	UF
0255-001	Bandshell	1		1		1		12.90	6.00	UF
0255-002	Bandshell	1		1		1		12.90	6.00	UF
0255-003	Bandshell	1		1		1		12.90	6.00	UF
0747-001	Bartram Hall	1	1	1	1	1		21.50	6.00	UF
0562-001	Beard Track Stadium #1		0.23					1.00	8.00	UF
0562-002	Beard Track Stadium #2		0.23					1.00	8.00	UF
0751-004	BEATY TOWERS		1		1			8.60	6.00	UF
0798-001	Bee Unit On Call			0.23256				1.00	4.00	UF
0894-001	Beef Resch North (Sand Hill Farm)			1				4.30	3.00	UF
0721-001	Benton Hall		1		1			8.60	8.00	UF
0430-001	Beta Theta P1	1		1		1		12.90	6.00	UF
1041-001	Biotec Dev Inst	1		1		1		12.90	8.00	UF
1040	Biotechnology	1		1		1		12.90	6.00	UF
1040-001	Biotechnology	1		1		1		12.90	6.00	UF
0724-001	Black Hall		1		1			8.60	8.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/m)
1329-001	1329 GLASS BUILDING	Paper	Dumpster	Academic	Plant Lab	16.00	68.8
1329-002	1329 GLASS BUILDING	Paper	Dumpster	Academic	Plant Lab	16.00	68.8
0019-001	Academic Advisement	Garbage	Dumpster	Admin		30.00	129.0
0019-002	ACADEMIC ADVISING CENTER	Paper	Dumpster	Admin		12.00	51.6
0252-001	Agricultural Eng. Field Lab	Garbage	Dumpster	Academic	Plant Lab	4.00	17.2
1237-001	Agronomy Field Office	Garbage	Dumpster	Academic	Mixed	0.47	2.0
0413-001	Alpha Chi Omega	Garbage	Dumpster	Housing	Greek	18.00	77.4
0409-001	Alpha Delta PI	Garbage	Dumpster	Housing	Greek	18.00	77.4
0417-001	Alpha Epsilon Phi	Garbage	Dumpster	Housing	Greek	18.00	77.4
0408-001	Alpha Omicron PI	Garbage	Dumpster	Housing	Greek	18.00	77.4
1371-001	Animal Care # I - BARC	Garbage	Dumpster	Medical		4.00	17.2
0459-002	Animal Science	Garbage	Dumpster	Academic	Mixed	16.00	68.8
0459-003	ANIMAL SCIENCE BUILDING	Paper	Dumpster	Academic	Mixed	6.00	25.8
0268-001	Architecture Building	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0436-001	Austin Cary	Garbage	Dumpster	Academic	Plant Lab	8.00	34.4
0142-001	Austin Cary Conference Bldg.	Garbage	Dumpster	Recreational		8.00	34.4
0292-001	Baby Gator	Garbage	Dumpster	Academic	Library	12.00	51.6
0255-001	Bandshell	Garbage	Dumpster	Recreational		18.00	77.4
0255-002	Bandshell	Garbage	Dumpster	Recreational		18.00	77.4
0255-003	Bandshell	Garbage	Dumpster	Recreational		18.00	77.4
0747-001	Bartram Hall	Garbage	Dumpster	Admin		30.00	129.0
0562-001	Beard Track Stadium #1	Garbage	Dumpster	Recreational		1.86	8.0
0562-002	Beard Track Stadium #2	Garbage	Dumpster	Recreational		1.86	8.0
0751-004	BEATY TOWERS	Paper	Dumpster	Housing	Dorm	12.00	51.6
0798-001	Bee Unit On Call	Garbage	Dumpster	Academic	Plant Lab	0.93	4.0
0894-001	Beef Resch North (Sand Hill Farm)	Garbage	Dumpster	Academic	Animal Lab	3.00	12.9
0721-001	Benton Hall	Garbage	Dumpster	Admin		16.00	68.8
0430-001	Beta Theta P1	Garbage	Dumpster	Housing	Greek	18.00	77.4
1041-001	Biotec Dev Inst	Garbage	Dumpster	Academic	Animal Lab	24.00	103.2
1040	Biotechnology	Garbage	Dumpster	Academic	Animal Lab	18.00	77.4
1040-001	Biotechnology	Garbage	Dumpster	Academic	Animal Lab	18.00	77.4
0724-001	Black Hall	Garbage	Dumpster	Academic	Mixed	16.00	68.8

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthy	CY	Collector
1603	Bldg 1603 2002 Waldo Rd			1				4.30	6.00	UF
0059-001	BRAIN BUILDING		1		1			8.60	6.00	UF
0059-002	Brain Building Temporary Trash Dumpster		0.23					1.00	8.00	UF
1011-001	Broward Dining	1	1	1	1	1	1	25.80	8.00	UF
0011	BROWARD EAST		1		1			8.60	3.00	UF
0011-001	Broward Hall East	1	1	1	1	1	1	25.80	3.00	UF
0011-002	Broward Hall East	1	1	1	1	1	1	25.80	3.00	UF
0011-003	Broward Hall East	1	1	1	1	1	1	25.80	3.00	UF
0011-004	Broward Hall West	1	1	1	1	1	1	25.80	3.00	UF
0011-005	Broward Hall West	1	1	1	1	1	1	25.80	3.00	UF
0011-006	Broward Hall West	1	1	1	1	1	1	25.80	3.00	UF
0011	BROWARD WEST		1		1			8.60	4.00	UF
0015	Buckman Hall - AM	1	1	1	1	1	1	25.80	8.00	UF
0015	Buckman Hall - PM	1	1	1	1	1		21.50	8.00	UF
1383	Center of Excellence	1		1		1		12.90	8.00	UF
0705	Central Stores ON Call		0.23					1.00	6.00	UF
0723-001	Chemical Eng		1		1			8.60	6.00	UF
0028-001	Chemistry Lab	1	1	1	1	1		21.50	8.00	UF
0028-002	CHEMISTRY LABORATORY BLDG		1		1			8.60	8.00	UF
0028-003	CHEMISTRY LABORTARY BLDG		1		1			8.60	8.00	UF
0419-001	Chi Phi		1			1		8.60	4.00	UF
0892-001	Clinical Trails	1		1		1		12.90	8.00	UF
0892-002	Clinical Trials		1		1			8.60	6.00	UF
0508	CNS Field station (Formerly Agronomy)		1		1			8.60	4.00	UF
0607-001	Coastal Engrg					1		4.30	8.00	UF
0897-001	Collegiate Living Org.					1		4.30	8.00	UF
0397-001	Commuter Lot, N-S Dr #1		0.23					1.00	6.00	UF
0397-002	Commuter Lot, N-S Dr. #2		0.23					1.00	6.00	UF
1621-003	CONST TRAINING		1		1			8.60	6.00	UF
1602-001	Const Training-1 2002 Waldo RD			1				4.30	6.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
1603	Bldg 1603 2002 Waldo Rd	Garbage	Dumpster	Admin		6.00	25.8
0059-001	BRAIN BUILDING	Paper	Dumpster	Medical		12.00	51.6
0059-002	Brain Building Temporary Trash Dumpster	Garbage	Dumpster	Academic	Mixed	1.86	8.0
1011-001	Broward Dining	Garbage	Dumpster	Dining		48.00	206.4
0011	BROWARD EAST	Paper	Dumpster	Housing	Dorm	6.00	25.8
0011-001	Broward Hall East	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011-002	Broward Hall East	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011-003	Broward Hall East	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011-004	Broward Hall West	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011-005	Broward Hall West	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011-006	Broward Hall West	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0011	BROWARD WEST	Paper	Dumpster	Housing	Dorm	8.00	34.4
0015	Buckman Hall - AM	Garbage	Dumpster	Housing	Dorm	48.00	206.4
0015	Buckman Hall - PM	Garbage	Dumpster	Housing	Dorm	40.00	172.0
1383	Center of Excellence	Garbage	Dumpster	Admin		24.00	103.2
0705	Central Stores ON Call	Garbage	Dumpster	Misc		1.40	6.0
0723-001	Chemical Eng	Garbage	Dumpster	Academic	Mixed	12.00	51.6
0028-001	Chemistry Lab	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0028-002	CHEMISTRY LABORATORY BLDG	Paper	Dumpster	Academic	Mixed	16.00	68.8
0028-003	CHEMISTRY LABORATORY BLDG	Paper	Dumpster	Academic	Mixed	16.00	68.8
0419-001	Chi Phi	Garbage	Dumpster	Housing	Greek	8.00	34.4
0892-001	Clinical Trails	Garbage	Dumpster	Medical		24.00	103.2
0892-002	Clinical Trials	Paper	Dumpster	Medical		12.00	51.6
0508	CNS Field station (Formerly Agronomy)	Paper	Dumpster	Misc		8.00	34.4
0607-001	Coastal Engrg	Garbage	Dumpster	Academic	Mixed	8.00	34.4
0897-001	Collegate Living Org.	Garbage	Dumpster	Admin		8.00	34.4
0397-001	Commuter Lot, N-S Dr #1	Garbage	Dumpster	Recreational		1.40	6.0
0397-002	Commuter Lot, N-S Dr. #2	Garbage	Dumpster	Recreational		1.40	6.0
1621-003	CONST TRAINING	Paper	Dumpster	Misc		12.00	51.6
1602-001	Const Training-1 2002 Waldo RD	Garbage	Dumpster	Academic	Mixed	6.00	25.8

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthv	CY	Collector
1621-001	Const Training-2 2002 Waldo Rd			1				4.30	8.00	UF
0687-001	Constans Thea	1	1	1	1	1		21.50	8.00	UF
0276-001	Corry Village		1			1		8.60	4.00	UF
0277-001	Corry Village		1			1		8.60	4.00	UF
0279-001	Corry Village		1			1		8.60	6.00	UF
0280-001	Corry Village		1			1		8.60	6.00	UF
0288-001	Corry Village		1			1		8.60	8.00	UF
0277-002	CORRY VILLAGE		1		1			8.60	3.00	UF
0278-001	CORRY VILLAGE		1		1			8.60	3.00	UF
0288-002	CORRY VILLAGE		1		1			8.60	3.00	UF
0287-001	Corry Village Laundry	1		1		1		12.90	8.00	UF
0031-003	CRISER HALL		1		1			8.60	8.00	UF
0031-001	Criser Hall - AM	1	1	1	1	1	1	25.80	8.00	UF
0031-002	Criser Hall - PM	1	1	1	1	1	1	25.80	8.00	UF
0042-001	CSE - Computer Sci / Eng Bldg	1	1	1	1	1		21.50	8.00	UF
0186-002	Dairy Research Barn			1				4.30	8.00	UF
0423-001	Delta Chi	1		1		1		12.90	4.00	UF
0411-001	Delta Delta Delta On Call/ Share with Kappa Delta		1			1		8.60	8.00	UF
0407-001	Delta Gamma	1		1		1		12.90	6.00	UF
0657-001	Delta PHI Epsilon	1		1		1		12.90	8.00	UF
0657-002	DELTA PHI EPSILON		1		1			8.60	4.00	UF
0300-001	Diamond Village	1			1			8.60	6.00	UF
0301-001	Diamond Village	1			1			8.60	3.00	UF
0302-001	Diamond Village	1			1			8.60	6.00	UF
0303-001	Diamond Village	1			1			8.60	6.00	UF
0304-001	Diamond Village	1			1			8.60	8.00	UF
0301-002	DIAMOND VILLAGE		1		1			8.60	6.00	UF
0302-002	DIAMOND VILLAGE		1		1			8.60	8.00	UF
0304-002	DIAMOND VILLAGE		1		1			8.60	6.00	UF
0181-001	Dickinson Hall - East	1		1		1		12.90	6.00	UF
0181-002	Dickinson Hall - West	1		1		1		12.90	6.00	UF
0592-001	East Hall	1	1	1	1	1	1	25.80	3.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
1621-001	Const Training-2 2002 Waldo Rd	Garbage	Dumpster	Misc		8.00	34.4
0687-001	Constans Thea	Garbage	Dumpster	Recreational		40.00	172.0
0276-001	Corry Village	Garbage	Dumpster	Housing	Family	8.00	34.4
0277-001	Corry Village	Garbage	Dumpster	Housing	Family	8.00	34.4
0279-001	Corry Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0280-001	Corry Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0288-001	Corry Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0277-002	CORRY VILLAGE	Paper	Dumpster	Housing	Family	6.00	25.8
0278-001	CORRY VILLAGE	Paper	Dumpster	Housing	Family	6.00	25.8
0288-002	CORRY VILLAGE	Paper	Dumpster	Housing	Family	6.00	25.8
0287-001	Corry Village Laundry	Garbage	Dumpster	Housing	Family	24.00	103.2
0031-003	CRISER HALL	Paper	Dumpster	Admin		16.00	68.8
0031-001	Criser Hall - AM	Garbage	Dumpster	Admin		48.00	206.4
0031-002	Criser Hall - PM	Garbage	Dumpster	Admin		48.00	206.4
0042-001	CSE - Computer Sci / Eng Bldg	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0186-002	Dairy Research Barn	Garbage	Dumpster	Academic	Animal Lab	8.00	34.4
0423-001	Delta Chi	Garbage	Dumpster	Housing	Greek	12.00	51.6
0411-001	Delta Delta Delta On Call/ Share with Kappa Delta	Garbage	Dumpster	Housing	Greek	16.00	68.8
0407-001	Delta Gamma	Garbage	Dumpster	Housing	Greek	18.00	77.4
0657-001	Delta PHI Epsilon	Garbage	Dumpster	Housing	Greek	24.00	103.2
0657-002	DELTA PHI EPSILON	Paper	Dumpster	Housing	Greek	8.00	34.4
0300-001	Diamond Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0301-001	Diamond Village	Garbage	Dumpster	Housing	Family	6.00	25.8
0302-001	Diamond Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0303-001	Diamond Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0304-001	Diamond Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0301-002	DIAMOND VILLAGE	Paper	Dumpster	Housing	Family	12.00	51.6
0302-002	DIAMOND VILLAGE	Paper	Dumpster	Housing	Family	16.00	68.8
0304-002	DIAMOND VILLAGE	Paper	Dumpster	Housing	Family	12.00	51.6
0181-001	Dickinson Hall - East	Garbage	Dumpster	Admin		18.00	77.4
0181-002	Dickinson Hall - West	Garbage	Dumpster	Admin		18.00	77.4
0592-001	East Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthly	CY	Collector
0592-002	East Hall	1	1	1	1	1	1	25.80	3.00	UF
0179-001	EH&S Office - Pest Control		1		1			8.60	4.00	UF
0033-001	Electrical Eng	1		1		1		12.90	8.00	UF
0261-001	Emerson Alumni Hall	1	1	1	1	1		21.50	3.00	UF
0261-002	Emerson Alumni Hall		1		1			8.60	3.00	UF
0643-001	Entomology Greenhouse		1		1			8.60	6.00	UF
0350-001	Entomology Nematology			1				4.30	6.00	UF
0970-001	Entomology Nematology		1		1			8.60	8.00	UF
0970-002	Entomology Nematology		1		1			8.60	4.00	UF
2006-001	Family Practice			1				4.30	8.00	UF
0717-001	Fifield Hall	1	1	1	1	1		21.50	8.00	UF
0717-003	FIFIELD HALL		1		1			8.60	8.00	UF
0599-001	Fine Arts	1	1	1	1	1		21.50	8.00	UF
1006-001	Flavett Field-Woodlawn #1		0.23					1.00	8.00	UF
1006-002	Flavett Field-Woodlawn #2		0.23					1.00	8.00	UF
1380-001	Florida Biologix			1				4.30	8.00	UF
0021-002	FLORIDA GYMNASIUM		1		1			8.60	8.00	UF
0685-001	Food & Environmental Toxicology Lab		1		1			8.60	4.00	UF
0475-002	FOOD SCIENCE & HUMAN NUTRITION		1		1			8.60	8.00	UF
0475-001	Food Science Shares with CMT/Post OFC Bldg120	1	1	1	1	1		21.50	8.00	UF
0681-002	Forestry Compost On Call			0.23256				1.00	3.00	UF
0107-001	Forestry Field Lab		1					4.30	4.00	UF
0681-001	Forestry Star		1					4.30	6.00	UF
0474-001	Frazier Rogers	1		1		1		12.90	6.00	UF
0359-001	Gator Corner Dining	1	1	1	1	1	1	25.80	8.00	UF
0674-001	Golf Clubhouse	1		1		1		12.90	6.00	UF
0821-001	Golf Maintenance					1		4.30	6.00	UF
0589-001	Graham Cafe	1		1		1		12.90	4.00	UF
0591-001	Graham Hall	1	1	1	1	1	1	25.80	3.00	UF
0591-002	Graham Hall	1	1	1	1	1	1	25.80	3.00	UF
0591-003	Graham Hall		1		1			8.60	6.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
0592-002	East Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0179-001	EH&S Office - Pest Control	Garbage	Dumpster	Admin		8.00	34.4
0033-001	Electrical Eng	Garbage	Dumpster	Academic	Mixed	24.00	103.2
0261-001	Emerson Alumni Hall	Garbage	Dumpster	Admin		15.00	64.5
0261-002	Emerson Alumni Hall	Paper	Dumpster	Admin		6.00	25.8
0643-001	Entomology Greenhouse	Garbage	Dumpster	Academic	Animal Lab	12.00	51.6
0350-001	Entomology Nematology	Garbage	Dumpster	Academic	Animal Lab	6.00	25.8
0970-001	Entomology Nematology	Garbage	Dumpster	Academic	Mixed	16.00	68.8
0970-002	Entomology Nematology	Paper	Dumpster	Academic	Mixed	8.00	34.4
2006-001	Family Practice	Garbage	Dumpster	Admin		8.00	34.4
0717-001	Fifield Hall	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0717-003	FIFIELD HALL	Paper	Dumpster	Academic	Mixed	16.00	68.8
0599-001	Fine Arts	Garbage	Dumpster	Admin		40.00	172.0
1006-001	Flavett Field-Woodlawn #1	Garbage	Dumpster	Recreational		1.86	8.0
1006-002	Flavett Field-Woodlawn #2	Garbage	Dumpster	Recreational		1.86	8.0
1380-001	Florida Biologix	Garbage	Dumpster	Admin		8.00	34.4
0021-002	FLORIDA GYMNASIUM	Paper	Dumpster	Academic	Mixed	16.00	68.8
0685-001	Food & Environmental Toxicology Lab	Garbage	Dumpster	Academic	Plant Lab	8.00	34.4
0475-002	FOOD SCIENCE & HUMAN NUTRITION	Paper	Dumpster	Academic	Mixed	16.00	68.8
0475-001	Food Science Shares with CMT/Post OFC Bldg120	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0681-002	Forestry Compost On Call	Garbage	Dumpster	Academic	Plant Lab	0.70	3.0
0107-001	Forestry Field Lab	Garbage	Dumpster	Academic	Plant Lab	4.00	17.2
0681-001	Forestry Star	Garbage	Dumpster	Academic	Plant Lab	6.00	25.8
0474-001	Frazier Rogers	Garbage	Dumpster	Academic	Mixed	18.00	77.4
0359-001	Gator Corner Dining	Garbage	Dumpster	Dining		48.00	206.4
0674-001	Golf Clubhouse	Garbage	Dumpster	Recreational		18.00	77.4
0821-001	Golf Maintenance	Garbage	Dumpster	Misc		6.00	25.8
0589-001	Graham Cafe	Garbage	Dumpster	Dining		12.00	51.6
0591-001	Graham Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0591-002	Graham Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0591-003	Graham Hall	Paper	Dumpster	Housing	Dorm	12.00	51.6

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Month	CY	Collector
0468-001	Greenhouse				1			4.30	6.00	UF
0002-001	Grinter Hall	1	1	1	1	1	1	25.80	6.00	UF
0309-003	HARN CAFE		1		1			8.60	4.00	UF
0831-001	HAZ Mat Facility		1		1			8.60	6.00	UF
0831-002	HAZ MAT FACILITY		1		1			8.60	3.00	UF
0210-001	Health Annex Shares with 82,112,115,223,237,354,363	1	1	1	1	1		21.50	8.00	UF
0212-002	HEALTH PROFESSIONS & NURSING		1		1			8.60	8.00	UF
0473-001	Heat Plant #2				1			4.30	6.00	UF
1089-001	Heliport Area #1		0.23					1.00	6.00	UF
1089-002	Heliport Area #2		0.23					1.00	8.00	UF
0757-001	Holland Hall	1		1		1		12.90	8.00	UF
0757-003	HOLLAND LAW CENTER		1		1			8.60	8.00	UF
0757-002	Holland Law CTR	1		1		1		12.90	6.00	UF
0882-001	Horse Barn				1			4.30	6.00	UF
0992-001	Horse Teach Unit			1				4.30	4.00	UF
0992-002	HORSE TEACH UNIT		1		1			8.60	8.00	UF
1213-003	HORT HEADS		1		1			8.60	6.00	UF
0541-001	Housing Cabinet Shop Shares with Nuclear Res Bldg. See bldg 554				1			4.30	6.00	UF
0212-001	HPNP - Health Prof & Nursing Professions	1	1	1	1	1		21.50	8.00	UF
3381-001	HR Building	1		1		1		12.90	6.00	UF
0032-002	HUB		1		1			8.60	8.00	UF
0032-001	HUB - Gator Dining	1	1	1	1	1		21.50	8.00	UF
0574-002	HUME HALL		1		1			8.60	8.00	UF
0579-002	HUME HALL		1		1			8.60	8.00	UF
0060-002	IFAS EDITORIAL		1		1			8.60	4.00	UF
0060-001	IFAS Editorial		1					4.30	4.00	UF
0057-001	IFAS Fac OPNS Shares with Nematology. See Bldg 78		1					4.30	4.00	UF
0440-001	IFAS Spt Svcs		1					4.30	6.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/m)
0468-001	Greenhouse	Garbage	Dumpster	Academic	Plant Lab	6.00	25.8
0002-001	Grinter Hall	Garbage	Dumpster	Admin		36.00	154.8
0309-003	HARN CAFE	Paper	Dumpster	Dining		8.00	34.4
0831-001	HAZ Mat Facility	Garbage	Dumpster	Admin		12.00	51.6
0831-002	HAZ MAT FACILITY	Paper	Dumpster	Admin		6.00	25.8
0210-001	Health Annex Shares with 82,112,115,223,237,354,363	Garbage	Dumpster	Medical		40.00	172.0
0212-002	HEALTH PROFESSIONS & NURSING	Paper	Dumpster	Admin		16.00	68.8
0473-001	Heat Plant #2	Garbage	Dumpster	Admin		6.00	25.8
1089-001	Heliport Area #1	Garbage	Dumpster	Misc		1.40	6.0
1089-002	Heliport Area #2	Garbage	Dumpster	Misc		1.86	8.0
0757-001	Holland Hall	Garbage	Dumpster	Admin		24.00	103.2
0757-003	HOLLAND LAW CENTER	Paper	Dumpster	Academic	Mixed	16.00	68.8
0757-002	Holland Law CTR	Garbage	Dumpster	Academic	Library	18.00	77.4
0882-001	Horse Barn	Garbage	Dumpster	Academic	Animal Lab	6.00	25.8
0992-001	Horse Teach Unit	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2
0992-002	HORSE TEACH UNIT	Paper	Dumpster	Academic	Animal Lab	16.00	68.8
1213-003	HORT HEADS	Paper	Dumpster	Academic	Plant Lab	12.00	51.6
0541-001	Housing Cabinet Shop Shares with Nuclear Res Bldg. See bldg 554	Garbage	Dumpster	Misc		6.00	25.8
0212-001	HPNP - Health Prof & Nursing Professions	Garbage	Dumpster	Admin		40.00	172.0
3381-001	HR Building	Garbage	Dumpster	Admin		18.00	77.4
0032-002	HUB	Paper	Dumpster	Academic	Mixed	16.00	68.8
0032-001	HUB - Gator Dining	Garbage	Dumpster	Dining		40.00	172.0
0574-002	HUME HALL	Paper	Dumpster	Housing	Dorm	16.00	68.8
0579-002	HUME HALL	Paper	Dumpster	Housing	Dorm	16.00	68.8
0060-002	IFAS EDITORIAL	Paper	Dumpster	Admin		8.00	34.4
0060-001	IFAS Editorial	Garbage	Dumpster	Admin		4.00	17.2
0057-001	IFAS Fac OPNS Shares with Nematology. See Bldg 78	Garbage	Dumpster	Academic	Plant Lab	4.00	17.2
0440-001	IFAS Spt Svcs	Garbage	Dumpster	Admin		6.00	25.8

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthly	CY	Collector
0440-002	IFAS SPT SVCS		1		1			8.60	6.00	UF
0874-001	Inst Black Cult		1		1			8.60	6.00	UF
0594-001	Jennings East		1		1			8.60	3.00	UF
0594-002	Jennings East		1		1			8.60	3.00	UF
0594-003	Jennings East		1		1			8.60	3.00	UF
0400-001	Kappa Alpha	1		1		1		12.90	6.00	UF
1002-002	KEYS BUILDING		1		1			8.60	3.00	UF
1005-002	KEYS BUILDING		1		1			8.60	3.00	UF
1008-001	Keys Housing	1				1		8.60	6.00	UF
1002-001	Keys Housing	1		1		1		12.90	8.00	UF
1005-001	Keys Housing	1		1		1		12.90	8.00	UF
1007-001	Keys Housing	1		1		1		12.90	8.00	UF
1010-001	Keys Housing	1		1		1		12.90	6.00	UF
1049-001	Kindercare		1			1		8.60	6.00	UF
0145-001	Lake Wauburg North		0.23					1.00	6.00	UF
0145-002	Lake Wauburg North			1				4.30	6.00	UF
0314-001	Lake Wauburg South			1				4.30	6.00	UF
1184-002	LAKESIDE		1		1			8.60	6.00	UF
1181-001	Lakeside Housing	1		1		1		12.90	8.00	UF
1182-001	Lakeside Housing	1		1		1		12.90	8.00	UF
1183-001	Lakeside Housing	1		1		1		12.90	8.00	UF
1184-001	Lakeside Housing	1		1		1		12.90	8.00	UF
1185-001	Lakeside Housing	1		1		1		12.90	8.00	UF
0421-001	Lambda Chi Alpha	1						4.30	6.00	UF
0752-001	Law School South Lot		0.23					1.00	8.00	UF
1630-002	LIBRARY WAREHOUSE		1		1			8.60	8.00	UF
1630-001	Library Warehouse 2715 NE 39 Av			1.00				4.30	8.00	UF
0689-003	LIBRARY WEST		1		1			8.60	8.00	UF
0689-001	Library West AM	1	1	1	1	1	1	25.80	8.00	UF
0689-002	Library West-PM	1	1	1	1	1	1	25.80	8.00	UF
0749-001	Life Sci/Phsy	1	1	1	1	1		21.50	8.00	UF
0211-001	Lift Station				1			4.30	4.00	UF
1178-003	LOT #9 (OFF 34TH ST)		0.23					1.00	8.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
0440-002	IFAS SPT SVCS	Paper	Dumpster	Admin		12.00	51.6
0874-001	Inst Black Cult	Garbage	Dumpster	Admin		12.00	51.6
0594-001	Jennings East	Paper	Dumpster	Housing	Dorm	6.00	25.8
0594-002	Jennings East	Paper	Dumpster	Housing	Dorm	6.00	25.8
0594-003	Jennings East	Paper	Dumpster	Housing	Dorm	6.00	25.8
0400-001	Kappa Alpha	Garbage	Dumpster	Housing	Greek	18.00	77.4
1002-002	KEYS BUILDING	Paper	Dumpster	Housing	Dorm	6.00	25.8
1005-002	KEYS BUILDING	Paper	Dumpster	Housing	Dorm	6.00	25.8
1008-001	Keys Housing	Garbage	Dumpster	Housing	Dorm	12.00	51.6
1002-001	Keys Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1005-001	Keys Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1007-001	Keys Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1010-001	Keys Housing	Garbage	Dumpster	Housing	Dorm	18.00	77.4
1049-001	Kindercare	Garbage	Dumpster	Academic	Library	12.00	51.6
0145-001	Lake Wauburg North	Garbage	Dumpster	Recreational		1.40	6.0
0145-002	Lake Wauburg North	Garbage	Dumpster	Recreational		6.00	25.8
0314-001	Lake Wauburg South	Garbage	Dumpster	Recreational		6.00	25.8
1184-002	LAKESIDE	Paper	Dumpster	Housing	Dorm	12.00	51.6
1181-001	Lakeside Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1182-001	Lakeside Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1183-001	Lakeside Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1184-001	Lakeside Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1185-001	Lakeside Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
0421-001	Lambda Chi Alpha	Garbage	Dumpster	Housing	Greek	6.00	25.8
0752-001	Law School South Lot	Garbage	Dumpster	Housing	Dorm	1.86	8.0
1630-002	LIBRARY WAREHOUSE	Paper	Dumpster	Admin		16.00	68.8
1630-001	Library Warehouse 2715 NE 39 Av	Garbage	Dumpster	Admin		8.00	34.4
0689-003	LIBRARY WEST	Paper	Dumpster	Academic	Library	16.00	68.8
0689-001	Library West AM	Garbage	Dumpster	Academic	Library	48.00	206.4
0689-002	Library West-PM	Garbage	Dumpster	Academic	Library	48.00	206.4
0749-001	Life Sci/Phsy	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0211-001	Lift Station	Garbage	Dumpster	Misc		4.00	17.2
1178-003	LOT #9 (OFF 34TH ST)	Garbage	Dumpster	Academic	Mixed	1.86	8.0

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthv	CY	Collector
1178-004	LOT #9 (OFF 34TH ST)		0.23					1.00	6.00	UF
0725-001	MAE-A Engineering Sci		1		1			8.60	6.00	UF
0392-001	Maguire Village		1			1		8.60	8.00	UF
0372-002	MAGUIRE		1		1			8.60	3.00	UF
0380-001	MAGUIRE		1		1			8.60	6.00	UF
0388-003	MAGUIRE		1		1			8.60	3.00	UF
0392-002	MAGUIRE		1		1			8.60	3.00	UF
0365-001	Maguire Village		1			1		8.60	6.00	UF
0372-001	Maguire Village		1			1		8.60	6.00	UF
0385-001	Maguire Village		1			1		8.60	6.00	UF
0388-001	Maguire Village		1			1		8.60	6.00	UF
0041-001	Mallory Hall	1	1	1	1	1	1	25.80	6.00	UF
0041-002	MALLORY HALL		1		1			8.60	4.00	UF
0043-001	Marsten Science Library	1		1		1		12.90	6.00	UF
0719-001	Material Engrg	1	1	1	1	1		21.50	6.00	UF
0498-002	MCCARTY HALL D		1		1			8.60	8.00	UF
0498-001	McCarty-D	1	1	1	1	1		21.50	8.00	UF
0459-001	Meats Lab					1		4.30	4.00	UF
0720-001	Mech Engrg	1		1		1		12.90	6.00	UF
0170-002	Med Plaza		1		1			8.60	8.00	UF
0170-003	Med Plaza		1		1			8.60	8.00	UF
0217-001	Metabolic Bldg	1	1	1	1	1		21.50	8.00	UF
0981-001	Microbiology	1		1		1		12.90	8.00	UF
0706-001	Motor Pool				1			4.30	6.00	UF
0706-002	MOTOR POOL		1		1			8.60	3.00	UF
0135-001	Murphree Hall	1	1	1	1	1	1	25.80	8.00	UF
0135-002	MURPHREE HALL A		1		1			8.60	6.00	UF
0070-001	Nano			1				4.30	6.00	UF
0070-002	NANO RESEARCH FACILITY		1		1			8.60	8.00	UF
0742-001	Neurobio Surge # 5 Shares with Neurobio Surge # 6. See bldg 772		1		1			8.60	6.00	UF
0172-001	Newell Annex	1		1		1		12.90	8.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
1178-004	LOT #9 (OFF 34TH ST)	Garbage	Dumpster	Academic	Mixed	1.40	6.0
0725-001	MAE-A Engineering Sci	Garbage	Dumpster	Admin		12.00	51.6
0392-001	Maguire Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0372-002	MAGUIRE	Paper	Dumpster	Housing	Family	6.00	25.8
0380-001	MAGUIRE	Paper	Dumpster	Housing	Family	12.00	51.6
0388-003	MAGUIRE	Paper	Dumpster	Housing	Family	6.00	25.8
0392-002	MAGUIRE	Paper	Dumpster	Housing	Family	6.00	25.8
0365-001	Maguire Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0372-001	Maguire Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0385-001	Maguire Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0388-001	Maguire Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0041-001	Mallory Hall	Garbage	Dumpster	Housing	Dorm	36.00	154.8
0041-002	MALLORY HALL	Paper	Dumpster	Housing	Dorm	8.00	34.4
0043-001	Marsten Science Library	Garbage	Dumpster	Academic	Library	18.00	77.4
0719-001	Material Engrg	Garbage	Dumpster	Academic	Mixed	30.00	129.0
0498-002	MCCARTY HALL D	Paper	Dumpster	Academic	Mixed	16.00	68.8
0498-001	McCarty-D	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0459-001	Meats Lab	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2
0720-001	Mech Engrg	Garbage	Dumpster	Academic	mixed	18.00	77.4
0170-002	Med Plaza	Paper	Dumpster	Medical		16.00	68.8
0170-003	Med Plaza	Paper	Dumpster	Medical		16.00	68.8
0217-001	Metabolic Bldg	Garbage	Dumpster	Medical		40.00	172.0
0981-001	Microbiology	Garbage	Dumpster	Academic	Mixed	24.00	103.2
0706-001	Motor Pool	Garbage	Dumpster	Admin		6.00	25.8
0706-002	MOTOR POOL	Paper	Dumpster	Admin		6.00	25.8
0135-001	Murphree Hall	Garbage	Dumpster	Housing	Dorm	48.00	206.4
0135-002	MURPHREE HALL A	Paper	Dumpster	Housing	Dorm	12.00	51.6
0070-001	Nano	Garbage	Dumpster	Academic	Mixed	6.00	25.8
0070-002	NANO RESEARCH FACILITY	Paper	Dumpster	Academic	Mixed	16.00	68.8
0742-001	Neurobio Surge # 5 Shares with Neurobio Surge # 6. See bldg 772	Garbage	Dumpster	Admin		12.00	51.6
0172-001	Newell Annex	Garbage	Dumpster	Academic	Mixed	24.00	103.2

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthly	CY	Collector
0832-001	Newins-Zeigler		1		1			8.60	6.00	UF
0101-001	Norman Hall	1	1	1	1	1		21.50	6.00	UF
0050-001	North Hall Shares with Van Fleet Hall	1	1		1	1	1	8.60	8.00	UF
0634-001	Nuclear Sci-South	1		1		1		12.90	6.00	UF
0477-001	Nutrition Lab					1		4.30	6.00	UF
0094-001	O'Connell Center Temporary dumpster when compactor is down.		0.23					1.00	8.00	UF
0186-001	OF-Dairy Research			1				4.30	8.00	UF
1178-002	ORTHOPAEDIC SURGERY		1		1			8.60	8.00	UF
0512-001	P.K.Y. Cafe		1	1	1	1	1	21.50	8.00	UF
0746-001	PARTICLE SCIENCE		1		1			8.60	6.00	UF
0315-001	Performing Arts Auditorium		1		1			8.60	6.00	UF
0856-001	Phelps Lab		1		1			8.60	4.00	UF
0424-001	Phi Gamma Delta (FIJI)					1		4.30	4.00	UF
0416-001	Phi Mu	1		1		1		12.90	3.00	UF
0462-001	Physical Therapy	1			1			8.60	3.00	UF
0092-001	Physics Building	1	1	1	1	1		21.50	8.00	UF
0092-002	Physics Building		1		1			8.60	8.00	UF
0418-001	PI Beta PHI	1		1		1		12.90	6.00	UF
0428-002	PI KAPPA PHI		1		1			8.60	3.00	UF
0432-001	PI Lambda PHI	1		1		1		12.90	6.00	UF
0521-002	PKYONGE		1		1			8.60	6.00	UF
0561-001	Plant Pathology		1					4.30	4.00	UF
0068-003	POULTRY LAB		1		1			8.60	6.00	UF
0308-001	Powell Hall - Fla Museum		1		1			8.60	6.00	UF
0308-002	POWELL HALL - FLA MUSEUM		1		1			8.60	8.00	UF
0700-001	PPD Admin				1			4.30	4.00	UF
0703-001	PPD Bldg Services	1	1	1	1	1		21.50	6.00	UF
0702-001	PPD Maint NE				1			4.30	6.00	UF
0702-002	PPD Maint SW				1			4.30	6.00	UF
0609-001	PPD Store Yard				1			4.30	8.00	UF
0127-001	Presidents Res	1		1		1		12.90	2.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
0832-001	Newins-Zeigler	Garbage	Dumpster	Academic	Mixed	12.00	51.6
0101-001	Norman Hall	Garbage	Dumpster	Housing	Dorm	30.00	129.0
0050-001	North Hall Shares with Van Fleet Hall	Garbage	Dumpster	Housing	Dorm	16.00	68.8
0634-001	Nuclear Sci-South	Garbage	Dumpster	Academic	Mixed	18.00	77.4
0477-001	Nutrition Lab	Garbage	Dumpster	Academic	Animal Lab	6.00	25.8
0094-001	O'Connell Center Temporary dumpster when compactor is down.	Garbage	Dumpster	Recreational		1.86	8.0
0186-001	OF-Dairy Research	Garbage	Dumpster	Academic	Animal Lab	8.00	34.4
1178-002	ORTHOPAEDIC SURGERY	Paper	Dumpster	Medical		16.00	68.8
0512-001	P.K.Y. Cafe	Garbage	Dumpster	Dining		40.00	172.0
0746-001	PARTICLE SCIENCE	Paper	Dumpster	Academic	Mixed	12.00	51.6
0315-001	Performing Arts Auditorium	Garbage	Dumpster	Recreational		12.00	51.6
0856-001	Phelps Lab	Garbage	Dumpster	Academic	Mixed	8.00	34.4
0424-001	Phi Gamma Delta (FIJI)	Garbage	Dumpster	Housing	Greek	4.00	17.2
0416-001	Phi Mu	Garbage	Dumpster	Housing	Greek	9.00	38.7
0462-001	Physical Therapy	Garbage	Dumpster	Medical		6.00	25.8
0092-001	Physics Building	Garbage	Dumpster	Academic	Mixed	40.00	172.0
0092-002	Physics Building	Paper	Dumpster	Academic	Mixed	16.00	68.8
0418-001	PI Beta PHI	Garbage	Dumpster	Housing	Greek	18.00	77.4
0428-002	PI KAPPA PHI	Paper	Dumpster	Housing	Greek	6.00	25.8
0432-001	PI Lambda PHI	Garbage	Dumpster	Housing	Greek	18.00	77.4
0521-002	PKYONGE	Paper	Dumpster	Academic	Mixed	12.00	51.6
0561-001	Plant Pathology	Garbage	Dumpster	Academic	Plant Lab	4.00	17.2
0068-003	POULTRY LAB	Paper	Dumpster	Academic	Animal Lab	12.00	51.6
0308-001	Powell Hall - Fla Museum	Garbage	Dumpster	Academic	Library	12.00	51.6
0308-002	POWELL HALL - FLA MUSEUM	Paper	Dumpster	Academic	Library	16.00	68.8
0700-001	PPD Admin	Garbage	Dumpster	Admin		4.00	17.2
0703-001	PPD Bldg Services	Garbage	Dumpster	misc		30.00	129.0
0702-001	PPD Maint NE	Garbage	Dumpster	Admin		6.00	25.8
0702-002	PPD Maint SW	Garbage	Dumpster	Admin		6.00	25.8
0609-001	PPD Store Yard	Garbage	Dumpster	Admin		8.00	34.4
0127-001	Presidents Res	Garbage	Dumpster	Recreational		6.00	25.8

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthly	CY	Collector
0641-003	PRIMATE FACILITY		1		1			8.60	6.00	UF
0715-002	PRINTING		1		1			8.60	6.00	UF
0715-001	Printing Share with Elmore Hall. See bldg 465	1		1		1		12.90	8.00	UF
0072-001	Pugh Hall	1		1		1		12.90	6.00	UF
0072-002	PUGH HALL		1		1			8.60	6.00	UF
0553-001	Rawlings Hall	1	1	1	1	1	1	25.80	3.00	UF
0553-002	Rawlings Hall	1	1	1	1	1	1	25.80	3.00	UF
0553-003	Rawlings Hall	1	1	1	1	1	1	25.80	3.00	UF
0553-004	Rawlings Hall	1	1	1	1	1	1	25.80	3.00	UF
0526-001	RECORD WAREHOUSE		1		1			8.60	3.00	UF
0686-001	Reitz Union Temporary dumpster when compactor down		0.23					1.00	8.00	UF
0052-001	Riker Hall	1	1	1	1	1	1	25.80	3.00	UF
0052-002	Riker Hall	1	1	1	1	1	1	25.80	3.00	UF
0272-001	Rinker Building	1	1	1	1	1		21.50	6.00	UF
1308-001	Santa Fe Beef			1				4.30	4.00	UF
0170-001	Shands Med Plaza Temporary trash dumpster		0.23					1.00	8.00	UF
0420-001	Sigma Alpha EPS	1		1		1		12.90	6.00	UF
0425-001	Sigma Chi	1		1		1		12.90	8.00	UF
0425-002	SIGMA FRATERNITY		1		1			8.60	3.00	UF
0412-001	Sigma Kappa	1		1		1		12.90	4.00	UF
0399-001	Sigma Nu	1		1		1		12.90	6.00	UF
0422-001	Sigma Phi Epsilon	1	1	1	1	1		21.50	8.00	UF
0590-001	Simpson Hall	1	1	1	1	1	1	25.80	3.00	UF
0590-002	Simpson Hall	1	1	1	1	1	1	25.80	3.00	UF
0631-001	Soils Lab	1		1		1		12.90	8.00	UF
0631-002	SOILS LAB		1		1			8.60	4.00	UF
0587-002	SOLAR ENERGY		1		1			8.60	3.00	UF
0587-001	Solar Energy Test House			1				4.30	8.00	UF
1083-002	SPRINGS BUILDING		1		1			8.60	6.00	UF
1082-001	Springs Housing	1		1		1		12.90	8.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
0641-003	PRIMATE FACILITY	Paper	Dumpster	Medical		12.00	51.6
0715-002	PRINTING	Paper	Dumpster	Admin		12.00	51.6
0715-001	Printing Share with Elmore Hall. See bldg 465	Garbage	Dumpster	Admin		24.00	103.2
0072-001	Pugh Hall	Garbage	Dumpster	Academic	Mixed	18.00	77.4
0072-002	PUGH HALL	Paper	Dumpster	Academic	Mixed	12.00	51.6
0553-001	Rawlings Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0553-002	Rawlings Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0553-003	Rawlings Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0553-004	Rawlings Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0526-001	RECORD WAREHOUSE	Paper	Dumpster	Admin		6.00	25.8
0686-001	Reitz Union Temporary dumpster when compactor down	Garbage	Dumpster	Admin		1.86	8.0
0052-001	Riker Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0052-002	Riker Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0272-001	Rinker Building	Garbage	Dumpster	Academic	Mixed	30.00	129.0
1308-001	Santa Fe Beef	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2
0170-001	Shands Med Plaza Temporary trash dumpster	Garbage	Dumpster	Medical		1.86	8.0
0420-001	Sigma Alpha EPS	Garbage	Dumpster	Housing	Greek	18.00	77.4
0425-001	Sigma Chi	Garbage	Dumpster	Housing	Greek	24.00	103.2
0425-002	SIGMA FRATERNITY	Paper	Dumpster	Housing	Greek	6.00	25.8
0412-001	Sigma Kappa	Garbage	Dumpster	Housing	Greek	12.00	51.6
0399-001	Sigma Nu	Garbage	Dumpster	Housing	Greek	18.00	77.4
0422-001	Sigma Phi Epsilon	Garbage	Dumpster	Housing	Greek	40.00	172.0
0590-001	Simpson Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0590-002	Simpson Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0631-001	Soils Lab	Garbage	Dumpster	Academic	Plant Lab	24.00	103.2
0631-002	SOILS LAB	Paper	Dumpster	Academic	Plant Lab	8.00	34.4
0587-002	SOLAR ENERGY	Paper	Dumpster	Academic	Mixed	6.00	25.8
0587-001	Solar Energy Test House	Garbage	Dumpster	Misc		8.00	34.4
1083-002	SPRINGS BUILDING	Paper	Dumpster	Housing	Dorm	12.00	51.6
1082-001	Springs Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthv	CY	Collector
1083-001	Springs Housing	1		1		1		12.90	8.00	UF
1085-001	Springs Housing	1		1		1		12.90	8.00	UF
0155-001	Stadium - SE corner	1	1	1	1	1	1	25.80	8.00	UF
0158-001	Stadium Gate 12 #1		0.23					1.00	8.00	UF
0158-002	Stadium Gate 12 #2	1						4.30	8.00	UF
0316-001	SW Rec Center		1			1		8.60	8.00	UF
0770-001	Swine Unit B			1				4.30	4.00	UF
0530-001	Tanglewd Village	1				1		8.60	8.00	UF
0531-001	Tanglewd Village	1				1		8.60	8.00	UF
0536-001	Tanglewd Village	1				1		8.60	8.00	UF
0538-001	Tanglewd Village	1				1		8.60	8.00	UF
0538-002	Tanglewd Village	1				1		8.60	8.00	UF
0531-002	TANGLEWOOD		1		1			8.60	6.00	UF
0533-001	TANGLEWOOD		1		1			8.60	3.00	UF
0536-002	TANGLEWOOD		1		1			8.60	3.00	UF
0538-003	TANGLEWOOD		1		1			8.60	6.00	UF
0427-001	Theta CHI	1		1		1		12.90	6.00	UF
0427-002	THETA CHI FRATERNITY		1		1			8.60	3.00	UF
0017-001	Thomas Hall	1	1	1	1	1	1	25.80	8.00	UF
0017-002	Thomas Hall	1	1	1	1	1	1	25.80	8.00	UF
0045-001	Tolbert Hall	1	1	1	1	1	1	25.80	3.00	UF
0045-002	Tolbert Hall	1	1	1	1	1	1	25.80	3.00	UF
0045-003	Tolbert Hall		1		1			8.60	3.00	UF
0588-001	Trusler Hall	1	1	1	1	1	1	25.80	3.00	UF
0588-002	Trusler Hall	1	1	1	1	1	1	25.80	3.00	UF
0588-003	Trusler Hall		1		1			8.60	3.00	UF
0267-001	Turlington Hall	1	1	1	1	1		21.50	8.00	UF
0267-002	Turlington Hall	1	1	1	1	1		21.50	6.00	UF
0267-003	Turlington Hall		1		1			8.60	6.00	UF
0255-004	UAA Bandshell dumpster		0.23					1.00	8.00	UF
0255-005	UAA Bandshell dumpster		0.23					1.00	8.00	UF
0253-001	UF Foundation	1	1	1	1	1		21.50	3.00	UF
1099-001	UF Horticulture Offices			1				4.30	4.00	UF
0196-001	UF-Beef Research Unit			1				4.30	4.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/m)
1083-001	Springs Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
1085-001	Springs Housing	Garbage	Dumpster	Housing	Dorm	24.00	103.2
0155-001	Stadium - SE corner	Garbage	Dumpster	Recreational		48.00	206.4
0158-001	Stadium Gate 12 #1	Garbage	Dumpster	Recreational		1.86	8.0
0158-002	Stadium Gate 12 #2	Garbage	Dumpster	Recreational		8.00	34.4
0316-001	SW Rec Center	Garbage	Dumpster	Recreational		16.00	68.8
0770-001	Swine Unit B	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2
0530-001	Tanglewd Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0531-001	Tanglewd Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0536-001	Tanglewd Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0538-001	Tanglewd Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0538-002	Tanglewd Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0531-002	TANGLEWOOD	Paper	Dumpster	Housing	Family	12.00	51.6
0533-001	TANGLEWOOD	Paper	Dumpster	Housing	Family	6.00	25.8
0536-002	TANGLEWOOD	Paper	Dumpster	Housing	Family	6.00	25.8
0538-003	TANGLEWOOD	Paper	Dumpster	Housing	Family	12.00	51.6
0427-001	Theta CHI	Garbage	Dumpster	Housing	Family	18.00	77.4
0427-002	THETA CHI FRATERNITY	Paper	Dumpster	Housing	Greek	6.00	25.8
0017-001	Thomas Hall	Garbage	Dumpster	Housing	Dorm	48.00	206.4
0017-002	Thomas Hall	Garbage	Dumpster	Housing	Dorm	48.00	206.4
0045-001	Tolbert Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0045-002	Tolbert Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0045-003	Tolbert Hall	Paper	Dumpster	Housing	Dorm	6.00	25.8
0588-001	Trusler Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0588-002	Trusler Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0588-003	Trusler Hall	Paper	Dumpster	Housing	Dorm	6.00	25.8
0267-001	Turlington Hall	Garbage	Dumpster	Housing	Dorm	40.00	172.0
0267-002	Turlington Hall	Garbage	Dumpster	Housing	Dorm	30.00	129.0
0267-003	Turlington Hall	Paper	Dumpster	Housing	Dorm	12.00	51.6
0255-004	UAA Bandshell dumpster	Garbage	Dumpster	Recreational		1.86	8.0
0255-005	UAA Bandshell dumpster	Garbage	Dumpster	Recreational		1.86	8.0
0253-001	UF Foundation	Garbage	Dumpster	Admin		15.00	64.5
1099-001	UF Horticulture Offices	Garbage	Dumpster	Admin		4.00	17.2
0196-001	UF-Beef Research Unit	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthy	CY	Collector
1232-001	UF-Fisheries & Aquatic Sci			1				4.30	8.00	UF
1232-002	UF-Fisheries & Aquatic Sci 2			1				4.30	8.00	UF
0479-001	UF-Hort Equip Shed			1				4.30	8.00	UF
0321-002	UNIV VILL		1		1			8.60	3.00	UF
0332-002	UNIV VILL		1		1			8.60	3.00	UF
0348-002	UNIV VILL LAUNDRY		1		1			8.60	4.00	UF
0321-001	University Village		1			1		8.60	6.00	UF
0332-001	University Village		1			1		8.60	6.00	UF
0333-001	University Village		1			1		8.60	8.00	UF
0348-001	University Village Storage		1			1		8.60	8.00	UF
0051-001	UPD Annex	1			1			8.60	6.00	UF
0000-001	USDA #1		1		1			8.60	6.00	UF
0000-002	USDA #2		1		1			8.60	6.00	UF
1023-001	Vet Med Hay Barn	1	1	1	1	1		21.50	8.00	UF
0215-001	Vet Med Hospital	1	1	1	1	1		21.50	8.00	UF
0215-002	Vet Med Hospital	1	1	1	1	1		21.50	8.00	UF
0215-003	Vet Med Hospital Animal bones.	1		1		1		12.90	3.00	UF
0471-001	Vet Science	1		1		1		12.90	6.00	UF
0471-002	VET SCIENCE		1		1			8.60	6.00	UF
1023-002	VETERINARY MEDICINE HAY BARN		1		1			8.60	6.00	UF
0217-002	VETERINARY MEDICINE METABOLIC BUILDING		1		1			8.60	6.00	UF
0217-003	VETERINARY MEDICINE METABOLIC BUILDING		1		1			8.60	6.00	UF
0217-004	VETERINARY MEDICINE METABOLIC BUILDING		1		1			8.60	6.00	UF
1070-001	Wastewater Plant		1		1			8.60	6.00	UF
0053-001	Weaver Hall	1	1	1	1	1	1	25.80	3.00	UF
0053-002	Weaver Hall	1	1	1	1	1	1	25.80	3.00	UF
0053-005	Weaver Hall		1		1			8.60	3.00	UF
0024-001	Weil Hall South	1	1	1	1	1		21.50	6.00	UF
0030-002	WEIMER HALL		1		1			8.60	8.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
1232-001	UF-Fisheries & Aquatic Sci	Garbage	Dumpster	Admin		8.00	34.4
1232-002	UF-Fisheries & Aquatic Sci 2	Garbage	Dumpster	Admin		8.00	34.4
0479-001	UF-Hort Equip Shed	Garbage	Dumpster	Misc		8.00	34.4
0321-002	UNIV VILL	Paper	Dumpster	Housing	Family	6.00	25.8
0332-002	UNIV VILL	Paper	Dumpster	Housing	Family	6.00	25.8
0348-002	UNIV VILL LAUNDRY	Paper	Dumpster	Housing	Family	8.00	34.4
0321-001	University Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0332-001	University Village	Garbage	Dumpster	Housing	Family	12.00	51.6
0333-001	University Village	Garbage	Dumpster	Housing	Family	16.00	68.8
0348-001	University Village Storage	Garbage	Dumpster	Misc		16.00	68.8
0051-001	UPD Annex	Garbage	Dumpster	Admin		12.00	51.6
0000-001	USDA #1	Paper	Dumpster	Academic	Mixed	12.00	51.6
0000-002	USDA #2	Paper	Dumpster	Academic	Mixed	12.00	51.6
1023-001	Vet Med Hay Barn	Garbage	Dumpster	Misc		40.00	172.0
0215-001	Vet Med Hospital	Garbage	Dumpster	Medical		40.00	172.0
0215-002	Vet Med Hospital	Garbage	Dumpster	Medical		40.00	172.0
0215-003	Vet Med Hospital Animal bones.	Garbage	Dumpster	Medical		9.00	38.7
0471-001	Vet Science	Garbage	Dumpster	Medical		18.00	77.4
0471-002	VET SCIENCE	Paper	Dumpster	Academic	Mixed	12.00	51.6
1023-002	VETERINARY MEDICINE HAY BARN	Paper	Dumpster	Medical		12.00	51.6
0217-002	VETERINARY MEDICINE METABOLIC BUILDING	Paper	Dumpster	Medical		12.00	51.6
0217-003	VETERINARY MEDICINE METABOLIC BUILDING	Paper	Dumpster	Medical		12.00	51.6
0217-004	VETERINARY MEDICINE METABOLIC BUILDING	Paper	Dumpster	Medical		12.00	51.6
1070-001	Wastewater Plant	Garbage	Dumpster	Academic	Mixed	12.00	51.6
0053-001	Weaver Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0053-002	Weaver Hall	Garbage	Dumpster	Housing	Dorm	18.00	77.4
0053-005	Weaver Hall	Paper	Dumpster	Housing	Dorm	6.00	25.8
0024-001	Weil Hall South	Garbage	Dumpster	Academic	Mixed	30.00	129.0
0030-002	WEIMER HALL	Paper	Dumpster	Academic	Mixed	16.00	68.8

Bldg #	Description	MO	TU	WE	TH	FR	SA/SU	Monthv	CY	Collector
0100-001	Williamson Hall	1	1	1	1	1		21.50	6.00	UF
0558-001	WUFT Transmitter Bldg. (Milhopper Rd.)		0.23					1.00	6.00	UF
1070-003	WWRP-Grit Bin	1		1		1		12.90	2.00	UF
1070-002	WWTP-Grit Bin	1		1		1		12.90	2.00	UF
0039-001	Yulee Hall Shares with Reid Hall, bldg 20.	1	1	1	1	1	1	25.80	6.00	UF
0410-001	Zeta Tau Alpha/ Share with Chi Omega #414 On Call	1		1		1		12.90	8.00	UF
0235-001	Zoology Research Lab				1			4.30	4.00	UF

Bldg #	Description	Waste Type	Container Type	Category	Sub-Category	Volume (yd3/wk)	Volume (yd3/mo)
0100-001	Williamson Hall	Garbage	Dumpster	Academic	Mixed	30.00	129.0
0558-001	WUFT Transmitter Bldg. (Milhopper Rd.)	Garbage	Dumpster	Admin		1.40	6.0
1070-003	WWRP-Grit Bin	Garbage	Dumpster	Misc		6.00	25.8
1070-002	WWTP-Grit Bin	Garbage	Dumpster	Misc		6.00	25.8
0039-001	Yulee Hall Shares with Reid Hall, bldg 20.	Garbage	Dumpster	Housing	Dorm	36.00	154.8
0410-001	Zeta Tau Alpha/ Share with Chi Omega #414 On Call	Garbage	Dumpster	Housing	Greek	24.00	103.2
0235-001	Zoology Research Lab	Garbage	Dumpster	Academic	Animal Lab	4.00	17.2

B.3. WASTE CONTRIBUTION BY CAMPUS SOURCE

It was important to determine the weight of different sources of campus from the volume estimates that we obtained. This is because the historic data provided by PPD was all weight based. In order to compare the composition of the MSW to the other waste categories weight calculations were needed. It was also important when weighting the composition results by how much each campus category contributes to the waste stream. Weight was obtained from volume by determining densities for each campus source of waste.

The densities for each campus source were determined using standard density values published by the 2006 US EPA waste study(US EPA, 2007). In general when a source paralleled the EPA results for MSW composition, then the standard density of MSW was used. In other cases where the source waste composition differed from the composition on US MSW, the density calculations were somewhat more complicated. In these cases, the density was altered to reflect the higher percent of a different component. See below for an example of how the density for the dining source was calculated.

Example: Dining Source Density Calculation

MSW Density: 200 lb/yd³

Food Scraps Density: 412lb/55 gal or 1513lb/yd³

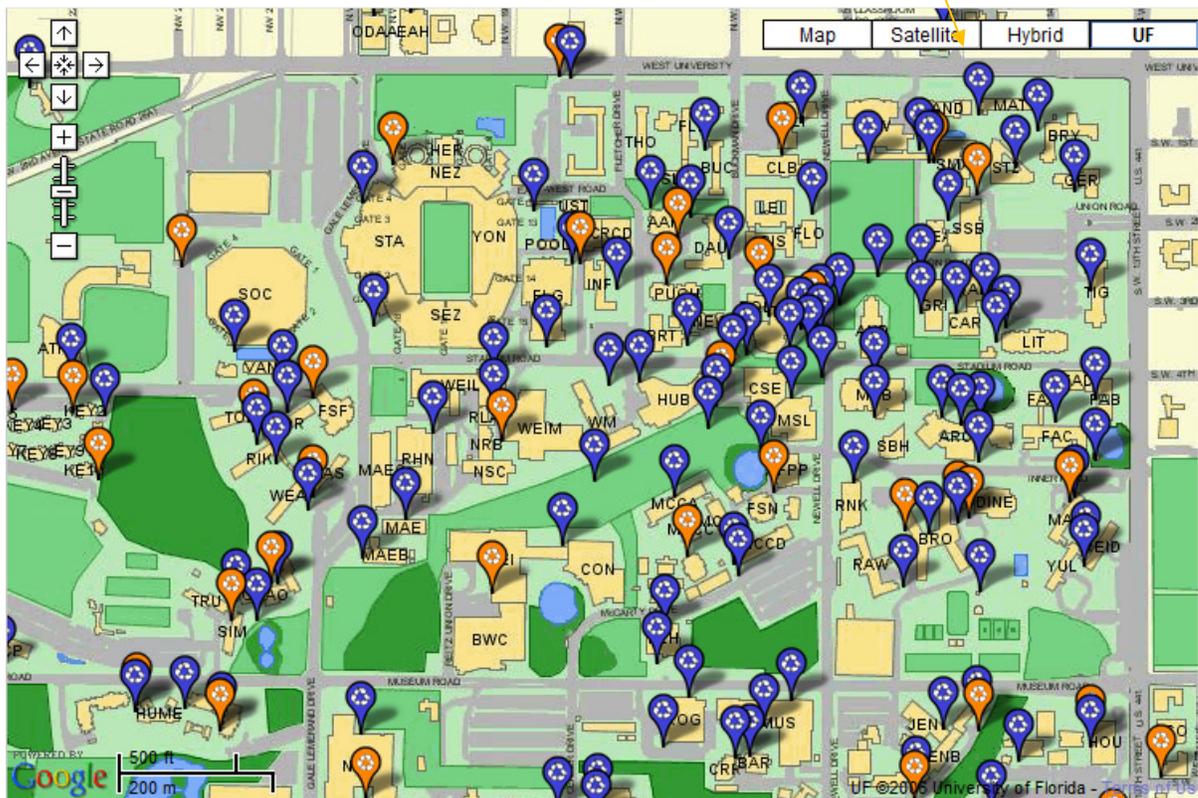
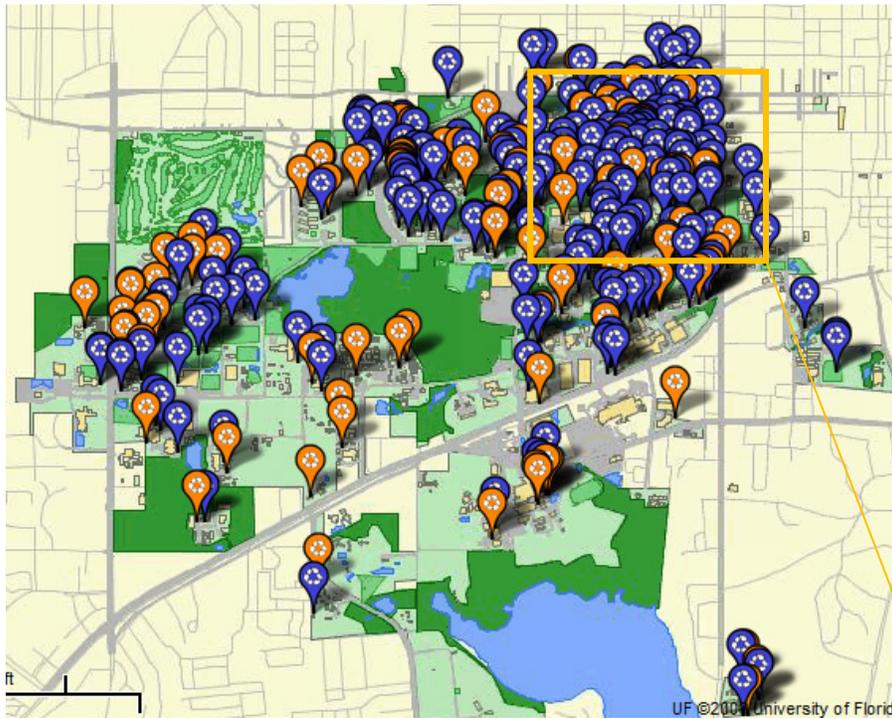
According to the UF waste composition study the campus dining source was composed of 29.1% food scraps. Since this was higher than the percent of food waste in US MSW, the density was weighted to reflect this. It was assumed that the rest of the 70.9 % was composed of MSW.

$$Dining\ Source\ Density = 0.291 * \frac{1513\ lb}{yd^3} + 0.709 * \frac{200\ lb}{yd^3} = \frac{582\ lb}{yd^3}$$

This methodology was then used to determine the rest of the densities for the other campus sources. Once the densities were approximated, the volumes of waste were then multiplied by the densities to get the weight of the waste in pounds. This enabled the MSW to be weighted by the campus source and then compared to the other components of the UF waste stream.

C. CAMPUS MAP WITH RECYCLING LOCATIONS

These maps are available at <http://campusmap.ufl.edu/> under “Sustainable Campus,” then “Recycling Opportunities.”



D. HISTORIC DATA

Detailed University of Florida solid waste data provided by PPD and collected from 2001 through 2008 is organized below. This information is organized by year in the following subsections. The final subsection shows a table of the total tonnages, average tonnages, and standard deviations by year and by recorded component.

D.1. YEARLY DATA

First, tables are presented that specify the monthly tonnages of each recorded component of the UF waste stream. Following the tables are figures that detail the monthly trends of these components and the percent that each component contributes.

CY 2001	CONTRACT LANDFILL DISPOSALS			IN-HOUSE LANDFILL DISPOSALS			TOTAL LANDFILL DISPOSALS		
	-	-	CONTRACT	-	-	IN-HOUSE	-----	-----	TOTAL
MONTH	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TO LANDFILL
=====	-	-	=	-	-	=	-	-	=
January	151.50	196.23	347.73	134.04	427.35	561.39	285.54	623.58	909.12
February	201.73	279.59	481.32	33.10	445.91	479.01	234.83	725.50	960.33
March	154.37	201.10	355.47	18.64	461.49	480.13	173.01	662.59	835.60
April	203.74	289.43	493.17	17.10	469.57	486.67	220.84	759.00	979.84
May	249.34	230.35	479.69	40.80	504.34	545.14	290.14	734.69	1,024.83
June	210.98	257.80	468.78	20.06	350.16	370.22	231.04	607.96	839.00
July	165.45	222.98	388.43	21.67	414.03	435.70	187.12	637.01	824.13
August	265.58	262.70	528.28	12.90	552.32	565.22	278.48	815.02	1,093.50
September	161.32	257.92	419.24	9.05	521.42	530.47	170.37	779.34	949.71
October	149.73	303.18	452.91	13.62	495.44	509.06	163.35	798.62	961.97
November	160.47	324.75	485.22	1.71	463.29	465.00	162.18	788.04	950.22
December	203.01	215.87	418.88	0.45	384.13	384.58	203.46	600.00	803.46
=====	-	-	=	-	-	=	-	-	=
CY 2001 TOTAL	2,277.22	3,041.90	5,319.12	323.14	5,489.45	5,812.59	2,600.36	8,531.35	11,131.71
MONTHLY AVG	189.77	253.49	437.69	26.93	457.45	484.38	216.70	710.95	927.64
	43.36%	57.92%		5.56%	94.44%		23.36%	76.64%	

Includes Ala Cty,
Florence,Boone,
& New River
disposals by UF.

Notes:

CY 2001	RECYCLED								TOTAL	TOTAL S.W.	% SW	MEDICAL	EST. HAZ.
MONTH	PAPER	MISC.	SCRAP METAL	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE		RECYCLED	(ALL FORMS)	RECYCLED	WASTE	WASTE
=====	-	-	-	-	-	-	-	-	=	=	=	=	=
January	164.31	8.43	36.94			260.00	16.01	2192	485.69	1,394.81	34.82%	19.08	8.33
February	127.16	7.35	19.85	52.50		280.00	26.18		513.05	1,473.38	34.82%	23.06	8.33
March	159.39	7.35	55.38	81.00		346.54	26.58		676.24	1,511.84	44.73%	16.31	8.33
April	148.79	8.75	23.54	135.00		272.00	30.52		618.60	1,598.44	38.70%	24.26	8.33
May	139.53	15.97	38.85	72.00		280.00	16.39		562.74	1,587.57	35.45%	33.48	8.33
June	150.66	16.04	44.53	369.00		276.00	12.64		868.86	1,707.86	50.87%	23.80	8.33
July	161.33	8.90	51.96	90.00		248.00	5.78	368	565.97	1,390.10	40.71%	23.77	8.33
August	202.65	7.54	45.15	63.00		276.00	22.07		616.41	1,709.91	36.05%	23.71	8.33
September	155.45	7.84	56.01	18.00		252.00	19.87		509.17	1,458.88	34.90%	25.35	8.33
October	160.41	8.37	44.37	36.00		268.00	17.18		534.33	1,496.30	35.71%	24.68	8.33
November	151.59	8.46	39.63	56.00		244.00	16.67		516.35	1,466.57	35.21%	24.24	8.33
December	144.40	7.98	35.82	225.00		248.00	19.95		681.15	1,484.61	45.88%	18.64	8.33
=====	-	-	-	-	-	-	-	-	=	=	=	=	=
CY 2001 TOTAL	1,865.67	112.98	492.02	1,197.50		3,250.54	229.85		7,148.56	18,280.27	39.11%	280.38	100.00
MONTHLY AVG	155.47	9.42	41.00	108.86		270.88	19.15		595.71	1,523.36	39.11%	23.37	8.33

Notes:

Cans, glass & plastics incl w/ Misc after 9/00.

Broken Concrete est @ 1.5 T/CY

Fla Concrete Recy closed 2/00 - 2/01.

Oct'00 fwd: incl comingled cans, glass & plastic. Housing bins est @ 20 lbs/bin per service.

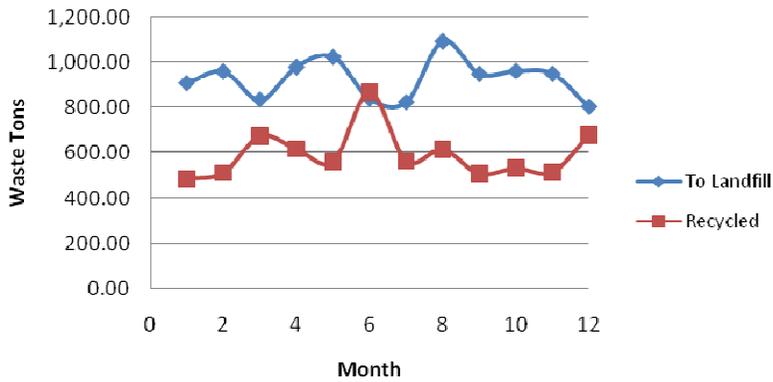
Yard Waste basic tonnage = historic average of 188 t/mo as of 1988 plus external additions.

Fr 3/97: wet haul; wgt based on mo. avg solids content.

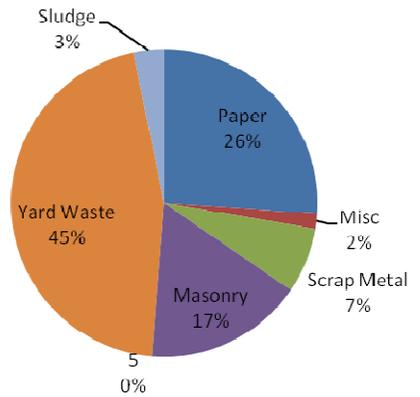
Total Waste includes both landfilled & recycled material.

Fla Concrete Recy closed 2/00 - 2/01. Major impact on recycling rate (~10%).

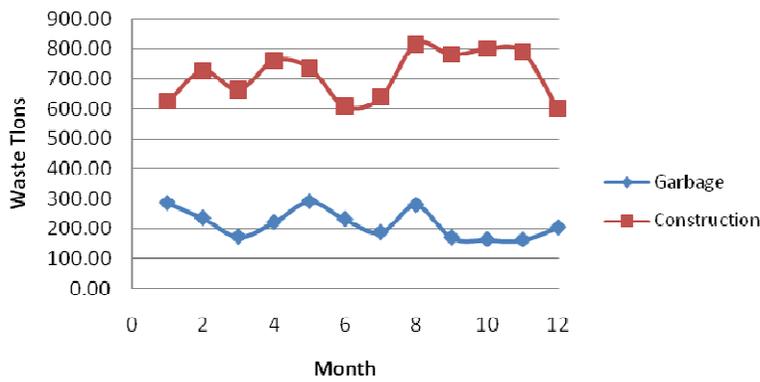
Total Waste 2001



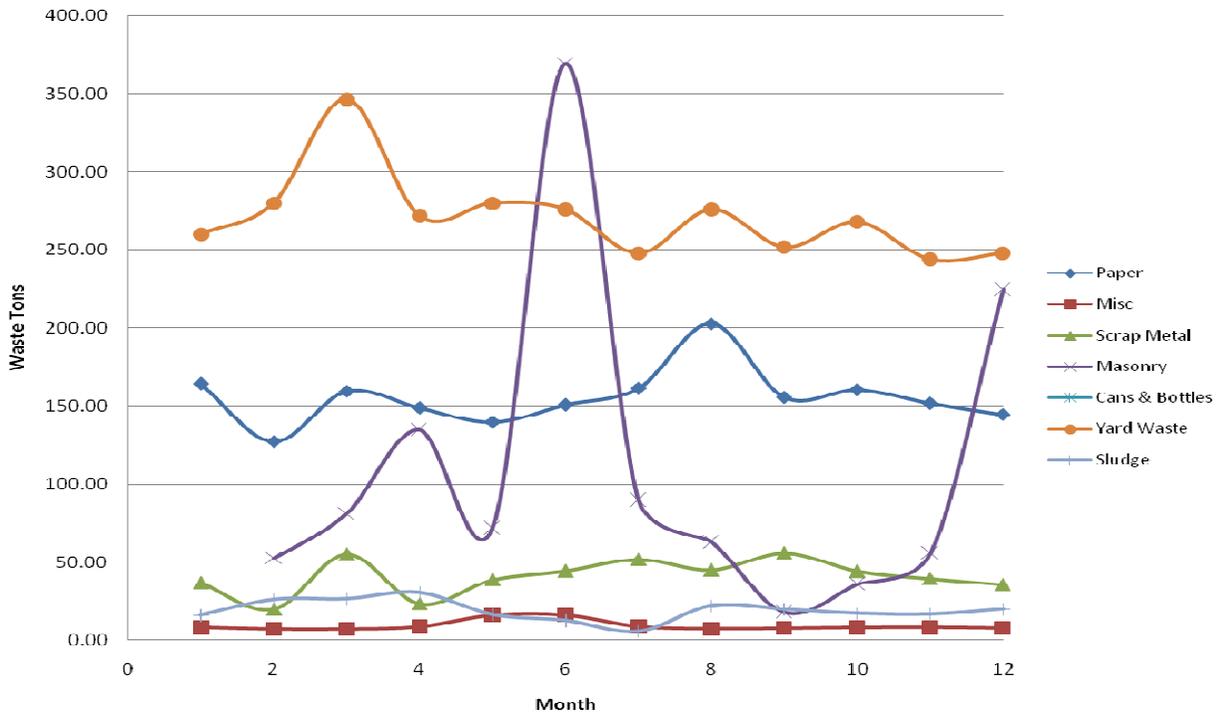
Recycled 2001



Total Landfilled 2001



Recycling 2001



CY 2002	CONTRACT LANDFILL DISPOSALS			IN-HOUSE LANDFILL DISPOSALS			TOTAL LANDFILL DISPOSALS		
	-	-	CONTRACT	-	-	IN-HOUSE	-----	-----	TOTAL
MONTH	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TO LANDFILL
=====	-	-	=	-	-	=	-	-	=
January	175.58	218.63	394.21	6.51	425.88	432.39	182.09	644.51	826.60
February	161.11	266.86	427.97	10.24	410.16	420.40	171.35	677.02	848.37
March	151.08	212.31	363.39	6.28	369.36	375.64	157.36	581.67	739.03
April	155.81	268.13	423.94	3.17	462.99	466.16	158.98	731.12	890.10
May	233.97	233.27	467.24	21.75	434.70	456.45	255.72	667.97	923.69
June	160.66	194.51	355.17	0.97	298.50	299.47	161.63	493.01	654.64
July	240.73	269.25	509.98	2.89	366.19	369.08	243.62	635.44	879.06
August	201.13	283.70	484.83	10.21	504.04	514.25	211.34	787.74	999.08
September	144.64	293.00	437.64	15.18	556.54	571.72	159.82	849.54	1,009.36
October	181.86	349.15	531.01	5.63	524.16	529.79	187.49	873.31	1,060.80
November	134.30	284.89	419.19	26.08	434.24	460.32	160.38	719.13	879.51
December	228.92	221.55	450.47	18.34	417.03	435.37	247.26	638.58	885.84
=====	-	-	=	-	-	=	-	-	=
2002 TOTAL	2,169.79	3,095.25	5,265.04	127.25	5,203.79	5,331.04	2,297.04	8,299.04	10,596.08
MONTHLY AVG	180.82	257.94	438.75	10.60	433.65	444.25	191.42	691.59	883.01
	41.21%	58.79%		2.39%	97.61%		21.68%	78.32%	

Includes Ala Cty,
Florence,Boone,
& New River
disposals by UF.

Notes:

CY 2002	RECYCLED								TOTAL	TOTAL S.W.	% SW	MEDICAL	EST. HAZ.
MONTH	PAPER	MISC.	SCRAP METAL	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE	RECYCLED	(ALL FORMS)	RECYCLED	WASTE	WASTE	
=====	-	-	-	-	-	-	-	=	=	=	=	=	
January	176.15	8.65	21.05	72.00		244.00	11.038608	532.89	1,359.49	39.20%	25.87	8.33	
February	164.29	8.43	65.77	111.00		256.00	27.85	633.34	1,481.71	42.74%	25.84	8.33	
March	176.43	8.54	43.02	117.00		260.00	14.88	619.87	1,358.90	45.62%	25.68	8.33	
April	190.27	8.81	26.40	63.00		260.00	30.11	578.59	1,468.69	39.40%	27.60	8.33	
May	187.31	8.39	41.59	180.00		268.00	18.17	703.46	1,627.15	43.23%	31.77	8.33	
June	176.15	7.77	34.79	54.00		236.00	7.46	516.17	1,170.81	44.09%	28.63	8.33	
July	182.28	8.13	51.66	54.00		264.00	15.469328	575.54	1,454.60	39.57%	26.92	8.33	
August	182.22	10.97	24.46	99.00		252.00	14.08	582.73	1,581.81	36.84%	29.62	8.33	
September	180.77	7.69	29.02	31.50		252.00	20.65	521.63	1,530.99	34.07%	24.24	8.33	
October	165.73	8.18	43.24	90.00		244.00	29.10	580.25	1,641.05	35.36%	29.73	8.33	
November	148.17	9.53	21.23	36.00		232.00	26.25	473.18	1,352.69	34.98%	27.53	8.33	
December	137.91	8.29	16.29	87.00		240.00	23.35	512.84	1,398.68	36.67%	24.61	8.33	
=====	-	-	-	-	-	-	-	=	=	=	=	=	
2002 TOTAL	2,067.68	103.38	418.52	994.50		3,008.00	238.41	6,830.49	17,426.57	39.20%	328.04	99.96	
MONTHLY AVG	172.31	8.62	34.88	82.88		250.67	19.87	569.21	1,452.21	39.20%	27.34	8.33	

Notes: Mar'02 includ Cans, glass Cans, glass & 28.6 T via Bo plastics incl plastics incl w/ Misc after 9. Misc after 9/00.

Broken Concrete est @ 1.5 T/CY

Oct'00 fwd: incl comingled cans, glass & plastic. Housing bins est @ 20 lbs/bin per service.

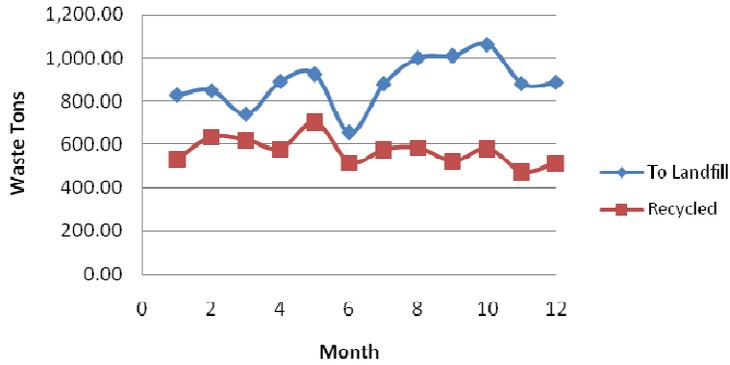
Yard Waste basic tonnage = historic average of 188 t/mo as of 1988 plus external additions.

Fr 3/97: wet haul; wgt based on mo. avg solids content.

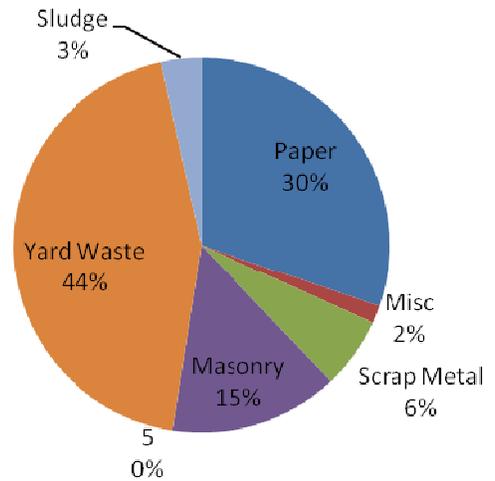
Total Waste includes both landfilled & recycled material.

Boxed was estimated at 1 lb/gal

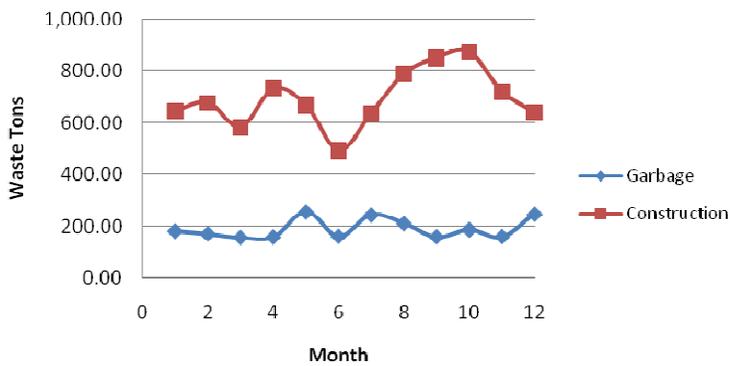
Total Waste 2002



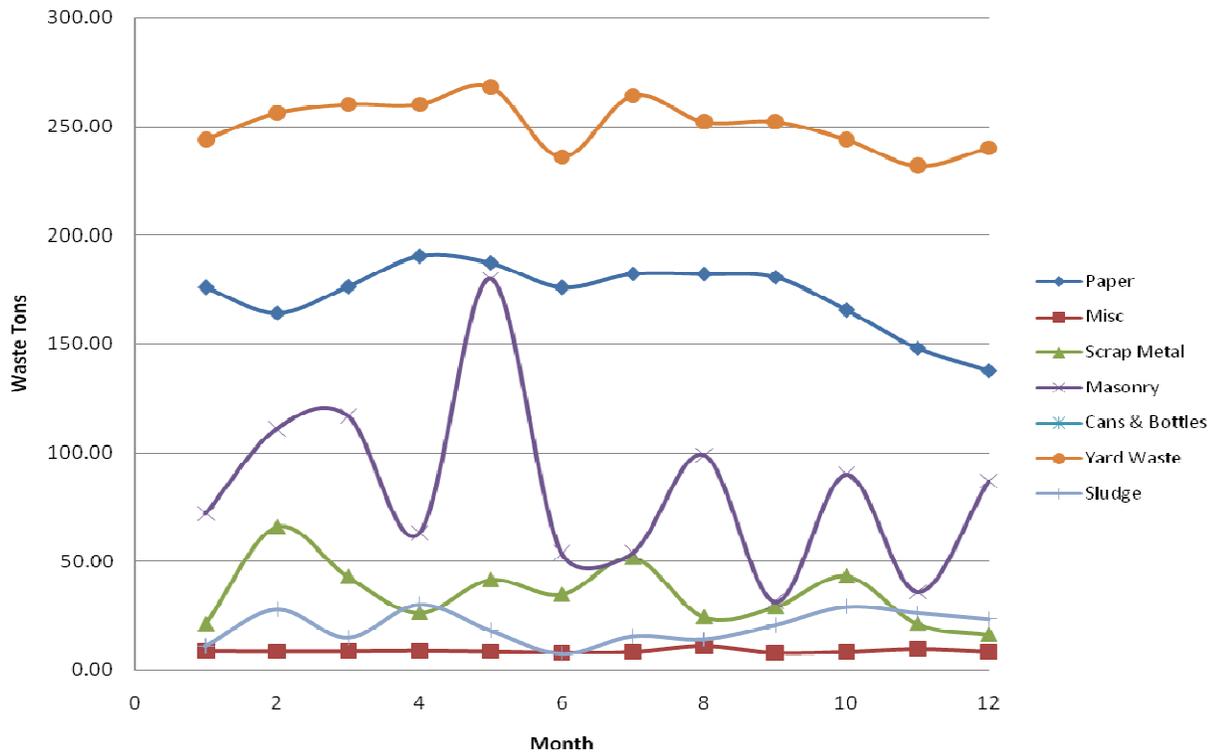
Recycled 2002



Total Landfilled 2002



Recycled 2002



CY 2003	CONTRACT LANDFILL DISPOSALS			IN-HOUSE LANDFILL DISPOSALS			TOTAL LANDFILL DISPOSALS		
	-	-	CONTRACT	-	-	IN-HOUSE	-----	-----	TOTAL
MONTH	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TOTAL	CONST	GARBAGE	TO LANDFILL
=====	-	-	=	-	-	=	-	-	=
January	205.99	254.36	460.35	3.66	440.27	443.93	209.65	694.63	904.28
February	199.27	291.22	490.49	4.16	461.42	465.58	203.43	752.64	956.07
March	190.80	256.99	447.79	11.10	485.83	496.93	201.90	742.82	944.72
April	274.62	306.05	580.67	3.99	521.08	525.07	278.61	827.13	1,105.74
May	412.94	235.79	648.73	23.79	436.94	460.73	436.73	672.73	1,109.46
June	339.30	246.63	585.93	6.16	357.69	363.85	345.46	604.32	949.78
July	287.26	270.13	557.39	16.73	366.09	382.82	303.99	636.22	940.21
August	220.02	218.90	438.92	1.67	472.49	474.16	221.69	691.39	913.08
September	281.64	397.39	679.03	6.32	554.92	561.24	287.96	952.31	1,240.27
October	147.81	270.57	418.38	9.74	522.32	532.06	157.55	792.89	950.44
November	145.56	228.05	373.61	6.64	435.60	442.24	152.20	663.65	815.85
December	222.03	415.57	637.60	7.74	390.17	397.91	229.77	805.74	1,035.51
=====	-	-	=	-	-	=	-	-	=
2003 TOTAL	2,705.21	2,976.08	6,318.89	101.70	5,444.82	5,546.52	3,028.94	8,836.47	11,865.41
MONTHLY AVG	245.93	270.55	526.57	8.48	453.74	462.21	252.41	736.37	988.78
	46.70%	51.38%		1.83%	98.17%		25.53%	74.47%	

Notes: Dec'03 incl Dec'03 includes Includes Ala Cty, Florence,Boone, & New River 20-30 Nov'02-30 Nov'03 disposals by UF.

CY 2003	RECYCLED								TOTAL	TOTAL S.W.	% SW	MEDICAL	EST. HAZ.
	-	-	-	-	-	-	-	-					
MONTH	PAPER	MISC.	SCRAP METAL	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE		RECYCLED	(ALL FORMS)	RECYCLED	WASTE	WASTE
=====	-	-	-	-	-	-	-	-	=	=	=	=	=
January	173.41	8.78	33.53	121.50		244.00	30.03784		611.26	1,515.54	40.33%	33.99	8.33
February	159.28	8.21	31.13	51.00		244.00	25.11		518.73	1,474.80	35.17%	30.14	8.33
March	172.61	9.13	54.27	70.50		264.00	21.36		591.87	1,536.59	38.52%	25.18	8.34
April	173.06	9.64	20.60	70.50		260.00	28.85		562.65	1,668.39	33.72%	33.68	8.33
May	155.63	9.28	70.71	64.50		268.00	16.31		584.43	1,693.89	34.50%	30.19	8.33
June	169.07	8.44	63.29	153.00		268.00	14.05		675.85	1,625.63	41.57%	26.14	8.34
July	186.60	9.02	4.58	46.50		272.00	14.795536		533.50	1,473.71	36.20%	29.52	8.33
August	194.85	8.84	33.96	99.00		236.00	12.57		585.22	1,498.30	39.06%	24.24	8.33
September	169.97	9.07	45.90	75.00		248.00	19.86		567.80	1,808.07	31.40%	28.75	8.34
October	215.86	10.02	50.49	66.00		232.00	31.92		606.29	1,556.73	38.95%	37.42	8.33
November	193.18	7.80	10.17	39.00		240.00	20.07		510.22	1,326.07	38.48%	25.49	8.33
December	141.39	9.24	24.85	16.50		260.00	23.82		475.80	1,511.31	31.48%	29.26	8.34
=====	-	-	-	-	-	-	-	-	=	=	=	=	=
2003 TOTAL	2,104.91	107.47	443.48	873.00		3,036.00	258.76		6,823.62	18,689.03	36.51%	354.00	100.00
MONTHLY AVG	175.41	8.96	36.96	72.75		253.00	21.56		568.63	1,557.42	36.51%	29.50	8.33

Cans, glass & plastics incl w/ Misc after 9/00.

Broken Concrete est @ 1.5 T/CY

Oct'00 fwd: incl comingled cans, glass & plastic. Housing bins of est @ 20 lbs/bin per service.

Yard Waste basic tonnage = historic average of 188 t/mo as of 1988 plus external additions.

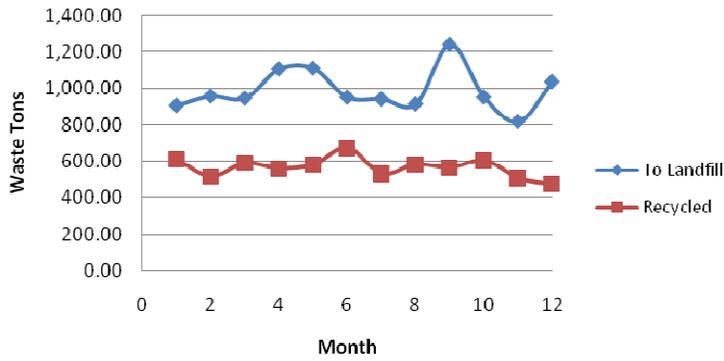
Fr 3/97: wet haul; wgt based on mo. avg solids content.

Total Waste includes both landfilled & recycled material.

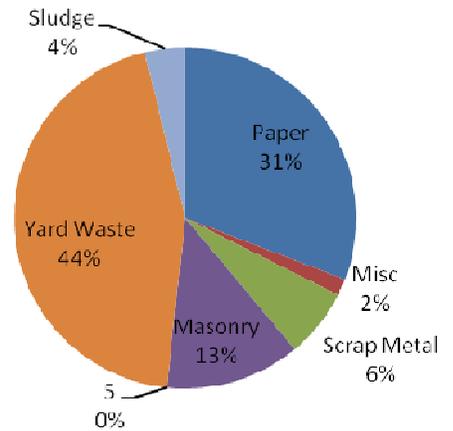
Boxed was estimated at 1 lb/gal

Notes:

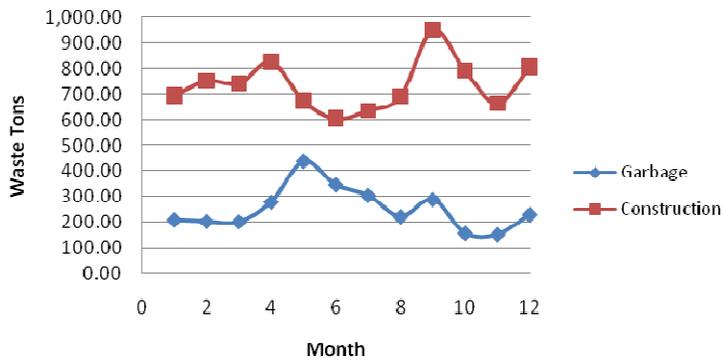
Total Waste 2003



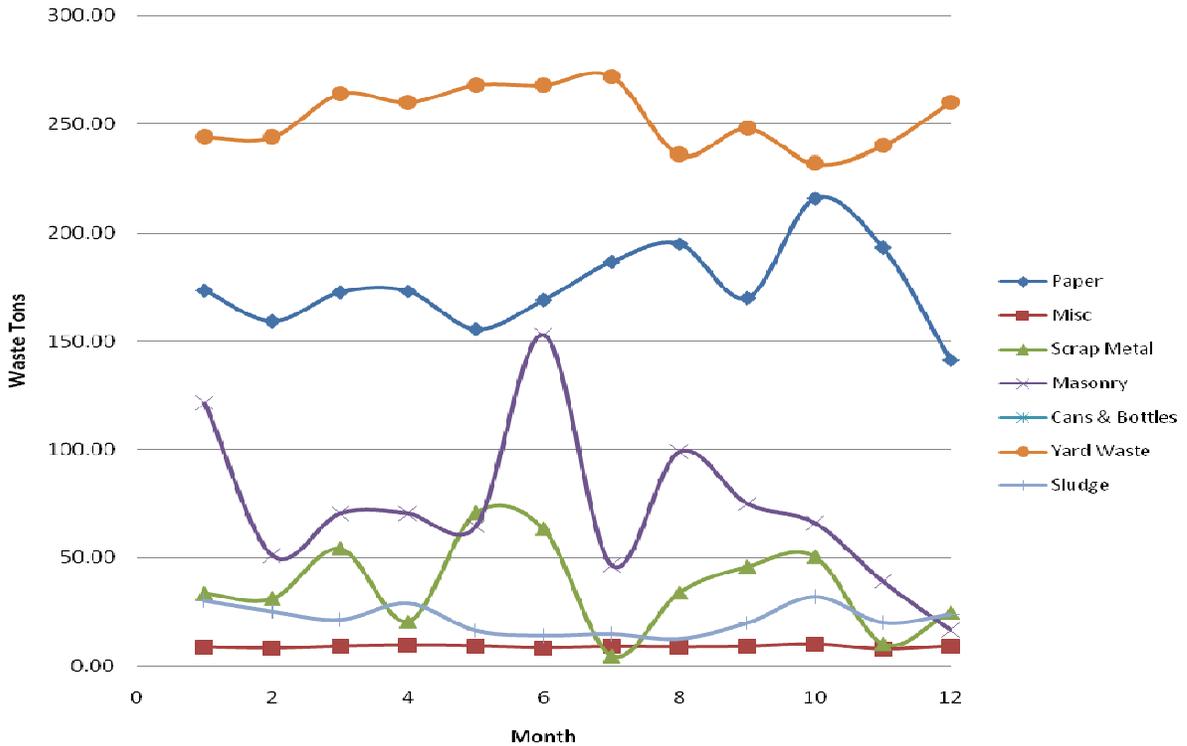
Recycled 2003



Total Landfilled 2003



Recycled 2003



CY 2004	CONTRACT LANDFILL DISPOSALS			IN-HOUSE LANDFILL DISPOSALS			TOTAL LANDFILL DISPOSALS		
	-	-	CONTRACT	-	-	IN-HOUSE	-	-	TOTAL
MONTH	C&D Debris	MSW	TOTAL	C&D Debris	MSW	TOTAL	C&D Debris	MSW	TO LANDFILL
=====	-	-	=	-	-	=	-	-	=
January	149.91	277.97	427.88	3.24	455.73	458.97	153.15	733.70	886.85
February	174.01	277.65	451.66	3.84	501.61	505.45	177.85	779.26	957.11
March	203.48	294.82	498.30	14.30	477.82	492.12	217.78	772.64	990.42
April	193.34	276.06	469.40	7.02	550.22	557.24	200.36	826.28	1,026.64
May	291.98	225.95	517.93	11.54	333.03	344.57	303.52	558.98	862.50
June	240.08	231.61	471.69	9.22	372.74	381.96	249.30	604.35	853.65
July	187.22	253.95	441.17	1.99	361.39	363.38	189.21	615.34	804.55
August	257.36	244.21	501.57	11.58	559.18	570.76	268.94	803.39	1,072.33
September	189.87	303.91	493.78	12.59	554.85	567.44	202.46	858.76	1,061.22
October	195.14	384.93	580.07	1.01	522.09	523.10	196.15	907.02	1,103.17
November	168.32	286.03	454.35	3.10	448.24	451.34	171.42	734.27	905.69
December	198.45	263.22	461.67	4.82	390.18	395.00	203.27	653.40	856.67
=====	-	-	=	-	-	=	-	-	=
2004 TOTAL	2,250.71	3,057.09	5,769.47	84.25	5,527.08	5,611.33	2,533.41	8,847.39	11,380.80
MONTHLY AVG	204.61	277.92	480.79	7.02	460.59	467.61	211.12	737.28	948.40
	42.56%	57.80%		1.50%	98.50%		22.26%	77.74%	

Includes Ala Cty,
Florence, Boone,
& New River
disposals by UF.

CY 2004	RECYCLED								TOTAL RECYCLED	TOTAL S.W. (ALL FORMS)	% SW RECYCLED	MEDICAL WASTE	EST. HAZ. WASTE
	PAPER	MISC.	SCRAP METAL	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE						
=====	-	-	-	-	-	-	-	-	=	=	=	=	=
January	180.07	10.18	38.77	67.50		240.09	16,625,168	553.23	1,440.08	38.42%	29.05	8.33	
February	157.45	10.36	33.91	7.50		326.68	25.59	561.49	1,518.61	36.97%	37.17	8.33	
March	185.42	9.28	38.52	20.25		230.75	32.17	516.39	1,506.81	34.27%	33.30	8.34	
April	142.25	9.63	32.50	45.75		244.03	25.54	499.70	1,526.34	32.74%	36.45	8.33	
May	140.49	9.19	41.01	126.00		252.20	23.37	592.26	1,454.76	40.71%	30.66	8.33	
June	149.97	17.51	37.47	72.00		359.38	25.17	661.50	1,515.15	43.66%	35.28	8.34	
July	142.02	9.26	31.89	54.00		272.08	13,690,544	522.94	1,327.49	39.39%	28.68	8.33	
August	178.50	11.01	6.95	0.00		202.43	13.36	412.25	1,484.58	27.77%	34.21	8.33	
September	154.71	9.10	24.48	9.00		540.97	23.20	761.46	1,822.68	41.78%	26.46	8.34	
October	159.73	11.02	15.26	18.00		2,089.30	25.93	2,319.24	3,422.41	67.77%	34.75	8.33	
November	191.43	12.68	28.64	15.00		601.80	22.06	871.61	1,777.30	49.04%	26.68	8.33	
December	153.66	9.07	21.14	49.50		364.70	25.63	623.70	1,480.37	42.13%	154.08	8.34	
=====	-	-	-	-	-	-	-	=	=	=	=	=	=
2004 TOTAL	1,935.70	128.29	350.54	484.50		5,724.41	272.34	8,895.78	20,276.59	43.87%	506.77	100.00	
MONTHLY AVG	161.31	10.69	29.21	40.38		477.03	22.70	741.32	1,689.72	43.87%	42.23	8.33	

Cans, glas
plastics inc
Misc after:

Cans, glass &
plastics incl w/
Misc after:

Broken
Concrete
est @ 1.5 T/CY

Oct'00 fwd: incl
comingled cans,
glass & plastic.
Housing bins
est @ 20 lbs/bin
per service.

Yard waste
basic tonnage =
historic average
of 188 t/mo as of
1988 plus external
additions.
Sep 04 - Jan 05+
includes debris
from hurricanes

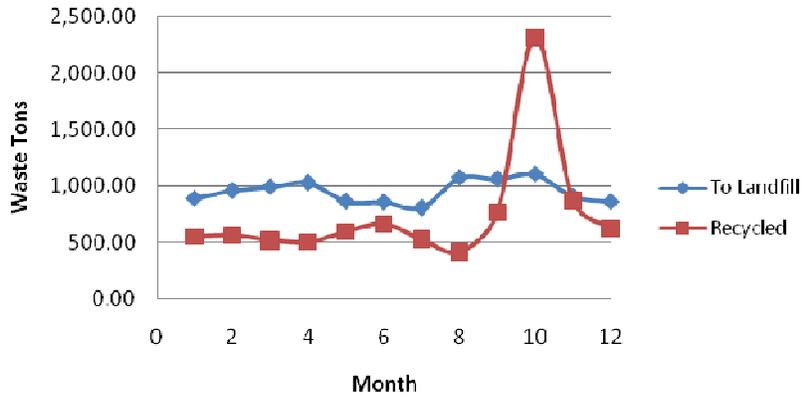
Fr 3/97: wet haul;
wgt based on
mo. avg solids
content.

Total waste
includes both
landfilled
& recycled
material.

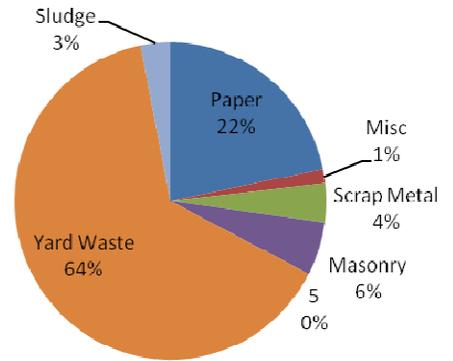
Bowed waste
estimated
at 1lb/qal

EH&S
estimate

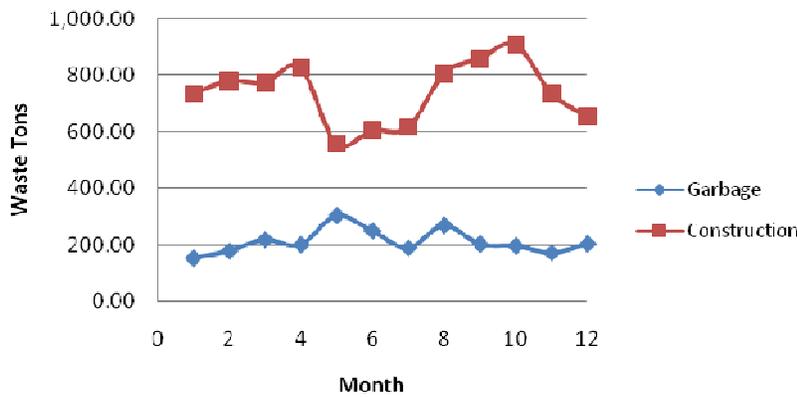
Total Waste 2004



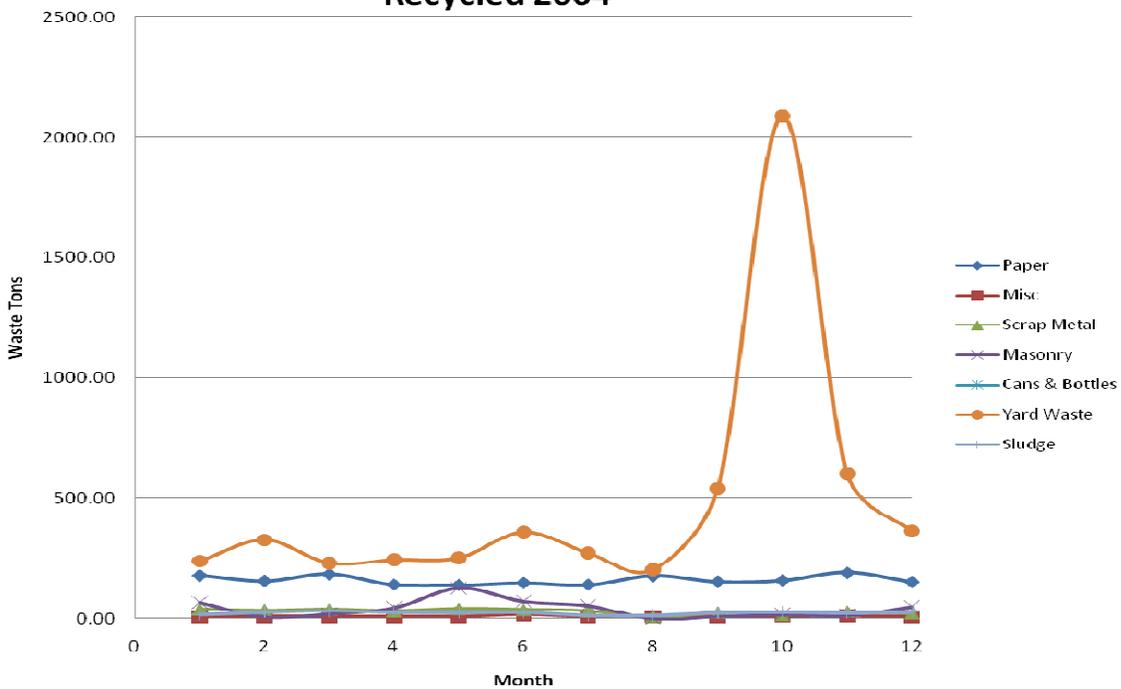
Recycled 2004



Total Landfilled 2004



Recycled 2004



CY 2005	CONTRACT Landfill Disposals			IN-HOUSE Landfill Disposals			TOTAL Landfill Disposals		
	-	-	CONTRACT	-	-	IN-HOUSE	-----	-----	TOTAL
MONTH	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	To LANDFILL
=====	-	-	=	-	-	=	-	-	=
January	201.01	268.39	469.40	4.67	488.28	492.95	205.68	756.67	962.35
February	158.65	300.37	459.02	16.47	437.56	454.03	175.12	737.93	913.05
March	181.16	318.44	499.60	6.26	467.60	473.86	187.42	786.04	973.46
April	301.33	300.04	601.37	7.85	591.40	599.25	309.18	891.44	1,200.62
May	210.63	263.34	473.97	15.53	359.57	375.10	226.16	622.91	849.07
June	200.59	272.45	473.04	14.42	381.35	395.77	215.01	653.80	868.81
July	125.26	233.60	358.86	11.82	386.91	398.73	137.08	620.51	757.59
August	174.02	235.65	409.67	7.16	531.29	538.44	181.18	766.94	948.11
September	149.80	289.41	439.21	5.54	553.42	558.96	155.34	842.83	998.17
October	119.47	271.96	391.43	5.04	533.16	538.20	124.51	805.12	929.63
November	229.94	259.56	489.50	5.06	456.44	461.50	235.00	716.00	951.00
December	170.41	217.27	387.68	1.74	407.04	408.78	172.15	624.31	796.46
=====	-	-	=	-	-	=	-	-	=
2005 TOTAL	2,051.86	3,013.21	5,452.75	101.56	5,594.02	5,695.57	2,323.83	8,824.50	11,148.32
Monthly Ave.	186.53	273.93	454.40	8.46	466.17	474.63	193.65	735.37	929.03
	41.05%	60.28%		1.78%	98.22%		20.84%	79.16%	

Includes Ala Cty,
Florence,Boone,
disposals by UF.

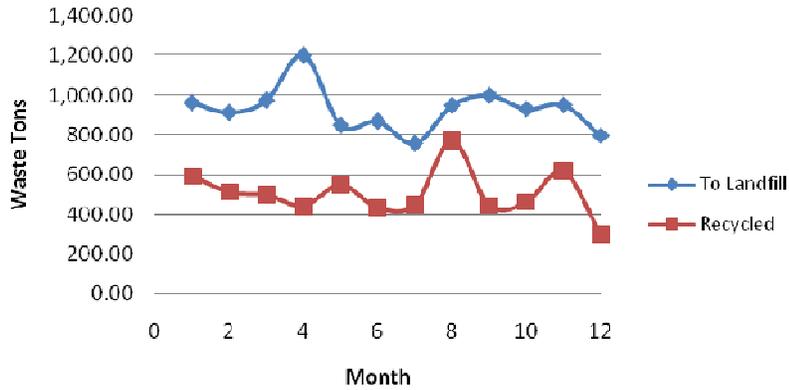
Notes:

CY 2005	RECYCLED								SOLID WASTE REDUCTION (RECYCLING)		
	-	-	-	-	-	-	-	-	TOTAL	TOTAL S.W.	% SW
MONTH	PAPER	MISC.	Scrap Metal	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE		RECYCLED	(ALL FORMS)	RECYCLED
=====	-	-	-	-	-	-	-		=	=	=
January	203.57	0.75	72.82	12.00	10.27	273.66	19.233648		592.30	1,554.65	38.10%
February	143.25	0.75	29.12	31.50	7.29	272.80	27.51		512.22	1,425.27	35.94%
March	157.95	0.75	15.41	60.00	8.10	221.47	33.70		497.38	1,470.84	33.82%
April	147.38	0.75	40.90	27.00	8.68	189.79	29.96		444.46	1,645.08	27.02%
May	164.59	0.75	30.81	81.00	8.68	238.41	23.61		547.85	1,396.92	39.22%
June	137.96	0.75	24.94	27.00	11.84	215.66	16.03		434.18	1,302.99	33.32%
July	158.65	0.75	13.58	69.00	8.17	172.81	25.40944		448.37	1,205.96	37.18%
August	249.15	0.75	7.47	57.00	8.17	421.22	26.07		769.83	1,717.94	44.81%
September	111.54	0.75	57.56	31.50	8.17	219.39	16.25		445.16	1,443.33	30.84%
October	162.05	0.75	62.86	34.50	8.17	168.64	24.58		461.55	1,391.18	33.18%
November	122.01	0.75	9.40	52.50	8.17	395.44	27.35		615.62	1,566.62	39.30%
December	120.10	0.75	36.00	0.00	13.98	107.31	22.91		301.05	1,097.51	27.43%
=====	-	-	-	-	-	-	-		=	=	=
2005 TOTAL	1,878.20	9.00	400.87	483.00	109.69	2,896.60	292.61		6,069.98	17,218.30	35.25%
Monthly Ave	156.52	0.75	33.41	40.25	9.14	241.38	24.38		505.83	1,434.86	35.25%

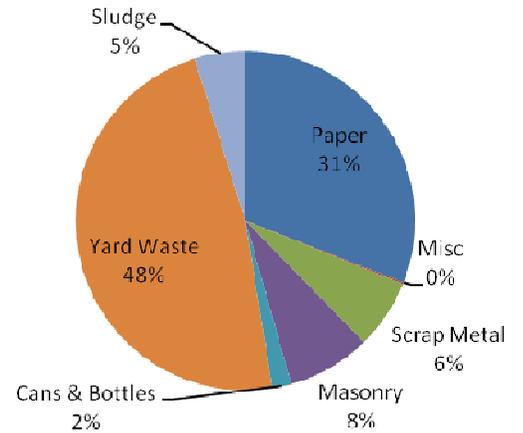
Notes: Batteries: EH&S (ave)+ Motor Pool (estimate). Broken Concrete estimated at 1.5 tons/cy 0 = # loads of 20cy roll offs. SWS recycling roll offs plus Waste Pro recycling, plus SP roll offs on gamedays Yard Waste tonnage = historic ave of 188 tons/mo as of 1988, plus external additions. Fr 3/97-wet haul wgt based on mo. avg solids content. Total Waste includes both landfilled & recycled material. Boxed waste estimated at 1 lb/gal EH&S estimate

MEDICAL WASTE	EST. HAZ. WASTE
=====	=====
31.15	8.33
31.49	8.33
39.13	8.34
31.39	8.33
35.72	8.33
31.76	8.34
36.34	8.33
35.58	8.33
31.17	8.34
37.29	8.33
30.29	8.33
29.06	8.34
=====	=====
400.37	100.00
33.36	8.33

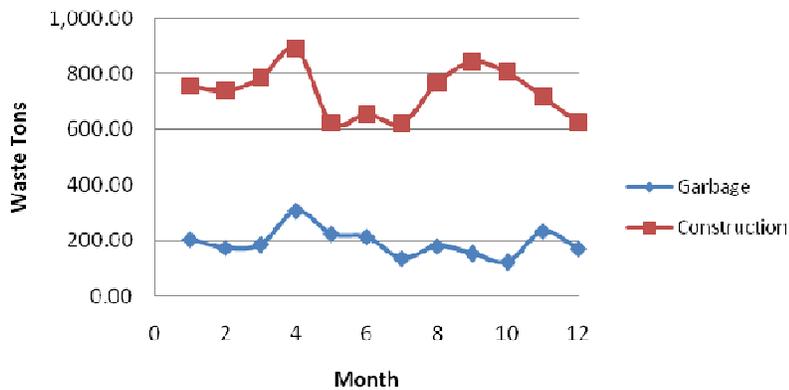
Total Waste 2005



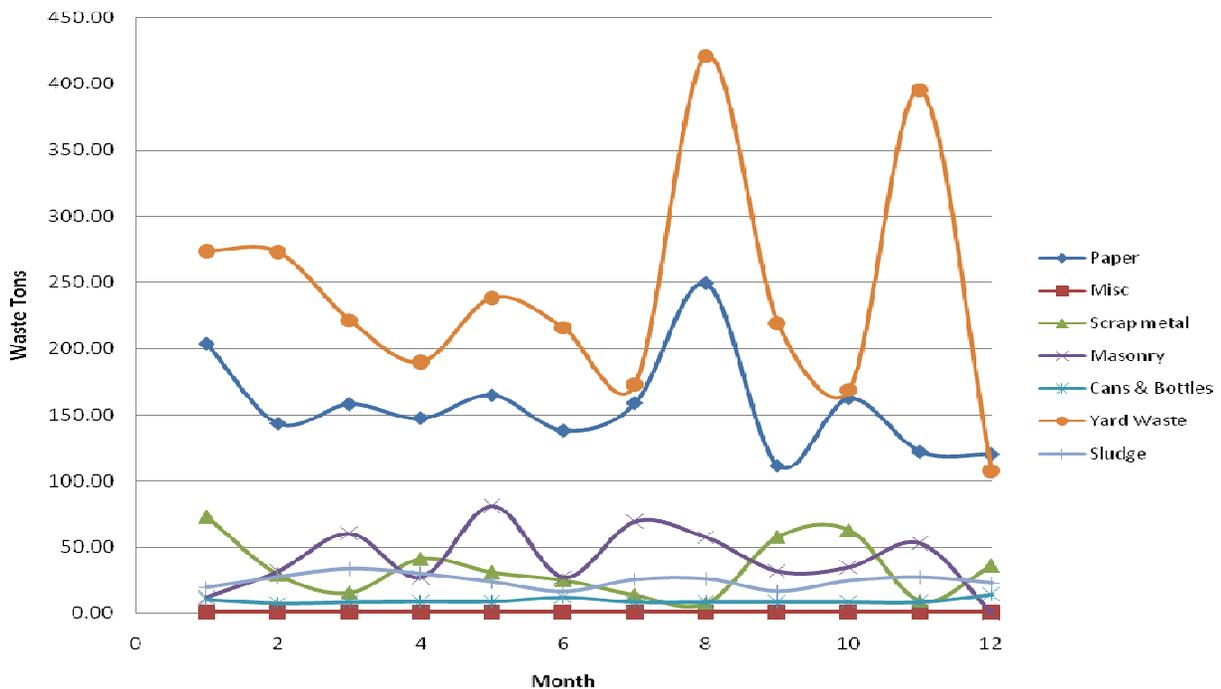
Recycled 2005



Total Landfilled 2005



Recycled 2005



CY 2006	CONTRACT Landfill Disposals			IN-HOUSE Landfill Disposals			TOTAL Landfill Disposals		
	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL
MONTH									
=====	-	-	=	-	-	=	-	-	=
January	153.93	232.41	386.34	17.70	475.19	492.89	171.63	707.60	879.23
February	147.87	251.36	399.23	78.35	485.01	563.36	226.22	736.37	962.59
March	139.81	239.51	379.32	24.55	441.28	465.83	164.36	680.79	845.15
April	129.29	252.80	382.09	6.54	473.27	479.81	135.83	726.07	861.90
May	176.21	230.08	406.29	12.89	478.96	491.85	189.10	709.04	898.14
June	192.43	222.14	414.57	5.13	342.59	347.72	197.56	564.73	762.29
July	149.75	239.94	389.69	6.76	369.03	375.79	156.51	608.97	765.48
August	226.79	235.13	461.92	31.31	496.58	527.89	258.10	731.71	989.81
September	204.75	272.32	477.07	8.75	551.69	560.44	213.50	824.01	1,037.51
October	205.76	254.09	459.85	215.46	523.20	738.66	421.22	777.29	1,198.51
November	259.46	240.78	500.24	116.14	464.44	580.58	375.60	705.22	1,080.82
December	104.81	223.07	327.88	67.94	365.24	433.18	172.75	588.31	761.06
=====	-	-	=	-	-	=	-	-	=
2006 TOTAL	1,986.05	2,670.56	4,984.49	591.52	5,466.48	6,058.00	2,682.38	8,360.11	11,042.49
Monthly Ave.	180.55	242.78	415.37	49.29	455.54	504.83	223.53	696.68	920.21
	43.47%	58.45%			90.24%		24.29%	75.71%	

Notes: From AuxRefSum-yymm.xls

Includes Ala Cty, Florence, Boone, disposals by UF. Feb 06 = storage yard clearance.

Non Class 3 mat'l from Ala Cty TS

CY 2006	RECYCLED							SOLID WASTE REDUCTION (RECYCLING)		
	PAPER	MISC.	Scrap Metal	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE	TOTAL RECYCLED	TOTAL S.W. (ALL FORMS)	% SW RECYCLED
MONTH										
=====	-	-	-	-	-	-	-	=	=	=
January	153.13	1.01	37.34	100.50	8.17	145.20	14.5	459.85	1,339.08	34.34%
February	143.15	1.01	18.67	7.50	8.17	457.61	26.63	662.74	1,625.33	40.78%
March	146.22	1.01	60.68	99.00	12.71	279.92	24.23	623.77	1,468.92	42.46%
April	129.05	1.01	21.96	45.00	10.72	126.45	19.38	353.57	1,215.47	29.09%
May	139.98	1.01	21.15	88.50	10.07	195.67	15.98	472.36	1,370.50	34.47%
June	127.28	1.01	18.55	118.50	8.55	421.08	4.70	699.67	1,461.96	47.86%
July	144.45	1.01	22.77	12.00	14.83	216.44	8.31	419.81	1,185.29	35.42%
August	180.34	1.01	38.82	30.00	13.81	215.01	19.33	498.32	1,488.13	33.49%
September	139.46	1.01	20.36	22.50	15.61	239.52	21.52	459.98	1,497.49	30.72%
October	120.18	1.01	28.21	34.50	15.94	195.62	20.31	415.77	1,614.28	25.76%
November	109.50	1.01	35.93	52.50	14.01	243.75	27.98	484.68	1,565.50	30.96%
December	191.13	1.01	23.33	0.00	9.36	210.82	18.31	453.96	1,215.02	37.36%
=====	-	-	-	-	-	-	-	=	=	=
2006 TOTAL	1,723.87	12.12	347.77	610.50	141.95	2,947.09	221.18	6,004.48	17,046.97	35.22%
Monthly Ave	143.66	1.01	28.98	50.88	11.83	245.59	18.43	500.37	1,420.58	35.22%

Notes: Generated from RSA monthly commodity report. (Note: Dec total incl adjustment)

Batteries: EH&S (ave)+ Motor Pool (estimate).

Broken Concrete estimated at 1.5 tons/cy 0 = # loads of 20cy roll offs. Dec=0

Co-mingled cans, glass & plastic. B96 bins est @ 20 lbs/bin per svc. 8.17=190 bins/wk x 20 lbs /ave bin x 4.3 wks / mo

Wood Recovery plus Vetmed rolloff compost. Loads to Andrews based on 4 tons per load.

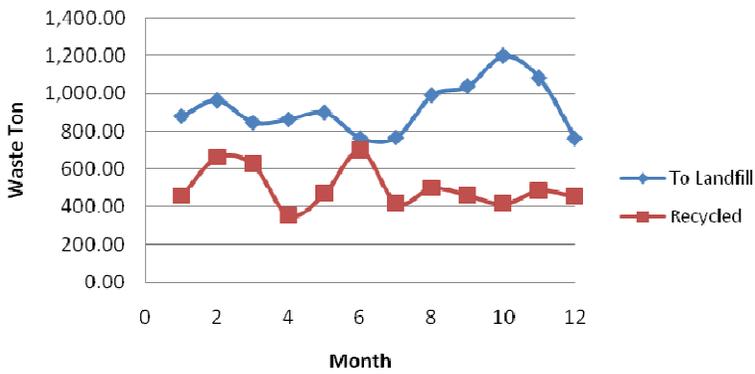
Fr 3/97-wet haul wgt based on mo. avg solids content.

MEDICAL WASTE	EST. HAZ. WASTE
=====	=====
28.37	7.12
33.43	7.12
33.96	7.12
33.22	7.12
33.32	7.12
24.64	7.12
29.11	7.12
35.40	7.12
29.85	7.12
27.70	7.12
32.72	7.12
25.55	7.12
=====	=====
367.27	85.44
30.61	7.12

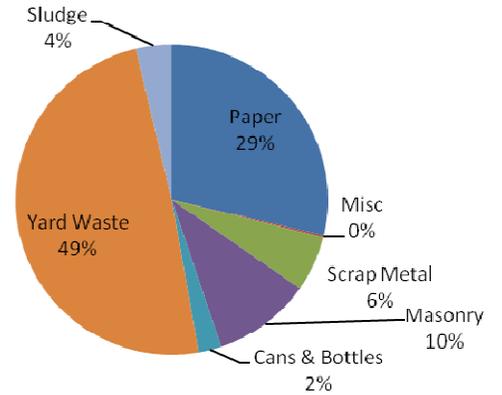
Boxed waste estimated at 1 lb/gal

2006 report from EH&S. Next report is 2008

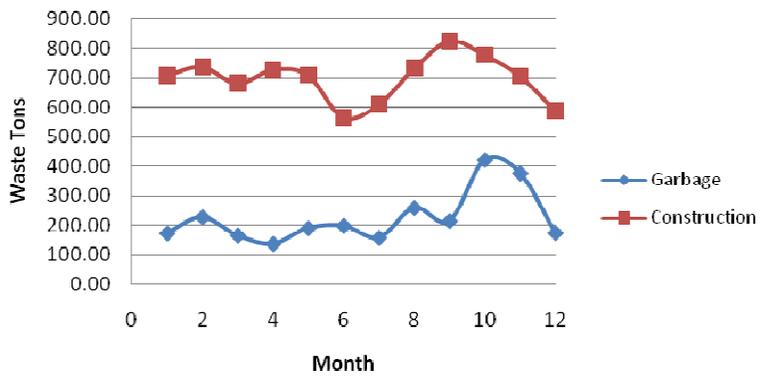
Total Waste 2006



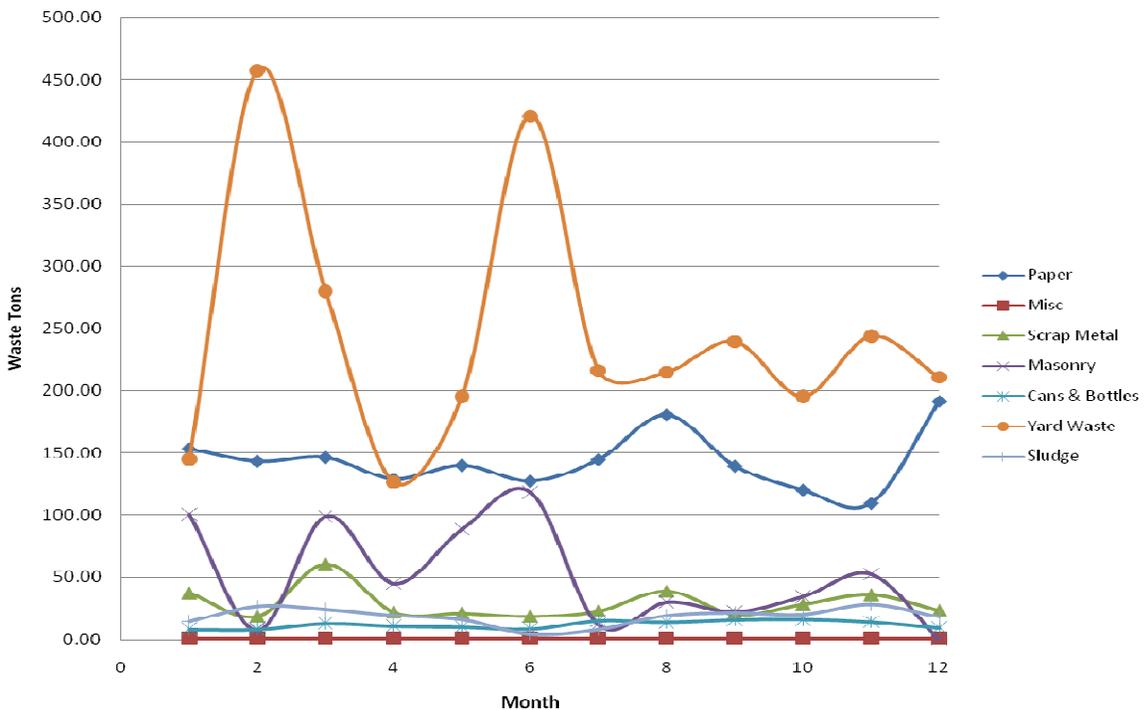
Recycled 2006



Total Landfilled 2006



Recycled 2006



CY 2007	CONTRACT Landfill Disposals			IN-HOUSE Landfill Disposals			TOTAL Landfill Disposals		
	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL
MONTH									
=====	-	-	=	-	-	=	-	-	=
January	131.25	225.61	356.86	49.94	474.06	524.00	181.19	699.67	880.86
February	125.29	227.36	352.65	35.30	447.90	483.20	160.59	675.26	835.85
March	121.74	296.93	418.67	39.09	442.52	481.61	160.83	739.45	900.28
April	96.33	288.22	384.55	44.14	505.80	549.94	140.47	794.02	934.49
May	152.45	285.11	437.56	12.65	454.71	467.36	165.10	739.82	904.92
June	136.82	278.86	415.68	96.81	334.50	431.31	233.63	613.36	846.99
July	102.11	235.18	337.29	25.69	383.66	409.35	127.80	618.84	746.64
August	127.61	304.56	432.17	26.34	515.09	541.43	153.95	819.65	973.60
September	132.44	312.20	444.64	32.92	514.54	547.46	165.36	826.74	992.10
October	68.05	365.43	433.48	62.00	555.78	617.78	130.05	921.21	1,051.26
November	51.13	390.39	441.52	49.77	482.56	532.33	100.90	872.95	973.85
December	58.07	272.03	330.10	17.12	372.78	389.90	75.19	644.81	720.00
=====	-	-	=	-	-	=	-	-	=
2007 TOTAL	1,303.29	3,481.88	4,785.17	491.77	5,483.90	5,975.67	1,795.06	8,965.78	10,760.84
Monthly Ave.	108.61	290.16	398.76	40.98	456.99	497.97	149.59	747.15	896.74
	27.24%	72.76%	44.47%	8.23%	91.77%	55.53%	16.68%	83.32%	

Notes: From AuxRefSum-yyymm.xls

Incl Class 3
mat'l from
Ala Cty TS,
Florence,
Waste Mgt
& New River

Non Class 3
mat'l from
Ala Cty TS

CY 2007	RECYCLED								SOLID WASTE REDUCTION (RECYCLING)		
	PAPER	MISC.	Scrap Metal	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE	ELECTRONICS	TOTAL RECYCLED	TOTAL S.W. (ALL FORMS)	% SW RECYCLED
MONTH											
=====	-	-	-	-	-	-	-	-	=	=	=
January	190.40	1.45	52.04	51.00	8.67	280.34	20.18		413.68	1,294.54	31.96%
February	124.39	1.41	31.99	9.00	5.73	268.90	24.13		465.55	1,301.40	35.77%
March	130.59	1.17	63.80	46.50	4.95	274.15	22.03		543.19	1,443.47	37.63%
April	97.40	0.38	25.08	67.50	6.79	217.80	21.65		436.60	1,371.09	31.84%
May	124.59	1.33	50.18	50.25	5.81	216.87	19.00		468.03	1,372.95	34.09%
June	108.29	1.51	30.56	33.00	3.62	237.52	12.52		427.02	1,274.01	33.52%
July	141.62	0.38	40.70	0.00	4.24	200.33	11.64	10.86	409.77	1,156.41	35.43%
August	193.65	1.42	33.89	1.50	4.17	146.48	17.83	11.46	410.40	1,384.00	29.65%
September	151.62	1.09	27.67	30.00	18.39	162.33	17.09	22.17	430.36	1,422.46	30.25%
October	161.57	0.40	37.80	70.50	9.60	196.94	26.55	11.61	514.97	1,566.23	32.88%
November	132.21	1.07	28.16	7.50	13.14	132.85	25.67	10.09	350.69	1,324.54	26.48%
December	126.28	1.32	18.95	0.00	9.79	99.16	19.95	0.00	275.45	995.45	27.67%
=====	-	-	-	-	-	-	-	-	=	=	=
2007 TOTAL	1,682.61	12.93	440.82	366.75	94.90	2,433.67	238.24	66.18	5,145.70	15,906.54	32.35%
Monthly Ave	140.22	1.08	36.74	30.56	7.91	202.81	19.85	11.03	428.81	1,325.54	32.35%

Notes: Generated from RSA monthly commodity report plus, eff 10/07, Cintas
Batteries: EH&S + Motor Pool (estimate).
Broken Concrete estimated at 1.5 tons/cy
SWS recycling roll offs plus Waste Pro recycling, plus SP roll offs on gamedays
Wood Recovery plus Vetmed rolloff compost. Eff 1/07 VM deliv to Andrews = 6.93 Ed Toby to email tons per load based on 64 weigh-ins.
As of 1/07, tons sludge per mo is supplied by waste water treatment plant.
As of 7/07, began receiving monthly weight reports from Amanda Jobs, UF surplus & Unicor.

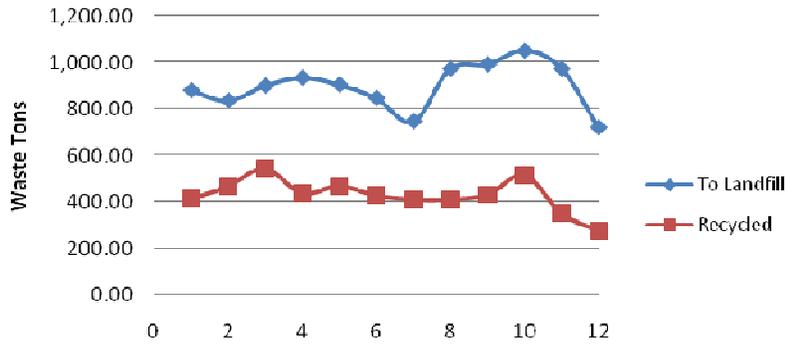
123

Total Waste includes both landfilled & recycled material.

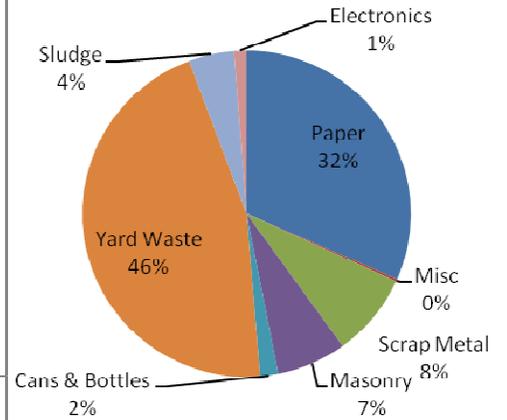
MEDICAL WASTE	EST. HAZ. WASTE
=====	=====
17.90	7.12
24.38	7.12
26.92	7.12
25.81	7.12
29.82	7.12
20.89	7.12
23.62	7.12
20.28	7.12
22.29	7.12
23.15	7.12
17.96	7.12
22.47	7.12
=====	=====
275.49	85.44
22.96	7.12

Effective 1/07, all weights are real & no longer estimated.
2006 report from EH&S. Next report is 2008

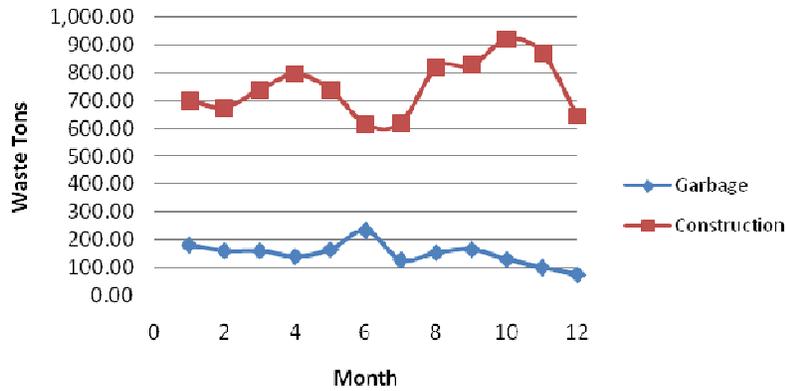
Total Waste 2007



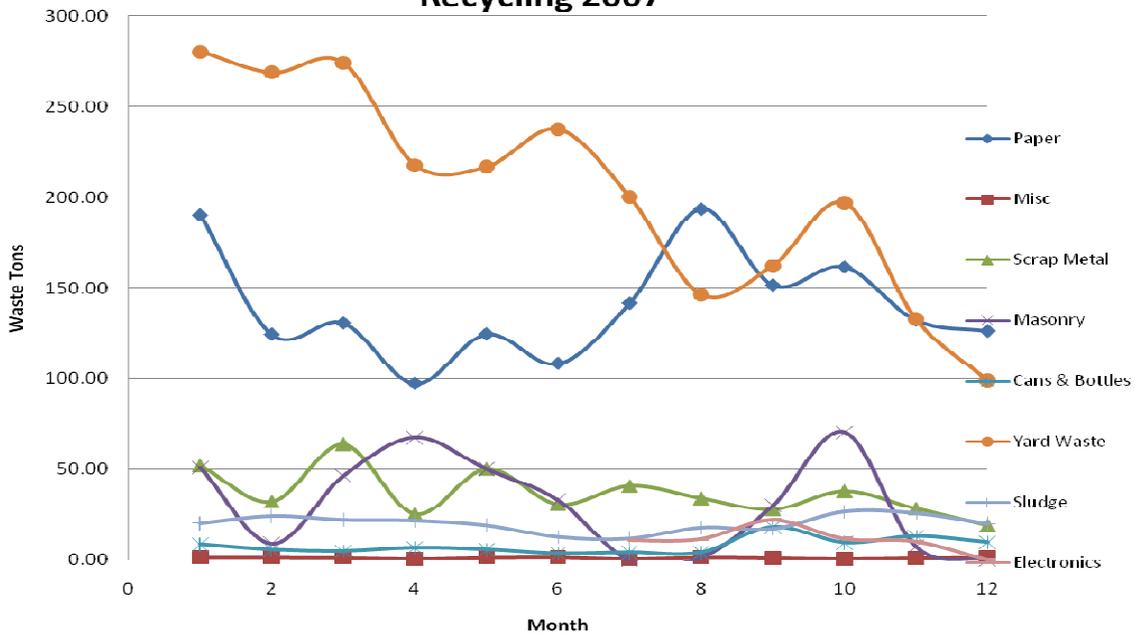
Recycled 2007



To Landfill 2007



Recycling 2007



CY 2008	CONTRACT Landfill Disposals			IN-HOUSE Landfill Disposals			TOTAL Landfill Disposals		
	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL	CONSTR	GARBAGE	TOTAL
MONTH									
January	64.59	304.89	369.48	63.75	497.20	560.95	128.34	802.09	930.43
February	87.02	320.42	407.44	100.00	486.79	586.79	187.02	807.21	994.23
March	104.17	333.13	437.30	63.09	405.11	468.20	167.26	738.24	905.50
April	68.72	361.19	429.91	31.17	495.08	526.25	99.89	856.27	956.16
May	102.45	287.40	389.85	60.16	372.87	433.03	162.61	660.27	822.88
June	84.99	284.55	369.54	94.04	304.10	398.14	179.03	588.65	767.68
July	100.48	319.01	419.49	34.86	347.30	382.16	135.34	666.31	801.65
August	70.95	372.86	443.81	7.53	397.46	404.99	78.48	770.32	848.80
September	36.87	500.68	537.55	46.99	478.40	525.39	83.86	979.08	1,062.94
October	57.41	443.06	500.47	21.59	512.36	533.95	79.00	955.42	1,034.42
November	17.34	359.55	376.89	31.17	380.42	411.59	48.51	739.97	788.48
December	71.33	300.30	371.63	31.45	345.19	376.64	102.78	645.49	748.27
2008 TOTAL	866.32	4,187.04	5,053.36	585.80	5,022.28	5,608.08	1,452.12	9,209.32	10,661.44
Monthly Ave.	72.19	348.92	421.11	48.82	418.52	467.34	121.01	767.44	888.45
	17.14%	82.86%	47.40%	10.45%	89.55%	52.60%	13.62%	86.38%	

Notes: From AuxRefSum-yymm.xls

Incl Class 3 mat'l from Ala City TS, Florence, Waste Mgt & New River

Class 1 MSW from Alachua City Trans Sta

CY 2008	RECYCLED									SOLID WASTE REDUCTION (RECYCLING)		
	PAPER	MISC.	Scrap Metal	MASONRY	Cans & Bottles	YARD WASTE	SLUDGE	ELECTRONICS	TOTAL RECYCLED	TOTAL S.W. ALL FORMS	% SW RECYCLED	
MONTH												
January	178.78	0.38	30.04	34.50	12.57	226.79	18.85	14.21	516.12	1,446.55	35.68%	
February	164.50	0.38	25.93	65.82	10.55	170.50	25.93	12.11	475.72	1,469.95	32.36%	
March	137.23	0.38	30.86	33.75	11.15	157.01	27.03	13.16	410.57	1,316.07	31.20%	
April	155.60	0.68	23.00	53.25	10.88	182.08	30.93	9.05	465.47	1,421.63	32.74%	
May	158.39	0.52	43.50	90.00	7.23	143.15	18.78	13.38	474.95	1,297.83	36.60%	
June	140.67	0.75	43.45	47.22	7.24	209.00	7.28	22.49	478.10	1,245.78	38.38%	
July	170.77	1.58	36.38	36.00	8.15	164.89	14.73	8.89	441.39	1,243.04	35.51%	
August	170.53	1.45	10.26	12.00	6.52	186.66	11.93	10.51	409.86	1,258.66	32.56%	
September	203.34	0.38	34.47	7.50	18.58	169.56	17.70	10.02	461.55	1,524.49	30.28%	
October	189.01	0.38	39.74	45.00	16.36	132.19	27.14	10.98	460.80	1,495.22	30.82%	
November	134.89	0.67	16.82	69.75	10.91	99.11	20.40	16.62	369.17	1,157.65	31.89%	
December	154.90	0.58	23.85	138.00	8.29	246.69	21.53	12.80	606.64	1,354.91	44.77%	
2008 TOTAL	1,958.61	8.13	358.30	632.79	128.43	2,087.63	242.23	154.22	5,570.34	16,231.78	34.32%	
Monthly Ave	163.22	0.68	29.86	52.73	10.70	173.97	20.19	12.85	464.20	1,352.65	34.32%	
% Total Recy	35.16%	0.15%	6.43%	11.36%	2.31%	37.48%	4.35%	2.77%				

MEDICAL WASTE	EST. HAZ. WASTE
=	=
18.64	7.12
24.96	7.12
22.29	7.12
25.06	7.12
22.08	7.12
23.75	7.12
23.61	7.12
21.81	7.12
23.55	7.12
23.65	7.12
20.34	7.12
20.02	7.12
269.76	85.44
22.48	7.12

Notes: Generated from RSA monthly commodity report plus, eff 10/07, Cintas

Batteries: EH&S (Matt Doty)+ Motor Pool (estimate).

Scrap metal from CMC, plus cable wt from Amanda Jobses.

Broken Concrete estimated at 1.5 tons/cy 0 = # loads of 20cy roll offs. Dec=0

SWS recycling roll offs plus Waste Pro recycling, plus SP roll offs on gamedays

Wood Recovery plus Vetmed rolloff compost delivered to Andrews Nursery. (=6.93 tons/load)

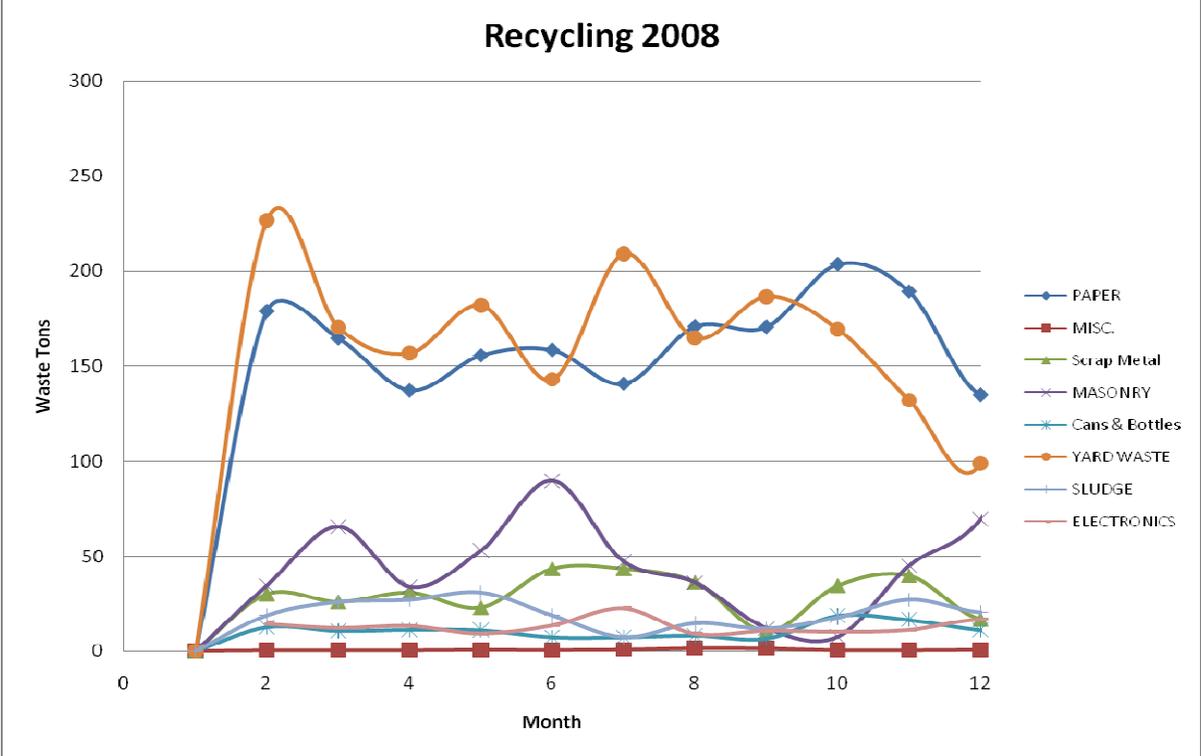
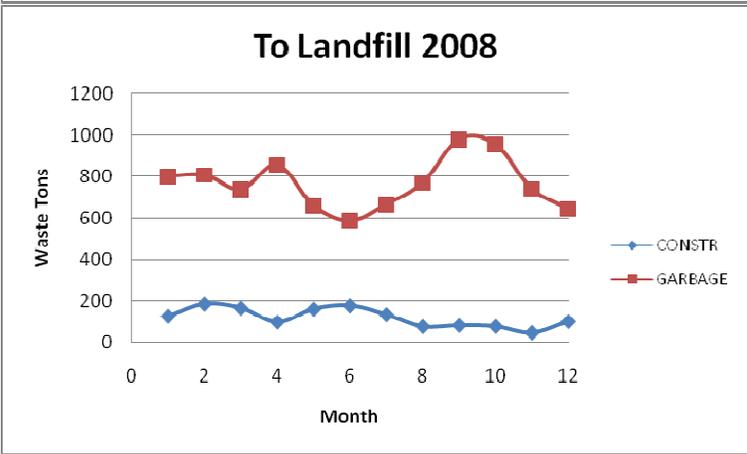
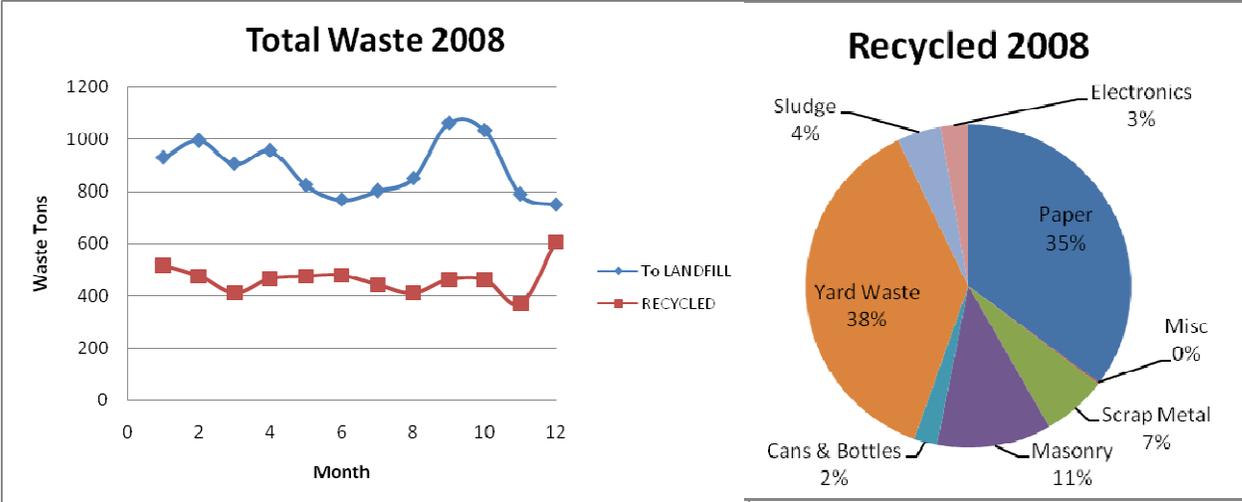
As of 1/07, tons sludge per mo is supplied by waste water treatment plant.

As of 7/07, began receiving monthly weight reports from Amanda Jobses, UF Surplus.

Total Waste includes both landfilled & recycled material.

Effective 1/07, all weights are real & no longer estimated.

Data is collected in even years, by EH&S. Reported in Feb, for new estimate.



D.2. AVERAGE YEARLY TONNAGES

Totals By Year	To Landfill	C&D Debris	MSW	Recycled	Paper	Misc	Scrap Metal	Masonry	Cans & Bottles	Yard Waste	Sludge	Electronics
2001	11,131.71	2,600.36	8,531.35	7,148.56	1,865.67	112.98	492.02	1,197.50		3,250.54	229.85	
2002	10,596.08	2,297.04	8,299.04	6,830.49	2,067.68	103.38	418.52	994.50		3,008.00	238.41	
2003	11,865.41	3,028.94	8,836.47	6,823.63	2,104.91	107.48	443.48	873.00		3,036.00	258.76	
2004	11,380.80	2,533.41	8,895.78	9,118.04	1,935.70	350.54	350.54	484.50		5,724.41	272.34	
2005	11,148.32	2,323.83	8,824.50	6,069.98	1,878.20	9.00	400.87	483.00	109.69	2,896.60	292.61	
2006	11,042.49	2,682.38	8,360.11	6,004.48	1,723.87	12.12	347.77	610.50	141.95	2,947.09	221.18	
2007	10,760.84	1,795.06	8,965.78	5,336.10	1,682.61	12.93	440.82	366.75	94.90	2,433.67	238.24	66.1805
2008	10,661.44	1,452.12	9,209.32	5,570.34	1,958.61	8.13	358.30	632.79	128.43	2,087.63	242.23	154.22
Averages	To Landfill	C&D Debris	MSW	Recycled	Paper	Misc	Scrap Metal	Masonry	Cans & Bottles	Yard Waste	Sludge	Electronics
2001	927.64	216.70	710.95	595.71	155.47	9.42	41.00	108.86		270.88	19.15	
2002	883.01	191.42	691.59	569.21	172.31	8.62	34.88	82.88		250.67	19.87	
2003	988.78	252.41	736.37	568.64	175.41	8.96	36.96	72.75		253.00	21.56	
2004	948.40	211.12	737.28	741.32	161.31	10.69	29.21	40.38		477.03	22.70	
2005	929.03	193.65	735.37	505.83	156.52	0.75	33.41	40.25	9.14	241.38	24.38	
2006	920.21	223.53	696.68	500.37	143.66	1.01	28.98	50.88	11.83	245.59	18.43	
2007	896.74	149.59	747.15	428.81	140.22	1.08	36.74	30.56	7.91	202.81	19.85	11.03
2008	888.45	121.01	767.44	464.20	163.22	0.68	29.86	52.73	10.70	173.97	20.19	12.85
Yearly Avg	922.78215	194.9285	727.85	546.76	158.51	5.15	33.88	59.91	9.90	264.42	20.77	11.940875

E. CONTACTS

Table E lists the contacts that were used to obtain information regarding this report. Also listed here are contacts for future research and implementation of this work.

Table E Contacts for UF waste audit

Name	Phone	Email	Description
Dale Morris	352- 392-7396	damorris@ufl.edu	Solid Waste Coordinator
Marty Werts	352- 392-1148 x 304	mwertz@ufl.edu	Lands/Grounds Superintendent
Susanne Lewis	352-273-0733	Lewis-Susanne@aramark.com	Sustainability Coordinator for Gator Dining
Anna Prizzia	352-392-7578	aprizzia@ufl.edu	Director of the Office of Sustainability
Bill Coughlin	352-392-8400	bcoughl@ehs.ufl.edu	Hazardous Materials Management Coordinator
Sharon Blansett	352-392-2171 x 10132	sharonb@housing.ufl.edu	Assistant Director of Housing
Bruce Ari Welt	352-392-1864 x222	bwelt@ufl.edu	Biodiesel Contact
David J. Segura	352-392-2556 x 406	dsegura@ufl.edu	Unit manager at Asset Management
David Dykes	352-392-0370	dykesde@ufl.edu	Outgoing Surplus Property - Supervisor

F. PHASE I: MSW SORTS

The first phase of the study consisted of large scale MSW sorts completed at the Leveda Brown Environmental Park where the Alachua County transfer station is located, a facility where municipal solid waste is transferred from the local collection vehicles to a larger, long distance truck that hauls approximately 100 yd³ to the landfill. The loads of waste were pre-selected to reflect sources of campus waste. Following the truck selection, the load of waste was deposited to the floor of the transfer station and visually assessed by the supervisors. A representative sample of 200 to 300 pounds was then extracted by the transfer station floor operator and deposited by the sort site. Supervisors followed appropriate health and safety protocols before the waste sort commenced.

F.1. SAFETY PLAN

Objective of this Plan

The personal safety and health of each staff person is a primary consideration of the Team. The prevention of occupationally-induced injuries and illnesses is a high priority during the sort. The Research Team will provide industry standard equipment, training, and physical facilities necessary for maintaining the personal safety and health of staff members. It is the responsibility of each and every person to contribute to his or her and fellow worker's health and safety by learning and exercising safe work practices and complying with all requirements of this site safety plan.

Location of Safety Equipment

The following items will be located near the sorting tables for immediate access:

- Fire Extinguisher
- Spill Containment Kit
- Protective Clothing
- First Aid Kit
- Eyewash Unit
- Water Supply

Employees and Personal Protective Equipment

Site Supervisor

The Site Supervisor is the site safety officer and the emergency coordinator. The Site Supervisor will be overseeing the entire work area and will be responsible for presorting the waste samples for hazards before the sample is categorized by the sorters. The sorters may not approach the areas where unexamined waste samples are being stored or examined. In the event of a spill of hazardous material from a sample, the supervisor is responsible for cleanup of the spill or for calling the appropriate authorities. The site supervisor will be in charge of training the sorters in the sorting protocol.

Assistant Supervisor

The Assistant Supervisor will assist the Site Supervisor as necessary, as well as act on the behalf of the Site Supervisor when the Site Supervisor is unavailable. The focus of the Assistance Supervisor's role is to facilitate the sorting process for the sorting crew.

Sorters

Sorters are volunteers of the Project Team and will sort and categorize the waste being sampled. Training by the Assistant Supervisor and Site Supervisor will take place for sorters. Sorters will be advised to wear a dust mask and steel toed shoes as well as safety equipment listed below. The waste will have been presorted by the Site Supervisor or Assistant Supervisor to remove the hazardous, household hazardous, and infectious waste, and the sorters will be limited to working only in the vicinity of the sort tables and taking breaks in a predetermined area.

Need for Personal Protective Clothing

Municipal solid waste is not considered to be a hazardous material for definition. But, it may contain items and substances that may be encountered in close range, picked up by hand, or may have leaked from a broken container and mixed with other waste materials. These conditions could result in situations which could be hazardous to the health of the sorters conducting the study. For these reasons, it will be necessary for each sorter to wear the personal protective clothing that will be provided. This protective clothing is listed below.

- Safety glasses or goggles, or prescription safety glasses
- Dust mask (suggested)
- White Tyvek full-piece suit (optional)
- Nitrile gloves
- Leather driving gloves
- Steel-toed boots (suggested)

Presorting Protection

The waste will be presorted for hazardous and infectious waste with caution and with safety glasses, dust masks, nitrile gloves, leather driving gloves, and steel-toed boots. The Site Supervisor and Assistant Supervisor will be the only staff conducting the presorting.

Spills

In the unlikely event of a spill or a release of a hazardous substance in a quantity still manageable by on-site personnel, the Site Supervisor will apply a spill kit to the area while wearing a Tyvek suite with duct tape to seal the wrists and ankles, gloves. The media will be disposed of in a designated area.

Likelihood of Heat Stress

Because the study will be taking place inside the tipping floor building, environmental factors are an important consideration in worker health and safety. Additionally, the personal protective clothing required for the study can aggravate situations caused by uncomfortable weather. A large Tyvek suit will be worn over layers of clothing. Frequent breaks will be encouraged in the event of extremely hot weather. A work/rest schedule will be adapted to weather conditions. Also, water coolers and beverages will be provided throughout the sort.

First Aid for Heat and Cold Stress

The following are First Aid procedures for conditions caused by hot and cold temperature extremes that may be aggravated by required personal protective equipment:

Heat Exhaustion

Caused by: Prolonged hot spell, excessive exposure, physical exertion.

Symptoms: Profuse sweating, weakness, dizziness, and sometimes heat cramps; skin is cold and pale, clammy with sweat; pulse is thready and blood pressure is low. Body temperature is normal or subnormal. Vomiting may occur. Unconsciousness is rare.

First Aid: Move to a cooler environment. Provide rest and a cool drink of water or beverage like Gatorade. Seek medical attention if the symptoms are severe.

Heat Stroke (Heat Collapse)

Caused by: Failure of the body to regulate its temperature because excessively warm weather and physical exertion has depleted it of fluids needed to perspire.

Symptoms: 1. Weakness, dizziness, nausea, headache, heat cramps, heat exhaustion, excessive sweating; skin flushed and pink.
2. Sweating stops (usually) and body temperature rises sharply. Delirium or coma is common; skin changes from pink to ashen or purplish.

First Aid: Immediate medical care is needed; heat stroke is very serious. The body must be cooled soon. Move the victim to a cooler place, remove protective clothing, and bathe in cold water. Use extreme care and frequently check ABCs (airway, breathing, and circulation) if the person is unconscious.

Lifting

When shoveling garbage onto the tabletop, sorters will be reminded not to load the shovel with more weight than they can comfortably lift.

The following tips will be used when lifting:

- Maintain the three natural curves of the spine by keeping the head high, chin tucked in, and back arched.
- Bend hips and knees.

- Use the diagonal lift (one foot ahead, one foot behind) to get the weight in close and maintain a wide, balanced base of support.
- Keep abdominal muscles tight when lifting to help support the back.
- Keep the load close to the body and stand up straight. Keep head up.
- Avoid twisting while lifting. Pivot after lifting, if changing direction.
- Avoid lifting anything heavy above the shoulders.

Procedure for Handling Hazardous Wastes

The waste composition study procedure has been designed so that sorters are not exposed to mixed municipal solid waste that has not first been screened for hazardous or infectious waste. These materials are defined and appropriate actions outlined for each:

Hazardous:

Materials that were improperly disposed of in municipal waste; e.g., radioactive waste, toxic chemicals, explosives. Note that these materials should not be found in campus waste. This is just a stand safety precaution.

Action: If the pre-sorters should miss a hazardous item in a waste sample and it is brought to the waste table and found, work should immediately stop and the area should be cleared. The entire waste sample will be rejected and removed and, depending upon the nature of the hazardous item, the site coordinator will see to the proper disposal action or will call the appropriate emergency agency.

Infectious Waste:

Solid waste that might be able to transfer disease or infection to another person; e.g., extremely bloody medical items, syringes, or an indiscriminately discarded biomedical bag. These biomedical bags are often red in color and they have "infectious waste" or the biomedical symbol printed on them. These materials should also be separated from the campus MSW stream. Again these items are considered as a safety precaution.

Action: If a hospital or veterinary bag or a similar medical waste is found, work will be stopped and the coordinator notified to remove the waste from the table. Single syringes are quite common in mixed municipal waste. If a syringe is found, the sorter finding it should announce to other workers at the table "Syringe." The sorter will then move the syringe to the appropriate container.

Emergency Contingency Plan

The Site Supervisor will be the emergency coordinator. The Assistant Supervisor will be the emergency coordinator in the event that the supervisor is not available. The Site Supervisor is responsible for understanding and complying with the facilities' emergency contingency plan and will follow site procedures.

Emergency Eyewash Unit

An emergency eyewash unit is located near the sort area. If someone gets a foreign object in his or her eye, the victim's eyes should be flushed with water from the eyewash unit.

Summary

The Site Supervisor will follow the health, safety, and training procedures specified in this plan. All sorters will be familiar with the policy and procedures specified in the plan prior to initiating the sorting events.

F.2. METHODOLOGY

The methodology of how the Phase I waste sort commenced is detailed in this section. It begins with the waste component category identification. Next the sampling and sorting protocols are listed. Finally the data collection techniques are presented.

F.2.1. Waste Category Identification for Sorts

The following table details each category, subcategory, part, and then a description of the waste sorted for during the Phase I Waste Sorts. The overall categories sorted for are: paper, plastic, glass, metals, organics, other items, bulky items, and C&D. Each category is denoted into subcategories, for instance examples of paper subcategories are old corrugated cardboard (OCC) and boxboard. In certain cases, it was of interest to further breakdown the subcategories to parts, in order to characterize the waste more thoroughly. For instance, composite paper was further separated into poly coated, metal coated, aseptic.

Table F2.1 Phase I Sort Categories

Category	Subcategory	Part	Description
Paper	Newspaper		
	OCC	plain	
		brown paper bags/ kraft paper	
	High Grade Paper		manila envelopes, notecards, printer paper, tablets with binding
	Mixed Recyclable Paper		Junk mail, carbonless paper, envelopes with and without windows, toilet paper cores and other mixed recyclable papers. Includes paperback books.
		junk mail	
	Composite	polycoated paper	Bleached and unbleached paperboard coated with HDPE. This includes polycoated milk, juice, ice cream cartons, paper cups, takeout containers, and frozen/refrigerator packaging.
		metal coated	
		aseptic	
	Compostable/ Soiled Paper		Paper towels, paper plates, waxed paper, tissues, and other papers that are soiled with food during use (e.g. pizza boxes)
	Boxboard		Cereal boxes, egg cartons (not coated with wax, plastic or metal)
	Miscellaneous		Magazines, phone books, glossy paper
Other		Anything that does not fall into the above categories	

Plastic	#1 PET bottles	clear	
		colored	
	#2 HDPE	Translucent Bottles	Milk, juice, beverages, oil, vinegar, and water bottles with necks
		Colored Bottles	Liquid detergent bottles and some hair care bottles with necks
	#3-#7 (Other Plastic Bottles)		All with necks
	Other rigid plastic	#2,4, and 5 Tubs, cups, and lids	Wide mouth cups and tubs, without a neck, and lids, such as yogurt, cottage cheese, and margarine containers
		#1,3,6, and 7 tubs, cups, and lids	Wide mouth cups and tubs, without a neck, and lids, such as polystyrene drink cups, and food, cosmetic, cleaning, auto, and other products and packaging
		Nonfood expanded polystyrene	Styrofoam products such as packaging peanuts and blocks.
		Other food service plastics	Plates, bowls, clamshells, salad trays, microwave trays, cookie tray inserts, utensils, straws, stirrers, and condiment packaging.
	Film	clean shopping	Grocery or check out bags. Dry cleaner bags. Bags intended to contain produce, bread, merchandise, and newspapers. Does not include food, liquid, or grit contaminated bags.
		other clean film	
		other film	Contaminated with food, liquid, or grit during use. Is woven together (e.g. grain bags); contains multiple layers of film or other materials that have been fused together (e.g. potato chip bags). This category also includes photographic negatives, shower curtains, and used garbage bags. This category also includes supermarket and shopping bags that were contaminated with food, liquid, or grit during use. Plastic bags (sandwich bags, zipper-recloseable bags, newspaper bags, produce bags, frozen vegetable bags, bread bags), food wrappers such as candy-bar wrappers, mailing pouches, bank bags, x-ray film, metalized film (wine containers and balloons), and plastic food wrap.
	Plastic products		Plastic such as toys, toothbrushes, vinyl hose, and lawn furniture.
	Composite		Items are predominately plastic with other materials attached such as disposable razors, pens, lighters, toys, and binders.
	Other		Anything that does not fall into the above categories

Glass	clear		Food, beverage, wine, liquor, and beer containers
	green/blue		Food, beverage, wine, liquor, and beer containers
	brown		Food, beverage, wine, liquor, and beer containers
	flat		Clear or tinted window, door, shelf, tabletop, flat auto, bus shelter, and other flat glass, included tempered.
	composite/ other mixed cullet		Mirrors, glassware, crystal, Pyrex and Corning Ware, and laminated curved glass such as windshields.
Metals	aluminum beverage		Cans and bi metal cans
	aluminum foil/containers		Food containers, trays, pie tins, and foil
	other aluminum		Aluminum products such as window frames and cookware.
	food and beverage		Tin and steel food, pet food, and other containers, including bi-metal cans mostly of steel. Excluding aluminum
	other ferrous metals		Magnet will adhere to, ferrous and alloyed ferrous scrap metals
	other non-ferrous scrap		Non-ferrous metal scrap such a brass, copper, or other non-magnetic metal
	empty paint and aerosol cans		Empty, metal paint and aerosol cans, including metal lids
	empty propane and other tanks		Metal tanks used for storage and distribution of propane and other compressed fuels
	composite/ other metals		Motors, insulated wire, appliances, and other products or parts containing a mixture of metals, or metals and other material
Organic	yard waste		
	Food		Food preparation wastes, food scraps, spoiled food
	Disposable Diapers		Diapers made form a combination of fibers, synthetic and/or natural, and made for the purpose of single use.
	Animal By-products		Animal carcasses not resulting from food storage or preparation, animal wastes, and kitty litter.
	Composite/ other organic		Combustible materials including wax, bar soap, vacuum cleaner bag contents, leather, briquettes, and fireplace, burn barrel, and fire-pit ash, and other organic material not classified elsewhere.

Other Products	Tires		Vehicle tires of all types. Inner tubes are put into the rubber category.
	Rubber		Finished products and scrap materials made of natural and synthetic rubber, such as bath mats, inner tubes, rubber hoses, and foam rubber.
	Textiles and leather		Rag stock fabric materials and clothing including natural and synthetic textiles such as cotton, wool, silk, woven nylon, rayon, and polyester.
	Apparel		shoes, tennis shoes, purses, and other composite accessories
	Electrical and Household Appliances		toasters, stereos, other small appliances and electronic equipment (non-refrigerant)
	Computer Related Electronics		
	Personal Portable Products		Cell phones, chargers, camcorders, gaming devices, cameras, and etc.
Bulky Items	Carpet/ Upholstery		General category of flooring applications and non-rag stock textiles consisting of various natural or synthetic fibers bonded to some type of backing material. Also includes non-rag stock grade textiles such as heavy linens and draperies.
	Furniture		mixed material furniture such as upholstered chair
	Mattresses		
C&D	Clean Wood		2 x 4's and 2 x 6's and sheets of plywood, strand board, and particleboard (processed wood)
	Gypsum		
	Fiberglass Insulation		
	Rock/ concrete/ bricks		
	Asphaltic Roofing		
	Ceramics		
	Composite/ other debris		
PVC			

HW	Automotive Products/ Fluids		Oil filter and motor oil/diesel oil
	Paints and Solvent		
	Pesticides, Herbicides, Fungicides		
	Household cleaners		
	Lead Acid Batteries		
	Other Batteries		
	Other HHM		
	Mercury Containing Products		Barometers, thermostat switches, thermometers, car switches, blood pressure cuffs
	Cathode Ray Tubes		Large monitors

F.2.2. *Sampling*

For the phase I waste sort, loads were pre-selected based on the source of the waste. Loads were selected from different areas of campus including dining, Shands Health Care Center, and housing sources. Once the truck was selected, the waste was dumped on the tipping floor of the transfer station. Here supervisors visually assessed the waste and noted observations. Then the waste was mixed and a sample consisting of 200 to 300 pounds was obtained. This sample was then transferred to the sorting area.

F.2.3. *Sorting*

Presorting

Sorters hired to sort and categorize the waste samples were not allowed to work with an unexamined sample of solid waste. The Site Supervisor or Assistant Supervisor presorted the waste sample, looking for hazardous or infectious waste before it was shoveled onto the sort table. Once the load was dumped on the table, the Site and Assistant Supervisors walked around the load to ensure that no red bag waste was visible, and no chemicals had been improperly disposed of. Sorters stayed near the sort table and carefully sorted the waste that was placed on the sorting table.

Sorting MSW

Prior to initiating the sorting event, the Site Supervisor provided each sorter with a list of the various material categories and their definitions. The Site Supervisor reviewed the materials to be sorted and addressed any questions about the various categories. Sorting and categorizing waste required that it be picked up with the hands. To avoid being cut or receiving a puncture wound, items were picked up gingerly from the surface of the waste on the sorting table. Moving the waste to the labeled containers used for categorizing and weighing the garbage was done with care. Sorters stationed themselves at a single position near a table and sort for the family of materials identified on the bins nearest their location.

Sorters were trained to try grabbing handfuls of like. Materials in other categories were passed to fellow workers nearer those bins. Throwing or tossing the garbage was not allowed. Sorters were advised to continue to look for hazardous items that could be in the waste, with special attention to the potential presence of sharps.

F.2.4. *Data recording method*

Before any sorting commenced, the sample was weighed so as to compare with the total weight of all of the components. Once the waste was sorted into all component categories, volunteers brought the bins to the supervisor for weighing and volume assessment. First the scale was tared with the weight of the bin. Then the weight of each component was recorded on the sort sheet presented in table F.2.4. Volumes were assessed by estimating how full the bin of known volume was. Observations were also noted as well as the date, time, truck driver, and any other information that was pertinent to distinguishing loads.

Table F.2.4 Phase I Data Collection Form

Date:	Newspaper				yard waste				Tires			
Time:	OCC				Food				Rubber			
Hauler:	High Grade				Animal By-products				Textiles & leather			
Truck #:	Mixed Recyclable				Composite/ o organic				Apparel			
Driver:	junk mail				Total	0.00	0		Electrical Appliances			
Truck Type:	Composite				Disposable Diapers	0.00			Comp Related Elect			
Truck Vol:	polycoated				aluminum drink cont				Portable Elect			
Source:	metal coated				aluminum foil/cont				Total	0.00	0	
Collection Type: SH COM	aseptic				other aluminum				Auto Products/Fluids			
Substream: RES COM INST	Compostable/Soiled				food and beverage				Paints & Solvent			
Load Wt (lb):	Boxboard				other ferrous metals				Pesticides, Herbicides, Fungicides			
Sample Wt (lb):	Miscellaneous				other non-ferrous scrap				Household Cleaners			
Start Time:	Other				empty paint & aerosol				Lead Acid Batts			
End Time:	Total	0.00		0	empty propane & o. tar				Other Batteries			
Ticket:	#1 PET bottles				composite/o. metals				Other HHW			
General Observations:	Clear				Total	0.00	0		Hg Containing Products			
	Colored				Clear				Cathode Ray Tubes			
	#2 HDPE				Blue				Total	0.00	0	
	Clear				Brown				Carpet/ Upholst			
	Colored				Green				Furniture			
	#3-#7				Flat				Mattresses			
	Other rigid plastic				composite/o mixed cullet				Total	0.00	0	
	#2, 4, and 5				Total	0.00	0					
	#1, 3, 6, and 7				Clean Wood							
	nonfood EPS				Gypsum							
	food service				Fiberglass Insulation							
	Film				Rock/concrete/bricks							
	clean shop				Asphaltic Roofing							
	other clean				Ceramics							
	other dirty				PVC							
	Plastic products				Composite/other C&D							
	Composite				Total	0.00	0					
	Other											
	Total	0.00		0								
Notes:					Material origin (specific geographic origin)?				Completed Protocol			
									<input type="checkbox"/> 1) Presort			
									a) waste scanned			
									b) waste placed on table			
					Were any out-of-the-ordinary items picked up?				<input type="checkbox"/> 2) Scan for the following items:			
									a) sharps (needles and razors)			
					Any observations within the load?				b) HHW			
									c) infectious waste			
					Low recycling community?				<input type="checkbox"/> 3) Sorting steps			
									a) gingerly pick items			
									b) avoid grabbing handfuls			
									c) sort for specific sub-categories			

F.3. DETAILED DATA SHEET RECORDINGS

This section specifies each individual sorting event in Phase I. The updated data sheets are available for viewing on the CD under “TS.Sort.Data.Phase.1.Results.Final.xlsx.”

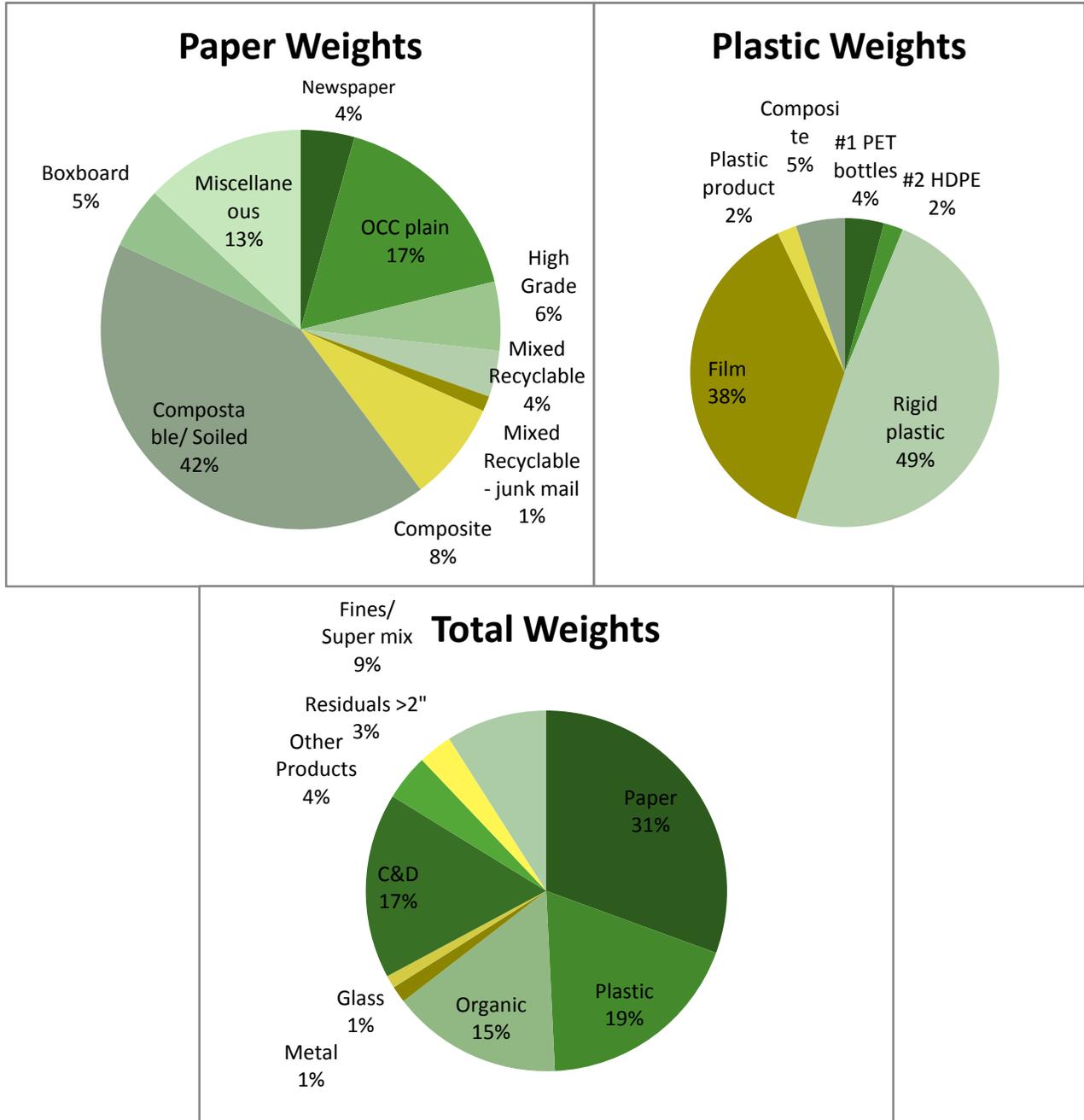
The following table is an example of what is available on the CD. A data sheet is provided for each load that was processed at the transfer station. The tables include the weights and volumes of the components recorded as well as general notes and observations.

		Weight, lb	count			Weight, lb	count			Weight, lb	count	
Date: 01/37/08, 1pm		Newspaper	2.00		Glass	Clear	0.38		Metals	aluminum drink cont.	5.50	
Driver: UF Daryl		OCC				Blue	0.00			aluminum foil/cont.	0.50	
Truck Type: Roll Off Truck		plain	6.50			Brown	0.50	1		other aluminum	1.50	
Truck #: 201		waxed	0.50			Green	0.00			food and beverage	1.50	
Truck Weight: 16000		brown paper	1.00			Flat	0.00			other ferrous meta	0.25	
Truck Volume:		High Grade				composite/other mix	0.13			other non-ferrous scrap	0.06	
Load Weight: 213.78		white	11.00			Total	1.00	1		empty paint & aerosol c	0.31	
Collection Type: SH COM		colored	0.00			yard waste	12.50			empty propane & other tank	0.00	
Substream: RES COM INST		Mixed Recyclable	2.50			grass	0.00			composite/other	0.00	
If mixed:		junk mail	0.50	2		prunings	0.00			Total	9.63	0
Other:		Composite			stumps/logs	0.00		Carpet/ Upholster	0.00			
		polycoated	2.00		Food	14.00		Furniture	0.00			
		metal coated	0.50		Animal By-product	2.00		Mattresses	0.00			
		aseptic (#3)	0.00		Composite/other	1.00		Total	0.00	0		
		Compostable/Soiled	18.00		Total	29.50	0	Tires	0.00			
		Boxboard	10.00		Disposable Diapers	0.50	1	Rubber	1.00			
		Miscellaneous	1.50					Textiles and leather	15.50			
		magazines	0.00					Apparel	0.25			
		phone books	0.00		Clean Wood	0.81		Electrical Appliances	2.00			
		glossy paper	0.00		treated	0.00		Computer Related Elec	0.00			
		Other	0.19		non-treated	0.00		monitors	0.00			
		Total	56.19	2	Pallets & Crates	0.00		Personal Portable Elec	0.00			
					Composite/	0.00		Total	18.75	0		
					Other wood	0.00		Automotive Products/Fluid	0.50			
General Observations:		#1 PET bottles			Gypsum	2.50		Paints and Solven	0.00			
UF: Broward, Jennings,		Clear	3.50		Clean Gypsum	0.00		Pesticides, Herbicides,	0.00			
Beaty Towers, Sorrority		Colored	0.38		Painted Gypsu	0.00		Fungicides	0.00			
Row, Fresh Food, Broward		#2 HDPE			Fiberglass Insulation	0.00		Household cleane	0.00			
Dinner, PK Young,		Clear	1.00		Rock/concrete/bricks	0.00		Lead Acid Batterie	0.00			
Vet School		Colored	0.25		Asphaltic Roofing	0.00		Other Batteries	0.00			
		#3-#7 (Other Plastic Bottles)	2.25	2	Ceramics	0.19		Other HHM	0.00			
		Other rigid plastic	2.50		Sand/soil/dirt/grit/fines	0.00		Mercury Containing Pro	0.00			
		#2, 4, and 5	1.00		Composite/other	5.00		Cathode Ray Tube	0.00			
		#1, 3, 6, and 7	5.00		PVC	0.00		Total	0.50	0		
		nonfood EPS	0.50		Total	8.50	0	Residuals	52.00			
		food service	5.00		Pharmaceuticals	0.375	0	Fines/ Super mix	0.00			
Notes:		Film			CFLs	0	0	Other (See Notes)	0.00			
		clean shopping	0.31		Sharps	0	0					
		other clean film	1.50									
		other dirty film	12.00									
		Plastic products	0.63									
		Composite	1.00									
		Other	0.03									
		Total	36.84	2								

F.4. SUMMARY OF RESULTS

The most updated results from Phase I of the MSW composition study are available on the CD under "TS.Sort.Data.Phase.1.Results.Final.xlsx." The following figures provide an example of the figures available in the file. These results are broken down into percentages by waste category and subcategory.

South Campus Labs Results:



G. PHASE II: MSW SORTS

The second phase of the study was composed of small scale MSW sorts completed on campus at the Physical Plant. Dumpsters were selected to obtain a representation of each campus category. An approximately 100 pound sample of waste was withdrawn from dumpsters by the supervisors. The samples were transported to the Physical Plant, where they were first examined by the supervisors, and then sorted.

In this second phase, the objective was to collect more information on the categories into which the campus was divided. The overall sort categories were: special waste construction and demolition debris, non-recyclable, and recyclable metal, paper, glass, and plastic. The non-recyclable category was selected to represent the items where there is no available, cost effective method for recycling. This includes items like composite plastic, dirty film, diapers, sanitary napkins, and broken glass, window panes, pyrex or other dishes.

G.1. SAFETY PLAN

Objective of this Plan

The personal safety and health of each staff person is a primary consideration of the Team. The prevention of occupationally-induced injuries and illnesses is a high priority during the sort. The Research Team will provide industry standard equipment, training, and physical facilities necessary for maintaining the personal safety and health of staff members. It is the responsibility of each and every person to contribute to his or her and fellow worker's health and safety by learning and exercising safe work practices and complying with all requirements of this site safety plan.

Standard Operating Procedures

This basic procedure for sorters will be to identify different materials in an MSW sample that has been placed on a tarp and to place the materials in nearby appropriately labeled containers. Before receiving the waste on the tarp it will have been examined by the Site Supervisor (or an appropriately trained assistant) for red bag medical waste, , hazardous, and infectious waste. These items are not anticipated to be found in campus waste. This is considered the pre-sort and is critical to site health and safety. After the material is sorted, the supervisor or an assistant will weigh the containers. After the containers are emptied, the next sample will be brought to the tarp and the sort will begin.

Location of Safety Equipment

The following items will be located near the sorting tarp for immediate access:

- Protective Clothing
- First Aid Kit
- Water Supply

Employees and Personal Protective Equipment

Site Supervisor

The Site Supervisor is the site safety officer and the emergency coordinator. The Site Supervisor will be overseeing the entire work area and will be responsible for presorting the waste samples for hazards before the sample is categorized by the sorters. The sorters may not approach the areas where unexamined waste samples are being stored or examined. In the event of a spill of hazardous material from a sample, the supervisor is responsible for calling the appropriate authorities. The site supervisor will be in charge of training the sorters in the sorting protocol.

Assistant Supervisor

The Assistant Supervisor will assist the Site Supervisor as necessary, as well as act on the behalf of the Site Supervisor when the Site Supervisor is unavailable. The focus of the Assistance Supervisor's role is to facilitate the sorting process for the sorting crew.

Sorters

Sorters are volunteers of the Project Team and will sort and categorize the waste being sampled. Training by the Assistant Supervisor and Site Supervisor will take place for sorters. Sorters will be advised to wear safety equipment described below.. The waste will have been presorted by the Site Supervisor or Assistant Supervisor to remove any hazardous and infectious waste, and the sorters will be limited to working only in the vicinity of the sort tarp and taking breaks in a predetermined area.

Need for Personal Protective Clothing

Municipal solid waste is not considered to be a hazardous material by definition. But, it may contain items and substances that may be encountered in close range, picked up by hand, or may have leaked from a broken container and mixed with other waste materials. These conditions could result in situations which could be hazardous to the health of the sorters conducting the study. For these reasons, it will be necessary for each sorter to wear the personal protective clothing that will be provided. This protective clothing is listed below.

- Safety glasses or goggles, or prescription safety glasses
- White Tyvek full-piece suit (optional)
- Nitrile gloves
- Leather driving gloves
- Steel-toed boots (suggested)

Presorting Protection

The waste will be presorted for hazardous and infectious waste with caution and with safety glasses, dust masks, nitrile gloves, and steel-toed boots. The Site Supervisor and Assistant Supervisor will be the only staff conducting the presorting and have received safety training.

Likelihood of Heat Stress

Because the study will be taking place inside during the late spring and summer, environmental factors are an important consideration in worker health and safety. Additionally, the personal protective clothing required for the study can aggravate situations caused by uncomfortable weather. A large Tyvek suit will be worn over layers of clothing. Frequent breaks will be encouraged in the event of extremely hot weather. A work/rest schedule will be adapted to weather conditions. Also, water coolers and beverages will be provided throughout the sort.

First Aid for Heat and Cold Stress

The following are First Aid procedures for conditions caused by hot and cold temperature extremes that may be aggravated by required personal protective equipment:

Heat Exhaustion

Caused by: Prolonged hot spell, excessive exposure, physical exertion.

Symptoms: Profuse sweating, weakness, dizziness, and sometimes heat cramps; skin is cold and pale, clammy with sweat; pulse is thready and blood pressure is low. Body temperature is normal or subnormal. Vomiting may occur. Unconsciousness is rare.

First Aid: Move to a cooler environment. Provide rest and a cool drink of water or beverage like Gatorade. Seek medical attention if the symptoms are severe.

Heat Stroke (Heat Collapse)

Caused by: Failure of the body to regulate its temperature because excessively warm weather and physical exertion has depleted it of fluids needed to perspire.

Symptoms: 1. Weakness, dizziness, nausea, headache, heat cramps, heat exhaustion, excessive sweating; skin flushed and pink.
2. Sweating stops (usually) and body temperature rises sharply. Delirium or coma is common; skin changes from pink to ashen or purplish.

First Aid: Immediate medical care is needed; heat stroke is very serious. The body must be cooled soon. Move the victim to a cooler place, remove protective clothing, and bathe in cold water. Use extreme care and frequently check ABCs (airway, breathing, and circulation) if the person is unconscious.

MSW Handling Procedures

Lifting

When shoveling garbage onto the tabletop, sorters will be reminded not to load the shovel with more weight than they can comfortably lift.

The following tips will be used when lifting:

- Maintain the three natural curves of the spine by keeping the head high, chin tucked in, and back arched.

- Bend hips and knees.
- Use the diagonal lift (one foot ahead, one foot behind) to get the weight in close and maintain a wide, balanced base of support.
- Keep abdominal muscles tight when lifting to help support the back.
- Keep the load close to the body and stand up straight. Keep head up.
- Avoid twisting while lifting. Pivot after lifting, if changing direction.
- Avoid lifting anything heavy above the shoulders.

Procedure For Handling Hazardous Wastes

The MSW composition study procedure has been designed so that sorters are not exposed to mixed MSW that has not first been screened for hazardous or infectious waste. These materials are defined and appropriate actions outlined for each:

Hazardous:

Materials that were improperly disposed of in MSW; e.g., radioactive waste, toxic chemicals, explosives. Note that these materials should not be found in campus waste. This is just a stand safety precaution.

Action: If the pre-sorters should miss a hazardous item in a waste sample and it is brought to the waste table and found, work should immediately stop and the area should be cleared. The entire waste sample will be rejected and removed and, depending upon the nature of the hazardous item, the site coordinator will see to the proper disposal action or will call the appropriate emergency agency.

Infectious Waste:

Solid waste that might be able to transfer disease or infection to another person; e.g., extremely bloody medical items, syringes, or an indiscriminately discarded biomedical bag. These biomedical bags are often red in color and they have "infectious waste" or the biomedical symbol printed on them. These materials should also be separated from the campus MSW stream. Again these items are considered as a safety precaution.

Action: If a hospital or veterinary bag or a similar medical waste is found, work will be stopped and the coordinator notified to remove the waste from the table. Single syringes are quite common in mixed MSW. If a syringe is found, the sorter finding it should announce to other workers at the table "Syringe." The sorter will then move the syringe to the appropriate container.

Emergency Contingency Plan

The Site Supervisor will be the emergency coordinator. The Assistant Supervisor will be the emergency coordinator in the event that the supervisor is not available. The Site Supervisor is responsible for understanding and complying with the facilities' emergency contingency plan and will follow site procedures.

Summary

The Site Supervisor will follow the health, safety, and training procedures specified in this plan. All sorters will be familiar with the policy and procedures specified in the plan prior to initiating the sorting events.

G.2. METHODOLOGY

The methodology of how the Phase II MSW sort commenced is detailed in this section. It begins with the waste component category identification. Next the sampling and sorting protocols are listed. Finally the data collection techniques are presented.

G.2.1. Waste Category Identification for Sorts

The following table details each category, subcategory, part, and then a description of the waste sorted for during the Phase II MSW Sorts. The overall categories sorted for are: paper, plastic, glass, metals, organics, bulky items, and C&D. Each category is denoted into subcategories, for instance examples of paper subcategories are old corrugated cardboard (OCC) and boxboard. Special wastes that could pose a risk to volunteers, as well as C&D debris were also targeted. These were not anticipated to be found in the waste stream, and their presence was noted if found.

TableG.2.1 Phase II Sort Categories

Category	Sub-Category	Description
Paper	Newspaper	
	Old Corrugated Cardboard	
	High Grade White	Note cards, printer paper, tablets with bindings
	High Grade Colored	Manila envelopes, colored note cards, printer paper and tablets with binding
	Mixed Recyclable	Junk mail, phonebooks, glossy paper, junk mails, carbonless paper, envelopes, toilet paper cores, paperback books, etc
	Boxboard	Thicker form of paper used in consumer packaging, often coated with kaolin clay to improve its printing surface
	Compostable	Paper towels, napkins, plates, cups etc.
	Composite/Other	Polycoated, metal coated, and other composites.
Plastics	#1-7 Recycled	With a pourable spout or neck up to 2 gallon in size ¹
	#1-7 Not Recycled	Aseptic, other clean film, All #3-7 that do not fit above description.
	Food Service	Numberless, plates, bowls, clamshells, salad trays, cookie tray inserts, utensils, straws. Stirrers, and condiment packaging.
	Nonfood Expanded Polystyrene	Styrofoam products such as packaging peanuts and blocks.
	Products	Plastic products, carpet, upholstery, tires, rubber, textiles, leathers, apparel, electrical appliances
	Rigid Plastic/Other	
Glass	Recyclable	Unbroken bottles and jars
Organics	Food Waste and Plants	Food waste, both pre and post consumer. Plant waste disposed by laboratories and greenhouses.
	Animal Byproducts	Animal byproducts such as bedding, waste, carcasses, etc disposed of by animal laboratories and veterinary clinics
	Yard Waste	Plant/tree clippings, branches, etc and soil.
Non-Recyclable		Dirty film, diapers, fines/residuals, window panes, glasses, etc, food wrappers, aluminum foil, etc
Products		Products that could be re-used, helmets, etc

G.2.2. Sampling

¹ This is how SP Recycling differentiates which #3-7 plastics are recyclable.

For the phase II MSW sort, loads were pre-selected based on the source of the waste. Loads were selected from different areas of campus including dining, Shands Hospital, and housing sources. Once a source was identified, supervisors targeted a dumpster in close proximity to the source. Here supervisors visually assessed the waste and noted observations. Then a 100 lb sample was removed from the dumpster and loaded into a pickup truck. The sample was then transported to the PPD recycling yard where the waste sort commenced.

G.2.3. Sorting

Presorting

Sorters hired to sort and categorize the waste samples were not allowed to work with an unexamined sample of solid waste. The Site Supervisor or Assistant Supervisor presorted the waste sample, looking for hazardous or infectious waste before it was shoveled onto the sort tarp. Once the load was dumped on the tarp, the Site and Assistant Supervisors walked around the load to ensure that no red bag waste was visible, and no chemicals had been improperly disposed of. Sorters stayed near the sort table and carefully sorted the waste that was placed on the sorting tarp.

Sorting MSW

Prior to initiating the sorting event, the Site Supervisor provided each sorter with a list of the various material categories and their definitions. The Site Supervisor reviewed the materials to be sorted and addressed any questions about the various categories. Sorting and categorizing waste required that it be picked up with the hands. To avoid being cut or receiving a puncture wound, items were picked up gingerly from the surface of the waste on the sorting table. Moving the waste to the labeled containers used for categorizing and weighing the garbage was done with care. Sorters stationed themselves at a single position near a table and sort for the family of materials identified on the bins nearest their location.

Sorters were trained to try grabbing handfuls of like. Materials in other categories were passed to fellow workers nearer those bins. Throwing or tossing the garbage was not allowed. Sorters were advised to continue to look for hazardous items that could be in the waste, with special attention to the potential presence of sharps.

G.2.4. Data recording method

Before any sorting commenced, the sample was weighed so as to compare with the total weight of all of the components. Once the waste was sorted into all component categories, volunteers brought the bins to the supervisor for weighing and volume assessment. First the scale was tared with the weight of the bin. Then the weight of each component was recorded on the sort sheet presented in the following table. Volumes were assessed by estimating how full the bin of known volume was. Observations were also noted as well as the date, time, dumpster location, and any other information that was pertinent to distinguishing and characterizing samples.

		Category/Subcategory	Weight	Vol	#	
Date:		Paper	Newspaper			
Campus Category:			OCC			
Location:			High Grade White			
			High Grade Colored			
Presence of other Bins:			Mixed Recyclable			
			Boxboard			
			Compostable/Soiled			
Time:			Total			
Start Time:		Plastic	#1-7 Recycled			
			#3-7 Not Recycled			
End Time:			Food Service			
			Nonfood EPS			
			Rigid Plastic/Other			
Sample Wt (lb):		Total				
General Observations/Notes:		Metals	Aluminum cans			
			Food and Beverage			
			Scrap Metal/Other			
			Total			
			Recyclable Glass			
			Non-recyclable			
		Organics	Food Waste			
			Yard Waste/other			
			Total			
			Products			
			C&D			
			Hazardous Waste			

G.3. SAMPLING AND SORTING EVENTS

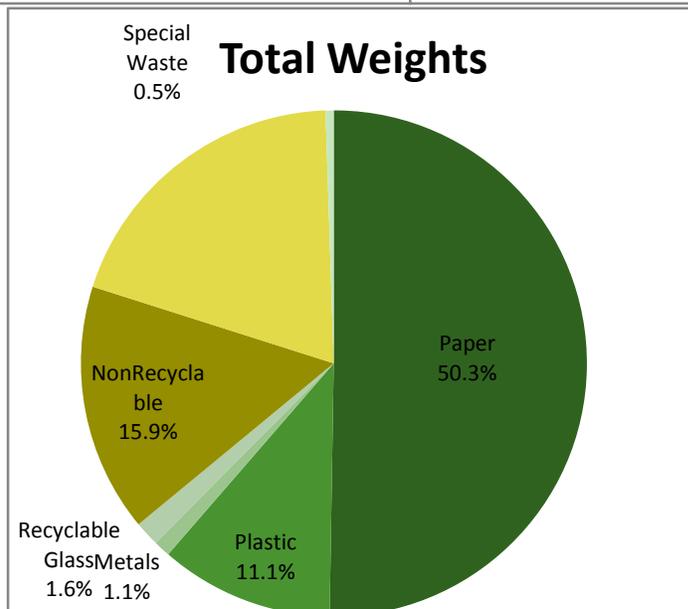
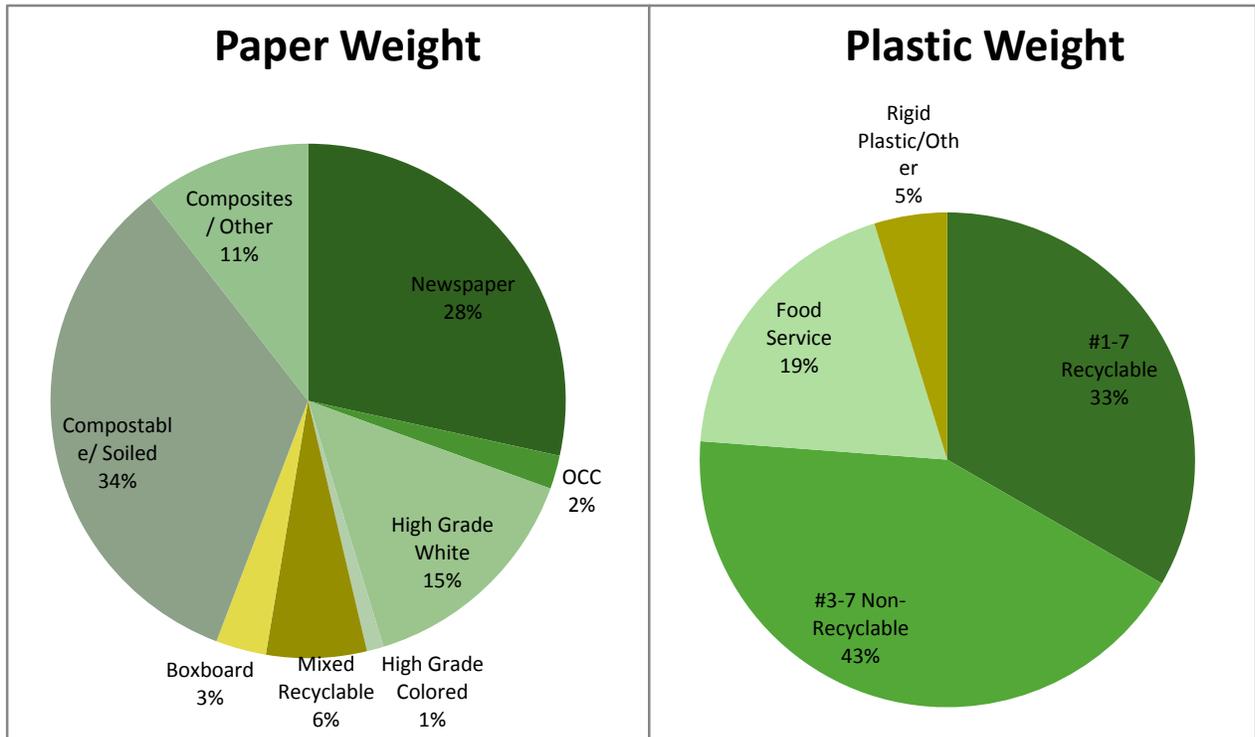
This section specifies each individual sorting event in Phase I. The detailed information is contained on the CD under "UF.Sort.Data.Phases.Commingled.2009.Final.xlsx" from sheet numbers 7 through 22, as noted on the Table of Contents. The tables list the data collection sheets for each load that was processed on campus. The table includes the weights and volumes of the components recorded as well as general notes and observations.

Date:		4/10/2009		Category/Subcategory	Weight	M %	Vol	V %	#
Campus Category:	Academic: Library		Paper	Newspaper	13.50	14.3%	12.00	7.9%	
				OCC	1.00	1.1%	2.70	1.8%	3
Location:	West Library and Smathers			High Grade White	7.00	7.4%	12.00	7.9%	
				High Grade Colored	0.50	0.5%	0.11	0.1%	30
Presence of other Bins:	1	Paper Recycling Dumpster		Mixed Recyclable	3.00	3.2%	3.00	2.0%	
	2	Waste Dumpster		Boxboard	1.50	1.6%	6.00	4.0%	
Time:	9:06 AM			Compostable/ Soiled	16.00	16.9%	45.00	29.7%	
				Composites/ Other	5.00	5.3%	12.00	7.9%	
Start Time:			Total	47.50	50.3%	92.81	61.2%	33.00	
End Time:			Plastic	#1-7 Recyclable	3.50	3.7%	18.00	11.9%	
				#3-7 Non-Recyclable	4.50	4.8%	0.90	0.6%	
Sample Wt (lb):	94.50			Food Service	2.00	2.1%	12.00	7.9%	
				Nonfood EPS		0.0%		0.0%	
General Observations/Notes:	97.5			Rigid Plastic/Other	0.50	0.5%	0.72	0.5%	3
				Total	10.50	11.1%	31.62	20.9%	3.00
# 1 Claim Shell			Metals	Aluminum cans	0.50	0.5%	4.50	3.0%	
				Food and Beverage	0.50	0.5%	0.90	0.6%	6
				Scrap Metal/ Other		0.0%		0.0%	
			Total	1.00	1.1%	5.40	3.6%	6.00	
			Recyclable Glass	1.50	1.6%	1.20	0.8%		
			NonRecyclable	15.00	15.9%	18.00	11.9%		
	Organics	Food Waste		18.50	19.6%	2.50	1.6%		
		Yard Waste/other			0.0%		0.0%		
		Total		18.50	19.6%	2.50	1.6%	0.00	
			Products		0.0%		0.0%		
			C&D		0.0%		0.0%		
			Special Waste	0.50	0.5%		0.0%		
			Total	94.50	lbs	151.53	gal	42.00	

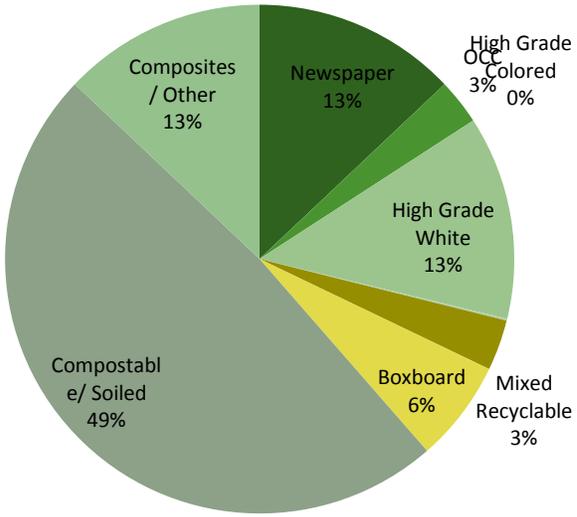
G.4. DETAILED RESULTS

Results from Phase II of the MSW composition study are provided in the file on the CD labeled "UF.Sort.Data.Phases.Commingled.2009.Final.xlsx." These results are broken down into percentages by waste category and sub category. The charts are presented by weight and volume. An example is provided below.

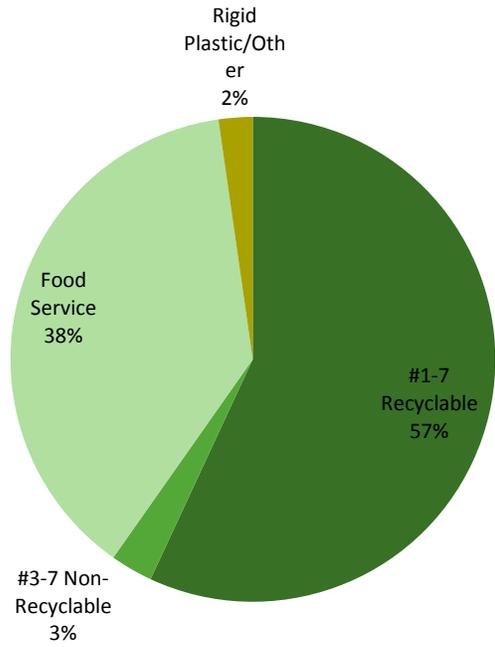
West Library and Smathers Results:



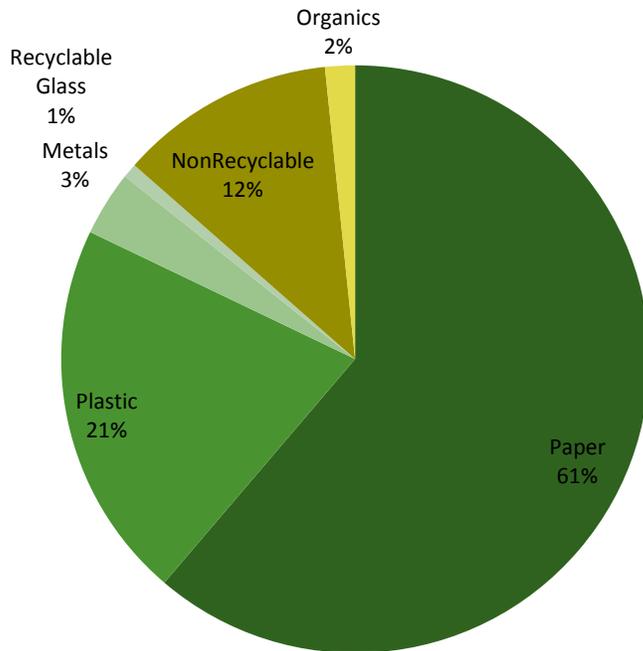
Paper Volume



Plastic Volume



Total Volumes



H. PHASE III: MSW SORTS

The third phase of the study entailed selecting dumpsters that represent the campus sources and verifying if the manual MSW sorts completed during Phases I and II were representative. Visual sorts took place over a two week period, and were repeated to decrease error. The waste bags within the dumpsters were torn apart and visually assessed. If the contents of the dumpster were within the 95% confidence interval of the manual sorts, then the category was approved.

H.1. METHODOLOGY

H.1.1. Waste Category Identification for Sorts

The waste categories sorted for were the same as in Phase II MSW Sorts.

Category	Sub-Category	Description
Paper	Newspaper	
	Old Corrugated Cardboard	
	High Grade White	Note cards, printer paper, tablets with bindings
	High Grade Colored	Manila envelopes, colored note cards, printer paper and tablets with binding
	Mixed Recyclable	Junk mail, phonebooks, glossy paper, junk mails, carbonless paper, envelopes, toilet paper cores, paperback books, etc
	Boxboard	Thicker form of paper used in consumer packaging, often coated with kaolin clay to improve its printing surface
	Compostable	Paper towels, napkins, plates, cups etc.
	Composite/Other	Polycoated, metal coated, and other composites.
Plastics	#1-7 Recycled	With a pourable spout or neck up to 2 gallon in size ²
	#1-7 Not Recycled	Aseptic, other clean film, All #3-7 that do not fit above description.
	Food Service	Numberless, plates, bowls, clamshells, salad trays, cookie tray inserts, utensils, straws. Stirrers, and condiment packaging.
	Nonfood Expanded Polystyrene	Styrofoam products such as packaging peanuts and blocks.
	Products	Plastic products, carpet, upholstery, tires, rubber, textiles, leathers, apparel, electrical appliances
	Rigid Plastic/Other	
Glass	Recyclable	Unbroken bottles and jars
Organics	Food Waste and Plants	Food waste, both pre and post consumer. Plant waste disposed by laboratories and greenhouses.
	Animal Byproducts	Animal byproducts such as bedding, waste, carcasses, etc disposed of by animal laboratories and veterinary clinics
	Yard Waste	Plant/tree clippings, branches, etc and soil.
Non-Recyclable		Dirty film, diapers, fines/residuals, window panes, glasses, etc, food wrappers, aluminum foil, etc
Products		Products that could be re-used, helmets, etc

² This is how SP Recycling differentiates which #3-7 plastics are recyclable.

H.1.2. *Sampling*

Dumpsters were selected that represented each source and sub-source. For instance, a different sorority house was sampled for the Greek Housing sub-source, than was sampled initially. The waste composition was compared to the percents determined after averaging the fraternity and sorority waste sampled during the previous phases. Two sources of waste, Animal Laboratory and Miscellaneous, were not sampled during the manual sorts and were only investigated through visual inspection.

H.1.3. *Sorting*

Waste was removed from dumpsters and dispersed on a tarp by supervisors. Approximately five to ten bags of waste were examined at each site. Supervisors visually assessed the contents of the bags and compared to the data available.

H.1.4. *Data recording method*

The average data determined from the Phase I and II cumulative results were taken to each site and the waste composition of each dumpster was compared to the appropriate source. If the approximations were within 5%, the averages were confirmed.

For the two sources, Animal Laboratory and Miscellaneous, which were not manually sorted, the approximate percents each waste category contributed to the sampled load were recorded. This was compared to existing data to determine if another source was representative.

H.2. SAMPLING AND SORTING EVENTS

Sampling and sorting events were completed by supervisors over a period of two weeks.

H.3. SAFETY PLAN

Supervisors took the appropriate safety precautions outlined for the previous phases.

I. COMPILED RESULTS

Example of the compiled results of Phase I and II are present in this section and the complete data is available in “UF.Sort.Data.Phases.Commingled.2009.Final.xlsx” Excel sheets one through twenty-two. The Phase I data was put into the Phase II format for compiling and comparison. This section also shows the results weighted by campus source .

The summary data sheets are available in this section, with the most updated version available in “UF.Sort.Data.Phases.Commingled.2009.Final.xlsx” on data sheet 23, as noted by the file’s Table of Contents.

Table I.A Phase I dorms sort sheet in phase II format

Date:	1/28/2009	Category/Subcategory	Weight	M %	Vol	V %	#	
Campus Category:	Housing, Dining, Academic	Paper	Newspaper	2.00	1.0%		0.0%	
			OCC	8.00	3.9%		0.0%	
Location:	Broward, Jennings, Beaty Towers, Sorrowity Row, Fresh Food, Broward Dinner, PK Young, Vet School		High Grade White	11.00	5.4%		0.0%	
			High Grade Colored	0.00	0.0%		0.0%	
Presence of other Bins:	- Paper Recycling Dumpster - Waste Dumpster		Mixed Recyclable	4.50	2.2%		0.0%	
			Boxboard	10.00	4.9%		0.0%	
			Compostable/ Soiled	18.00	8.8%		0.0%	
Time:	1:00 PM		Composites/ Other	2.69	1.3%		0.0%	
		Total	56.19	27.4%		0.0%	0	
Start Time:		Plastic	#1-7 Recyclable	7.69	3.7%		0.0%	
			#3-7 Non-Recyclable	7.50	3.7%		0.0%	
Food Service	5.00		2.4%		0.0%			
Nonfood EPS	0.50		0.2%		0.0%			
End Time:			Rigid Plastic/Other	2.53	1.2%		0.0%	
Sample Wt (lb):	205.30	Total	23.22	11.3%		0.0%	0	
General Observations/Notes:		Metals	Aluminum cans	5.50	2.7%		0.0%	
			Food and Beverage	1.50	0.7%		0.0%	
			Scrap Metal/ Other	2.12	1.0%		0.0%	
		Total	9.12	4.4%		0.0%	0	
		Recyclable Glass		0.88	0.4%		0.0%	
		NonRecyclable		66.13	32.2%		0.0%	
		Organics	Food Waste	14.00	6.8%		0.0%	
			Yard Waste/other	15.50			0.0%	
			Total	29.50	6.8%		0.0%	0.00
		Products		19.38			0.0%	
		C&D			0.0%		0.0%	
		Special Waste		0.88	0.4%		0.0%	
		Total		205.30	lbs	0.00	gal	0.00

Sample	Location	Category	# of Waste Bins	# of Recycling Bins	Sample Weight (lbs)	Sample Vol (gal)	Category Weight of Total Load (lbs)								
							Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
1	Broward	Housing, Dining,	-	-	205.30	0.00	56.19	23.22	9.12	0.88	66.13	29.50	19.38	0.00	0.88
2	South Campus	Academic	-	-	268.00	0.00	81.00	32.50	3.50	2.50	50.5	40.50	12.00	44.00	1.50
3	Shands Compact	Medical	-	-	240.51	0.00	70.00	23.38	2.56	0.00	75.63	40.44	7.25	0.00	21.25
4	Shands Kitchen	Dining	-	-	442.82	466.08	156.63	27.00	14.06	9.00	65.63	131.5	38.00	0.00	1.00
5	Weimer	Academic: Mixed	-	-	283.02	397.62	105.44	16.51	1.75	1.38	62.63	20.00	74.75	0.56	0.00
6	Administration	Administration	-	-	212.90	347.83	100.25	22.76	5.88	5.00	44.38	32.50	1.00	0.00	1.13
7	West Library	Academic: Library	2	1	94.50	151.53	47.50	10.50	1.00	1.50	15.00	18.50	0.00	0.00	0.50
8	NEB	Academic: Mixed	1	0	139.40	218.33	54.50	11.50	4.50	3.50	10.00	55.00	0.00	0.40	0.00
9	Turlington	Academic: Mixed	1	1	107.50	211.25	54.00	10.00	2.50	4.00	14.00	23.00	0.00	0.00	0.00
10	Criser	Administration	1	1	54.30	136.25	30.30	6.00	2.00	1.50	7.00	7.50	0.00	0.00	0.00
11	Gator Dining	Dining	1	1	114.50	108.94	17.50	3.50	4.00	0.00	17.50	72.00	0.00	0.00	0.00
12	Keys	Housing: Dorm	0	0	96.50	201.46	24.50	9.00	1.50	3.00	17.00	41.50	0.00	0.00	0.00
13	HUB	Dining	0	0	76.03	121.48	27.00	3.50	0.03	0.00	12.50	33.00	0.00	0.00	0.00

14	Thomas	Housing: Dorm	0	0	143.61	251.25	45.50	5.00	2.61	0.00	23.00	67.50	0.00	0.00	0.00
15	Broward Dinning	Dining	0	0	96.00	85.01	14.50	2.00	0.00	0.00	13.00	66.50	0.00	0.00	0.00
16	Chemistry	Academic: Mixed	1	1	97.33	238.94	49.80	10.50	1.13	1.00	9.50	25.00	0.00	0.00	0.40
17	Fraternity ()	Housing: Greek	0	0	99.50	169.11	14.00	8.50	5.00	20.00	17.00	31.00	3.50	0.00	0.50
18	Sorority (ΔΦΕ)	Housing: Greek	0	0	100.50	166.70	17.50	6.50	0.50	2.50	7.50	65.50	0.00	0.00	0.50
19	Southwest Recreation Center	Recreational	1	0	117.76	178.46	54.40	6.20	0.11	0.40	15.60	20.20	20.20	0.00	0.05
20	Plant Science Facility	Academic: Biological Lab	1	1	105.20	186.90	17.60	13.00	0.00	0.00	10.40	49.20	14.40	0.00	0.60
21	Corry Village	Housing: Family	0	0	105.51	220.97	30.40	5.80	2.31	1.00	39.00	26.20	0.80	0.00	0.00
22	Florida Museum	Recreation	0	0	132.57	192.56	31.20	2.00	1.37	0.00	4.40	92.80	0.80	0.00	0.00
Total					3333.25	4050.67	1099.71	258.87	65.43	57.16	597.30	988.84	192.08	44.96	28.31
avg/% of total					151.51	184.12	49.99	11.77	2.97	2.60	27.15	44.95	8.73	2.04	1.29
std dev					90.59	117.12	35.51	8.72	3.33	4.45	22.86	28.77	17.67	9.37	4.48
std error					19.31	24.97	7.57	1.86	0.71	0.95	4.87	6.13	3.77	2.00	0.96
variance					8206.2327	13716.82374	1260.64	76.114	11.0975	19.837	522.51938	827.533	312.219	87.8377	20.0815
On Campus Sorts					1680.71	2839.14									
On Campus Sort %					--	--									

Sample	Location	Category	Category Volume of Total Load (lbs)								
			Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
1	Broward	Housing, Dining,	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	South Campus	Academic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Shands Compact	Medical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Shands Kitchen	Dining	232.13	63.50	6.20	1.25	110.00	35.00	18.00	0.00	0.00
5	Weimer	Academic: Mixed	180.34	80.25	5.00	0.00	98.80	12.50	19.53	1.20	0.00
6	Administration	Administration	109.33	108.00	9.17	1.67	108.00	11.67	0.00	0.00	0.00
7	West Library	Academic: Library	92.81	31.62	5.40	1.20	18.00	2.50	0.00	0.00	0.00
8	NEB	Academic: Mixed	119.70	54.72	9.75	1.20	18.00	14.60	0.00	0.36	0.00
9	Turlington	Academic: Mixed	102.80	61.47	6.75	0.90	36.00	3.33	0.00	0.00	0.00
10	Criser	Administration	70.65	36.00	5.40	1.20	18.00	5.00	0.00	0.00	0.00
11	Gator Dining	Dining	46.17	15.51	6.26	0.00	18.00	23.00	0.00	0.00	0.00
12	Keys	Housing: Dorm	105.75	33.30	2.51	2.57	36.00	21.33	0.00	0.00	0.00
13	HUB	Dining	63.63	36.00	0.52	0.00	18.00	3.33	0.00	0.00	0.00

14	Thomas	Housing: Dorm	120.75	42.75	6.75	0.00	54.00	27.00	0.00	0.00	0.00
15	Broward Dinning	Dining	38.61	5.40	0.00	0.00	27.00	14.00	0.00	0.00	0.00
16	Chemist ry	Academic: Mixed	126.67	52.97	5.26	0.26	21.60	14.00	18.00	0.00	0.18
17	Fraterni ty ()	Housing: Greek	52.95	36.13	18.45	9.00	36.00	9.50	6.00	0.00	1.08
18	Sorority (ΔΦΕ)	Housing: Greek	49.24	49.50	0.36	1.80	18.00	46.00	0.00	0.00	1.80
19	Southw est Recreat ion Center	Recreational	81.05	34.16	7.25	0.00	18.00	11.00	27.00	0.00	0.00
20	Plant Science Facility	Academic: Biological Lab	49.80	67.50	0.00	0.00	18.00	15.60	36.00	0.00	0.00
21	Corry Village	Housing: Family	96.72	54.00	5.85	0.00	36.00	27.50	0.90	0.00	0.00
22	Florida Museu	Recreation	70.56	21.60	6.80	0.00	18.00	72.00	3.60	0.00	0.00
Total			1809.67	884.38	107.67	21.05	725.40	368.87	129.03	1.56	3.06
avg/% of total			82.26	40.20	4.89	0.96	32.97	16.77	5.86	0.07	0.14
std dev			56.10	27.45	4.43	1.95	32.23	17.20	10.57	0.26	0.44
std error			11.96	5.85	0.94	0.42	6.87	3.67	2.25	0.06	0.09
variance			3147.39	753.472	19.617	3.82175	1038.98	295.967	111.776	0.06948	0.1911
On Campus Sorts											
On Campus Sort %											

Sample	Location	Category	Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
1	Broward	Housing, Dining,	27.4%	11.3%	4.4%	0.4%	32.2%	14.4%	9.4%	0.0%	0.4%
2	South Campus	Academic	30.2%	12.1%	1.3%	0.9%	18.8%	15.1%	4.5%	16.4%	0.6%
3	Shands Compact	Medical	29.1%	9.7%	1.1%	0.0%	31.4%	16.8%	3.0%	0.0%	8.8%
4	Shands Kitchen	Dining	35.4%	6.1%	3.2%	2.0%	14.8%	29.7%	8.6%	0.0%	0.2%
5	Weimer	Academic: Mixed	37.3%	5.8%	0.6%	0.5%	22.1%	7.1%	26.4%	0.2%	0.0%
6	Administration	Administration	47.1%	10.7%	2.8%	2.3%	20.8%	15.3%	0.5%	0.0%	0.5%
7	West Library	Academic: Library	50.3%	11.1%	1.1%	1.6%	15.9%	19.6%	0.0%	0.0%	0.5%
8	NEB	Academic: Mixed	39.1%	8.2%	3.2%	2.5%	7.2%	39.5%	0.0%	0.3%	0.0%
9	Turlington	Academic: Mixed	50.2%	9.3%	2.3%	3.7%	13.0%	21.4%	0.0%	0.0%	0.0%
10	Criser	Administration	55.8%	11.0%	3.7%	2.8%	12.9%	13.8%	0.0%	0.0%	0.0%
11	Gator Dining	Dining	15.3%	3.1%	3.5%	0.0%	15.3%	62.9%	0.0%	0.0%	0.0%
12	Keys	Housing: Dorm	25.4%	9.3%	1.6%	3.1%	17.6%	43.0%	0.0%	0.0%	0.0%
13	HUB	Dining	35.5%	4.6%	0.0%	0.0%	16.4%	43.4%	0.0%	0.0%	0.0%

14	Thomas	Housing: Dorm	31.7%	3.5%	1.8%	0.0%	16.0%	47.0%	0.0%	0.0%	0.0%
15	Broward Dinning	Dining	15.1%	2.1%	0.0%	0.0%	13.5%	69.3%	69.3%	0.0%	0.0%
16	Chemist ry	Academic: Mixed	51.2%	10.8%	1.2%	1.0%	9.8%	25.7%	0.0%	0.0%	0.4%
17	Fraterni ty ()	Housing: Greek	14.1%	8.5%	5.0%	20.1%	17.1%	31.2%	3.5%	0.0%	0.5%
18	Sorority (ΔΦΕ)	Housing: Greek	17.4%	6.5%	0.5%	2.5%	7.5%	65.2%	0.0%	0.0%	0.5%
19	Southw est Recreati on Center	Recreational	46.2%	5.3%	0.1%	0.3%	13.2%	17.2%	17.2%	0.0%	0.0%
20	Plant Science Facility	Academic: Biological Lab	16.7%	12.4%	0.0%	0.0%	9.9%	46.8%	13.7%	0.0%	0.6%
21	Corry Village	Housing: Family	28.8%	5.5%	2.2%	0.9%	37.0%	24.8%	0.8%	0.0%	0.0%
22	Florida Museu	Recreation	23.5%	1.5%	1.0%	0.0%	3.3%	70.0%	0.6%	0.0%	0.0%
Total											
avg/% of total			32.9%	7.7%	1.8%	2.0%	16.6%	33.6%	7.2%	0.8%	0.6%
std dev			0.13	0.03	0.01	0.04	0.08	0.20	0.16	0.03	0.02
std error			0.03	0.01	0.00	0.01	0.02	0.04	0.03	0.01	0.00
variance			0.01717	0.0012	0.0002	0.0018	0.00679617	0.0391696	0.0240815	0.001222	0.0003444
On Campus Sorts											
On Campus Sort %											

			Category Mass Percent of Total Load
Sample	Location	Category	Top Contributors
1	Broward	Housing, Dining,	Nonrecyclable (31%), Paper (26%) with 32% Compostable and 20% High Grade, Organics (14%), Plastic (11%)
2	South Campus	Academic	Paper (30%) with 42% compostable, Nonrecyclable (19%), Organics (15%), Plastic (12%)
3	Shands Compact	Medical	Nonrecyclable (31%), Paper (29%), Organics (17%), Plastic (10%)
4	Shands Kitchen	Dining	Paper (35%) with 47% OCC, Organics (30%), Products (9%), Plastic (6%)
5	Weimer	Academic: Mixed	Paper (37%) with 35% Mixed Recyclable and 21% Compostable , Products (26%), Nonrecyclable (22%), Plastic (6%)
6	Administration	Administration	Paper (47%) with 50% Compostable and 21% High Grade, Nonrecyclable (21%), Organics (15%), Plastic (11%)
7	West Library	Academic: Library	Paper (50%) with 34% Compostable and 28% Newspaper, Organic (20%), Plastic (11%) with 33% Recyclable
8	NEB	Academic: Mixed	Paper (39%) with 34% Newspaper and 30% Compostable, Organic (39%), Plastic (8%) with 48% Recyclable
9	Turlington	Academic: Mixed	Paper (50%) with 42% Compostable, 21% Newspaper, and 17% High Grade, Organic (21%), Plastic (9%) with 55% Recyclable
10	Criser	Administration	Paper (56%) with 35% Compostable and 25% High Grade, Organic (14%), Plastic (11%) with 58% Recyclable
11	Gator Dining	Dining	Organic (62%), Paper (16%), Nonrecyclable (15%), Plastic (3%)
12	Keys	Housing: Dorm	Organic (39%), Paper (27%) with 35% Compostable and 21% Boxboard, Plastic (10%) with 72% Recyclable
13	HUB	Dining	Organic (43%), Paper (36%), Plastic (5%)

14	Thomas	Housing: Dorm	Organic (47%), Paper (32%), Plastic (10%) with 72% Recyclable
15	Broward Dinning	Dining	Organic (68%), Paper (15%), Plastic (2%)
16	Chemist ry	Academic: Mixed	Paper (52%) with 56% Compostable and 25% Newspaper, Organic (24%), Plastic (11%) with 38% Recyclable
17	Fraterni ty ()	Housing: Greek	Organic (31%), Glass (21%), Paper (14%), Plastic (9%)
18	Sorority (ΔΦΕ)	Housing: Greek	Organic (65%), Paper (18%), Plastic (7%)
19	Southw est Recreati on Center	Recreational	
20	Plant Science Facility	Academic: Biological Lab	
21	Corry Village	Housing: Family	
22	Florida Museu	Recreation	
Total			
avg/% of total			
std dev			
std error			
variance			
On Campus Sorts			
On Campus Sort %			

			Category Volume Percent of Total Load								
Sample	Location	Category	Paper	Plastic	Metals	Glass	Non-recyclable	Organics	Products	C&D	Special Waste
1	Broward	Housing, Dining,	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	South Campus	Academic	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	Shands Compact	Medical	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	Shands Kitchen	Dining	49.8%	13.6%	1.3%	0.3%	23.6%	7.5%	3.9%	0.0%	0.0%
5	Weimer	Academic: Mixed	45.4%	20.2%	1.3%	0.0%	24.8%	3.1%	4.9%	0.3%	0.0%
6	Administration	Administration	31.4%	31.0%	2.6%	0.5%	31.0%	3.4%	0.0%	0.0%	0.0%
7	West Library	Academic: Library	61.2%	20.9%	3.6%	0.8%	11.9%	1.6%	0.0%	0.0%	0.0%
8	NEB	Academic: Mixed	54.8%	25.1%	4.5%	0.5%	8.2%	6.7%	0.0%	0.2%	0.0%
9	Turlington	Academic: Mixed	48.7%	29.1%	3.2%	0.4%	17.0%	1.6%	0.0%	0.0%	0.0%
10	Criser	Administration	51.9%	26.4%	4.0%	0.9%	13.2%	3.7%	0.0%	0.0%	0.0%
11	Gator Dining	Dining	42.4%	14.2%	5.7%	0.0%	16.5%	21.1%	0.0%	0.0%	0.0%
12	Keys	Housing: Dorm	52.5%	16.5%	1.2%	1.3%	17.9%	10.6%	0.0%	0.0%	0.0%
13	HUB	Dining	52.4%	29.6%	0.4%	0.0%	14.8%	2.7%	0.0%	0.0%	0.0%

14	Thomas	Housing: Dorm	48.1%	17.0%	2.7%	0.0%	21.5%	10.7%	0.0%	0.0%	0.0%	
15	Broward Dinning	Dining	45.4%	6.4%	0.0%	0.0%	31.8%	16.5%	16.5%	0.0%	0.0%	
16	Chemist ry	Academic: Mixed	53.0%	22.2%	2.2%	0.1%	9.0%	5.9%	7.5%	0.0%	0.1%	
17	Fraterni ty ()	Housing: Greek	31.3%	21.4%	10.9%	5.3%	21.3%	5.6%	3.5%	0.0%	0.6%	
18	Sorority (ΔΦΕ)	Housing: Greek	29.5%	29.7%	0.2%	1.1%	10.8%	27.6%	0.0%	0.0%	1.1%	
19	Southw est Recreati on Center	Recreationa l	45.4%	19.1%	4.1%	0.0%	10.1%	6.2%	6.2%	0.0%	0.0%	
20	Plant Science Facility	Academic: Biological Lab	26.6%	36.1%	0.0%	0.0%	9.6%	8.3%	19.3%	0.0%	0.0%	
21	Corry Village	Housing: Family	43.8%	24.4%	2.6%	0.0%	16.3%	12.4%	0.4%	0.0%	0.0%	
22	Florida Museu	Recreation	36.6%	11.2%	3.5%	0.0%	9.3%	37.4%	1.9%	0.0%	0.0%	
Total												
avg/% of total			38.6%	18.8%	2.5%	0.5%	14.5%	8.8%	2.9%	0.0%	0.1%	
std dev			0.18	0.10	0.03	0.01	0.09	0.09	0.05	0.00	0.00	
std error			0.04	0.02	0.01	0.00	0.02	0.02	0.01	0.00	0.00	
variance			0.03258	0.010829	0.0007	0.00013	0.007969449	0.0090174	0.00288534	5.2E-07	6.825E-06	
On Campus Sorts												
On Campus Sort %												

			Category Mass of Total Load (lbs)												
			Paper								Plastic				
Sample	Location	Category	Newspaper	OCC	High Grade White	High Grade Colored	Recycled	Boxboard	Postable/Sealed	Composites/Other	#1-7 Recycled	#1-7 Not Recycled	Food Service	Nonfood Flexible	Rigid Plastic
1	Broward	Housing, Dining	2.00	8.00	11.00	0.00	4.50	10.00	18.00	2.69	7.69	7.50	5.00	0.50	2.53
2	South Campus	Academic	3.50	13.50	4.50	0.50	14.50	4.00	34.00	6.50	4.00	7.50	3.50	1.00	16.50
3	Shands Compact	Medical	2.50	32.50	1.00	0.06	18.25	12.00	0.00	3.69	4.38	10.00	4.00	1.50	3.50
4	Shands Kitchen	Dining	0.56	115.00	0.63	0.00	0.00	3.50	24.00	12.94	2.75	9.50	13.00	1.00	0.75
5	Weimer	Academic: Mixed	13.00	12.00	14.50	0.00	36.69	3.50	21.50	4.25	5.32	3.88	0.31	3.50	3.50
6	Administration	Administration	2.50	5.00	21.00	0.00	10.00	7.50	50.50	3.75	6.00	7.13	9.00	0.00	0.63
7	West Library	Academic: Library	13.50	1.00	7.00	0.50	3.00	1.50	16.00	5.00	3.50	4.50	2.00	0.00	0.50
8	NEB	Academic: Mixed	18.50	1.50	5.50	0.00	7.50	2.50	16.50	2.50	5.50	2.00	2.00	0.50	1.50
9	Turlington	Academic: Mixed	11.50	4.00	9.00	0.50	1.50	2.50	23.00	2.00	5.50	1.50	2.00	0.50	0.50
10	Criser	Administration	3.00	1.30	7.50	0.50	4.00	1.00	10.50	2.50	3.50	0.50	1.00	0.00	1.00
11	Gator Dining	Dining	0.50	0.50	0.00	0.00	0.50	1.00	9.50	5.50	1.00	2.00	0.50	0.00	0.00
12	Keys	Housing: Dorm	3.50	0.50	2.00	1.50	2.00	5.00	8.50	1.50	6.50	2.00	0.50	0.00	0.00
13	HUB	Dining	0.50	0.00	0.00	0.00	0.00	0.00	23.00	3.50	0.00	1.00	2.50	0.00	0.00

14	Thomas	Housing: Dorm	3.50	0.50	0.00	2.00	0.50	4.50	31.50	3.00	3.50	0.50	1.00	0.00	0.00
15	Broward Dinning	Dining	3.00	0.00	0.00	0.00	0.00	1.00	6.00	4.50	1.00	0.00	1.00	0.00	0.00
16	Chemistry	Academic: Mixed	12.50	2.00	2.00	0.50	0.50	1.00	27.80	3.50	4.00	3.00	2.50	0.50	0.50
17	Fraternity ()	Housing: Greek	1.50	1.50	1.00	0.00	0.00	4.00	5.00	1.00	4.00	2.50	0.50	0.00	1.50
18	Sorority (ΔΦΕ)	Housing: Greek	0.00	1.00	1.50	0.50	0.00	1.00	11.50	2.00	1.00	3.50	1.50	0.00	0.50
19	Southwest Recreation Center	Recreational	1.00	0.40	0.40	0.40	0.00	1.00	51.20	0.00	5.50	0.00	0.00	0.30	0.40
20	Plant Science Facility	Academic: Biological Lab	1.20	2.00	0.00	0.00	6.20	1.40	5.60	1.20	1.60	10.40	0.00	0.00	1.00
21	Corry Village	Housing: Family	6.00	3.00	0.80	0.80	3.60	2.80	12.00	1.40	2.60	1.80	1.20	0.20	0.00
22	Florida Museum	Recreation	1.40	0.40	13.00	1.40	12.80	0.40	1.00	0.80	1.00	0.60	0.00	0.40	0.00
Total			105.16	205.60	102.33	9.16	126.04	71.10	406.60	73.72	79.84	81.31	53.01	9.90	34.81
avg/% of total			3.15%	6.17%	3.07%	0.27%	3.78%	2.13%	12.20%	2.21%	2.40%	2.44%	1.59%	0.30%	1.04%
std dev			5.32	24.71	5.84	0.56	8.70	3.11	14.09	2.69	2.09	3.40	3.14	0.80	3.50
std error			1.13	5.27	1.24	0.12	1.86	0.66	3.00	0.57	0.45	0.73	0.67	0.17	0.75
variance			28.28804	610.3493	34.07014	0.319034	75.76733	9.663225	198.5206	7.258656	4.35756	11.5899	9.88362	0.635	12.2234
On Campus Sorts			81.10	19.60	49.70	8.60	42.10	30.60	258.60	39.90	49.70	35.80	18.20	2.40	7.40
On Campus Sort %			4.8%	1.2%	3.0%	0.5%	2.5%	1.8%	15.4%	2.4%	3.0%	2.1%	1.1%	0.1%	0.4%

Sample	Location	Category										
			Metals			Glass	Non-recyclable	Organics		Products	C&D	Special Waste
			Aluminum	Food and E Scrap	Met			Food Waste	Yard Waste/other			
1	Broward	Housing, Dining,	5.50	1.50	2.12	0.88	66.13	14.00	15.50	19.38	0.00	0.88
2	South Campus	Academic	1.00	0.00	2.50	2.50	50.50	18.00	22.50	12.00	44.00	1.50
3	Shands Compact	Medical	0.69	0.50	1.37	0.00	75.63	6.50	33.94	7.25	0.00	21.25
4	Shands Kitchen	Dining	0.06	0.00	14.00	9.00	65.63	131.50	0.00	38.00	0.00	1.00
5	Weimer	Academic: Mixed	1.00	0.44	0.31	1.38	62.63	12.50	7.50	74.75	0.56	0.00
6	Administration	Administration	2.50	1.00	2.38	5.00	44.38	32.50	0.00	1.00	0.00	1.13
7	West Library	Academic: Library	0.50	0.50	0.00	1.50	15.00	18.50	0.00	0.00	0.00	0.50
8	NEB	Academic: Mixed	1.00	0.50	3.00	3.50	10.00	54.00	1.00	0.00	0.40	0.00
9	Turlington	Academic: Mixed	1.00	1.50	0.00	4.00	14.00	23.00	0.00	0.00	0.00	0.00
10	Criser	Administration	1.50	0.50	0.00	1.50	7.00	7.50	0.00	0.00	0.00	0.00
11	Gator Dining	Dining	0.00	3.50	0.50	0.00	17.50	72.00	0.00	0.00	0.00	0.00
12	Keys	Housing: Dorm	0.00	1.00	0.50	3.00	17.00	41.50	0.00	0.00	0.00	0.00
13	HUB	Dining	0.03	0.00	0.00	0.00	12.50	33.00	0.00	0.00	0.00	0.00

14	Thomas	Housing: Dorm	0.11	2.50	0.00	0.00	23.00	67.50	0.00	0.00	0.00	0.00
15	Broward Dinning	Dining	0.00	0.00	0.00	0.00	13.00	66.50	0.00	0.00	0.00	0.00
16	Chemistry	Academic: Mixed	0.13	0.50	0.50	1.00	9.50	23.50	1.50	0.00	0.00	0.40
17	Fraternity ()	Housing: Greek	2.50	1.50	1.00	20.00	17.00	29.50	1.50	3.50	0.00	0.50
18	Sorority (ΔΦΕ)	Housing: Greek	0.00	0.00	0.50	2.50	7.50	65.50	0.00	0.00	0.00	0.50
19	Southwest Recreation Center	Recreational	0.11	0.00	0.00	0.40	15.60	19.60	0.60	20.80	0.00	0.05
20	Plant Science Facility	Academic: Biological Lab	0.00	0.00	0.00	0.00	10.40	45.80	3.40	14.40	0.00	0.60
21	Corry Village	Housing: Family	0.11	1.60	0.60	1.00	39.00	25.20	1.00	0.80	0.00	0.00
22	Florida Museum	Recreation	0.07	1.00	0.30	0.00	4.40	81.00	11.80	0.80	0.00	0.00
Total			17.81	18.04	29.58	57.16	597.30	888.60	100.24	192.68	44.96	28.31
avg/% of total			0.53%	0.54%	0.89%	1.71%	17.92%	26.66%	3.01%	5.78%	1.35%	0.85%
std dev			1.30	0.91	2.98	4.45	22.86	30.38	8.88	17.69	9.37	4.48
std error			0.28	0.19	0.63	0.95	4.87	6.48	1.89	3.77	2.00	0.96
variance			1.68464	0.83147	8.86001	19.837	522.519	923.023	78.8383	312.891	87.8377	20.0815
On Campus Sorts			7.06	14.60	6.90	38.40	232.40	673.60	20.80	40.30	0.40	2.55
On Campus Sort %			0.4%	0.9%	0.4%	2.3%	13.8%	40.1%	1.2%	2.4%	0.0%	0.2%

			Category Volume of Total Load (gal)														
			Paper								Plastic					Metals	
Sample	Location	Category	Newspaper	OCC	High Grade Wh	Grade Col	Col Recycle	Boxboard	Postable/S	Posites/O	#1-7 Recyc	#1-7 Not R	Food Servi	Nonfood E	Rigid Plast	Aluminum	Food and E
1	Broward	Housing, Dining,	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	South Campus	Academic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Shands Compact	Medical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Shands Kitchen	Dining	0.00	192.00	0.25	0.00	0.00	4.38	17.50	18.00	0.00	27.50	18.00	18.00	0.00	1.20	0.00
5	Weimer	Academic: Mixed	9.00	76.80	14.00	0.00	19.75	11.67	35.00	14.13	18.00	20.50	1.25	36.00	4.50	5.00	0.00
6	Administration	Administration	4.50	12.00	18.00	0.00	19.50	23.33	20.00	12.00	22.50	27.00	54.00	0.00	4.50	5.00	1.67
7	West Library	Academic: Library	12.00	2.70	12.00	0.11	3.00	6.00	45.00	12.00	18.00	0.90	12.00	0.00	0.72	4.50	0.90
8	NEB	Academic: Mixed	18.00	18.00	1.20	0.00	6.00	9.00	54.00	13.50	24.00	18.00	9.00	0.72	3.00	4.50	2.25
9	Turlington	Academic: Mixed	18.00	9.00	13.50	0.05	2.25	9.00	45.00	6.00	27.00	18.00	13.50	0.72	2.25	4.50	2.25
10	Criser	Administration	4.50	1.80	13.50	2.25	3.60	9.00	27.00	9.00	18.00	9.00	3.00	0.00	6.00	4.50	0.90
11	Gator Dining	Dining	0.63	0.36	0.00	0.00	0.18	9.00	18.00	18.00	6.00	9.00	0.51	0.00	0.00	0.00	6.00
12	Keys	Housing: Dorm	18.00	9.00	9.00	18.00	2.25	18.00	18.00	13.50	18.00	13.50	1.80	0.00	0.00	0.00	2.25
13	HUB	Dining	0.63	0.00	0.00	0.00	0.00	0.00	45.00	18.00	0.00	18.00	18.00	0.00	0.00	0.52	0.00

14	Thomas	Housing: Dorm	6.00	2.25	0.00	2.25	2.25	18.00	72.00	18.00	15.75	9.00	18.00	0.00	0.00
15	Broward Dining	Dining	2.25	0.00	0.00	0.00	0.00	0.36	18.00	18.00	1.80	0.00	3.60	0.00	0.00
16	Chemistry	Academic: Mixed	18.00	18.00	6.00	0.07	3.60	9.00	54.00	18.00	18.00	18.00	13.50	2.57	0.90
17	Fraternity (I)	Housing: Greek	0.45	12.00	4.50	0.00	0.00	18.00	12.00	6.00	18.00	13.50	0.13	0.00	4.50
18	Sorority (ΔΦΕ)	Housing: Greek	0.00	2.70	6.00	0.04	0.00	9.00	18.00	13.50	9.00	18.00	4.50	0.00	18.00
19	Southwest Recreation Center	Recreational	0.00	1.20	0.02	0.04	0.00	6.00	72.00	1.80	27.00	0.00	0.26	6.00	0.90
20	Plant Science Facility	Academic: Biological Lab	12.00	1.80	0.00	0.00	6.00	9.00	18.00	3.00	18.00	36.00	0.00	0.00	13.50
21	Corry Village	Housing: Family	6.00	18.00	0.36	0.36	9.00	18.00	36.00	9.00	18.00	18.00	18.00	0.00	0.00
22	Florida Museum	Recreation	3.60	0.36	18.00	4.50	27.00	3.60	4.50	9.00	9.00	3.60	0.00	9.00	0.00
Total			133.56	377.97	116.33	27.66	104.38	190.34	629.00	230.43	286.05	277.50	189.05	73.01	58.77
avg/% of total			3.3%	9.3%	2.9%	0.7%	2.6%	4.7%	15.5%	5.7%	7.1%	6.9%	4.7%	1.8%	1.5%
std dev			6.85	42.38	6.59	3.90	7.58	6.90	21.86	6.52	9.42	10.39	12.39	8.46	4.69
std error			1.46	9.04	1.41	0.83	1.62	1.47	4.66	1.39	2.01	2.21	2.64	1.80	1.00
variance			46.9375	1796.11	43.442	15.2259	57.4865	47.6687	477.706	42.4793	88.6787	107.928	153.539	71.5403	22.0098
On Campus Sorts			120.06	97.17	84.08	27.66	65.13	150.96	556.50	186.30	245.55	202.50	115.80	19.01	49.77
On Campus Sort %			4.2%	3.4%	3.0%	1.0%	2.3%	5.3%	19.6%	6.6%	8.6%	7.1%	4.1%	0.7%	1.8%

			al)									
			Metals					Organics				
Sample	Location	Category	Aluminum	Food and E Scrap	Met	Glass	Non-recyclabl e	Food Waste	Yard Waste/o ther	Products	C&D	Special Waste
1	Broward	Housing, Dining,	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	South Campus	Academic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Shands Compact	Medical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Shands Kitchen	Dining	1.20	0.00	5.00	1.25	110.00	35.00	0.00	18.00	0.00	0.00
5	Weimer	Academic: Mixed	5.00	0.00	0.00	0.00	98.80	3.50	9.00	19.53	1.20	0.00
6	Adminis tration	Administrati on	5.00	1.67	2.50	1.67	108.00	11.67	0.00	0.00	0.00	0.00
7	West Library	Academic: Library	4.50	0.90	0.00	1.20	18.00	2.50	0.00	0.00	0.00	0.00
8	NEB	Academic: Mixed	4.50	2.25	3.00	1.20	18.00	11.00	3.60	0.00	0.36	0.00
9	Turlingt on	Academic: Mixed	4.50	2.25	0.00	0.90	36.00	3.33	0.00	0.00	0.00	0.00
10	Criser	Administrati on	4.50	0.90	0.00	1.20	18.00	5.00	0.00	0.00	0.00	0.00
11	Gator Dining	Dining	0.00	6.00	0.26	0.00	18.00	23.00	0.00	0.00	0.00	0.00
12	Keys	Housing: Dorm	0.00	2.25	0.26	2.57	36.00	21.33	0.00	0.00	0.00	0.00
13	HUB	Dining	0.52	0.00	0.00	0.00	18.00	3.33	0.00	0.00	0.00	0.00

14	Thomas	Housing: Dorm	2.25	4.50	0.00	0.00	54.00	27.00	0.00	0.00	0.00	0.00
15	Broward Dinning	Dining	0.00	0.00	0.00	0.00	27.00	14.00	0.00	0.00	0.00	0.00
16	Chemistry	Academic: Mixed	2.60	2.57	0.09	0.26	21.60	5.00	9.00	18.00	0.00	0.18
17	Fraternity ()	Housing: Greek	14.40	2.25	1.80	9.00	36.00	5.00	4.50	6.00	0.00	1.08
18	Sorority (ΔΦΕ)	Housing: Greek	0.00	0.00	0.36	1.80	18.00	28.00	18.00	0.00	0.00	1.80
19	Southwest Recreation Center	Recreational	2.25	0.00	5.00	0.00	18.00	5.00	6.00	27.00	0.00	0.00
20	Plant Science Facility	Academic: Biological Lab	0.00	0.00	0.00	0.00	18.00	12.00	3.60	36.00	0.00	0.00
21	Corry Village	Housing: Family	2.25	3.60	0.00	0.00	36.00	23.00	4.50	0.90	0.00	0.00
22	Florida Museum	Recreation	1.80	0.00	5.00	0.00	18.00	54.00	18.00	3.60	0.00	0.00
Total			55.27	29.14	23.26	21.05	725.40	292.67	76.20	129.03	1.56	3.06
avg/% of total			1.4%	0.7%	0.6%	0.5%	17.9%	7.2%	1.9%	3.2%	0.0%	0.1%
std dev			3.28	1.72	1.81	1.95	32.23	13.82	5.56	10.57	0.26	0.44
std error			0.70	0.37	0.39	0.42	6.87	2.95	1.18	2.25	0.06	0.09
variance			10.7813	2.94656	3.29327	3.82175	1038.98	191.028	30.8805	111.776	0.06948	0.1911
On Campus Sorts			44.07	27.47	15.76	18.13	408.60	242.50	67.20	91.50	0.36	3.06
On Campus Sort %			1.6%	1.0%	0.6%	0.6%	14.4%	8.5%	2.4%	3.2%	0.0%	0.1%

J. LITERATURE REVIEW

The University of Florida, as well as Universities across the nation, has taken an aggressive step towards zero waste. The waste management and reduction programs employed at the universities have similar components, but an increasing number are integrating more unique solutions. Some take it a step further than others. These programs include: recycling, composting, source reduction, education and outreach and even adding waste reduction into their contracts and vendor agreements. Discussed in this section are proactive and innovative approaches as well as standard waste management methods utilized by various universities, such as the University of Oregon and University of Colorado at Boulder, as well as Carnegie Mellon University, Notre Dame University, University of California Davis, and Pennsylvania State University.

J.1. UNIVERSITY OF OREGON (POPULATION: 20,376)

One of the most aggressive schools tackling waste reduction is the University of Oregon (UO) with their zero waste goals. The general waste is managed in house, where they collect the waste generated on campus and transfer it to the landfill. The recycling program is separate, which can cause some problems³.

J.1.1. *Recycling:*

UO's recycling program is a single focus program that consists of several groups that fund the program and work with it. These include student groups as well as local and University run groups. It relies heavily on student involvement. The materials that can be recycled include, containers, corrugated cardboard, magazines, books and paper, as well as other items such as CDs, packaging materials, and computer related waste. There are different bins located around campus for the large volume contributors, and you can call recycling services to pick up some of the less common items such as diskettes. The school also participates in an education initiative known as Recycle Mania.

J.1.2. *Composting:*

UO composts organics from events and conferences. The compost is then sent to a local forest company to further process the material in windrows. There is a lack of funding and resources to integrate a campus wide organics composting program. There are currently no local companies that will compost or digest the organics generated daily, so UO would have to implement the technology on campus. However, UO is investigating the feasibility of establishing a campus wide composting effort.

J.1.3. *Source Reduction:*

UO has implemented many tactics for source reduction. One unique program is the use of reusable serve ware for the folk festival as well as other events. These items are washed and rented by organizations for conferences and events. UO also incorporates source reduction into some contracts

³ University of Oregon. (2008). *UO Recycling Program*. Retrieved July 8, 2009, from <http://www.uoregon.edu/~recycle/main.htm>

and vendor agreements. They encourage refillable cups and printing techniques such as half pages and double sided defaults. They also encourage paperless communication through electronic media.

J.1.4. *Education and Outreach:*

UO's recycling program has numerous opportunities for education and outreach; they even offer student intern positions in the program. Zero waste events are advertised through electronic media, and those who participate in greening the event will help advertise via T-shirts. Also, the UO utilizes student groups such as green teams to go out and teach about recycling and waste reduction. The Recycle Mania program also helps get the word out on recycling. They also have a great website that includes resources, information and involvement/volunteer opportunities.

J.1.5. *Event Recycling:*

UO has had remarkable success in making many events on campus zero waste. They do this by negotiating with vendors to either use reusable or easily compostable serve ware for food. They also collect all organics and recyclables in separate bins for processing. Events will have few or no trash receptacles, obliging patrons to use the bins labeled for recycling and composting. Also, advertising for these events is done via word of mouth and electronic means.

J.1.6. *Contracts/Vendor agreements:*

UO has built waste reduction into many of the contracts and vendor agreements through their purchasing department. For construction contracts, UO encourages recycling by requiring all contractors to report their waste management. The coffee vendors on campus give a discount for refillable cups. Also, they encourage vendors to use easily compostable or reusable serve ware.

J.2. UNIVERSITY OF COLORADO AT BOULDER (POPULATION: 26,000)

The University of Colorado (CU) also has an aggressive approach to waste reduction with an ultimate goal of zero waste. CU collects the general waste generated on campus and hauls it to a local transfer station. The recycling program is operated as a partnership between facilities management and student organizations⁴.

J.2.1. *Recycling:*

CU's recycling program targets containers, paper, corrugated cardboard, magazines, books, as well as specialty items such as CDs, toner cartridges, e-waste, diskettes, etc. They collect these items through specific bins as well as some single stream bins. They are able to take advantage of single stream recycling because they have their own intermediate processing facility where items are separated, compacted and bailed. The recyclables are then sent to a local company called eco-cycle where the items are marketed nationally. This school also participates in Recycle Mania.

⁴ University of Colorado at Boulder. (2008). *CU Environmental Center*. Retrieved July 8, 2009, from http://recycling.colorado.edu/state_and_national/index.html

J.2.2. *Composting:*

CU has been composting pre-consumer waste in dining halls for several years. There is degree of contamination, and it gets too high, the waste must be dumped. Rubber gloves are the largest component of the contamination. The organics go to dumpsters on campus where they are picked up by eco-cycle and then sent to a composting company called A1-Organics. The school then buys back some of the compost to use as a soil amendment for their landscaping.

J.2.3. *Source Reduction:*

CU implements source reduction procedures such as double sided printing defaults and giving out reusable mugs. They also encourage re-use and donation for furniture during move outs and renovations. Like many other schools they encourage communication through electronic media.

J.2.4. *Education/Outreach:*

CU's education and outreach program includes bulletins, student volunteer organizations, as well as environmental impact reports. The latter is a technique that is not seen in many other institutions. Their outreach includes literature on how to recycle and ways to get involved. They also have a user friendly website with many resources.

J.2.5. *Event Recycling:*

CU has implemented a zero waste goal for their football games as well as other campus events. They do this by providing compost and recyclable receptacles, but none for trash. They staff these events with volunteers that help aid patrons on how they can do their part. This method has resulted in up to 90% recycling.

J.2.6. *Contract/Vendor Agreements:*

CU has composed a green products guide that aids in purchasing office supplies that contain recycled components. This is an important step in assuring there are markets for recycled materials.

J.3. CARNEGIE MELLON UNIVERSITY (POPULATION: 9,000)

At Carnegie Mellon waste collection and removal is contracted out. The recycling program is administered/managed/directed on campus, by the Green Practices Committee. The committee consists of students, faculty, and staff. They also participate in Recycle Mania⁵.

J.3.1. *Recycling:*

Their recycling program targets containers, paper, cardboard, batteries, computer components, as well as other materials such as compact disks. Recyclables can be placed in specific bins located in and around buildings on campus.

⁵ Carnegie Mellon University. (n.d.). *Campus Recycling*. Retrieved July 8, 2009, from Carnegie Mellon University: <http://www.cmu.edu/greenpractices/campus-recycling/index.html>

J.3.2. *Composting:*

Carnegie Mellon currently composts yard waste. Food waste composting is still being evaluated.

J.3.3. *Source Reduction:*

Carnegie Mellon reduces waste by encouraging students, professors, and staff to limit printing and bring reusable food and beverage containers from home. They also have a service that will cut and bind a notebook for anyone that brings in scratch paper. Moreover, furniture is either reused or donated.

J.3.4. *Education/Outreach:*

Carnegie Mellon uses student organizations, bulletins, and events to educate the community about waste reduction and recycling. They also have a website that lists resources and ways to get involved.

J.3.5. *Event Recycling:*

They reuse or recycle all the wood from their spring fair booths.

J.4. NOTRE DAME UNIVERSITY (POPULATION: 11,733)

Notre Dame's general waste management is contracted out through waste management (WM). WM collects their refuse and recycling and sends it for local disposal/processing. Recycling is coordinated through the building department and the office of sustainability⁶.

J.4.1. *Recycling:*

Notre Dame's recycling program targets containers as well as paper. Recyclables can be deposited in single stream bins. This single stream is then sent to a regional recycling facility for separation.

J.4.2. *Composting:*

Currently Notre Dame is looking into composting organics, but does not currently manage any organics produced on the campus separately. All organics are disposed of.

J.4.3. *Source Reduction:*

Their source reduction techniques include green office procedures such as double sided printing defaults, and electronic communications. Collecting and selling leftover furniture during move outs also helps with reuse opportunities. The University also discourages water bottles and individually packaged foods.

⁶ University of Notra Dame. (n.d.). *Waste Reduction*. Retrieved July 8, 2009, from Office of Sustainability University of Notra Dame: <http://green.nd.edu/programs-and-initiatives/waste-management>

J.4.4. *Education/Outreach:*

Educational posters are available that display what can be recycled and how. There are also student groups and organizations that help spread the word about waste reduction. Their website is also a somewhat useful tool to find out how to get involved.

J.4.5. *Event Recycling:*

Notre Dame encourages game day recycling by having a student organization pass out recycling bags to tailgaters, and providing recycling receptacles around the stadium.

J.5. UNIVERSITY OF CALIFORNIA, DAVIS (POPULATION: 31,426)

J.5.1. *Recycling:*

UC's recycling program targets plastic, glass, and metal containers, mixed paper, cardboard, batteries, inkjet cartridges, and toner cartridges. Recyclables can be placed at collection points located around campus⁷.

J.5.2. *Composting:*

UC at Davis composts food waste, bedding, and manure. Student workers and volunteers collect the food waste from dining halls, and then transport it to the composting facility. They have also experimented with some vermi-composting where they use worms to metabolize organic waste into a product that is of higher quality than ordinary compost. They are also experimenting with a pilot scale anaerobic digester to convert organic waste to methane gas for energy.

J.5.3. *Source Reduction:*

Source Reduction is supported by employing techniques such as double sided printing defaults and encouraging reusable mugs. UC supports a materials exchange where furniture and equipment may be brought to be sold or given away.

J.5.4. *Education/Outreach:*

Education is utilized through posters and other forms of advertising that explain what and where to recycle. There are also outreach programs that students, faculty, and staff can participate in that help to promote a sustainable attitude on campus. This attitude encourages higher participation in waste reduction and recycling. UC's recycling program also has a website where information is readily available.

J.5.5. *Event Recycling:*

UC encourages zero waste events where nearly all wastes from the event are captured and diverted from the landfills. Compostable products are encouraged or reusable products to keep the

⁷ University of California, D. (n.d.). *R4 Recycling*. Retrieved September 3, 2009, from University of California, Davis: <http://r4.ucdavis.edu/>

wastes from even being produced. The university offers guides on how to plan a zero waste event, and ensures that many events are zero waste.

J.6. PENNSYLVANIA STATE UNIVERSITY (POPULATION: 77,505)

Pennsylvania State University collects and hauls its own solid waste with their staff. This waste is then sent to a disposal facility. Recyclables are also managed by campus staff. Yard wastes are sent to the campus composting center⁸.

J.6.1. Recycling:

Penn State's recycling program targets mixed office paper, newspaper, cardboard, glass and metal containers, plastic beverage containers, wooden pallets, motor oil from our garage, batteries, and fluorescent lamps. The program makes faculty, staff, and students take receptacles to a central collection point.

J.6.2. Composting:

Organic wastes are collected and taken to the campus Organics Materials Processing and Education Center. Preparation food waste and napkins are collected from dining halls, while pre-consumer and post consumer food waste is collected from the Universities two hotels and child care center.

J.6.3. Source Reduction:

The University supports a trash to treasure program where reusable items are donated or sold. The profits of this event go to the United Way charity.

J.6.4. Education/Outreach:

Penn State uses student volunteer groups to get the word out on campus and to educate on how and where to recycle. They also initiate programs to get faculty, staff, and students involved in recycling and waste reduction. The support competitions and events that promote a more sustainable attitude on campus.

J.6.5. Event Recycling:

The University encourages recycling at basketball games and during and after football tailgating. These programs are still developing and are expected to capture more in the future as participation increases.

⁸ Pennsylvania State University. (2009, April 30). *Penn State's Recycling Program*. Retrieved September 3, 2009, from Office of Physical Plant: <http://www.opp.psu.edu/about-opp/recycling>

J.7. UNIVERSITIES OF A SIMILAR POPULATION TO UF

Listed below are universities of a student population between 40,000 and 54,000 students.

- Ohio State University (53,715)
- Arizona State University (52,734)
- University of Florida (51,413)
- University of Minnesota (51,141)
- University of Central Florida (50,275)
- University of Texas at Austin (50,006)
- Texas A&M University (48,029)
- Michigan State University (46,648)
- University of South Florida (46,174)
- Pennsylvania State University (44,406)
- University of Washington (42,113)
- University of Wisconsin-Madison (42,041)
- University of Illinois at Urbana-Champaign (42,025)
- University of Michigan (41,028)
- Florida International University (40,151)