

Garbage on the Green
Public Waste Audit/Recycle Education Event
University of North Florida, 2009

A Report for the Environmental Center

By:

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Overview:

Garbage on the Green is an event organized to provide education and awareness of recycling practices on campus at UNF while performing a public waste audit. The purpose of the waste audit is to supply faculty and staff with a representative analysis of waste and recycling practices of representative buildings through the efforts of the Environmental Center and Physical Facilities. Students, faculty and staff are involved in the waste audit process to ensure campus community integration during the event.

Materials and Methods:

Waste is collected from the four representative buildings on campus consistent with previous years. Trash and recycle bags are collected from the Food Courtyard, Osprey Hall Housing, Building 42 (Academic/Administrative), and Building 51 (Academic). Twenty-four hours prior to the event all waste and recycle containers are emptied to ensure a true 24-hour waste stream is sampled. All bags are labeled according to the building and the type of container from which they are taken (trash or recycle).

Volunteers weigh each bag before cataloguing the contents and weighing each type of material inside the bag. Bag information and material weights are recorded on a *Bag Audit Form* (see attachment A) that is then entered into a database using Microsoft Excel. Bags that contain bathroom waste or are putrid are not emptied after being weighed for health and safety reasons nor are they categorized, but are still recognized in the sampling by weight. All contents from sample bags are transferred to category-labeled 60-gallon containers for final volume estimate and disposal for each type of waste (mixed paper, metal cans, etc.). Volume is estimated depending on fullness of all final bags filled with previously catalogued material. Waste and recycle is then carted to appropriate containers for disposal after the audit is completed.

The original detailed methodology of the waste audit and event is found in “*Garbage on the Green*” - *A Waste Audit Event at the University of North Florida, March 8, 2007*, by Stacy E. Wheeler. Access is made through the Environmental Center at UNF’s website, http://www.unf.edu/dept/center/dl/GOG_Report'07.pdf.

Materials:

4 tarps	11 clip boards
4 large plastic sheets for table tops	7 tongs
2 foam core signs (Volunteer Check In and Info Booth)	1 box paper towels
100 Blue garbage bags (Campus Litter Clean Up)	4 “Wash your Hands” stand up table signs
100 Tyvek Suits	2 rolls duct tape
10 boxes gloves	3 rolls clear box tape and dispenser
18 goggles	1 stapler with extra staples
40 -55 gallon drum liners	8 calculators
20 Lab aprons	4 dry erase markers
3 extension cords	2 dry erase boards
Various lengths of rope	35 pencils
14 stakes for tarps	4 easels
80 pairs of booties	6 vinyl GoG signs (4 large, 2 small)
4 packs Clorox wipes	10 wood stakes
	10 buckets
	14 GoG yard signs

Results:

One hundred and fourteen bags were sampled from all four buildings. Collectively, 753 pounds of trash and recycle were collected. Amount of litter collected by volunteers during the Campus Litter Clean Up amounted to 136 lbs. Recycle makes up majority of the waste stream by weight at 53% with food packaging the next largest portion of the waste stream at 18%. Remaining waste and recycle by volume are equal parts of the waste stream at 38% each category. Corrugated cardboard (78%) and paper (48%) show the highest rate of recovery among all categories of recycling, and glass the lowest at 14%. Of all the buildings sampled Osprey Hall had the highest rate of recovery (27%) and Business Bldg. 42 the lowest (14%).

Generated Waste by Weight

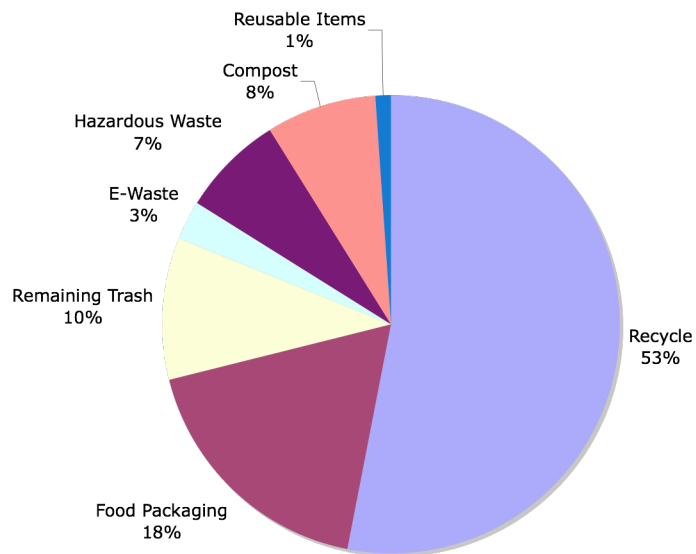


Figure 1 Recycle material by weight is the largest percentage in the waste stream yet less than half of it is actually diverted from the waste stream.

Generated Waste by Volume

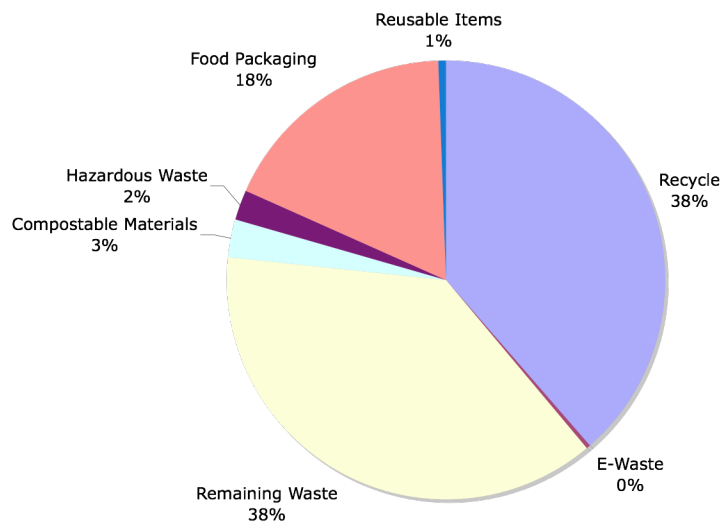


Figure 2 Volume of E-Waste is 6 gallons although shown as insignificant in the chart.

Waste Generation and Recovery by Category:

Category	Weight Generated	Weight Recovered	Recovery as a Percent of Generation
Paper (Total)	261.6	125.2	48%
White Office Paper	67.2	25.4	38%
Mixed Paper	143.2	60	42%
Corrugated Cardboard	51.2	39.8	78%
Plastics (#1 and #2)	102	21.3	21%
Metal cans	15.9	3.9	24%
Glass bottles	21.6	3.1	14%
Compostable materials	63.5	0	0%
Food packaging	135.6	8.3	6%
Reusable items	5.9	0.8	13%
E-Waste	19.9	0	0%
Hazardous waste	50.8	0	0%
Remaining trash	76.6	0	0%
Total waste stream	753.4	162.6	21.60%

Figure 3 Weight generated is the total sample post-categorization from recycle and waste containers collected in all four buildings. Weight recovered represents the recycled material from each category found in recycle containers. Contaminated recycle bags were also deemed in weight recovered.

Waste and Recycle Generated by Building:

Building	Total Weight (lbs)	Actual Reclaimed (lbs)	Percent Reclaimed	Potential to be Reclaimed
Social Sciences Bldg. 51	302.9	72.3	24%	69%
Food Courtyard	121.2	24	20%	53%
Business Bldg. 42	217.1	31.4	14%	69%
Osprey Hall Dormitory	108.6	29.2	27%	56%

Figure 4 Analysis of each building can reveal ‘problem’ buildings that are recycling less than the rest of the campus. In this instance Business Bldg. 42 has the second highest generation of waste material yet recycles the least amount of all the buildings in the sample.

Estimated Volume of Waste:

Categories	Observed # of bags	Estimated volume
White Office Paper	2 bags	120 gal
Mixed Paper	3 bags	180 gal
Corrugated Cardboard	2.5 bags	150 gal
Metal Cans	1.5 bags	90 gal
Glass Bottles	.25 bag	15 gal
Plastic Bottles	6 bags	360 gal
Food Packaging	7 bags	420 gal
Compostable Material	1 bag	60 gal
Reusable Items	.25 bag	15 gal
E-Waste	.10 bag	6 gal

Hazardous Waste	.75 bag	45 gal
Remaining Trash	15 bags	900 gal
Total Waste Stream	39.35 bags	2361 gallons

Figure 5 Volume is estimated depending on bag size after completion of the waste audit accounting for entire sample of waste.

Discussion:

Comparatively with data collected in 2007 and 2008 the waste audit has not found a significant increase in the percent of material recovered from the waste stream.

Compared with 2008 waste audit results the study did not show an increase or a decrease in the percent of recovered materials at 21%. Efforts by physical facilities to provide recognizable recycle containers and increase the frequency of containers located inside and outside buildings on campus was predicted to increase the percent of recycled material recovered from the waste stream. Also, there was an increase in the weight of the total sample collected that may be due to a larger student population or displacement of offices and classrooms with new development on campus. We feel the lack of progression with the recycling program is due to a general behavior pattern and culture in Jacksonville that does not foster peer pressure or moral responsibility to recycle often. A recycling education campaign would be a logical next step in UNF's efforts toward reducing the amount of waste going to the landfill thus reducing their carbon footprint.