



Quad Recycling Containers Implementation Project

STUDENT SUSTAINABILITY COMMITTEE

April 2015



A report by the Illinois Sustainable Technology Center, Zero Waste Program

www.istc.illinois.edu/zerowaste

INTRODUCTION

Illinois Sustainable Technology Center along with Facilities and Services approached the Student Sustainability Committee for financial assistance to add recycling containers at the Quad.

The intent of the Zero Waste Illinois team is to improve the waste process in and around the Quad. The first step was to merge the existing 40 stand-alone refuse containers with twenty new recycling bins, creating a total of 30 combined waste/recycling stations.

All containers were cleaned, painted, and color-coded to clearly indicate that one bin is for recycling and one is only for landfill-directed refuse. In addition to the expanded bin options, signage will be placed in the buildings on the Quad to launch the new standards and clarify what can be recycled. To measure the impact from this project, waste audits will be conducted before and after the proposed changes.

This project looks to change the culture of campus, placing partial responsibility for a sustainable waste stream back on the shoulders of the consumer. By taking a systems approach to waste minimization, all individuals are involved from the moment they need to dispose of material. The choice regarding which bin to place the item in engages that individual in the process. By having recyclables sorted from landfill before the material is delivered to the Waste Transfer Station, the sort line will be more efficient, enabling more volume to be recycled per hour.

Highlights of the project

- ✓ *20 new recycling bins have been added to the Quad*
- ✓ *30 combined waste/recycling stations have been created.*
- ✓ *Bins were updated to add a new flair to the Quad.*
- ✓ *New signage to inform students on the change on the Quad was put up in buildings around the Quad.*
- ✓ *Increased visibility of campus recycling efforts on social media.*

Questions about this report and project may be directed to:

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PROCESS

To execute this project, it took collaboration from many different units at the University. The Facilities & Services print shop took care of sandblasting, painting and lettering the lids. Teams from Operations, Maintenance &



Alterations moved the bins into place and its grounds staff maintains and empties the bins. The waste management department has agreed to alter its process to accommodate logistical changes at the Waste Transfer Station. And the Illinois Sustainable Technology Center coordinated the waste audits by working with volunteers to collect material from bins for sorting.

BEFORE AND AFTER WASTE AUDIT

As part of the evaluation of the project, the project team conducted a baseline and follow-up waste audit. An initial waste audit was conducted in October 2014 and a follow-up audit in April 2015 after the bins were placed.

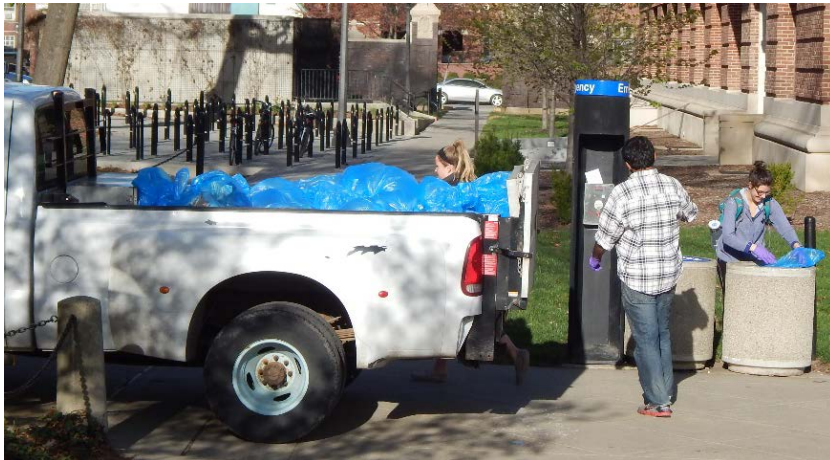
Sampling Procedure

ISTC worked with Facilities and Services to coordinate the sample collection for the pre and post waste characterization. Each bin was emptied and was lined with a trash bag for ease of collection. Samples were collected early in the morning to accommodate the

	Date	Bins	Sample
<i>Baseline</i>	8-Oct	Landfill	201.8 lb.
	10-Oct	Landfill	123.2 lb.
<i>Post Implementation</i>	15-Apr	Landfill	82.4 lb.
	15-Apr	Recycling	47.6 lb.
	16-Apr	Landfill	59.4 lb.
	16-Apr	Recycling	133.4 lb.

regular schedule of the staff collecting the refuse material and the bins were relined with a trash bag for the

next sample.



Appendix B has the individual weights of the collected samples by location at the quad.

The ASTM standard test method for determination of the composition of unprocessed municipal solid waste through manual sorting (ASTM D5231) was used as the guiding document to conduct sampling and sorting.

WASTE CHARACTERIZATION

Two waste audits were conducted; one in October of 2014 to assess the baseline and one in April right after the installation of the new bins to gauge the progress. Waste sorting was conducted at ISTC. All samples were sorted into three categories;

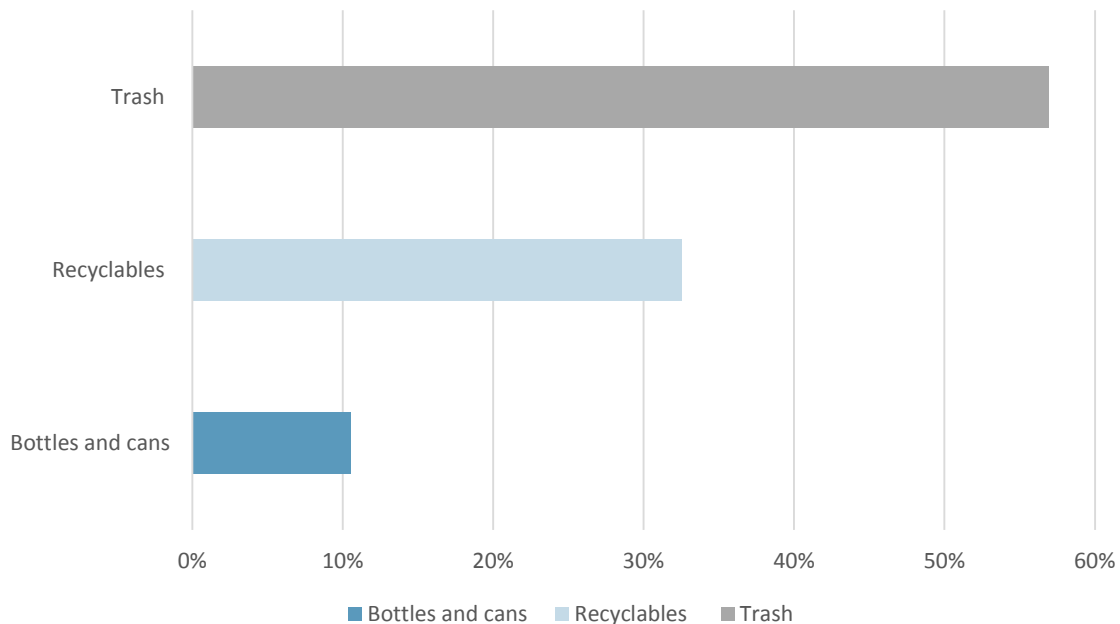
1. Bottles and cans: This category includes #1 and #2 plastic bottles and aluminum beverage cans;
2. Recycled in the community: This category includes materials recycled by Urbana's U-Cycle Program;
3. Landfill: This category include material that is neither recycled on campus or by the U-Cycle Program.

Material was separated into labeled containers with known weights and net material weights were recorded for each sample.

Figure 1 shows the observed composition material sorted for the baseline. For the baseline all the sorted samples were collected from the bins that were destined to go to the Waste Transfer Facility, meaning the material was headed to the landfill after it is lightly sorted for visually accessible bottles and cans at the Waste Transfer Facility.



Figure 1 Baseline material distribution of landfill stream



Figures 2 and 3 show the observed composition material sorted after implementation for the landfill and recycling stream. For the post implementation, the sorted samples were collected from the new bins that were labeled to go to landfill as well as recycling.

Figure 2 Post implementation material distribution of landfill stream

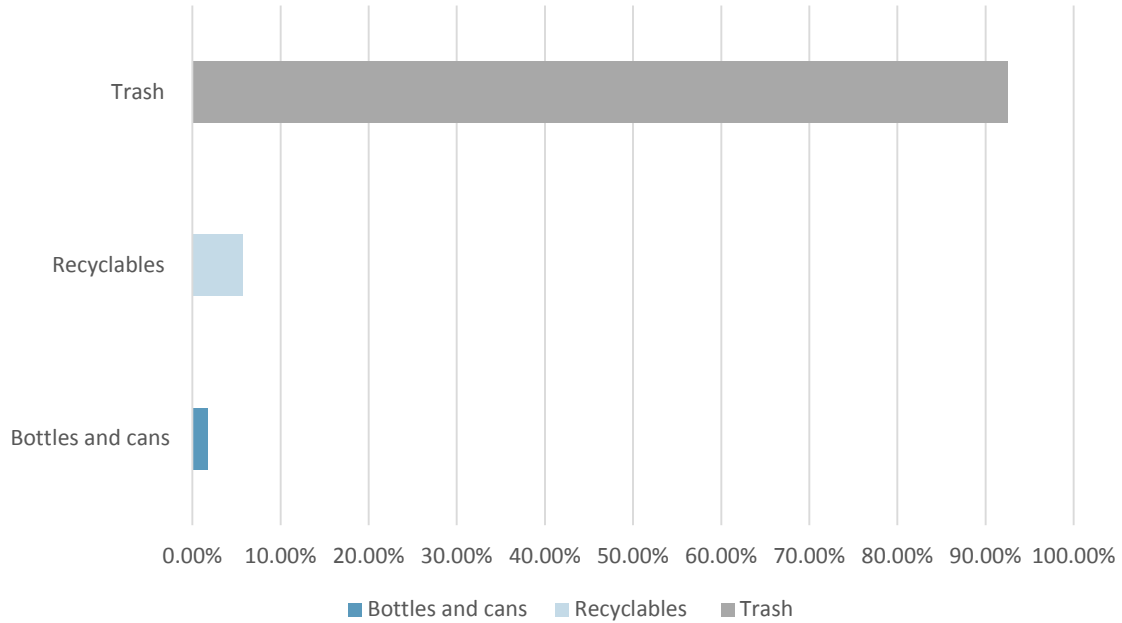
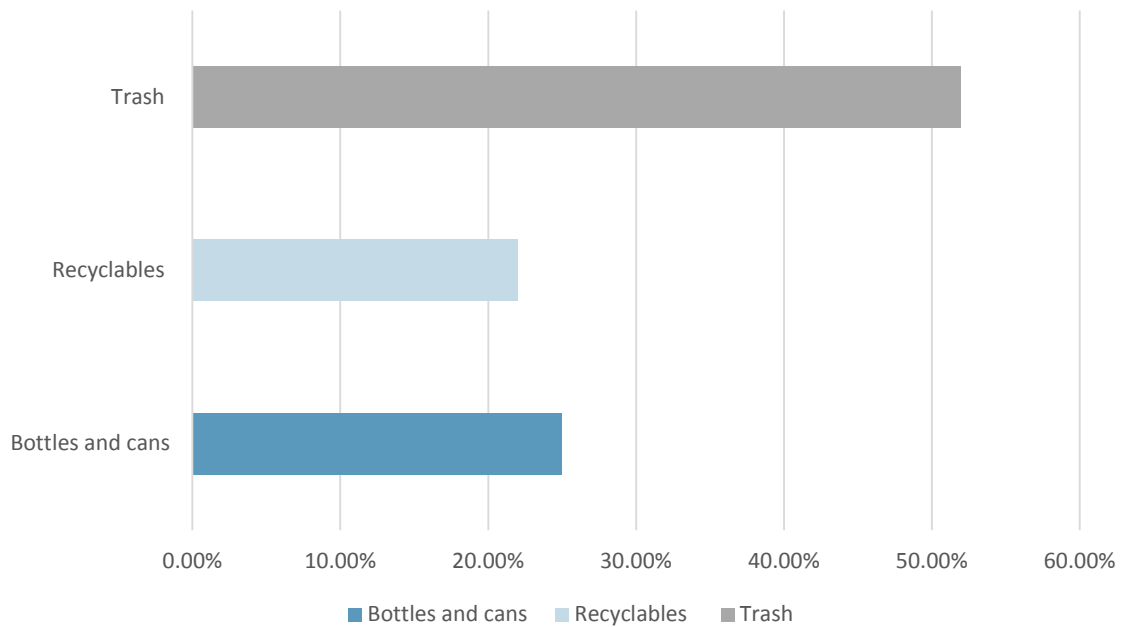


Figure 3 Post implementation material distribution of recycling stream



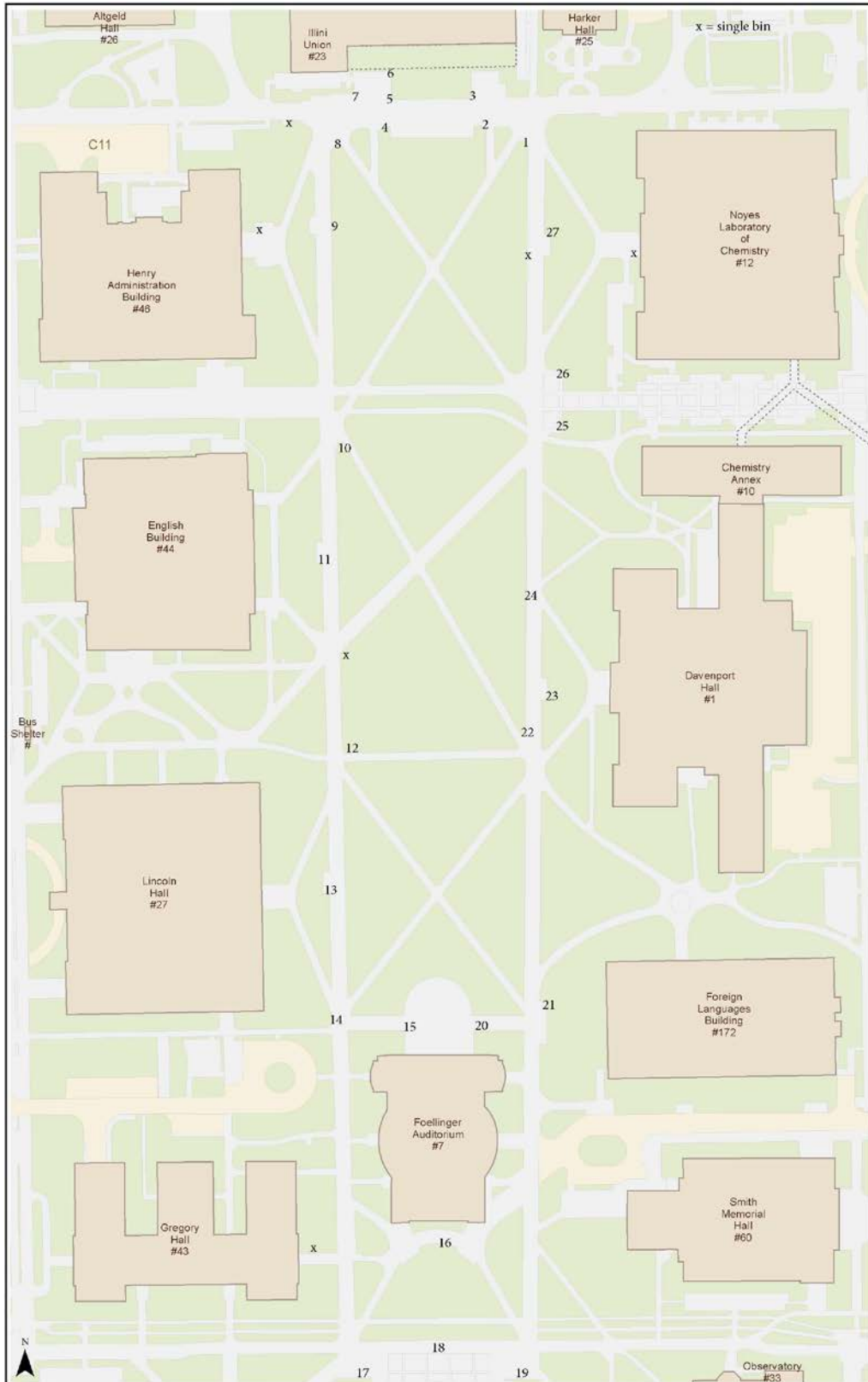
NEXT STEPS

After the audits it is clear that very few recyclables are entering the landfill stream. However the recycling stream still has a significant level of contamination. ISTC's zero waste team makes the following recommendations to improve the overall collection:

1. **Continue outreach and messaging;** at the time of the audit, the bins had been out only a week. Increased education and outreach will help reduce the contamination in the recycling stream.
2. **Collection clarity;** during the sample collection, it was apparent that a few recycling bins were being filled with general trash overflow. Improvements in the collection route would help alleviate contamination.
3. **Send only recycling stream for secondary sort;** the waste transfer station has the ability to lightly sort for bottles and cans. By sending only the source separated recycling stream from the Quad it reduces the volume of material that is needed to be sorted and helps improve the capture rate at the waste transfer station.
4. **Increase the commodities recycled on campus;** there is confusion on what is recycled on campus vs the community and most of the contamination arises from a disparity in service on campus. By increasing the recyclable commodities we help create a uniform level of service in the Champaign Urbana community and reduce perceived contamination.

APPENDIX A

Figure 4 Location of two bin stations for recycling and landfill



APPENDIX B

Table 1 Individual two bin station usage data

<i>Location ID (corresponds to locations in Appendix A)</i>	<i>Landfill bin average</i>	<i>Recycling bin average</i>
1	5.6 lb.	1.8 lb.
2	8.1 lb.	1.5 lb.
3	8.7 lb.	1.2 lb.
4	10.5 lb.	3 lb.
5	4.5 lb.	2.1 lb.
6	7.3 lb.	8.3 lb.
7	5.8 lb.	3.3 lb.
8	4.3 lb.	1.35 lb.
9	7.1 lb.	1.7 lb.
10	5.9 lb.	3.2 lb.
11	3.1 lb.	1.4 lb.
12	4.4 lb.	1.9 lb.
13	2.7 lb.	1.8 lb.
14	5 lb.	1.5 lb.
15	2.3 lb.	1.7 lb.
16	1.5 lb.	1.6 lb.
17	1.5 lb.	3.4 lb.
18	1.5 lb.	1.8 lb.
19	2 lb.	1.4 lb.
20	1.6 lb.	0.8 lb.
21	2.1 lb.	2.1 lb.
22	1.9 lb.	1.5 lb.
23	3.5 lb.	1.3 lb.
24	3.1 lb.	2 lb.
25	1.3 lb.	0.3 lb.
26	1 lb.	0.85 lb.
27	1.6 lb.	0.7 lb.
Total	107.9 lb.	53.5 lb.