

Valparaiso University Waste System Assessment

OFFICE OF SUSTAINABILITY

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Executive Summary

Valparaiso University Office of Sustainability is working with faculty, staff and students and members of the community in a *Plastic Waste Reduction Initiative* (PWRI) - to develop solutions to the plastic waste crisis on a university and local level. The Recycling & Waste Reduction District of Porter County has provided funding for students interns to review the university's plastic waste consumption and in Porter County. The first step of the multi-phase project is an inventory of plastic waste, with a focus on single use plastics, and an education/awareness component. This will be done on the university campus and at a number of participating locations in Porter County.

The Office of Sustainability performed a comprehensive waste audit of campus buildings to identify opportunities to save money, reduce waste, and to promote better waste management practices. The data that is collected for the waste audits, will give a baseline of the university's plastic consumption and areas of concern and improvement.

Plastic is made from fossil fuels and never decomposes, and globally 91% of plastic never gets recycled. Of the 9% that does get recycled, a very small percent of this is made back into new bottles or packaging, with the vast majority being turned into textiles, carpeting, etc. This means that all of the plastic ever produced is still in the environment today, with the vast majority of it sitting in landfills. This is why reducing plastic waste is of great importance. The university has a responsibility to set the example for Porter County, and integrate new practices to reduce the use of plastic materials and waste less overall.

This report details a wide range of measurements and recommendations that will help with the waste problem the community is facing.

Key Findings

- 42% of all waste (by volume) sorted was plastic
- 41% of waste was recyclable, and 59% was non-recyclable.
- 32% recycling contamination rate
- 61 waste diversion recommendations
- \$19,490.92 of potential savings
- An estimated 775 waste receptacles are managed by building services
- Lack of clear signage for waste and recycling containers

The Waste and Recycling Industry

Volatility of the Recycling Market

The recycling industry is based on economics. Bales of recycled items become commodities once they are sorted, and are sold on a global market. This is the reason why companies are constantly changing the rules on what to recycle, because the prices for recycled items are constantly fluctuating. In reality, almost everything can be recycled, but if the recycling company can't make money on it then it will be sent to landfill. Representatives from Diversified recycling told us that they used to be able to recycle Styrofoam, but the facility that was buying it from them shut down so they can't accept it anymore. During the course of the audit the recyclability of PET thermoforms (plastic cups, take out

boxes, etc.) changed because the buyer Diversified used stopped accepting these items. These constantly changing rules are one of the biggest reasons why recycling can be so confusing for consumers.

Greenhouse Gas and CO2 Emissions

Waste and recycling contribute to CO2 and greenhouse gas emissions. Solid waste contributes directly to greenhouse gas emissions through the generation of methane from the anaerobic decay of waste in landfills. Methane has 21 times the warming potential of carbon dioxide. Additionally, the trucks that pick up waste and recycling produce CO2 emissions. While these trucks do run on CNG, emissions are still produced and larger diesel fueled semi-trucks are used to transport waste from the Valparaiso transfer station to the landfill and recycling facility.

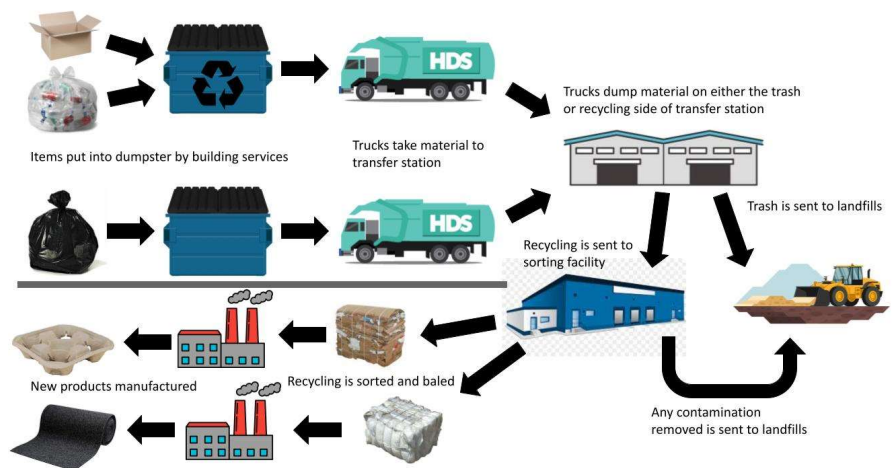
Current Campus Waste Practices and Operations

Building Services Trash and Recycling Procedure

In most buildings, there is a trash and recycling bin located next to each other in the hallways. Most classrooms don't have waste receptacles. In office spaces, staff empties their trash and recycling into the hallways or breakroom bins. Recycling is collected in a single stream; a system in which all recyclables are mixed together during disposal. All trash containers on-campus use black bags, and all recycling containers use clear bags. In academic and administration buildings, trash and recycling bins are located in hallways and breakrooms. In most residence halls, students bring their waste and recycling to a trash room on the bottom floor. Students also have access to the dumpster outside their buildings. Building services collects recycling and trash bags from each building every day, removes all bags from the containers, and puts them into a rolling cart. This cart is then taken to either dumpster or to a vehicle to be transported to the dumpsters. Clear bags are put into the recycle dumpsters and black bags are put into trash dumpsters (See Appendix A for dumpster locations).

What happens to the trash and recycling

The recycling and trash is collected by the waste hauler, Homewood Disposal, and then dumped out at the Valparaiso transfer station (owned by Homewood). The transfer station resembles a large warehouse that acts as a pit-stop for the trash and recyclables. Once the collection truck dumps the trash, it is loaded onto large semi-trucks which transport it to various landfills. Recycling follows a similar process, once it's dumped out of the collection truck any large contaminants are removed (things like pallets, couches, carpeting, and other large visual contamination). Then the recyclables are loaded onto large semi-trailers and hauled to Diversified Recycling (owned by Homewood), which is a material recovery facility located in East Hazel Crest Illinois.



Once the material arrives at Diversified, it is sorted into various categories (cardboard, metal, glass, etc.) and baled. These bales are then to various manufacturers who turn the recyclables into new products. About 30% of what comes into the facility is non-recyclable material and unable to be sold, so it is sent to landfill. The Audit Team was initially concerned that all of the recycling was being sent to landfill without being sorted because it is tied inside of plastic bags. However, the team was informed by representatives from Diversified that there's a machine known as a drum feeder at the start of the sorting line, which has a series of teeth designed to rip open plastic bags and free the material that they contain. However, if bags don't have a lot of material in them, they might pass by the teeth in the machine and the material inside wouldn't get sorted. During the audit the team found that most recycling bags were 2-15% full, so there is a high probability that the contents of these bags aren't getting sorted. This is just another reason for us to remove unnecessary containers and pull bags less often.

Battery recycling

Most buildings on campus have at least one container for battery recycling, larger buildings have multiple. Once these containers are full they are collected by building services and dropped off at Valparaiso University Police Department, and then Porter County Recycling and Waste Reduction comes and picks it up to be recycled properly.



Electronic waste and battery recycling

E-waste recycling

Electronic waste drop off sites on campus is lacking. During the audit, the audit team only found one recycling location on all of campus, located in the library. The current protocol is to contact IT with E-waste for them to pick up.

Shredded Paper

Secure-Shred (part of Opportunity Enterprises) handles document destruction for Valparaiso University. Shredded paper is not recyclable, and needs to be educated across campus.

Lab Glass Disposal

Lab glass waste is taped shut in a cardboard box and disposed of in the regular trash dumpster. This is done by the chemistry department and not Building Services.

Food Waste

Dining Services has a pulper that food waste from the kitchen is fed into, that grinds up food. This waste is then dried, so the weight and volume of the food waste is decreased.

Current Waste Diversion Programs

Plastic Film Recycling

Student Mail Services manages a program to recycling plastic film, in partnership with Trex. Students and staff can bring plastic film to the mail center in the Union to get it properly recycled. There are also several other locations collecting on campus, with collection bins in Facilities Management, Center for the Sciences, Helge center, and Arts and Sciences building. So far, Student Mail Services have earned six benches made from recycled plastic film. In order to receive each bench, they had to collect 500 pounds of recyclable film. An estimate of 4,300 pounds have been collected since the program has started in 2019.

Goodwill for Move out

Each year when students move out of residential dorms, students have the opportunity to donate used items to Goodwill. Although, this helps with some current landfill waste students generate, there is still large number of roll-off dumpsters available for students to throw away items.



Roll off dumpsters for move out waste



Goodwill bin for donating items during move out



Move out trash piled up

Earth Day and Sustainability Awareness Events

Each year Valparaiso University hosts Earth Day Events and sustainability awareness events each year. Recycling and plastic waste has been one of the topics that the Office of Sustainability always try to educate on.

Mermaid Straw reusable dinner ware

Valparaiso University environmental club, Earthtones passed out reusable silverware kits to students during the month of April in 2022, in order to encourage students to use less plastic cutlery.

University Guild Reusable Water Bottle Program and Filter Stations

The Guild is a committee that enhances the student experience. In Fall 2022, they will be supporting all 750+ freshman with stainless steel water bottles, and has also purchased several water filtration stations in campus buildings to help combat the purchasing of plastic water bottles.

Clothing Swap Events

Clothing from students was collected in bins over a period of a month. The clothes were offered for free at the event. Students were able to give the donated clothes new life.



Clothing swap event

Green Your Event

The Green Your Event program was developed to help encourage event planners and participants to implement sustainable practices into Valpo's many events. By applying green practices at these events, whether it's a small meeting or a hundred people, the Valpo Community can help reduce waste, reduce use of valuable resources, and set an example of a sustainability future on campus.



Eco-Rep Program

An Eco-rep is a peer-to-peer educational outreach opportunity for students at Valparaiso University. Eco-reps help create a culture of sustainability on campus through activism, research, and project implementation.



Green Event Certification Example

Ongoing research in academics

- Sara Dick, Professor of Biology: Training a community of microbes to degrade plastics
- Julie Peller, Professor of Chemistry: Detecting microplastics on aquatic vegetation in the Great Lakes
- Laurie Eberhardt, Does exposure to microplastic fibers change the attachment ability or behavior of zebra mussels when they attach themselves to hard substrates?
- Laurie Eberhardt, How do birds incorporate plastic debris into their nests? Does this vary by location or species? And when plastic is present in a nest, how might this impact nest success?

Eco-Pedagogy

A group of staff and faculty formed a Faculty Learning Community that chose the overall theme of plastic pollution, that created classroom activities for professors to incorporate into the curriculum.

<https://drive.google.com/drive/folders/1cAxF87eaoo8Mbalym1c5BEt7RB6EPfFK>

Take a book/leave a book program

There are many book shelves on campus where students and community members are encouraged to donate old books, or take any books for free. There are also other national programs that collect books, should be looked into because of the high demand on campus.

Waste Audit Methodology

The VU audit team wanted to understand how different types of buildings were producing waste. The assumptions were each different type of building (academic, residential halls, administration, and dining) was going to have different types of waste generated. Samples of each building type were selected to audit based on different occupancy and uses. The audit team identify and reviewed different types of material that could be found on campus, and formed the following categories to sort waste into: cardboard, mixed paper, metal, glass, food, trash, plastic bottles and recyclable cups, plastic lids, Styrofoam, plastic take out boxes, utensils and straws, flexible plastic packaging, plastic bags and film, and contaminated/mixed plastic. For a more in-depth description of the material categories, see Appendix B.

Audit Process and Practices

1. Audit Team

The waste audits were performed by Julie Whitaker- Energy and Sustainability Coordinator, Tyler Kuss, and Rachel Painter- Plastic Waste Reduction Interns.

Dr. Julie Peller, Professor of Chemistry and Kerri Marrs Barron, Executive Director of Recycling and Waste Reduction District of Porter County were also involved with planning and processes.



Picture from left to right: Julie Peller, Kerri Barron, Rachel Painter, Tyler Kuss, and Julie Whitaker

2. Audit Process

A walkthrough of the building was done prior to the waste sorting. During the walkthrough the quantity, location, and size of waste receptacles were recorded, the number of water filling stations, water fountains, vending machines, and drink vending machines. Once the walkthrough was complete, Building Services collected all waste and recycling for a set number of days (based on building occupancy and usage), and deliver it to the sorting site. The audit team then sorted the trash and recycling into the categories previously mentioned. The team calculated the volume of each category in the sample as well as the weight. Material was then recycled or landfilled appropriately and the area was prepared for the next day's sample.



Cooler with plastic items noted in the walkthrough



Containers for sorting different waste categories into

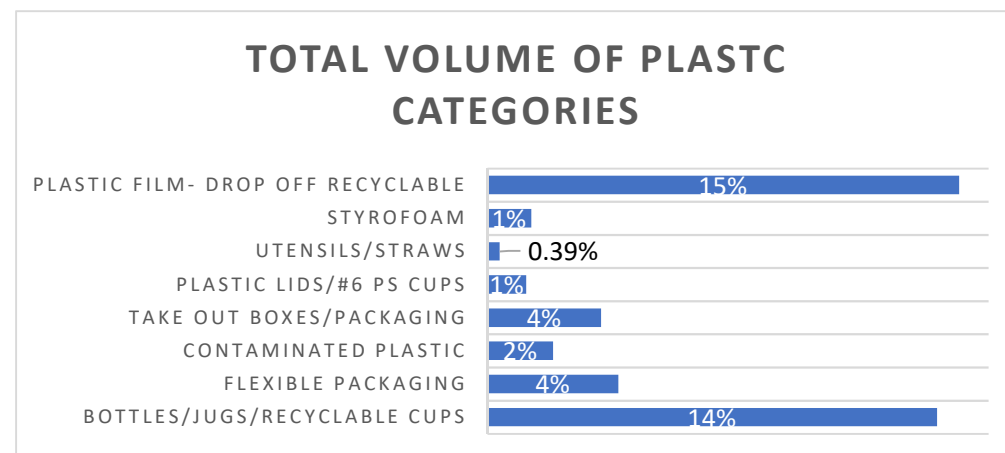
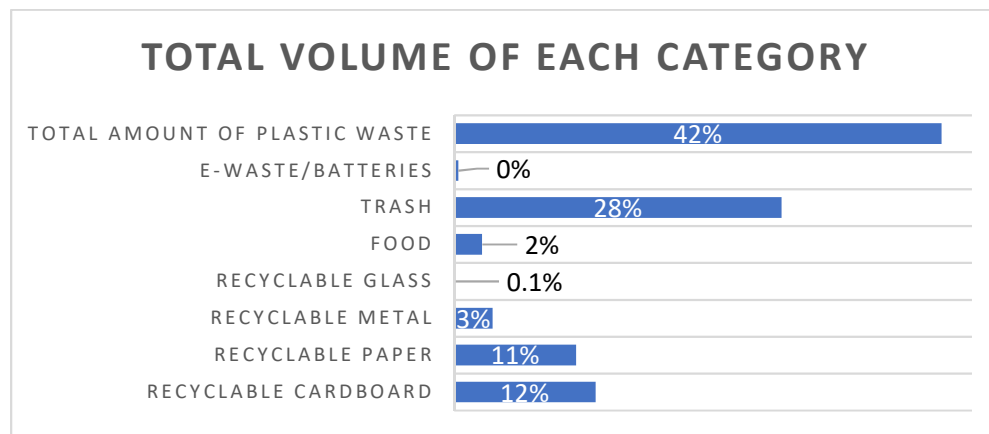
Results and Observations for Waste Sorting

For each building audited data was collected for the following criteria:

- Total volume of each category
- Total volume of each plastic category
- Recyclable vs. landfill waste (what is recyclable vs. what is trash, not what was put into trash vs. recycling containers)
- Recycling contamination rate (what percent of items in the recycling were trash)
- Missed recycling capture rate (what percent of items in the trash could have been recycled)

Campus Totals

16 total buildings were auditing during the time in the Spring of 2022. Plastic material is 42% of the waste generated during the audit. Of that plastic waste, plastic film (15%) and plastic bottles (14%) made up the majority of the plastic material. The plastic film is generated from all the plastic bags used to collected trash and recycling. The plastic film collected during this audit was recycled in the plastic film recycling program that is on campus. There were plastic bags that could not be recycled due to food contamination, those plastic bags went into the trash. The campus recycling contamination rate is 32% which is high. Recycling companies are requesting for a 10% contamination rate, or the University could be at risk for contamination fees. 28% of the waste was mishandled, and could have been recycled. That means the University has a chance to improve the recycling rate by 28%.

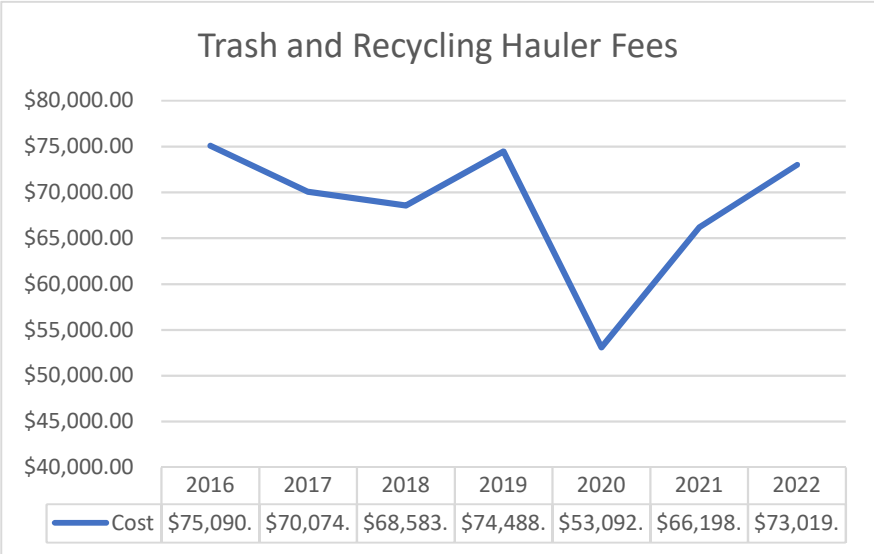


Financial Analysis

Cost per year for waste and recycling collection

VU is billed based on the size of the dumpster’s and the frequency of collection. For most locations (there are some exceptions), an 8 cubic yard container is used for trash, and an 8 cubic yard container for mixed recyclables. Trash is collected twice a week and recyclables collected once per week. The University is billed the same amount, no matter how full the dumpsters are.

The graph shows a large drop in 2020 and continues to be lower in 2021, Facilitates Management reduced the amount of pickups, due to the lack of people in buildings.



Ways to Reduce Cost

Changes that have already been put in place:

1. Building Services will now only empty trash and recycling containers when they are 50% full, and will no longer supply staff offices with bags, which will reduce the cost of plastic bags by **\$2,629** per year, as well as saving 13,145 bags each year.
2. Reduce size of dumpsters or frequency of collection in strategic locations, especially during the summer.
 - Currently campus reduces trash during the summer. Trash went from 2x a week to 1x per week. Recycling is not being reduced during the summer.
 - Reducing trash pick-ups to once a week during the summer has an estimated savings of **\$1,522.92** per year.
3. The Audit Team removed unnecessary waste and recycling containers on campus. This was done to reduce labor cost from emptying these containers, and to reduce the amount of plastic bags used, which has a positive environmental impact and decreases cost and time spent on plastic bags.
 - Throughout the audit, the team removed a total of 48 recycling containers and 162 trash containers, or a total of 210 containers total. If the team assume these bins are all emptied once per work day, the University would save approximately 51,240 bags per year. On average it cost \$32.00 for a case of 150 bags. By removing bins on campus, the University would have approximately saved **\$10,760** dollars on plastic bags.

Changes for the future:

1. Adding sensors to the dumpsters in strategic locations where trash isn’t produced in a consistent amount can reduce collection costs. The sensor will notify VU when dumpster is full, and needs

to be scheduled for a pick up. If it doesn't get full, then the University holds off on the dumpster being collected.

- a. The cost per sensor in a 3-year subscription is \$20.75/month in the first year, and \$9.95/month in the second and third years
2. There are several companies the Audit Team is looking into that would provide free or reduced cost collection for paper and cardboard, as well as a company that would provide food waste and compostable material collection. These programs could reduce the collection fees.
3. The University can reduce collection frequency of the Harre Union trash compactor in the summer. The suggestion would be to pick up twice a month, or every other week. Previous bills for the compactor state on average that the Harre Union produces 2 tons of trash during a month during the summer. A 26 yard (the size of the trash compactor) can usually hold 4-6 tons of weight, and a 42 yard (the size of the recycle compactor) can hold about 8 tons.
 - a. Trash- Currently 4x/month (savings vary by tonnage/month but should be similar)
 - i. If the University reduces to 2x/month- \$348.31 in savings per month. **\$1,044** for 3 months.
 - ii. If the University reduces to 1x/month- \$522.51 in savings per month
4. Switch the recycle compactor to an on-call basis.
 - a. Recycle- Currently 2x/month
 - i. If the University reduces to 1x/month- \$174.17 in savings per month. \$441.51 for 3 months
 - ii. If the University reduces to every other month- \$261.25 savings per month, or **\$3,135** per year
 - b. The recycle compactor can hold 8-9 tons of material. Looking at the past bills, the compactor has been between 2-4 tons full each month. It could potentially go 2-3 months without being emptied.
5. Eliminate the trash and recycling dumpsters at Heritage Hall. Heritage could utilize the Wesemann hall dumpsters instead. This would save an estimated **\$2,544** per year.
6. Baseball field is listed on the RFP for a 6yd dumpster, if the University removes that dumpster it could save us **\$1,476** a year. Building services currently puts trash and recycling in the back of the truck and dumps the waste in another bin on campus. Landscaping could do the same for baseball games.

Waste Diversion Recommendations and Improvements

Below is a list of recommendations and improvements that can be done on campus to improve waste diversion percentages and waste management practices. If changes have been done in your zone or department please contact the Office of Sustainability of these changes, for tracking purposes.

Zone Key

CW Campus wide | ADM Administrative Spaces | DIN Dining Spaces | MUL Multi-Use Spaces
AC Academic Spaces | ACL Academic with Lab Spaces | RES Residential Spaces

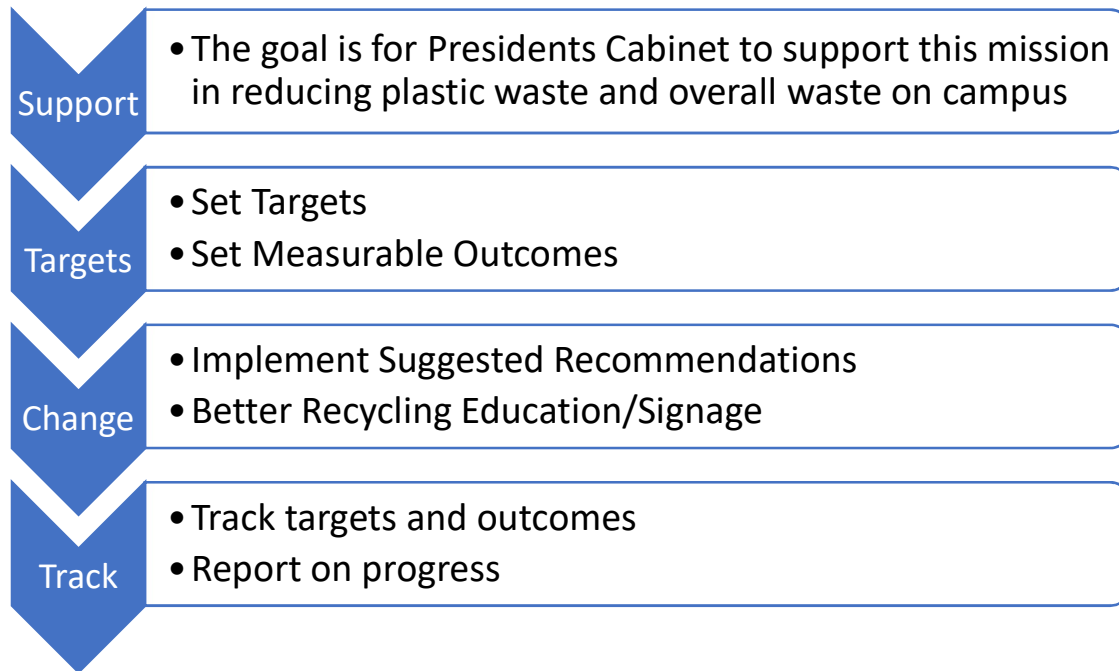
Implementation Departments Key

PUR Purchasing/Procurement Office | FM Facilities Management | GR Grants/Outside Funding
SS Student Services | IT Information Technology | P President/Board | LS Landscaping Services

Zone	DEPT	Recommendation
CW	PUR, SS	Prohibit the sale or distribution of drinks in single use plastic bottles
CW	FM, GR	Install water bottle refill stations in all campus buildings
CW	PUR, SS	Remove plastic bottled items from vending machines and dining locations
ADM	PUR	Establish a sustainable paper policy to reduce paper generation
ADM	IT	Prohibit use of personal printers
ADM	PUR	Add a recycling fee on each case of paper purchased
CW	P	Ban single use plastics
CW	PUR, P	Prohibit the sale or distribution of expanded polystyrene
CW	SS, PUR	Make sure that all beverage containers sold on campus are recyclable, including vending machines, concession stands, and dining locations
CW	SS, P	Prohibit the sale or distribution of plastic bags
DIN	SS	Provide reusable to-go containers at all dining locations, disposable only available on request
DIN	SS	Provide reusable utensils at all dining locations, disposable only available on request
DIN	SS	Implement a fee on single use plastic items sold in dining facilities.
DIN	SS	Incentivize use of reusable cups with discounts on drinks, or a fee on disposable cups
DIN	SS	Remove lids and straws from drinks sold on campus, available only on request
CW		Switch from K-cups to drip coffee makers
CW		Implement reusable utensils, plates, mugs, etc. into staff breakrooms instead of disposable.
ADM	FM	Ban the use of plastic liners in desk side waste and recycling containers
CW	FM, SS	Purchase liners that are appropriately sized for each sized container
CW	FM	Pilot program to only empty waste and recycling containers when they're 1/2 full
CW	FM	Pilot program to remove liners from recycling containers completely
CW	FM	Create a map of water bottle filling stations
CW	GR	Reusable water bottle program, all employees and students receive a reusable water bottle to be used across campus.
CW	FM	Revamp recycling and waste containers across campus
CW	FM, GR	Add clear, consistent signage on all containers across campus, with area specific signage in each space
DIN	SS	Add signage by registers/where products are sold instructing students on how to dispose of packaging from purchased food items.
CW	FM	Remove unnecessary containers
CW	FM	Standardize policy for container locations across campus (none in classrooms, etc.)
RES	GR, SS	Provide all residence hall rooms with a recycling bin or reusable recycling bag
CW	LS, FM	Have recycling containers at outdoor athletic events and practices
CW	LS, FM	Have recycling containers next to outdoor trash cans (such as by the Union entrance, Residence halls, etc.)

CW	FM	Place signage on shredders that shredded paper is not recyclable
CW	FM	Have battery and toner recycling containers in each building
CW	FM	Provide recycling at all outdoor events
DIN	SS	Expand food waste recovery and reduction
DIN	SS	Require dining services to track and report daily food loss
DIN	SS	Require dining services to donate edible food
DIN	SS	Require dining services to separate inedible food waste via Organix Recycling or another food waste collection service
CW		Empower all campus community members to recognize, report, and take action on wasteful activity
CW	FM	Develop an outreach campaign to increase campus recycling literacy
CW	FM	Develop an easy to use, comprehensive reuse and recycling resource on website (recyclopeda)
CW	FM	Have recycling education training presentations/webinars available to all campus community members
CW	FM	Require quarterly meetings with waste and recycling processors and haulers, to keep updated on changes or issues
CW	IT	Require IT to start reporting on E-Waste that is recycled each year
CW	FM	Empower building services staff to be ambassadors for campus waste reduction efforts.
CW	FM	Enhance building services onboarding to include detailed recycling and waste processes and protocol
CW	FM	Empower building services staff to recognize, report, and take action on wasteful activity by facility, department, or event
CW		Implement waste reduction plans into all buildings and departments
CW	FM	Install cool air hand dryers in all bathrooms
ADM	FM, IT	Expand ink cartridge and toner recycling, send reminders each semester
CW	FM, SS	Expand plastic film recycling, send reminders each semester
CW	FM	Expand battery recycling, send reminders each semester
DIN, ACL	FM, SS	Explore disposable glove recycling
CW		Explore K-cup recycling
RES, MUL	FM, SS,	Create a container deposit system via Replenish in dorms and other high traffic areas.
CW	FM	Lock dumpsters and only allow them to be opened by building services staff
CW	FM	Offer free waste audits to any buildings that request them
CW	FM	Implement random quarterly recycling audits to check for contamination
CW	FM	Bill departments for extra waste fees, container rentals, and contamination charges
CW	FM	Share waste diversion metrics with all vendors, buildings, and departments
CW	FM, SS	Create drop off locations with Terracycle for certain items

Next Steps



Suggested Targets

Currently, about 28% of items in the trash are recyclable. The Audit Team hope to reduce this to 14% by taking the following steps:

- Promoting recycling in residence halls with large posters in trash rooms, recycling bins distributed to each room, and student ambassadors.
- Implementing recycling and sustainability programing to Welcome Week for all incoming students
- Sending campus wide quarterly reminder emails with recycling and waste information
- Adding posters at dining locations that list specific items and how to recycle their packaging.

Currently, the recycling is around 32% contaminated with trash. The Audit Team hopes to reduce this to a 10% contamination rate by taking the following steps:

- Adding lids with restricted openings to bins at strategic locations with high contamination rates.
- Adding new updated and standardized signage on all recycling containers on campus, as well as large posters in trash rooms.
- Adding locks on recycling dumpsters that can only be opened by Building Services staff

The Audit Team also hope to reduce plastic waste by implementing various changes:

- Building Services has already reduced plastic film usage by eliminating unnecessary recycling and waste containers, only emptying these when they are 50% full, and promoting plastic film recycling programs on campus.

- Banning Styrofoam from being sold or distributed on campus, causing an instant 100% reduction in this category
- Working with dining services to reduce the use of plastic to-go containers and disposable items

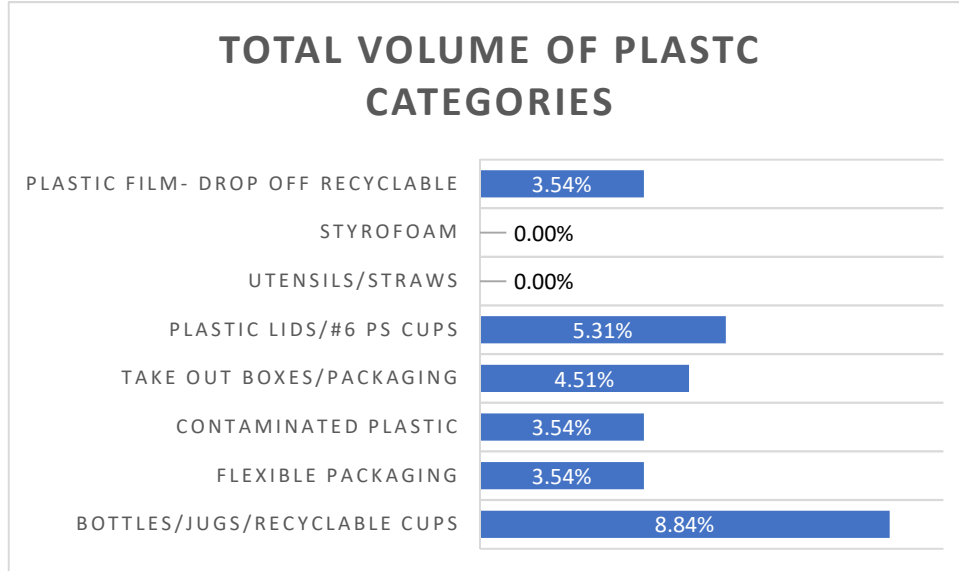
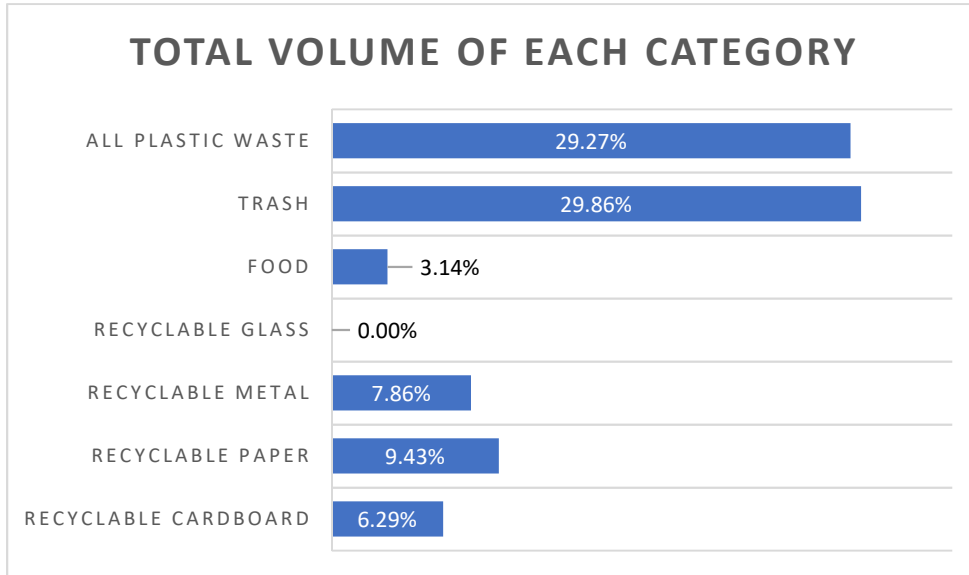
Porter County Waste Reduction Initiative

The VU campus hopes to serve as a leader in reducing waste in Porter County, so the next step for the Office of Sustainability is to help residents, businesses, restaurants, and schools understand their impact on their community when it comes to waste. Suggestions and recommendations on how to be more sustainable and reduce their plastic usage will be given to the community. The Office of Sustainability is offering four different services. Customers can request site visit of their facility; the audit team will be able to observe current waste management practices and can suggest recommendations and improvements to the customer. The team is offering education talks and presentations. These presentations will educate the customer on proper recycling practices, plastic pollution, and more. These presentations can be customized to what the customer is asking for. The team is also offering waste audit advice and guidelines. If customers are wanting to perform their own plastic or waste audit, the Audit Team can advise them on how to accomplish this task and how to report their data for tracking purposes. The last item is a residential survey. This survey will help residents understand their plastic usage, while also collecting data for tracking.

Appendix A: Individual Building Results from Waste Sorting

Kallay Christopher and Schnabel

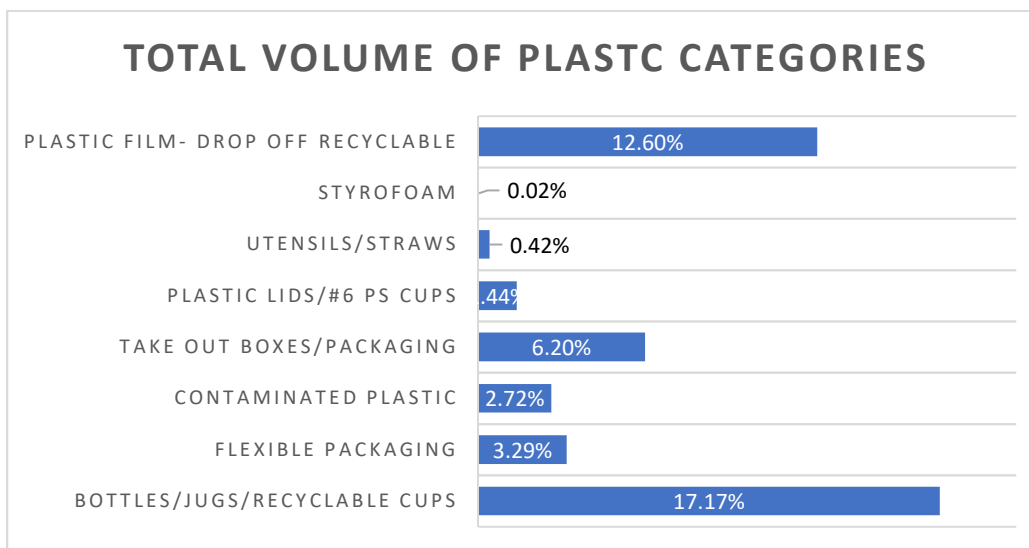
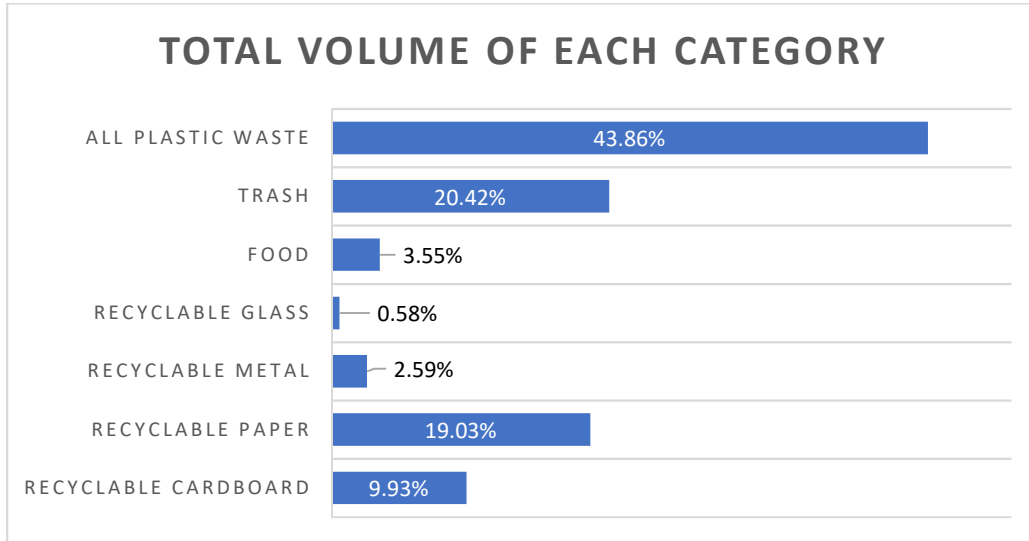
This was the first building audited, so there was a bit of a learning curve when it came to calculating data. The weights are accurate, but volume measurements were estimates.



Recyclable vs. landfill waste (volume)	68% landfill, 32% recyclable
Recycling contamination rate (volume)	49%
Missed recycling capture rate (volume)	17%

Gellerson and Fites Center

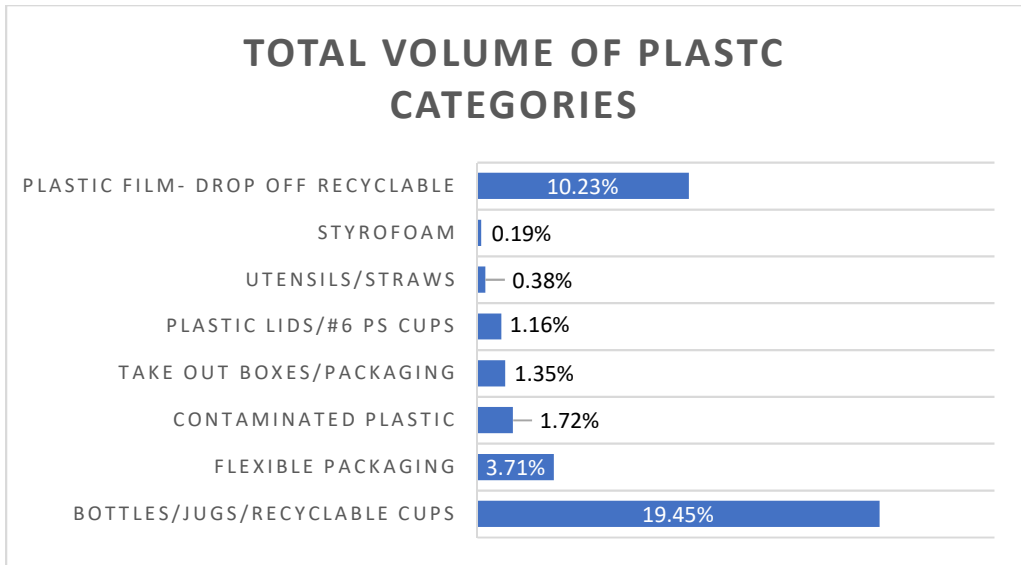
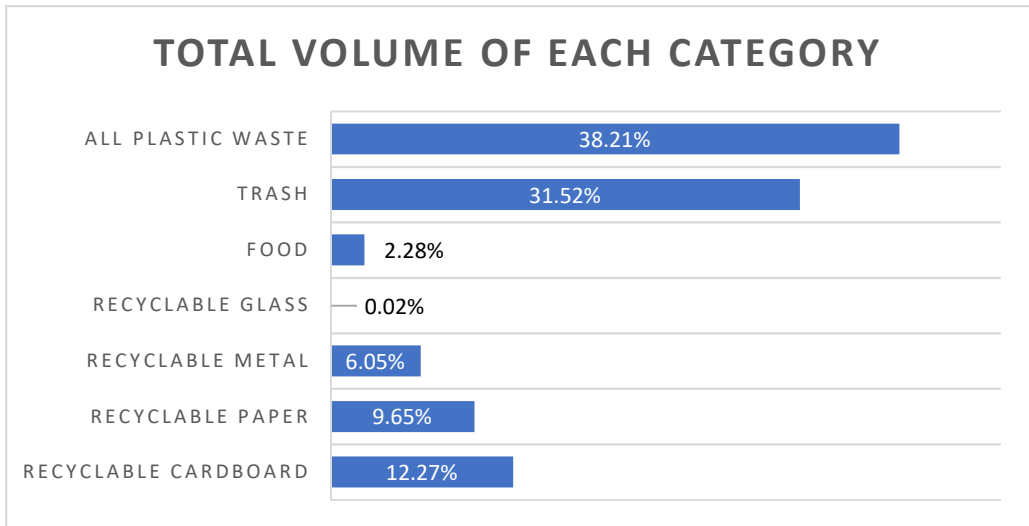
This building is home to Gelley’s Grab and Go Café, which serves products in take-out boxes, paper bags, and disposable cups. This is one of the larger and most highly occupied buildings.



Recyclable vs. landfill waste (volume)	51% landfill, 49% recyclable
Recycling contamination rate (volume)	26%
Missed recycling capture rate (volume)	35%

Athletics-Recreation Center

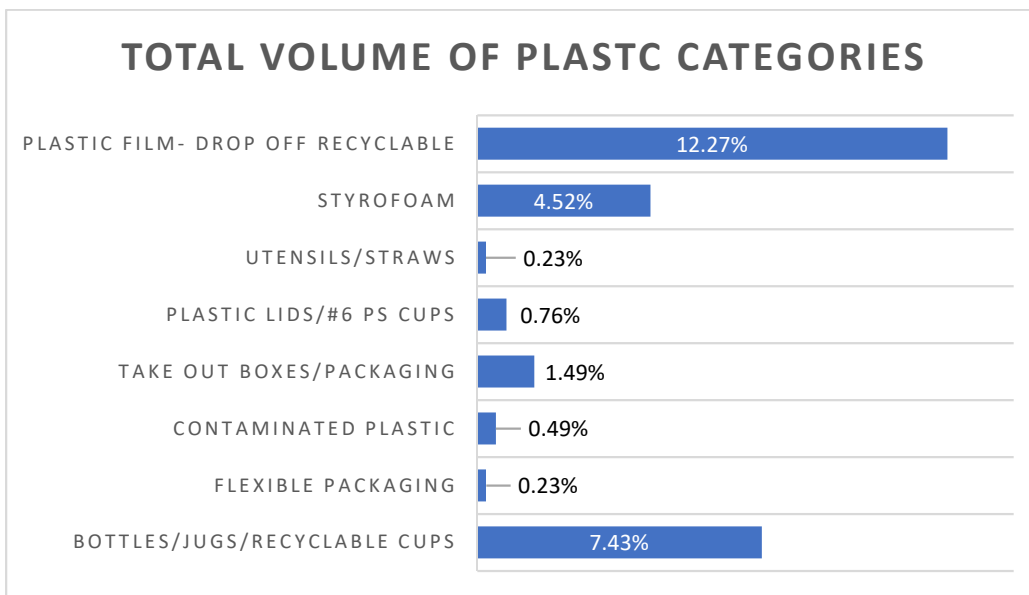
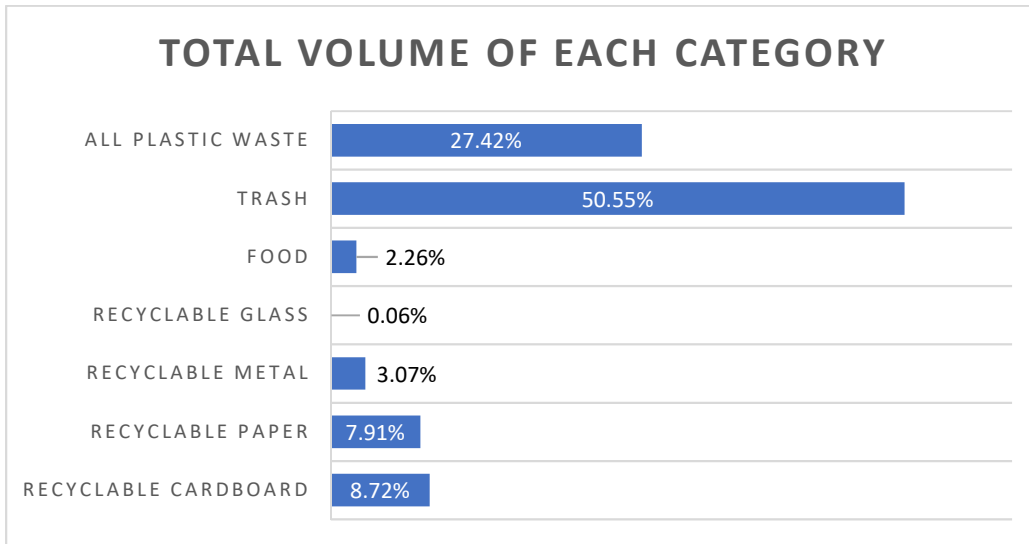
Waste and Recycling was collected and sorted from one game day, and one regular day without a basketball game. The data might be slightly off for the ratio of recyclable paper to trash, because at the time the Audit Team thought that paper cups were not recyclable, and there was a large amount from the basketball game. However, the team have been recently informed that these cups can be recycled. During the walkthrough the team noticed a lot of take-out food, and fast food catering in the basketball wing, which produces plastic waste.



Recyclable vs. landfill waste (volume)	53% landfill, 47% recyclable
Recycling contamination rate (volume)	23%
Missed recycling capture rate (volume)	31%

Neils Science Center

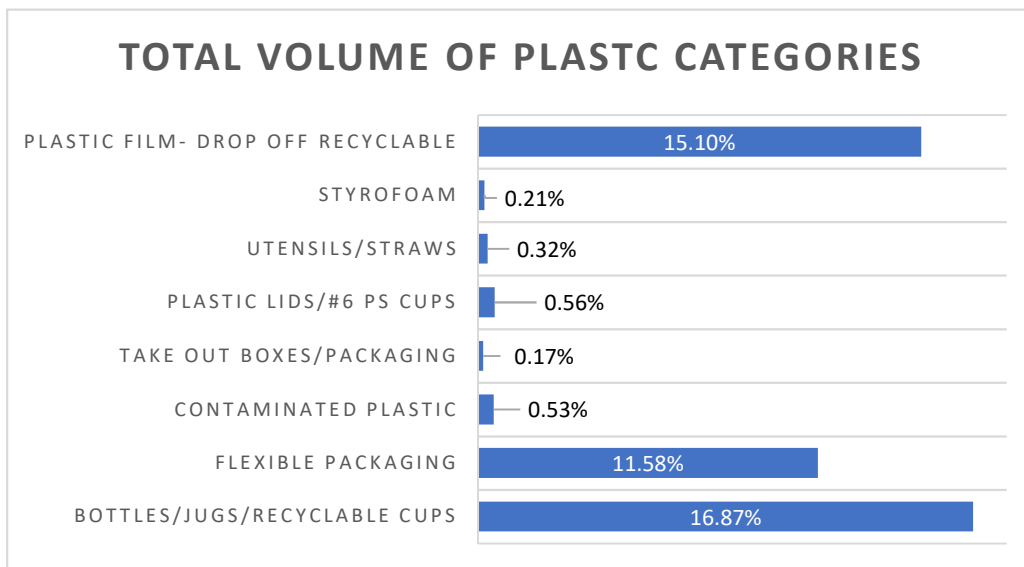
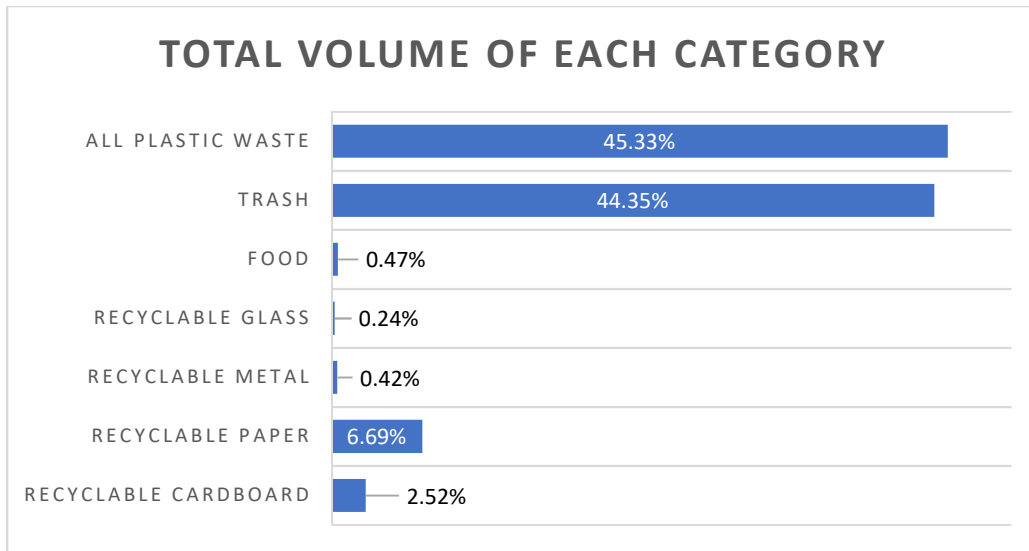
This building consists of mostly lab spaces and professor’s offices.



Recyclable vs. landfill waste (volume)	73% landfill, 27% recyclable
Recycling contamination rate (volume)	35%
Missed recycling capture rate (volume)	19%

Facilities Management

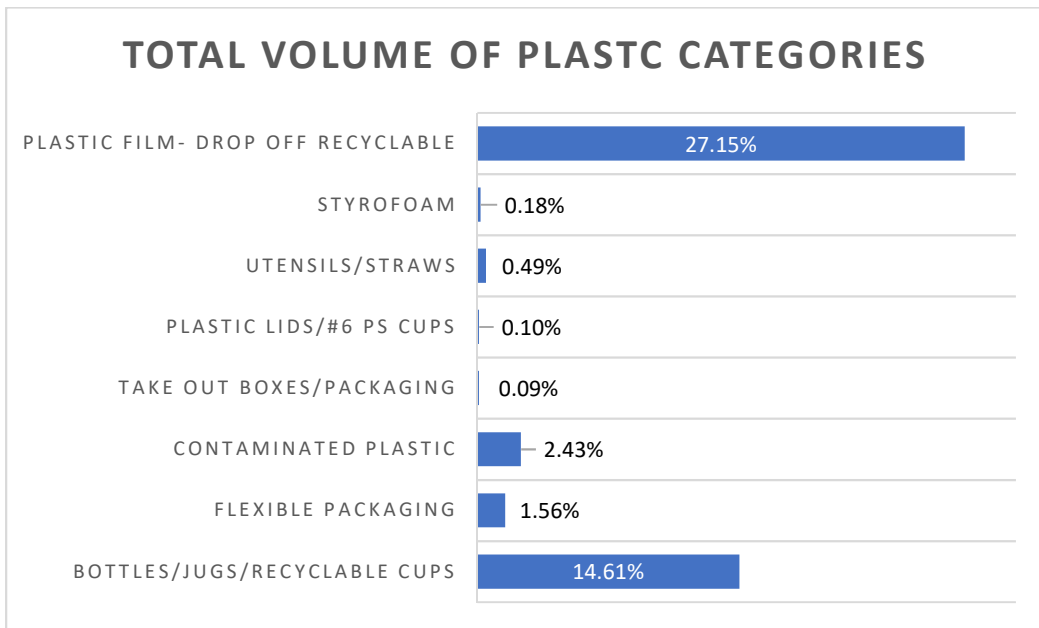
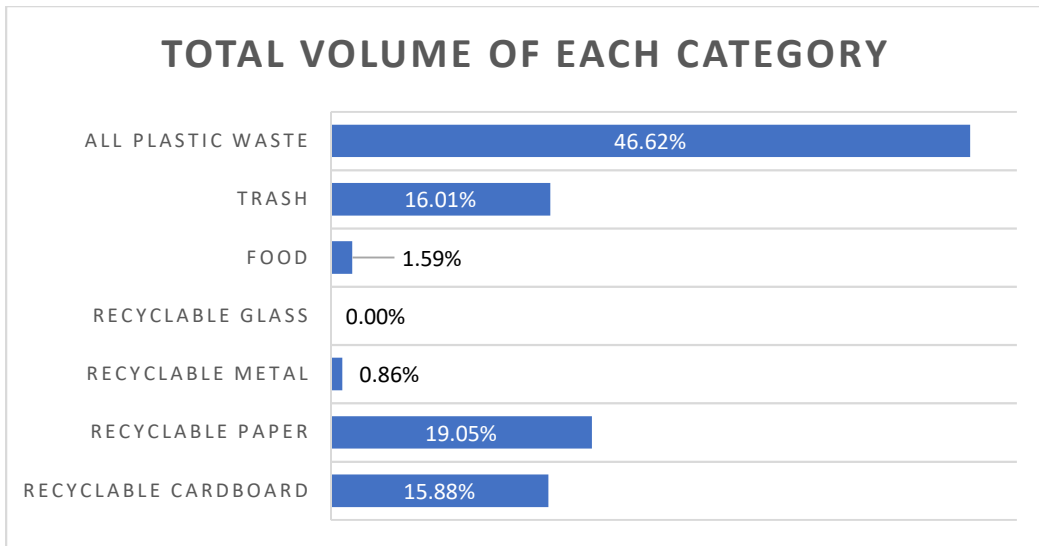
The audit for facilities management included waste from the administration, grounds and maintenance buildings. In 510, there is no signage or bin that states its recyclable.



Recyclable vs. landfill waste (volume)	73% landfill, 27% recyclable
Recycling contamination rate (volume)	36%
Missed recycling capture rate (volume)	13%

LeBien Hall

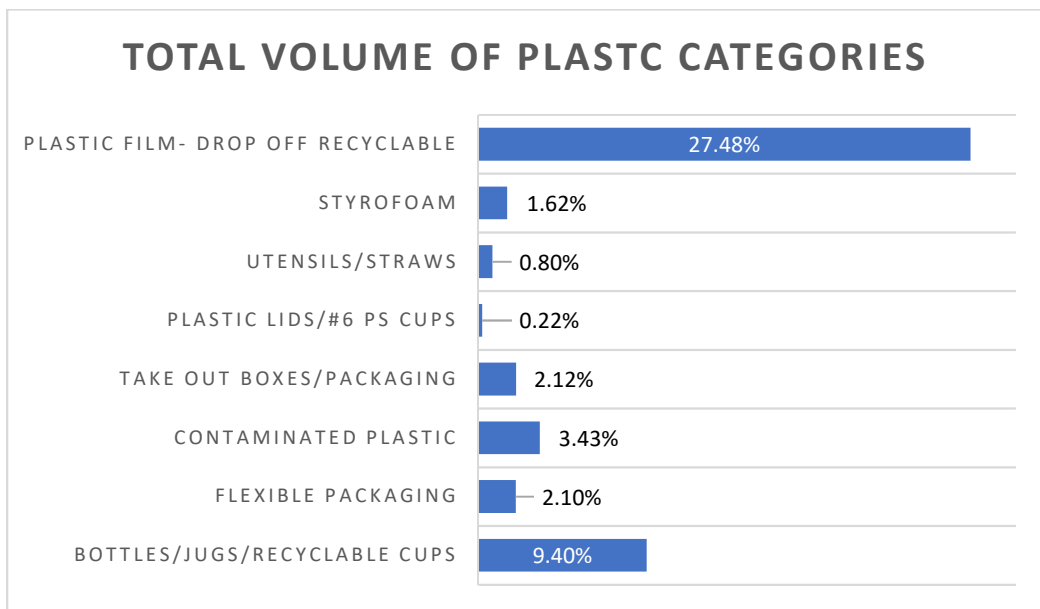
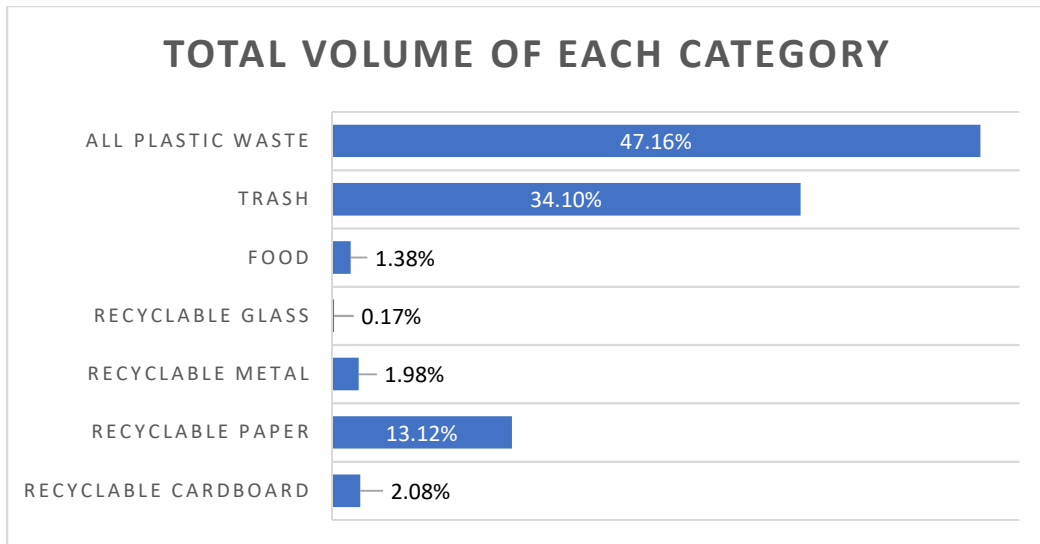
The nursing building, consisting of a classrooms, labs, and administrative and office space. Coffee cups were heavily found in LeBien hall.



Recyclable vs. landfill waste (volume)	50% landfill, 50% recyclable
Recycling contamination rate (volume)	30%
Missed recycling capture rate (volume)	37%

Chapel and Helge Center

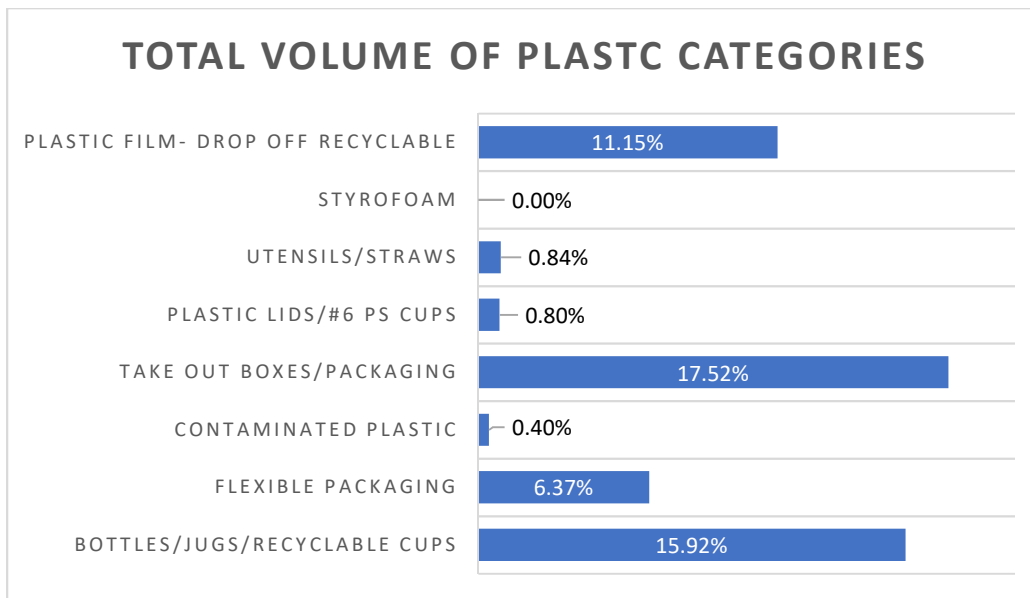
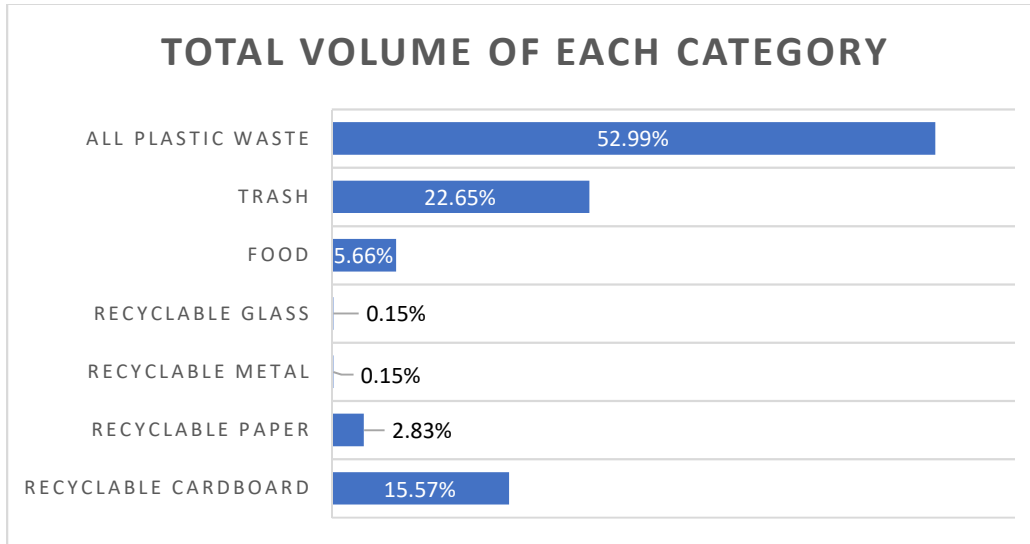
The waste sorted was from the lobby and other area’s around the chapel, as well as the Helge center, an administrative and office space



Recyclable vs. landfill waste (volume)	73% landfill, 27% recyclable
Recycling contamination rate (volume)	19%
Missed recycling capture rate (volume)	19%

Harre Union Café

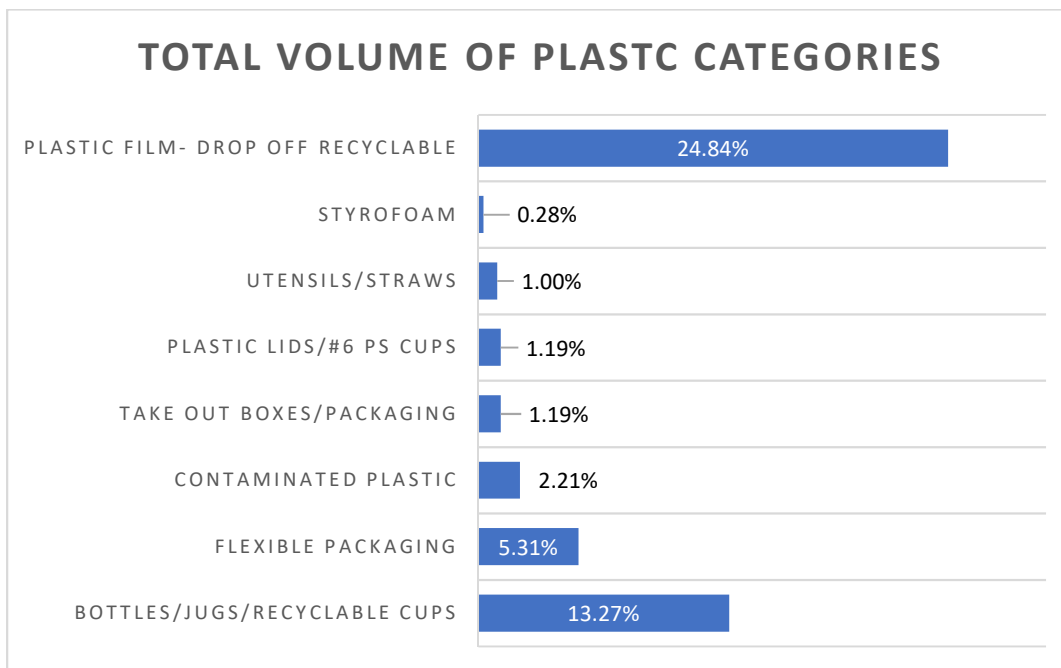
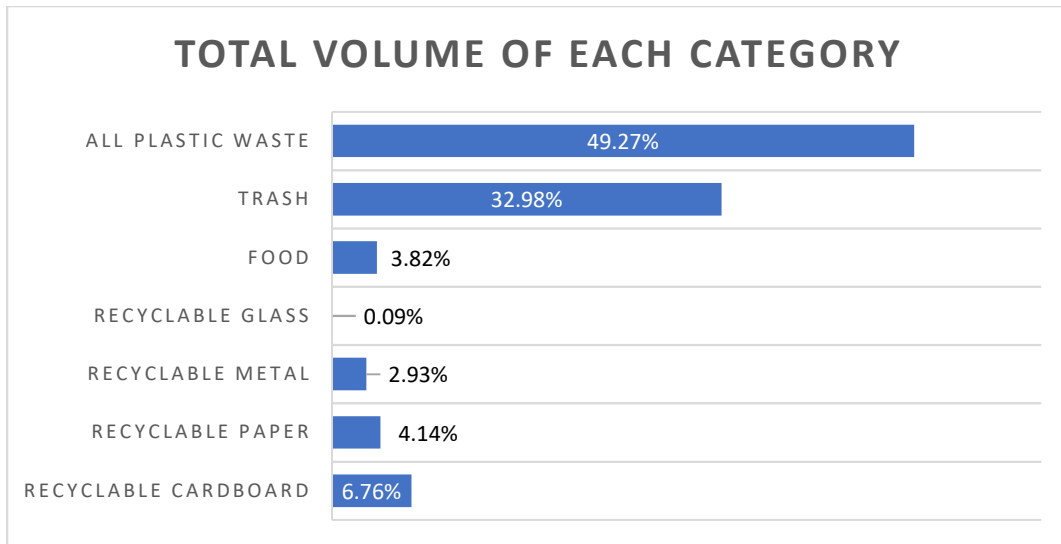
All waste was given to us in black bags, so the Audit Team were assuming it was all trash and no recycling. This audit covered only waste from the student area trash cans, not from the kitchen and prep areas.



Recyclable vs. landfill waste (volume)	65% landfill, 35% recyclable
Recycling contamination rate (volume)	NO RECYCLING COLLECTED
Missed recycling capture rate (volume)	35%

Mueller Hall

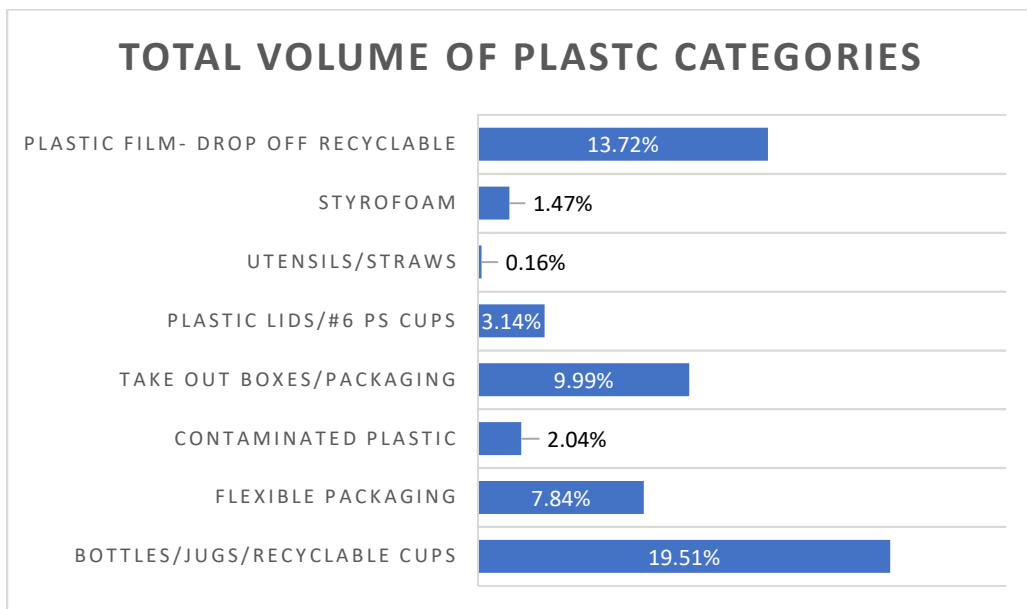
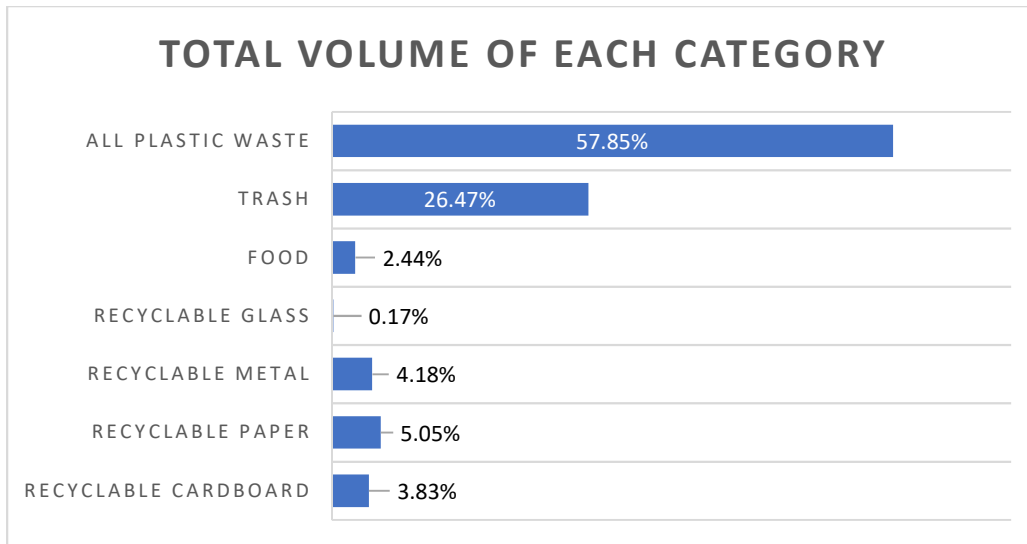
There was a party on one of the days the Audit Team sorted, extra waste was generated from catering. This building is mainly classrooms and professors' offices.



Recyclable vs. landfill waste (volume)	73% landfill, 27% recyclable
Recycling contamination rate (volume)	58%
Missed recycling capture rate (volume)	18%

Christopher Center Library

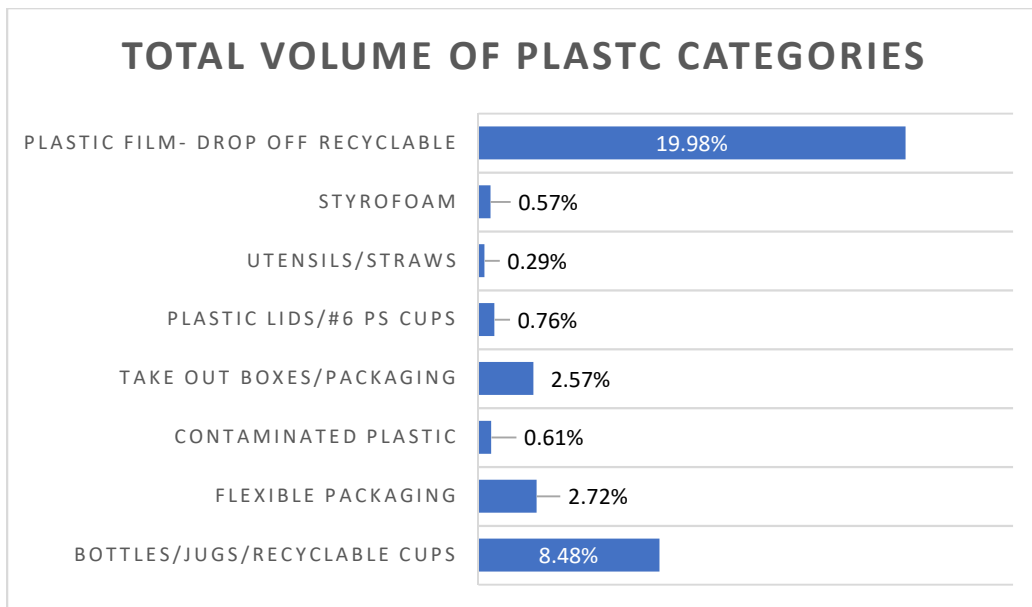
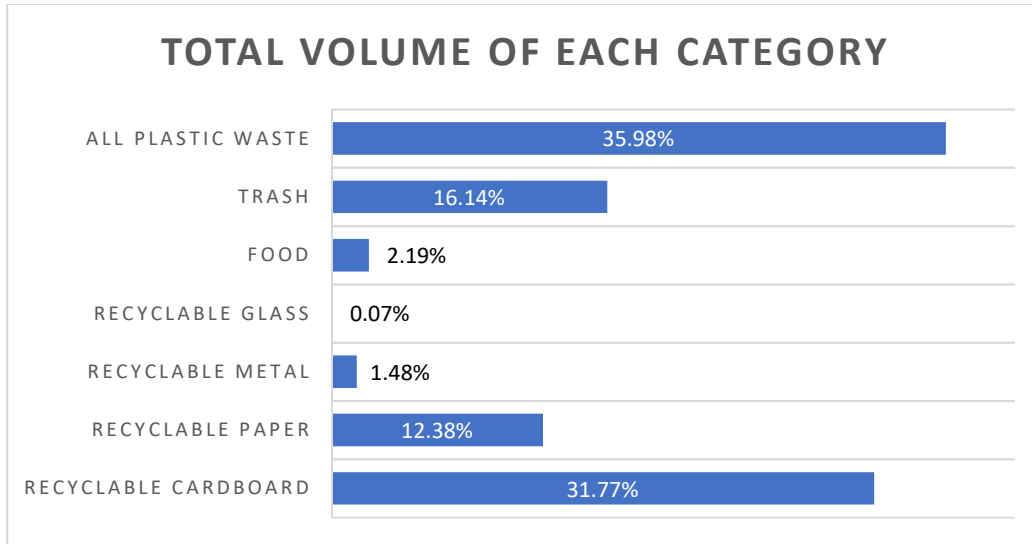
The library is one of the largest campus buildings, with over 1,000 visitors each day. The library also has a coffee shop that can supply students with drinks and food items to go.



Recyclable vs. landfill waste (volume)	67% landfill, 33% recyclable
Recycling contamination rate (volume)	48%
Missed recycling capture rate (volume)	23%

Harre Union

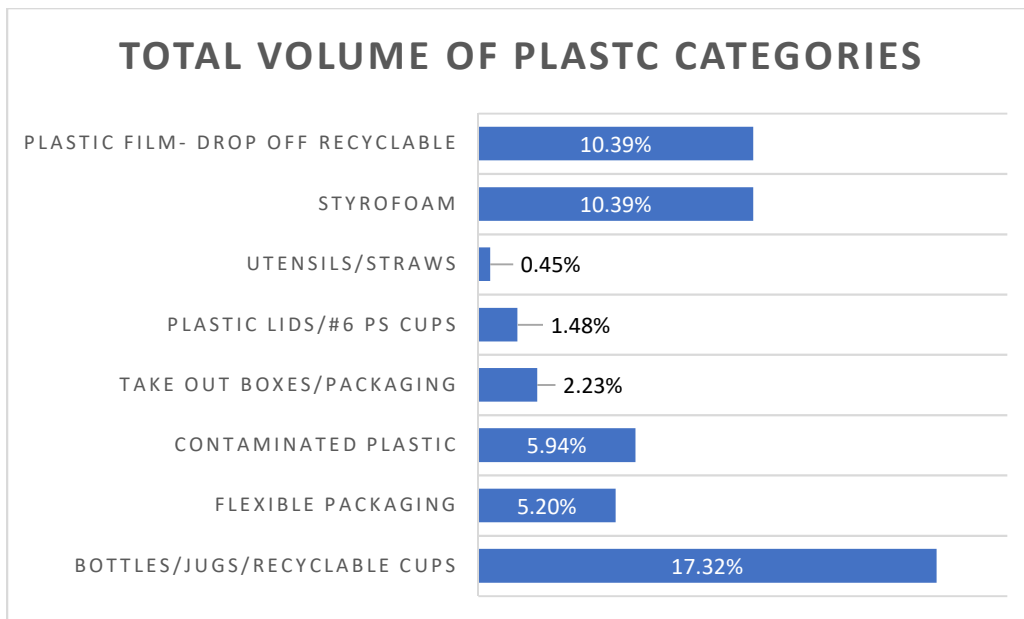
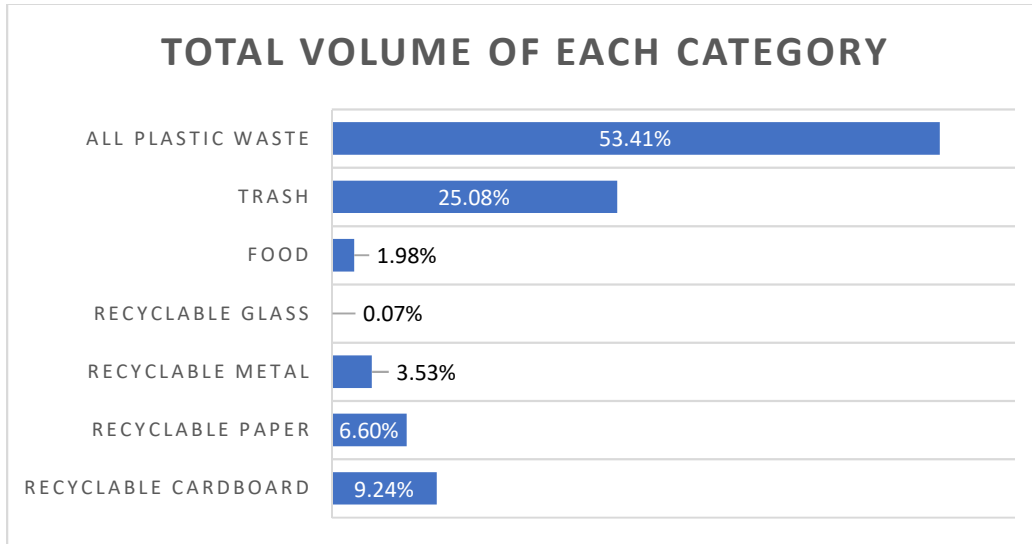
This audit only included trash and recycling from receptacles that building services empties, not from founders, the café, or student mail services. It was later identified that the Audit Team did not receive afternoon trash and recycling, and only morning waste.



Recyclable vs. landfill waste (volume)	46% landfill, 54% recyclable
Recycling contamination rate (volume)	31%
Missed recycling capture rate (volume)	38%

Brandt Hall

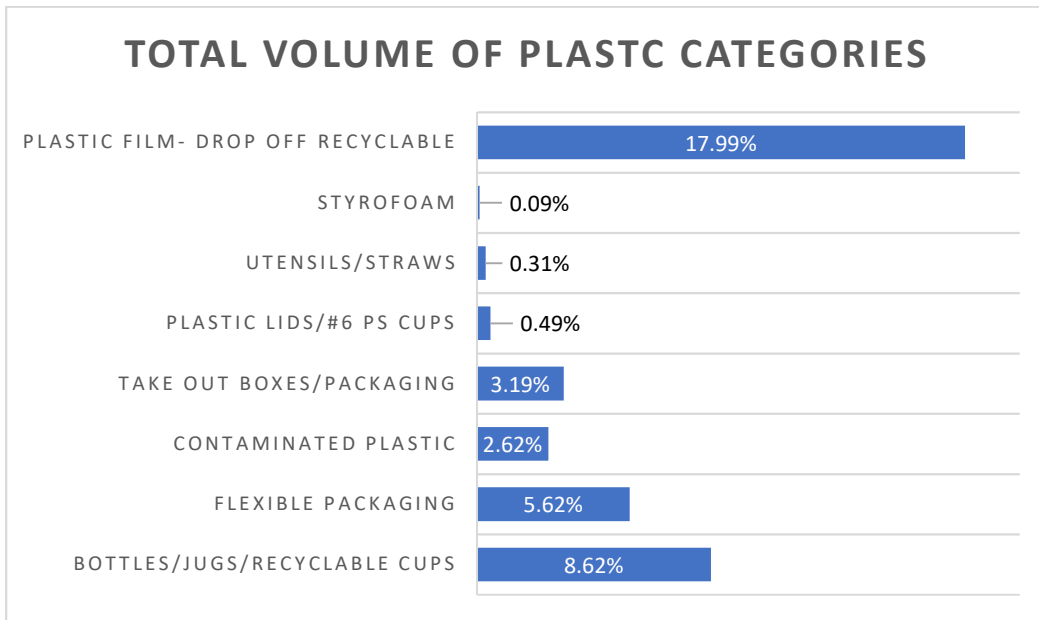
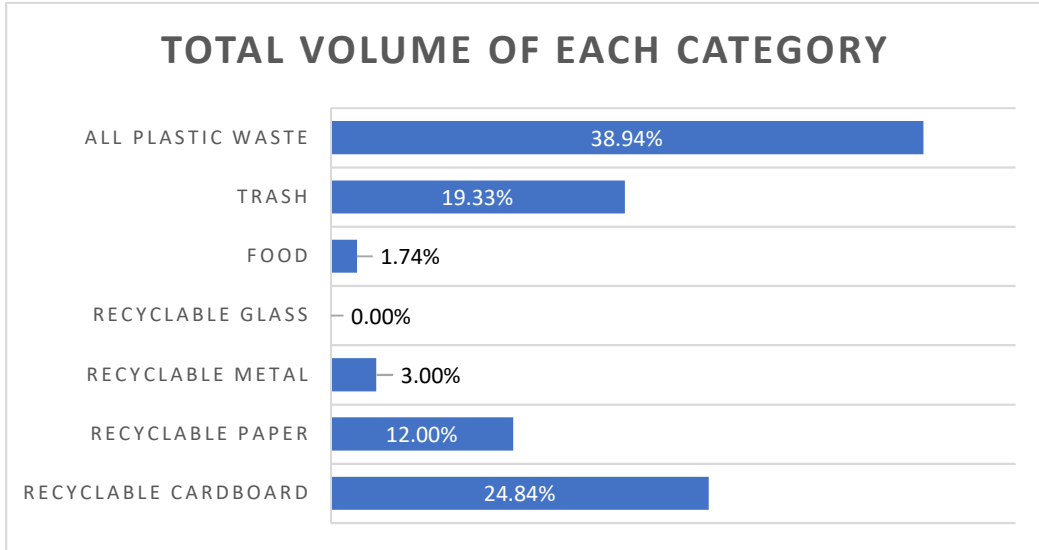
The Audit Team noticed a very small amount of recycling; most students don't take the time to sort their waste and throw it all away. The Audit Team believes that most students only have trash can in their rooms, and are not sorting the recycled material from their trash bags.



Recyclable vs. landfill waste (volume)	63% landfill, 37% recyclable
Recycling contamination rate (volume)	0%
Missed recycling capture rate (volume)	33%

Kretzmann Hall

This is an administrative building consisting entirely of offices.



Recyclable vs. landfill waste (volume)	52% landfill, 48% recyclable
Recycling contamination rate (volume)	30%
Missed recycling capture rate (volume)	25%

Appendix B: Current Dumpster Locations and Rates

Note: buildings that don't have their own dumpster have their trash and recycling driven to a nearby location with a dumpster to be thrown away.

Academic Year Schedule

Location	Trash size (cubic yards)	Price each month	Collection Frequency	Recycling size (cubic yards)	Price each month	Collection Frequency
Art/Psych	8yd	\$102.55	1x per week	8yd	\$80.30	1x per week
Center for the Arts	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Wehrenberg Hall	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Alumni Hall	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Athletic Rec Center	2- 8yd	\$309.00	2x per week	8yd	\$128.70	2x per week
Kretzmann Hall	8yd	\$100.00	1x per week	8yd	\$80.30	1x per week
Guild Memorial	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Facility Management	6yd	\$122.93	2x per week	8yd	\$128.70	2x per week
Kade-Duesenberg	2yd	\$67.78	1x per week	2yd	\$42.00	every other week
CCLIR/Library	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Lankenau Hall	8yd	\$152.00	2x per week	8yd	\$80.30	2x per week
Brandt Hall	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Beacon Hall	8yd	\$152.00	2x per week	8yd	\$80.30	1x per week
Gellerson-Fites	6yd	\$122.93	2x per week	8yd	\$80.30	2x per week
Short Street	2yd	\$65.00	on call	---	---	---
Mail Center/Wesemann Hall	8yd	\$105.00	1x per week	8yd	\$84.00	1x per week
Heritage Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Harre Student Union	26yd- compactor	\$156.56 + \$52.53 per ton	1x per week	42yd- compactor	\$156.56 per haul	Every other week

Summer Schedule

Location	Trash size (cubic yards)	Price each month	Collection Frequency	Recycling size (cubic yards)	Price each month	Collection Frequency
Art/Psych	8yd	\$107.55	1x per week	8yd	\$80.30	1x per week
Center for the Arts	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Wehrenberg Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Alumni Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Athletic Rec Center	2- 8yd	\$235.00	1x per week	8yd	\$80.30	1x per week
Kretzmann Hall	8yd	\$100.00	1x per week	8yd	\$80.30	1x per week
Guild Memorial	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Facility Management	6yd	\$100.00	1x per week	8yd	\$80.30	1x per week
Kade-Duesenberg	2yd	\$67.78	1x per week	2yd	\$42.00	every other week
CCLIR/Library	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Lankenau Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Brandt Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Beacon Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Gellerson-Fites	6yd	\$100.00	1x per week	8yd	\$80.30	1x per week
Short Street	2yd	\$65.00	on call	---	---	---
Mail Center/ Wesemann Hall	8yd	\$105.00	1x per week	8yd	\$84.00	1x per week
Heritage Hall	8yd	\$115.00	1x per week	8yd	\$80.30	1x per week
Harre Student Union	26yd- compactor	\$156.56 + \$52.53 per ton	1x per week	42yd- compactor	\$156.56 per haul	Every other week

Appendix C: Categories for sorting material

Category	Is the item curbside recyclable?	Other notes about the item
Cardboard	Yes	Includes all corrugated shipping boxes, as well as cereal boxes, soda cases, tissue boxes, and more.
Mixed Paper	Yes	Office paper, newspaper, cartons (orange juice, protein shakes, etc.), paper coffee and soda cups (lid and straw removed), paper bags
Metal	Yes	Aluminum and steel cans, pie trays/party size disposal pans, small scrap metal
Glass	Yes	Glass bottles, jars, and food containers. (Window glass, drinking glasses, candles, etc. are not recyclable)
Food	No	All food waste. This was sorted separately from trash to get potential data for a food waste composting program
Trash	No	Napkins/paper towels, paper that had been contaminated by food or liquid, paper or cardboard takeout containers and fast food packaging, shredded paper.
Plastic bottles, jugs, PET and PP cups	Yes	Water/soda bottles, milk jugs/detergent bottles, and plastic drink cups that were made of PET(#1) or PP(#5). Lids and straws are not recyclable due to their size and were sorted separately from the cups. This also included yogurt cups and portion cups larger than 3 inches in diameter (otherwise would be too small to sort)
Plastic lids	No	Lids from paper coffee and soda cups, as well as plastic cups. These lids are too small to be sorted at the recycling facility, and fall through the screen in the collection area for glass
Styrofoam	No	This included all foam shipping materials and food packaging. This did NOT include PS cups or lids, even though they are made from the same type of plastic.
Plastic take out boxes and PS cups	No	All plastic to-go boxes, small portion cups, sushi boxes, plastic sandwich containers, black plastic containers, red solo cups, and more. Basically, any plastic food that wasn't a bottle, jug, or recyclable cup. These materials are of a lower value and recyclers can't make money off of them.
Utensils and Straws	No	All plastic cutlery and straws. This material is too small to be sorted at the recycling facility and falls through the glass sorting screen.
Flexible plastic packaging	No	All chips bags, granola bar wrappers, candy wrappers, wrappers from plastic fork/spoon/knife packs, ketchup packets from restaurants, saran wrap.
Plastic bags and film (HDPE and LDPE)	No- but accepted at mail center and other drop off locations- Info	Plastic shopping bags, amazon mailers, Ziploc bags, bread and produce bags, bubble wrap, air pillows, product overwrap (from water bottles, paper towels, toilet paper, etc.), plastic trash bags
Contaminated/mixed plastic	No	Any item that doesn't fit one of the above categories. This includes mixed material packaging, such as a paper shipping mailer lined with bubble wrap. Also includes items that could have been recycled, but were too contaminated with food or liquid.

