



Toronto Metropolitan University
350 Victoria St,
Toronto, Ontario,
M5B 2K3

2023 Waste Audit

Prepared For
Garth Poppleton
Toronto Metropolitan University
Email: gpopplet@torontomu.ca

This document and its contents are the property of Waste Reduction Group Inc. (WRG). This document contains information proprietary to waste reduction, including processes, methodologies, and architecture frameworks for consulting engagements. No part of this document may be used, copied, or disclosed in any manner, in whole or in part, electronic or otherwise, to any third party, except as expressly authorized in writing by Waste Reduction Group.

Table of Contents

[Executive Summary](#)

[1. Introduction](#)

[1.1 Purpose and Objectives](#)

[2. Scope of Work](#)

[3. Sampling Methodology](#)

[4. Waste Audit Findings](#)

[4.1 Site Tour](#)

[4.2 Waste Sample Composition by Functional Areas](#)

[4.3 Waste Sample Composition by Material](#)

[4.4 Types of Recycling Material in the Garbage Stream](#)

[5.0 Waste Diversion Programs and Disposal Systems](#)

[6.0 Performance Metrics](#)

[6.1 Waste Diversion Rate](#)

[6.2 Capture Rate](#)

[7.0 Waste Audit Summary and Waste Reduction Work Plan](#)

[8.0 Findings and Conclusions](#)

[9.0 Recommendations](#)

[9.1 Improve Existing Waste Diversion Programs](#)

[9.2 Promoting Culture](#)

[9.3 Continuous Monitoring and Process Improvement](#)

[Appendices](#)

[Appendix A: List of Categories](#)

[Appendix B: Annual Request Form](#)

[Appendix C: Scale Calibration Certificate](#)

[Appendix D: Detailed Sample Composition](#)

[Appendix E: Estimated Annual Quantities Generated from Garbage Stream](#)

[Appendix F: Site Photographs](#)

[Appendix G: Waste Reduction Work Plan](#)

Executive Summary

Waste Reduction Group (“WRG”) was retained by Toronto Metropolitan University (“TMU”) to conduct a solid non-hazardous waste audit (in compliance with the Environmental Protection Act, O.Reg. 102/94: Waste Audits and Waste Reduction Work Plans and O.Reg. 103/94: Industrial, Commercial and Institutional Source Separation Program) for the educational institution located at 350 Victoria Street in Toronto, Ontario (the Site).

The objectives of the audit were to: determine the composition of the garbage stream by point of origin; quantify the estimated 2023 annual waste generation for TMU; determine the waste diversion and capture rates; identify additional opportunities for waste reduction and diversion; and address any specific concerns identified during the study.

The scope of the waste audit included collecting five (5) representative samples over a two-day period of the garbage stream from the functional areas of the Site buildings.

Findings and Conclusions

- Approximately 40% of the sample mass originated from the Hallways and Lunch Room/Kitchenette.
- Paper towels (20.21%), organics (11.52%), boxboard (11.49%) had a combined mass which contributed to over 40% of the total sample mass.
- Mandatory Recyclables were identified in the waste stream (9.75%) and was largely comprised of:
 - Fine paper - an estimated quantity of 45.28 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette, and Classrooms, Labs and Seminar Rooms
 - Aluminum - an estimated quantity of 25.8 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette, and Classrooms, Labs and Seminar Rooms
 - Glass - an estimated quantity of 16.12 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette
 - Cardboard - an estimated quantity of 14.37 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette
- Other Recyclables were identified in the waste stream in large quantities:
 - Organics - an estimated quantity of 120.69 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette and Classrooms, Labs and Seminar Rooms
 - Paper Towels - an estimated quantity of 211.64 MT is produced annually and originates primarily from the Washrooms.
- **Waste Diversion Rate** - was calculated to be **31.74%** based on 486.98 MT of diverted waste and 1,534.35 MT of total waste produced annually.
- **Capture Rate** - the overall capture rate was **37.66%** based on 486.98 MT of diverted waste and 1,293.24 MT of total divertible waste generated.

Recommendations

Waste diversion and capture rates could be further improved by improving the following existing diversion programs.

Mandatory Recyclables:

- **Fine Paper** - roughly 45.28 MT of material is estimated to be generated annually through the waste stream. Diverting could **increase the waste diversion rate up to 2.9%** and could **increase the capture rate up to 3.5%** based on current waste quantities at the Site.
- **Aluminum** - roughly 25.8 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing mixed recycling diversion program could **increase the waste diversion rate up to 1.7%** based on current waste quantities at the Site.
- **Glass** - roughly 13.78 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing mixed recycling diversion program could **increase the waste diversion rate up to 0.9%** based on current waste quantities at the Site.
- **Cardboard** - roughly 14.37 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing cardboard diversion program could **increase the waste diversion rate up to 0.9%** based on current waste quantities at the Site.

Other Recyclables

- **Organics** - roughly 120.69 MT of material is estimated to be generated annually through the garbage stream. Diverting this quantity through the existing organics diversion program could **increase the waste diversion rate up to 7.9%** and would **increase overall capture rate by up to 9.3%** based on current waste quantities at the Site.
- **Paper Towels** - roughly 211.64 MT of material is estimated to be generated annually through the garbage stream. Diverting this quantity through the existing paper towel diversion program could **increase the waste diversion rate up to 13.8%** and would **increase overall capture rate by up to 16.4%** based on current waste quantities at the Site.

Adding dedicated receptacles for the following:

- Fine paper and aluminum (Hallways and Lunch Room/Kitchenette and Classrooms, Labs and Seminar Rooms)
- Organics, glass and cardboard (Hallways and Lunch Room/Kitchenette)
- Paper towels (Washrooms) and consolidating materials for pick up to be diverted from landfill.

Placing clear signage with visuals/pictures directly above receptacles indicating the appropriate waste for each bin will encourage staff to source separate at the time of disposal. Signage with a simple message such as “Organics Only” for organics bins or “Cardboard Only” for cardboard bins above each set of receptacles to encourage staff to place cardboard or organics in the appropriate dedicated receptacles could improve capture rates.

Promoting Culture:

- Establish a committee that oversees waste reduction and sustainability and to promote a culture of waste diversion.
- Educate students and staff on the importance of waste diversion and communicate the corporate goals for waste diversion and sustainability.
- Create a positive message around the benefits of waste diversion, and the role that the individual plays.
 - Support and encourage the purchase and use of “environmentally friendly”, reusable or recyclable materials and packaging, and/or those that contain recycled content.

Continuous Monitoring and Improvement:

- Track year-over-year changes in waste diversion and capture rates and communicate progress to staff to encourage further participation/engagement from staff.

1. Introduction

Waste Reduction Group (“WRG”) was retained by the Toronto Metropolitan University (“TMU”) to conduct a solid non-hazardous waste audit for the facility located at 350 Victoria Street in Toronto, Ontario (the Site). The waste audit was conducted in compliance with the Environmental Protection Act, O.Reg. 102/94: Waste Audits and Waste Reduction Work Plans and O.Reg. 103/94: Industrial, Commercial and Institutional Source Separation Program.

1.1 Purpose and Objectives

The purpose of the waste audit was to comply with Ontario Regulation 102/94 – Waste Audits and Waste Reduction Work Plans Part XI, which requires educational institutions to conduct a waste audit covering the waste generated by the establishment operating at the site, and prepare and implement a waste reduction work plan on an annual basis to confirm compliance with Ontario Regulation 103/94 – IC&I Source Separation Programs.

The objectives are as follows:

- Determine the composition of the Garbage stream by point of origin,
- Quantify the estimated 2023 annual waste generation for all waste streams using the 2022 annual data provided by TMU,
- Determine the waste diversion and capture rates,
- Identify additional opportunities for waste reduction and diversion; and
- Address any specific concerns identified during the study.

The Site is considered to be applicable to O.Reg. 103./94 – Educational Institutions.

2. Scope of Work

To meet the objectives outlined above, the following activities were undertaken by WRG:

- Collected five (5) samples from the site on November 2nd, 2023 over a 2-day period.
- Sorted samples into predetermined categories as set out by WRG (detailed in Appendix A: List of Categories)
- Determined the total quantity of waste diverted from landfill through current reduction, reuse, and recycling programs implemented at the facility (provided by TMU, Appendix B: Annual Data Request Form);
- Completed a waste audit report summarizing the findings of the audit and provided recommendations for increased waste diversion efficiency.
- Conducted a tour of the Site accompanied by TMU personnel and interviewed staff to obtain information on existing waste diversion practices.

3. Sampling Methodology

Five (5) representative samples of the garbage waste stream from the functional areas of the Site on November 2nd and 3rd, 2023 and audited on November 4th, 2023 to determine the composition of the waste stream. The samples were collected from the following functional areas:

- Classrooms, Labs and Seminar Rooms (colour coded **Blue**)
- Washrooms (colour coded **Orange**)
- Hallways and Lunch Room Kitchenette (colour coded **Red**)
- Office Spaces and Meeting Rooms (colour coded **Green**)
- Random/Mixed Samples (unlabelled bags)

The materials were sorted by qualified WRG staff using containers to keep materials separate. Waste was sorted into individual material categories and weighed using a calibrated scale (Appendix C: Scale Calibration Certificate). The waste was then re-bagged and disposed of in an appropriate waste container.

The total amount of materials source separated by the facility for recycling (other than mixed recycling) were not collected and categorized in the audit. However, annual quantities of all reused and recycled materials were reviewed and included in the audit results.

4. Waste Audit Findings

In total, 895.08 kg of waste materials were collected for the waste audit. Analysis of the waste stream sample is provided in the following sections.

4.1 Site Tour

During the tour of the Site, the following observations were made by WRG representatives:

- Four-stream containers (landfill, mixed paper, bottles and cans, and organics) were observed to be placed frequently throughout the Site.
- Four-stream bins were equipped with appropriate and clear signage to encourage proper disposal at source.
- Some batteries disposal receptacles were observed in various locations
- Garbage bins were observed in various locations including outside buildings
- Extra mixed paper bins were provided in areas of the Site where higher volumes of paper would be generated including offices, study rooms and libraries.

4.2 Waste Sample Composition by Functional Areas

Based on the audit findings, the functional areas of the Site that produced the highest mass (kg) from the waste stream are shown in the visual below.

Figure 1: Waste Sample Composition by Functional Area (in kg and % of sample by mass)

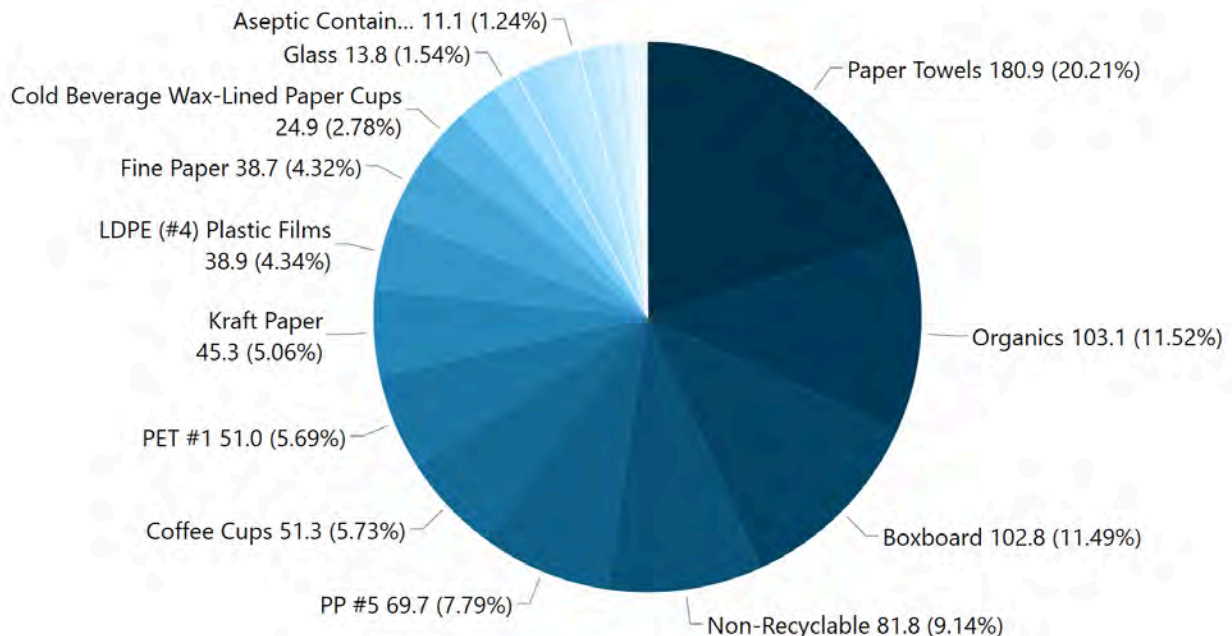
Functional Area	kg	%
Hallways and Lunch Room/Kitchenette	368.81	41.20%
Classrooms , Labs and Seminar Rooms	183.24	20.47%
Washrooms	156.09	17.44%
Unlabelled	98.73	11.03%
Office Spaces/Meeting Rooms	88.21	9.85%
Total	895.08	100.00%

Approximately 41% of the sample mass originated from the Hallways and Lunch Room/Kitchenette. The Classroom, Labs and Seminar Rooms and Washrooms had a combined sample mass of approximately 38%.

4.3 Waste Sample Composition by Material

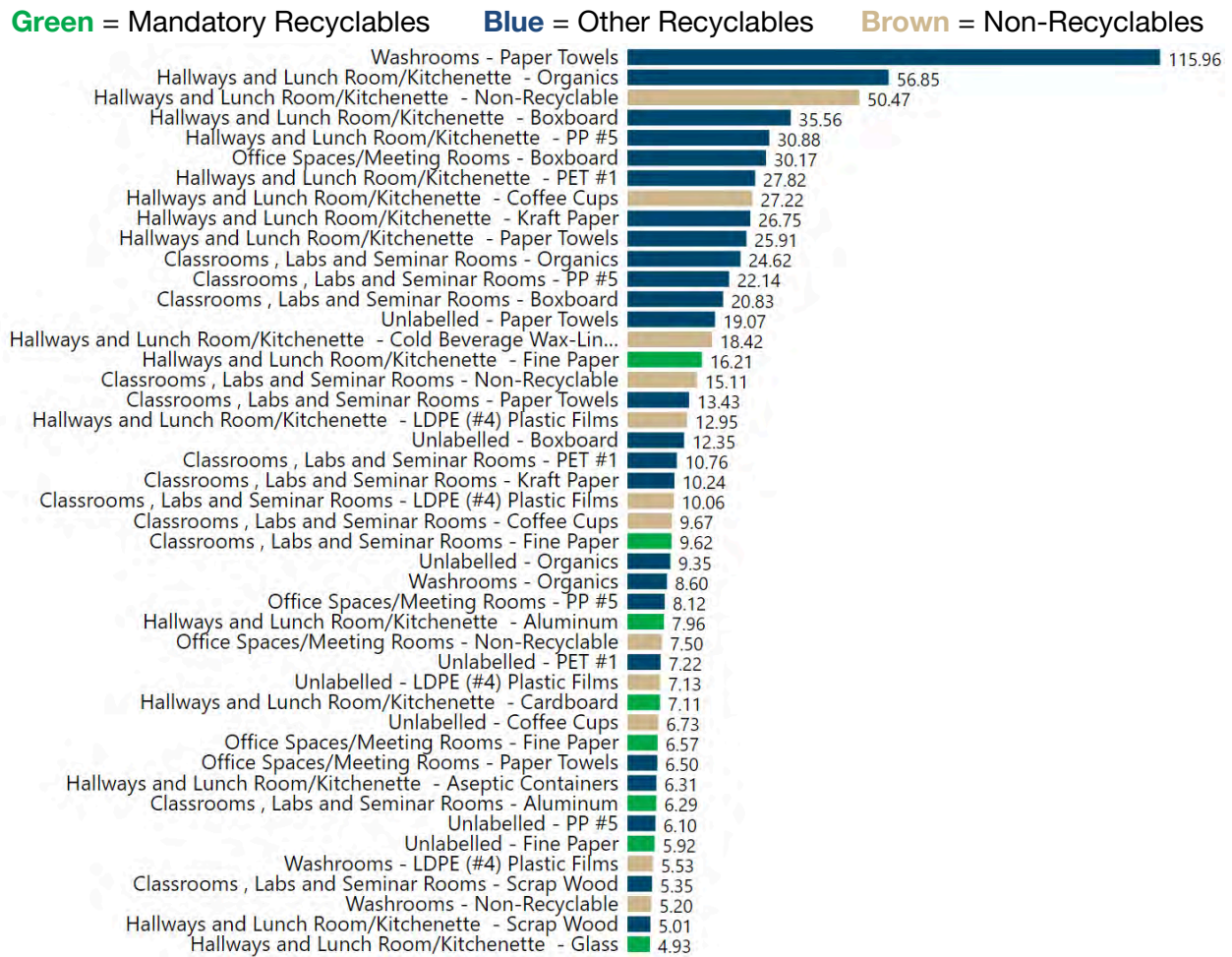
Based on the audit findings, the materials with the highest mass (kg) from the waste stream are shown in the visual below.

Figure 2: Waste Sample Composition by Material (in kg and % of sample by mass)



Paper towels (20.21%), organics (11.52%), and boxboard (11.49%) had a combined mass which contributed to over 40% of the total sample mass. The sample mass (%) ranked by functional area and material is provided in the chart below.

Figure 3. Sample Weight (kg) Ranked by Functional Area and Material (including Material Type)



A detailed breakdown of the waste sample composition is provided in Appendix D.

4.4 Types of Recycling Material in the Garbage Stream

Based on analysis of the waste sample composition, Mandatory Recyclables and Other Recyclables were identified in the waste stream. The sample consisted of 9.75% Mandatory Recyclables, 80.67% Other Recyclables, and 9.58% Other (Non-Recyclable) material.

A description of the categories is provided below.

Mandatory Recyclables

O.Reg.193/04 requires that educational institutions source separate the following materials (at a minimum):

- Cardboard
- Fine Paper
- Newsprint
- Glass
- Aluminum
- Steel cans

Other Recyclables

Includes the following materials:

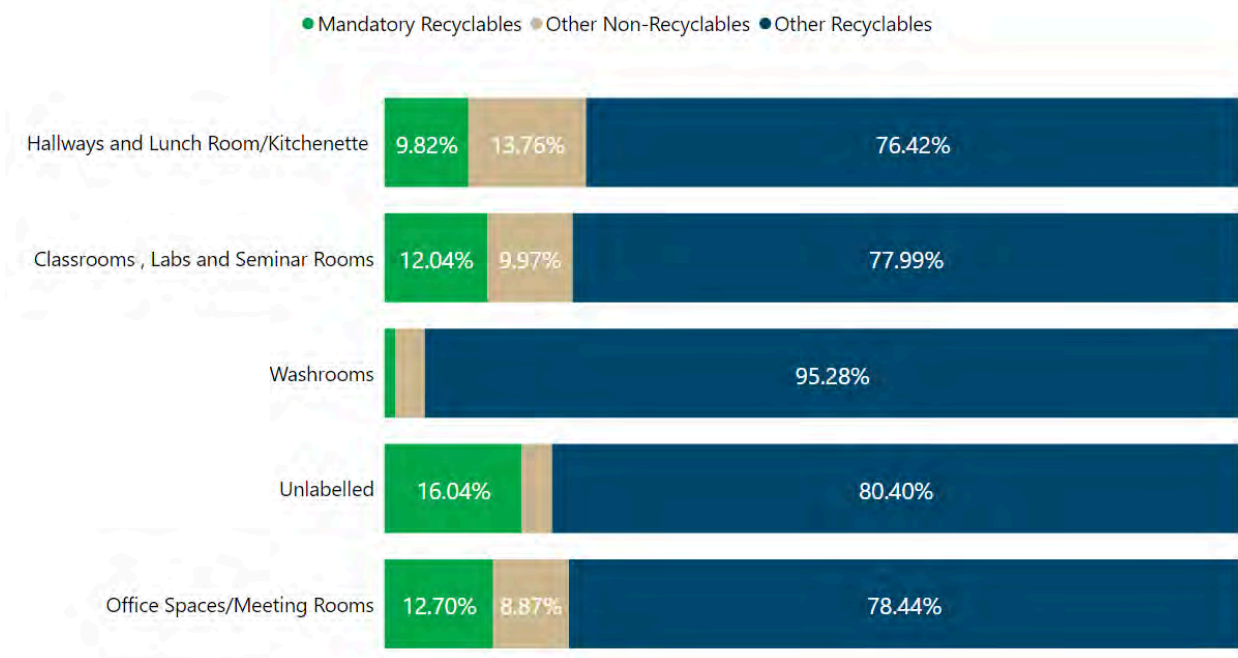
- Aseptic containers
- Batteries
- Boxboard
- Craft paper
- Electronic waste
- Organics
- Gable top containers
- Paper towels
- PP #5
- Scrap metal
- Scrap wood

Other (Non-Recyclables)

Includes all other non-recyclable materials including organics.

Analysis of the Mandatory Recyclables, Other Recyclables and Non-Recyclables is provided below.

Figure 4: Composition of Waste Stream by Mandatory Source Separated Waste vs Non-Mandatory Source Separated Waste



Based on a total sample weight of 895.08 kg, an annual generated waste amount of 936.38MT and the composition of mandatory recyclables in the waste stream, the estimated annual quantities of mandatory recyclables generated were calculated and are provided in the chart below.

Figure 5: Composition of Mandatory Recyclables in the Waste Stream represented as estimated annual tonnage (MT and % of mandatory recyclables in garbage stream)

Materials	Material Sample Mass (kg)	Estimated Annual Quantity Generated Through Waste Stream (MT)	% of Mandatory Recyclables
Fine Paper	38.70	45.28	44.34%
Aluminum	22.05	25.80	25.26%
Glass	13.78	16.12	15.79%
Cardboard	12.28	14.37	14.07%
Newspaper	0.47	0.55	0.54%
Steel Cans	0.00	0.00	0.00%
Total	87.28	102.13	100.00%

The total annual quantity of Mandatory Recyclables estimated to exist in the garbage stream is 102.13 MT.

5.0 Waste Diversion Programs and Disposal Systems

As part of the waste audit, WRG staff conducted a tour of the Site (accompanied by TMU personnel) to document existing waste disposal systems. Interviews with TMU personnel were also conducted to gain an understanding of the existing waste diversion programs and practices.

The following diversion programs exist at the Site:

- **Mixed Recycling** for general recycling materials is collected and consolidated in 96-gallon totes for recycling.
- **Cardboard** is collected in dedicated receptacles and is then consolidated by staff into cardboard totes for recycling.
- **Paper towels** are collected in dedicated receptacles and then consolidated by staff into paper towel totes for diversion from landfill.
- **Organics** are collected in 32-gallon totes for diversion from landfill.
- **Scrap wood** is consolidated to be picked up for diversion from landfill (no amounts generated for 2023)
- **Scrap metal** is consolidated to be picked up for diversion from landfill (no amounts generated for 2023)
- **Confidential paper/shredding** is collected in dedicated receptacles for diversion from landfill
- **Used Furniture/Donations** is collected in a dedicated area or donation bins
- **Electronic Waste** is collected in dedicated areas for pick up by a contractor
- **Paper Archive/Digitization** - paper documents are converted to digital format
- **Yard Waste** - yard waste is collected separately and diverted from landfill
- **Cooking Oil** is picked up by a dedicated contractor
- **Binder Reuse Program** - binders are diverted from landfill and reused at the site.

The waste diversion programs and associated annual generated quantities (in metric tonnes) is provided below.

Figure 6: Waste Diversion Programs and Annual Waste Quantities (MT)

Waste Collection	2023 Annual Quantity (MT)	% of Material Generated
Garbage	1,047.37	68.26%
Cardboard	115.45	7.52%
Mixed Recycling	91.80	5.98%
Organics	83.68	5.45%
Paper Shredding	63.97	4.17%
Scrap Metal	39.22	2.56%
Used Furniture/Donations	33.58	2.19%
Scrap Wood	31.14	2.03%
Electronic Waste	12.46	0.81%
Mixed Paper	5.00	0.33%
Lightbulb/Batteries	4.13	0.27%
Paper Towels	2.88	0.19%
Paper Recycling - Digitization	1.19	0.08%
Yard Waste (Dirt)	0.88	0.06%
Reuse Of Metal Filing Cabinets	0.66	0.04%
Used Cooking Oil	0.49	0.03%
Binder Reuse Program	0.47	0.03%
Total	1,534.35	100.00%

A total of 1,534.35 MT of waste material was generated in 2023. Photos of the receptacles and bins are provided in Appendix F.

6.0 Performance Metrics

TMU does not currently implement performance metrics.

6.1 Waste Diversion Rate

Waste diversion is the percentage of waste materials that a facility diverts from landfill due to reduce, reuse and recycling (3Rs) programs versus the total amount of waste generated (3Rs plus landfill waste). The Ministry of the Environment, Conservation and Parks defines the Waste Diversion rate calculation as follows:

$$\text{Waste Diversion Rate} = \frac{\text{Total Waste Diverted (3Rs)}}{\text{Total Waste Generated}} \times 100$$

Where,

Total Waste Diverted (3Rs) = 486.98 MT

Total Waste Generated = 1,534.35 MT

Waste Diversion Rate = 31.74%

The 2022-23 waste diversion rate of 31.74% is below the provincial objective of 60%.

6.2 Capture Rate

Capture rate is the proportion of divertible waste materials which are successfully diverted from disposal compared to the total amount of divertible waste materials generated. The capture rate is a measure of the effectiveness of existing recycling programs.

The Recycling Council of Ontario defines the Capture Rate calculation as follows:

$$\text{Capture Rate} = \frac{\text{Total Divertible Material Captured (3Rs)}}{\text{Total Divertible Material Generated}} \times 100$$

The Capture Rates for all divertible materials that are included in existing waste diversion programs at the Site are provided below.

Figure 7: Capture Rates for Divertible Materials

Waste Stream	Estimated Annual Quantity Generated Through Waste Stream (MT)	Estimated Annual Quantity Generated Through Diversion Programs (MT)	Total Generated (MT)	Capture Rate (%)
Mixed Recycling	335.63	91.80	427.43	21.48%
Paper Towels	211.64	2.88	214.52	1.34%
Organics	120.69	83.68	204.37	40.95%
Mixed Paper	98.80	5.00	103.80	4.82%
Cardboard	14.37	115.45	129.82	88.93%
Scrap Wood	13.23	31.14	44.37	70.18%
Electronic Waste	9.10	12.46	21.56	57.78%
Scrap Metal	2.80	39.22	42.01	93.34%
Binder Reuse Program	0.00	0.47	0.47	100.00%
Lightbulb/Batteries	0.00	4.13	4.13	100.00%
Paper Recycling - Digitization	0.00	1.19	1.19	100.00%
Paper Shredding	0.00	63.97	63.97	100.00%
Reuse Of Metal Filing Cabinets	0.00	0.66	0.66	100.00%
Used Cooking Oil	0.00	0.49	0.49	100.00%
Used Furniture/Donations	0.00	33.58	33.58	100.00%
Yard Waste (Dirt)	0.00	0.88	0.88	100.00%
Total	806.26	486.98	1,293.24	37.66%

The overall **Capture Rate is 37.66%** based on a total quantity generated of 486.98 MT and total divertible quantity of 806.26 MT.

Large quantities of organics (120.68 MT), paper towels (211.64 MT), and mixed paper (98.8 MT) were estimated to be generated from the waste stream based on the total landfill quantity of 806.26 MT and the sample composition from the waste audit.

7.0 Waste Audit Summary and Waste Reduction Work Plan

Refer to Appendix G for the Waste Audit Summary and the Waste Reduction Work Plan.

According to O.Reg.102/94, the Waste Reduction Work Plan or a summary of the plan must be posted at the facility in a place where employees can review it. If a summary is posted, the entire Work Plan should also be made available for review by any employee upon request.

8.0 Findings and Conclusions

Based on the findings of the waste audit, the following conclusions can be made:

- Approximately 40% of the sample mass originated from the Hallways and Lunch Room/Kitchenette.
- Paper towels (20.21%), organics (11.52%), boxboard (11.49%) had a combined mass which contributed to over 40% of the total sample mass.
- Mandatory Recyclables were identified in the waste stream (9.75%) and was largely comprised of:
 - Fine paper - an estimated quantity of 45.28 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette, and Classrooms, Labs and Seminar Rooms
 - Aluminum - an estimated quantity of 25.8 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette, and Classrooms, Labs and Seminar Rooms
 - Glass - an estimated quantity of 16.12 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette
 - Cardboard - an estimated quantity of 14.37 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette
- Other Recyclables were identified in the waste stream in large quantities:
 - Organics - an estimated quantity of 120.69 MT is produced annually and originates primarily from the Hallways and Lunch Room/Kitchenette and Classrooms, Labs and Seminar Rooms
 - Paper Towels - an estimated quantity of 211.64 MT is produced annually and originates primarily from the Washrooms.
- **Waste Diversion Rate** - was calculated to be **31.74%** based on 486.98 MT of diverted waste and 1,534.35 MT of total waste produced annually.
- **Capture Rate** - the overall capture rate was **37.66%** based on 486.98 MT of diverted waste and 1,293.24 MT of total divertible waste generated.

9.0 Recommendations

Based on the conclusions, the following recommendations are tied to conclusions discussed in the previous section.

The Site diverts 37.14% of generated waste through existing programs which is below the provincial objective of 60%. There are opportunities to further improve the waste diversion rate.

9.1 Improve Existing Waste Diversion Programs

Waste diversion and capture rates could be further improved by improving the following existing diversion programs.

Mandatory Recyclables

- **Fine Paper** - roughly 45.28 MT of material is estimated to be generated annually through the waste stream. Diverting this material through the existing mixed recycling diversion program could **increase the waste diversion rate up to 2.9%** and could **increase the capture rate up to 3.5%** based on current waste quantities at the Site.
- **Aluminum** - roughly 25.8 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing mixed recycling diversion program could **increase the waste diversion rate up to 1.7%** based on current waste quantities at the Site.
- **Glass** - roughly 13.78 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing mixed recycling diversion program could **increase the waste diversion rate up to 0.9%** based on current waste quantities at the Site.
- **Cardboard** - roughly 14.37 MT of material is estimated to be generated annually through the waste stream. Diverting this quantity through the existing cardboard diversion program could **increase the waste diversion rate up to 0.9%** based on current waste quantities at the Site.

Other Recyclables

- **Organics** - roughly 120.69 MT of material is estimated to be generated annually through the garbage stream. Diverting this quantity through the existing organics diversion program could **increase the waste diversion rate up to 7.9%** and would **increase overall capture rate by up to 9.3%** based on current waste quantities at the Site.
- **Paper Towels** - roughly 211.64 MT of material is estimated to be generated annually through the garbage stream. Diverting this quantity through the existing paper towel diversion program could **increase the waste diversion rate up to 13.8%** and would **increase overall capture rate by up to 16.4%** based on current waste quantities at the Site.

Capture rates could be improved by implementing dedicated receptacles in the following areas with improved signage:

- Fine Paper and Aluminum - dedicated receptacles in the Hallways and Lunch Room/Kitchenette and Classrooms, and Labs and Seminar Rooms.
- Organics, Glass and Cardboard - dedicated receptacles in the Hallways and Lunch Room/Kitchenette.
- Paper Towels - dedicated receptacles in the Washrooms and consolidating paper towels in a bin for pick-up by a dedicated contractor for diversion from landfill.

Placing clear signage with visuals/pictures directly above receptacles indicating the appropriate waste for each bin will encourage staff to source separate at the time of disposal. Signage with a simple message such as “Organics Only” for organics bins or “Cardboard Only” for cardboard bins above each set of receptacles to encourage staff to place cardboard or organics in the appropriate dedicated receptacles could improve capture rates.

9.2 Promoting Culture

It is recommended to establish and maintain a committee that oversees waste reduction and sustainability and to promote a culture of waste diversion. Educate staff and students on the importance of waste diversion and communicate TMU’s goals for waste diversion and sustainability. Create a positive message around the benefits of waste diversion, and the role that the individual plays.

Support and encourage the purchase and use of “environmentally friendly”, reusable or recyclable materials and packaging, and/or those that contain recycled content.

9.3 Continuous Monitoring and Process Improvement

Track year-over-year changes in waste diversion and capture rates and communicate progress to staff to encourage further participation/engagement from staff.

Continuous monitoring and reporting for this site annually and comparison with year-over-year changes would provide insight into trends, which can then be used as a basis for policy decisions regarding solid waste management for future projects. Further refinements to programs/processes can be made and adherence to provincial requirements can be achieved.

Appendices

Appendix A: List of Categories

Material Category	Description
1. Paper and Paper Products	
Fine Paper	Includes mixed fine papers, writing paper, office paper, copy paper, bills and statements, ad mail, lottery tickets, receipts, envelopes, promotional cards, promotional calendars, printed information found within packaged products, etc. Also includes soft cover books, booklets, magazines, catalogues, calendars, flyers, and inserts.
Newsprint	Major daily and weekly newspapers and community newspapers. Does not include flyers and inserts.
Shredded Confidential Papers	Any paper that has been shredded.
Boxboard	Single layered paperboard and fibre board with no corrugation. Includes cereal boxes, shoe boxes, cores from toilet paper / paper towels / gift wrap, etc.
Kraft Paper	Kraft paper bags and wrap, grocery or retail bags, potato bags, some pet food bags, etc. Includes brown, white, and coloured kraft paper and bags. No bags with bonded plastic or foil lining.
Corrugated Cardboard	Waxed or unwaxed corrugated cardboard containers. Includes molded pulp materials such as egg cartons, drink trays, other trays, etc.
Gable Top Containers	Polycoat containers with a gable shaped top used for milk, juice, some foods, etc.
Aseptic Containers	Tetra-pak type polycoat packaging containers used for juice, milk, some soups & broths, alternative milk beverages, alcoholic beverages, etc.
Composite Cans	Spiral wound cans with paper walls and plastic or metal tops or bottoms. Includes frozen juice, Pringles chips, dough, some raisins, etc.

2. Plastic	
#1 Polyethylene Terephthalate (PET)	<p>All PET #1 plastics.</p> <p>Includes clear or coloured thermoform packaging, beverage bottles, non-beverage bottles used for food items and non-food items such as dish soap, shampoo, mouthwash, window cleaner, floor cleaner, etc.</p> <p>Does not include Black Plastics.</p>
#2 High-Density Polyethylene (HDPE)	<p>All HDPE #2 plastics.</p> <p>Includes natural and coloured bottles, jugs, and containers for beverages, food items, and non-food items such as laundry soap, shampoo, bleach, vinegar, pill bottles, etc.</p> <p>Does not include Black Plastics.</p>
#4 Low-Density Polyethylene (LDPE) Films	<p>All #4 LDPE plastic films.</p> <p>Includes soft "stretchy" PE plastic used for items such as produce bags, overwrap for water bottles, garbage bags, kitchen liners, blue or clear recycling bags, sandwich and freezer bags, etc.</p> <p>Does not include Black Plastics.</p>
#5 Polypropylene (PP)	<p>All #5 PP plastics.</p> <p>Includes clear and coloured food containers, jugs, and jars, take-out beverage cups, bottles, and jars for food items, etc.</p> <p>Does not include Black Plastics.</p>
#6 Non-Expanded Polystyrene (PS)	<p>All Non-Expanded (rigid) #6 PS plastics.</p> <p>Includes clear or coloured rigid food trays, clamshells, cup lids, yogurt cups, CD and DVD cases only (no disk), etc.</p> <p>Does not include Black Plastics.</p>
Other Recyclable Plastics (#3, 4, 7)	<p>All other recyclable plastics (#3, 4, 7).</p> <p>Includes clear and coloured bottles, jugs, jars, containers.</p>
3. Glass/Metal	
Glass	<p>All clear and coloured glass.</p> <p>Includes bottles and containers for food, beverage, cosmetics, toiletries, household pharmaceutical products, candle jars etc.</p> <p>Does not include non-recyclable glass such as windowpane glass, plates, drinking glasses, figures, incandescent light</p>

	bulbs.
Aluminum	All aluminum containers and foils. Includes food and beverage containers, rigid aluminum trays (pie plates, baking trays, etc.), empty aerosol containers, and containers for hair products, tubes, etc. Does not include full or partially full pressurized cans.
Steel	All steel containers. Includes food and beverage containers, empty spray cans (for cooking oil, whipped cream, etc.), empty paint cans. Does not include full or partially full pressurized cans.
4. Organics	
Organic Food Waste	All edible and non-edible organic wastes that result from food items. Includes untouched and leftover bakery, meat & fish, dried food, fruits & vegetables, dairy, and other foods.
Other Organics	All other organic materials that do not result from food items. Includes yard waste, grass clippings, small wood waste, pet waste, diapers and sanitary products, certified compostable plastic bin liners, and other compostable papers.
Compostable Fibres	Paper towels, paper napkins, toilet papers, facial tissues, etc.
5. Operational Waste	
Other Metals	Scrap metals, copper pipes, hardware, etc. Includes multi-material items that are mainly metal.
Non-Treated Wood	Non-treated wood materials. Includes skids/pallets, wooden furniture, etc. Does not include branches, brush, or wood chips.
Batteries	All single-use and rechargeable batteries. Includes Alkaline-Manganese, Lithium, Silver Oxide, Zinc Air, Zinc-Carbon, etc.
Printer Toners	All ink cartridges and printer toners.

E- Waste	<p>All Waste from Electrical and Electronic Equipment (WEEE). Anything that is battery operated and/or can be plugged into an electrical outlet.</p> <p>Includes computer / IT equipment, telecom equipment, TV & audio equipment, small kitchen appliances, wires / chargers / adapters, cocks, gadgets, etc.</p>
Plastic Strapping	<p>All Plastic Strapping material.</p> <p>This material is used to bundle products together for retail sales and can come in a variety of colours and plastic materials.</p>
6. Non-Recyclable Waste	
Non-Recyclable/Garbage	<p>All other non-recyclable waste materials not classified elsewhere. Includes hazardous waste, coffee cups, black plastics, expanded polystyrene, all described below.</p> <p>Includes chip bags, furnace filters, laminated papers, rigid or durable plastics, non-recyclable glass, dust, single-use cleaning wipes, single-use coffee pods, plastic straws and cutlery, materials too small to process, etc.</p>
Hazardous Wastes	<p>All hazardous wastes not classified elsewhere.</p> <p>Includes full or partially full pressurized cans, paints, and oil containers.</p> <p>Also includes fluorescent light bulbs and tubes, medical sharps and syringes, mercury containing devices, pharmaceuticals, antifreeze, fertilizers, solvents, pesticides, etc.</p> <p>Also includes all other liquid or non-liquid items with signal words such as "Poison", "Danger", "Warning", "Caution", and "Precautionary Statements".</p>
Coffee Cups	<p>All cups and containers used for hot/cold beverages and food with a plastic or wax lining.</p> <p>Multiple layered, primarily fibre, hot/cold food and beverage containers common in the fast food industry.</p> <p>Includes paper based cups with a plastic lining, water cooler cups, freezer boxes, etc.</p>
Black Plastics	<p>Includes all Black Plastics #1-7 and unmarked.</p> <p>Also includes rigid, durable, and expanded Black Plastics, as well as black plastic bags.</p>

Expanded Polystyrene	<p>Includes white, coloured, and black polystyrene foam packaging.</p> <p>Includes food trays, clamshells, etc. Also includes foam packaging "peanuts" and foam blocks used to protect boxed products.</p>
----------------------	--



Appendix B: Annual Request Form

Annual Data Request Form

Client Name: TMU
 WRC Project No: waste management and recycling service summary
 Date: 2023

If a bin is used for multiple waste streams (i.e. Garbage and PPE Gloves), please indicate these as separate on different rows so there is one row per waste stream.

Container Size	Waste Stream/Material	Service Provider	Contact Name	Contact Number	Equipment (Compactor/Shredder / Baler)	Pick-Up Frequency	Estimated Annual Quantity	Annual Quantity (Number)	Average "Fullness" at Time of Pick-up (Check the cell with an "x" as applicable)					Notes	
									Empty	1/4 Full	1/2 Full	3/4 Full	Full		
	Organics						83.68	83.68							
	Mixed Recycling						91.8	91.8							
	Paper Towels						2.88	2.88							
	Cardboard						115.45	115.45							
	Mixed Paper						5	5							
	Scrap Wood						3114	3114							
	Used Furniture/Donations						33.58	33.58							
	Yard Waste (Dirt)						0.88	0.88							
	Used Cooking Oil						0.486	0.486							
	Electronic Waste						12.48	12.48							
	Scrap metal						34.088	34.088							
	Reuse of Metal Filing Cabinets						0.86	0.86							
	Paper Recycling - digitization						1185	1185							
	Sanitary Waste						-	-							
	Paper Shredding						63.97	63.97							Numbers from Iron Mountain from Gar
Gaylord	Binder Reuse Program						0.465386	0.465386	2						Garth has sent already
	Lightbulb/batteries						4.13	4.13							
	Scrap metal						11,280	5,127,272							
	Garbage						1047.37	1047.37							

Appendix C: Scale Calibration Certificate



CALIBRATION CERTIFICATE

DATE: Aug 17 2023

SR # 51702

CUSTOMER:

Waste Reduction Group
214 Merton St. Unit 101
Toronto ON

REMARKS

This is to certify that the following scale has been tested and verified in relation to the Standards maintained by **CANADIAN SCALE COMPANY LIMITED**, with test weights traceable to the Legal Metrology Laboratories of, Industry Canada and National Research Council, Canada.

Western model EWA-150
Capacity - 150 kg
S/N - 202304031

CANADIAN SCALE COMPANY LIMITED is accredited with Measurement Canada

Technician's signature



CANADIAN SCALE COMPANY LIMITED
305 Horner Avenue, Toronto, ON M8W 1Z4
1-800-461-0634 www.canscale.com

Appendix D: Detailed Sample Composition

Detailed Waste Sample Composition by General Waste Category and Material (Note: higher intensity of blue highlighting indicates higher sample weight/percent)

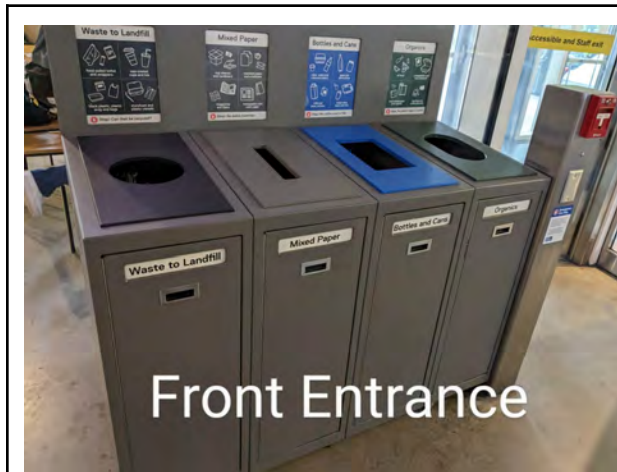
Functional Area Waste Generating Areas	Classrooms , Labs and Seminar Rooms		Hallways and Lunch Room/Kitchenette		Office Spaces/Meeting Rooms		Unlabelled		Washrooms		Total	
	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%
Mixed Containers	49.34	5.51%	85.27	9.53%	20.29	2.27%	24.22	2.71%	4.87	0.54%	183.99	20.56%
Aluminum	6.29	0.70%	7.96	0.89%	2.91	0.33%	4.61	0.52%	0.28	0.03%	22.05	2.46%
Aseptic Containers	2.49	0.28%	6.31	0.70%	0.91	0.10%	1.40	0.16%	0.00	0.00%	11.11	1.24%
Gable Top Containers	1.65	0.18%	0.00	0.00%	0.62	0.07%	0.00	0.00%	0.00	0.00%	2.27	0.25%
Glass	2.19	0.24%	4.93	0.55%	1.59	0.18%	4.07	0.45%	1.00	0.11%	13.78	1.54%
HDPE Plastic Containers #2	0.01	0.00%	3.21	0.36%	0.31	0.03%	0.41	0.05%	0.00	0.00%	3.94	0.44%
PET #1	10.76	1.20%	27.82	3.11%	4.10	0.46%	7.22	0.81%	1.06	0.12%	50.96	5.69%
Polystyrene #6	3.81	0.43%	4.16	0.46%	1.73	0.19%	0.41	0.05%	0.03	0.00%	10.14	1.13%
PP #5	22.14	2.47%	30.88	3.45%	8.12	0.91%	6.10	0.68%	2.50	0.28%	69.74	7.79%
Steel Cans	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Mixed Papers	40.82	4.56%	78.52	8.77%	39.92	4.46%	20.20	2.26%	7.81	0.87%	187.27	20.92%
Boxboard	20.83	2.33%	35.56	3.97%	30.17	3.37%	12.35	1.38%	3.93	0.44%	102.84	11.49%
Fine Paper	9.62	1.07%	16.21	1.81%	6.57	0.73%	5.92	0.66%	0.38	0.04%	38.70	4.32%
Kraft Paper	10.24	1.14%	26.75	2.99%	3.05	0.34%	1.72	0.19%	3.50	0.39%	45.26	5.06%
Newspaper	0.13	0.01%	0.00	0.00%	0.13	0.01%	0.21	0.02%	0.00	0.00%	0.47	0.05%
Other Recyclables	50.27	5.62%	95.48	10.67%	11.89	1.33%	33.78	3.77%	126.35	14.12%	317.77	35.50%
Batteries	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Cardboard	3.84	0.43%	7.11	0.79%	0.00	0.00%	1.03	0.12%	0.30	0.03%	12.28	1.37%
Electronic Waste	0.89	0.10%	0.60	0.07%	1.16	0.13%	4.12	0.46%	1.01	0.11%	7.78	0.87%
Organics	24.62	2.75%	56.85	6.35%	3.72	0.42%	9.35	1.04%	8.60	0.96%	103.14	11.52%
Paper Towels	13.43	1.50%	25.91	2.89%	6.50	0.73%	19.07	2.13%	115.96	12.96%	180.87	20.21%
Scrap Metal	2.14	0.24%	0.00	0.00%	0.20	0.02%	0.00	0.00%	0.05	0.01%	2.39	0.27%
Scrap Wood	5.35	0.60%	5.01	0.56%	0.31	0.03%	0.21	0.02%	0.43	0.05%	11.31	1.26%
Other	42.81	4.78%	109.54	12.24%	16.11	1.80%	20.53	2.29%	17.06	1.91%	206.05	23.02%
Coffee Cups	9.67	1.08%	27.22	3.04%	3.70	0.41%	6.73	0.75%	4.01	0.45%	51.33	5.73%
Cold Beverage Wax-Lined Paper Cups	2.43	0.27%	18.42	2.06%	1.20	0.13%	2.76	0.31%	0.08	0.01%	24.89	2.78%
LDPE (#4) Plastic Films	10.06	1.12%	12.95	1.45%	3.21	0.36%	7.13	0.80%	5.53	0.62%	38.88	4.34%
Non-Recyclable	15.11	1.69%	50.47	5.64%	7.50	0.84%	3.51	0.39%	5.20	0.58%	81.79	9.14%
Plastic Strapping	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%
PPE	2.39	0.27%	0.19	0.02%	0.18	0.02%	0.40	0.04%	2.04	0.23%	5.20	0.58%
Styrofoam	0.00	0.00%	0.00	0.00%	0.20	0.02%	0.00	0.00%	0.00	0.00%	0.20	0.02%
Textiles	3.15	0.35%	0.29	0.03%	0.12	0.01%	0.00	0.00%	0.20	0.02%	3.76	0.42%
Total	183.24	20.47%	368.81	41.20%	88.21	9.85%	98.73	11.03%	156.09	17.44%	895.08	100.00%

Appendix E: Estimated Annual Quantities Generated from Garbage Stream

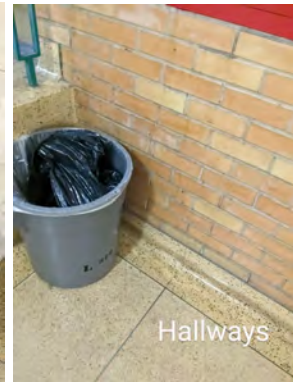
Waste Sample Composition and Estimated Annual Quantities Generated in the Garbage Stream (Note: **blue** data bars indicate higher annual quantities)

Mandatory Recyclables	Sample Mass (kg)	%	Estimated Annual Quantity Generated Through Waste Stream (MT)
<input type="checkbox"/> Other Recyclables	722.05	80.67%	844.90
Paper Towels	180.87	20.21%	211.64
Organics	103.14	11.52%	120.69
Boxboard	102.84	11.49%	120.34
PP #5	69.74	7.79%	81.61
Coffee Cups	51.33	5.73%	60.06
PET #1	50.96	5.69%	59.63
Kraft Paper	45.26	5.06%	52.96
LDPE (#4) Plastic Films	38.88	4.34%	45.50
Cold Beverage Wax-Lined Paper Cups	24.89	2.78%	29.12
Scrap Wood	11.31	1.26%	13.23
Aseptic Containers	11.11	1.24%	13.00
Polystyrene #6	10.14	1.13%	11.87
Electronic Waste	7.78	0.87%	9.10
PPE	5.20	0.58%	6.08
HDPE Plastic Containers #2	3.94	0.44%	4.61
Scrap Metal	2.39	0.27%	2.80
Gable Top Containers	2.27	0.25%	2.66
Batteries	0.00	0.00%	0.00
<input type="checkbox"/> Mandatory Recyclables	87.28	9.75%	102.13
Fine Paper	38.70	4.32%	45.28
Aluminum	22.05	2.46%	25.80
Glass	13.78	1.54%	16.12
Cardboard	12.28	1.37%	14.37
Newspaper	0.47	0.05%	0.55
Steel Cans	0.00	0.00%	0.00
<input type="checkbox"/> Other Non-Recyclables	85.75	9.58%	100.34
Non-Recyclable	81.79	9.14%	95.71
Textiles	3.76	0.42%	4.40
Styrofoam	0.20	0.02%	0.23
Plastic Strapping	0.00	0.00%	0.00
Total	895.08	100.00%	1,047.37

Appendix F: Site Photographs



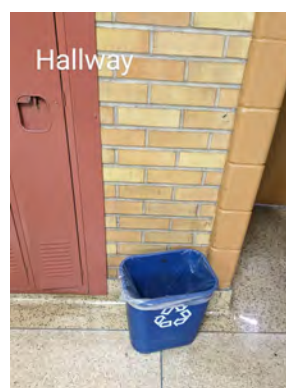
Site Tour - typical 4-stream receptacle with clear signage and specific slot sizes to encourage separation of waste at source



Site Tour - Hallway garbage and recycling receptacles. Implementing 4-stream receptacles is recommended to encourage separation of waste at source.



Site Tour - Mixed paper dedicated receptacles



Site Tour - Hallway garbage and recycling receptacles. Implementing 4-stream receptacles is recommended to encourage separation of waste at source.



Waste Audit - paper towels from the washrooms



Waste Audit - organics from the Hallways and Lunch Room/Kitchenette



Waste Audit - fine paper from the Hallways and Lunch Room/Kitchenette.



Waste Audit - aluminum from the Hallways and Lunch Room/Kitchenette

Appendix G: Waste Reduction Work Plan