

ICI WASTE AUDIT PROCEDURE

The City of Regina recommends hiring a waste audit professional to ensure the most accurate results. The protocol below is meant to assist with a basic waste audit.

Preparing for a Waste Audit

Designate Sorting Location and Audit Team

Identify who will be involved in conducting the waste audit. The number of people will vary depending on the volume of waste. It is important to note there will be tasks such as planning the audit dates, collecting/weighing/sorting the material, and analyzing the data.

Designate a sorting location that will provide enough space to collect the waste that is generated over the course of the audit, as well as have locations for each type of material once it is sorted. A space of least 10ft x 10ft is recommended, however, this will vary based on the amount of waste collected.

Safety Equipment and Supplies

The audit team should utilize the following supplies and consider utilizing personal protective equipment for the waste sorting process:

- Steel toed boots
- Overalls
- Puncture proof gloves
- Masks
- Safety glasses
- Table to spread out the waste
- Bins for sorting the waste
- Bags to line the sorting bins and cover the table
- Tarps to cover the floor
- Tape

- Knives or scissors
- Camera
- Weigh scale
- Clipboard
- Waste Composition Sort and Weigh Form (Appendix A)
- Pens
- Broom

Selecting Sample Dates

When selecting sample dates there are two important considerations. The first consideration is to select dates that will represent an average business cycle. There may be significant changes in waste generation between weekdays and weekends or other events that may impact waste generation. If there is a day with a relatively high waste generation, it may be best to sample a high waste generation day and a lower waste generation day and take the average between the two.

The second consideration is to ensure the dates selected provide a large enough sample for accurate results. Ideally a larger sample will provide more accurate results, but this must be balanced with operational challenges. A sample of one **week's worth of waste is recommended, however, if only one day is feasible, you can extrapolate one day's waste volume to determine how much waste would be produced in one week.** It is important to record the generation period for the sample, beginning at the day when the containers were last emptied until they are collected for sorting. This will provide an understanding of how much waste is generated per day.

Once the dates are selected, they should not be disclosed to staff that are not involved in the waste audit process. Only personnel necessary for the waste collection process, such as supervisors, managers, and cleaning staff will be notified about the waste audit. Extensive knowledge of the audit might influence behaviours causing the end results to be skewed and not reflective of normal day-to-day activities.

Collecting the Sample

As you collect your sample after the generation period, ensure that each stream of waste is labeled. For example, all garbage bags should have a tag placed on them that states "garbage" If your location currently recycles, any bags of waste taken from the recycling receptacle should be labeled "recycling." The bags of waste can be taken to your sorting area and grouped accordingly. If there are multiple locations being sampled, you may label the bags by location if you wish ex. "front entrance," "kitchen." This could help you determine which areas of your property produce the most waste, however this is not necessary.

Conducting the Audit

1. Prepare Sorting Area

Ensure that all the required supplies and materials are available. The sorting area will consist of a central sorting table(s) where the waste will be spread out, with bins for each material category (see Appendix A) placed close by or on the table. Garbage bags or tarps can be used to cover the table and line each of the sorting bins.

Before sorting, weigh the empty bins and write this tare weight on the side of the bin. Material categories are listed on the Waste Composition Sort and Weigh form in Appendix A. It is important to have bins or containers for each applicable category listed in Appendix A and that you ensure that all containers are labeled (your organization may not produce waste for every category listed in Appendix A, so you will only need bins for the types of waste produced).

2. Sort the Material by Stream

When it is time to begin sorting, the bagged material should be moved to the designated sorting area. It is very important to only sort one stream of waste at a time. For example, you can sort through bags labeled “garbage”, but you do not want to place bags labeled “recycling” on the sorting table as you are sorting through the garbage stream. The audit team may have to handle potentially hazardous materials such as sharps and needles. When ever handling waste material, puncture proof gloves and proper safety measures are required.

The team members will set one bag at a time on the table and cut it open length wise to expose the waste. It is important never to reach into a bag blindly or squish/squeeze an item to determine if something is inside. The waste will then be sorted by material type/category into the designated bins.

As you sort the waste from each stream, deposit each item into the correct labeled bin as identified in Appendix A. For example, you should have at least one bin for paper, one bin for cardboard, etc. Take photos of any unusual items that may skew results. These must be noted and weighed separately.

3. Weigh and Record Your Data

Next to the sorting area will be the weigh-out station where each individual material category is weighed. This area consists of a table, scale, the Waste Composition Sort and Weigh form (Appendix A) to log each categories weight and takes notes, and a camera.

Once sorting is completed, the audit team can take photos of each bin/material category and then weigh and record the weights of each category using the Waste Composition Sort and Weigh form. Prior to weighing the material, the audit team must make sure that the scale is calibrated and that the tare weights of bins are recorded as mentioned in Step 1. After the information has been recorded, the audit team should properly dispose of the garbage, recyclables, and food and yard waste.

4. Dispose of the Waste

Once the waste has been properly sorted, weighed, and recorded, gather each material type by stream and dispose of each correctly. Depending on the amount of waste that was generated for the period of the audit, this may require additional coordination from your collection service provider.

Analyzing the Results

After the results have been compiled there are several calculations to make that will help interpret the results for each of the three waste streams. Food and yard waste and recyclables that are correctly sorted into their respective streams are considered diverted material.

You will need to take the gross weight (the weight of waste and container) minus the tare weight (the weight of the container) to get the net weight (the weight of the waste only)

The Results Calculation Form in Appendix B will help you calculate:

- Contamination rates: The percentage of non-acceptable material in a waste stream.
- Capture Rates: Acceptable material diverted from the landfill as a percentage of total acceptable material generated.
- Generation Rates: Quantity of waste generated per day.
- Diversion Rate: The percentage of all waste diverted from the landfill.

Appendix A: Waste Composition Sort and Weigh Form

Waste Composition Sort and Weigh			Circle Stream being sorted: Garbage Recycling Food and Yard			
Recyclables	Gross Weight (Weight of Container and Waste)	Tare Weight (Weight of Container)	Net Weight (Weight of Waste)	Notes	Examples	
Paper					Office paper, newspaper, catalogues, shredded paper	
Paper Packaging					Cardboard, cereal boxes, egg cartons, takeout trays,	
Plastics #1-7						
Glass Deposit					Beer and wine bottles, etc.	
Glass Non-Deposit					pickle jars, etc.	
Metals					Soda cans, aluminum foil, soup cans	
Other Recyclable Material						
TOTAL WEIGHT						
Food and Yard Waste	Gross Weight (Weight of Container and Waste)	Tare Weight (Weight of Container)	Net Weight (Weight of Waste)	Notes	Examples	
Food Waste					Compostable food waste	

Yard Waste							Leaves, grass, branches, etc.
Other Food and Yard Material							Sawdust, wood shavings
TOTAL WEIGHT							
Garbage	Gross Weight (Weight of Container and Waste)	Tare Weight (Weight of Container)	Net Weight (Weight of Waste)	Notes	Examples		
Diapers and Sanitary Products							
Polycoat Beverage containers					Disposable Coffee Cups		
Single Use Disposable							
Pet Waste							
Bulky Waste					Large mixed material items not classified elsewhere		
Residue Fines (<2.5cm)					Small residue		
Other Garbage Material							
TOTAL WEIGHT							
Other Material	Gross Weight (Weight of Container and Waste)	Tare Weight (Weight of Container)	Net Weight (Weight of Waste)	Notes	Examples		
Household Hazardous Waste							

Scrap Metal							Copper pipe, vehicle parts, etc.
Motor oil							
Electronics							
Batteries							
Other Waste							Other waste not categorized elsewhere
TOTAL WEIGHT							

Appendix B: Results Calculation Form

Garbage Stream		Recycling Stream		Food and Yard Stream	
Weight of Garbage (kg)		Weight of Garbage (kg)		Weight of Garbage (kg)	
Weight of Recyclables (kg)		Weight of Recyclables (kg)		Weight of Recyclables (kg)	
Weight of Food and Yard (kg)		Weight of Food and Yard (kg)		Weight of Food and Yard (kg)	
Total Weight of Stream (kg)		Total Weight of Stream (kg)		Total Weight of Stream (kg)	
Contamination Rate (%)		Contamination Rate (%)		Contamination Rate (%)	
Capture Rate (%)	N/A	Capture Rate (%)		Capture Rate (%)	
Generation Rate (kg/day)		Generation Rate (kg/day)		Generation Rate (kg/day)	
Diversion Rate (%) =					

Contamination Rates (%)

Garbage Contamination Rate = $(\text{Weight of Recyclables in the Garbage Stream} + \text{Weight of Food and Yard in the Garbage Stream}) / (\text{Total Weight of Garbage Stream}) \times 100$

Recycling Contamination Rate = $(\text{Weight of Garbage in the Recycling Stream} + \text{Weight of Food and Yard in the Recycling Stream}) / (\text{Total Weight of Recycling Stream}) \times 100$

Food and Yard Contamination Rate = $(\text{Weight of Garbage in the Food and Yard Stream} + \text{Weight of Recycling in the Food and Yard Stream}) / (\text{Total Weight of Food and Yard Stream}) \times 100$

Capture Rates (%)

Recycling Capture Rate = $(\text{Weight of Recyclables in the Recycling Stream} / \text{Total Weight of Recyclables in All Three Streams}) \times 100$

Food and Yard Capture Rate = $(\text{Weight of Food and Yard in the Food and Yard Stream} / \text{Total Weight of Food and Yard in All Three Streams}) \times 100$

Generation Rate (kg/day)

Garbage Generation Rate = $\text{Total Weight of Garbage} / \text{Generation Period}$

Recycling Generation Rate = $\text{Total Weight of Recycling} / \text{Generation Period}$

Food and Yard Generation Rate = $\text{Total Weight of Food and Yard} / \text{Generation Period}$

Diversion Rate (%)

Diversion Rate = $(\text{Weight of Recyclables in Recycling Stream} + \text{Weight of Food and Yard in Food and Yard Stream}) / (\text{Total Sample Weight}) \times 100$