EPA Region 8 Waste Audit Report

EXECUTIVE SUMMARY

Waste generation is one of the significant environmental impacts that we have in our daily operations, therefore it is important to quantify the various components of our waste/recycling stream, evaluate the effectiveness of Region 8's current recycling program, and identify areas for improving both the current and future recycling efforts. On October 27, 2009, the Green Operations staff coordinated a Waste Audit (WA) of trash and recyclables generated by the EPA Region 8 1595 Wynkoop Facility. A volunteer team of Region 8 employees helped capture a snapshot of 24 hours of materials that we generated in our facility. In addition to analyzing the amount and types of waste generated by Region 8 employees at the Wynkoop Facility, the purpose of the audit was to identify:

- Baseline data for measuring the effectiveness of future waste minimization strategies
- The effectiveness of the existing recycling and waste management program
- Information to support the feasibility of adding a composting program

The WA is broken into two different study areas – Waste and Recyclables.

Waste

The WA studied the waste collected from all 9 floors of the building from three generation areas:

- Office
- Kitchen
- Bathroom

These samples were then sorted into three categories and weighed:

- Trash
- Organics
- Recyclables

Recyclables

The WA also studied the 9 recycle bin loads collected from the Recycle Room, in addition to the break room and printer locations on each floor. These samples were sorted into 7 categories and weighed. These categories were:

- Aluminum
- Organics (food waste, paper towels, plant material…etc.)
- Cardboard
- Glass
- Paper (office paper, newspaper, magazines, junk mail, paperboard, etc.)
- Plastic (bottles and tubs #1-7)
- Contaminants/Trash

Forty samples were collected, sorted and weighed during the waste audit, totaling 428 pounds. 180 pounds of waste and 248 pounds of recyclables were collected. Based on sample results, it appears that the building diversion rate is approximately 58%. Additionally, 11% of the materials in the waste stream were items that could have been recycled based on our current recycling program. Finally, 45% of the materials in the waste stream collected were material that could be composted. The recycling and waste information collected from each floor during the WA is shown below in Figure 1.

Figure 1:

Floor By Floor Recycling and Waste Information				
Floor	**Population**	**Waste Collected (lbs)**	**Recycling Collected (lbs)**	**Avg. Recycling Rate (%)**
1	**15**	**10**	**15**	**60**
2	**17 + conference rooms**	**9**	**22**	**71**
3	**58**	**20**	**32**	**62**
4	**91**	**16**	**16**	**50**
5	**137**	**25**	**55**	**69**
6	**131**	**26**	**29**	**53**
7	**139**	**38**	**28**	**43**
8	**139**	**21**	**48**	**70**
9	**55**	**16**	**7**	**30**

Recommendations resulting from the waste audit include:

- **Increase education and outreach** messages to ensure proper recycling and waste diversion;
- **Analyze waste and recycling process** to potentially improve collection strategies and encourage more diversion;
- **Implement a composting program** targeting the compostable items specifically in each kitchen/break room and the bathrooms.

Key observations:

- With the expansion of plastics recycling that now includes plastics #1-7, many more food containers (such as yogurt containers and microwavable food trays) were found in the recycle bins. Many had not been rinsed out and still contained food residue. It is important to rinse these containers first before recycling them.

- There were many plastic and glass beverage containers in the recycle bins that still had lids on and many still had liquid inside. It is important to remove the lid (not recyclable) and rinse the containers before recycling them.

- A large volume of paper towels were found in the recycle bins. These are not currently recyclable and need to go in the trash.

- The Technotrash recycling was not evaluated and calculated as part of the one day waste audit.

1.0 INTRODUCTION

A Waste Audit (WA) was conducted of the trash and recyclables generated by the EPA Region 8 1595 Wynkoop Facility on October 27, 2009. The WA, which is a structured process used to quantify the amount and types of waste generated at the facility, was coordinated by the GreenOps group using staff volunteers from multiple programs. The sort location for the WA was the loading dock area.

The over-arching purpose of the WA was to analyze the amount and types of waste generated by Region 8 employees at the Wynkoop Facility. In addition, the audit was designed to identify:

- Baseline data for measuring the effectiveness of future waste minimization strategies
- The effectiveness of the existing recycling and waste management program
- Information to support the feasibility of adding a composting program

2.0 GENERAL SORT LOGISTICS

Equipment & Safety Considerations

Prior to the day of the Waste Audit, volunteers were encouraged to attend a volunteer orientation meeting. At this meeting, the Regional Health and Safety Specialist went over some recommendations for safe practices and proper gear for the day. Equipment available to the volunteers in the sort area included:

- Goggles or protective glasses
- Tyvek suits
- Gloves – leather and latex
- Respirators
- Tongs
- Shovel
- Tarps
- Hand Sanitizer

Waste Sample Collection

During a normal weekly schedule, the trash is collected from each floor by the janitorial service company daily. Building Management and the janitorial staff were coordinated with to determine the locations and approximate times the trash is collected around the facility each day. Two volunteers were designated as Runners, whose job it was to meet the staff at all collection locations, retrieve the trash from the janitorial representative, label the sample and take it to the sort location in the dock area. The designated Runners, both spoke Spanish, which was an added valuable communication tool.

Recycle Sample Collection

During a normal weekly schedule, the recycling is collected from each floor by janitorial staff on Wednesdays and Fridays. Three volunteers were assigned to collect the blue rolling recycle bin from the Recycle Room located on each floor of the building (nine

locations). In addition, they circulated the floors collecting paper from the paper recycling bins located at each multifunction machine (approximately 4-5 per floor). Finally, they collected the recyclables from the break room on each floor. This resulted in a total of 9 recycle samples.

Sorting Area

- Four sort tarps were set up in the dock area to accommodate sorting.
- A Dock Master was dedicated to overseeing the sorting and recording of weights and observations of the waste samples.
- A second individual was dedicated to overseeing the sorting and recording of weights and observations of the recycling samples.
- Two recycling and one trash dumpsters were located adjacent to the sorting area for collecting waste materials after sorting.

Sorting Staff

A total of 16 staff members volunteered to help with the audit.

Other Logistics:

The duration of the audit was seven and a half hours with a total of 40 samples collected, sorted, and weighed. Region 8 employees were not alerted to the audit ahead of time so that the waste results represented normal waste practices.

3.0 MATERIALS SORTED

The waste samples were sorted into three possible categories:

- Trash
- Organics
- Recyclables

The recyclable samples were sorted into seven possible categories:

- Aluminum
- Organics (food waste, paper towels, plant material…etc.)
- Cardboard
- Glass
- Paper (office paper, newspaper, magazines, junk mail, paperboard, etc.)
- Plastic (bottles and tubs #1-7)
- Contaminants/Trash

The sorted materials categories and descriptions are identified in Appendix A.

4.0 RESULTS

Appendix B includes the log sheet used to record the recycling sort data. Appendix C includes the log sheet used to record waste sort data. In addition to visual observations, measurements recorded during the waste audit were weights (pounds) or percentage of weights.

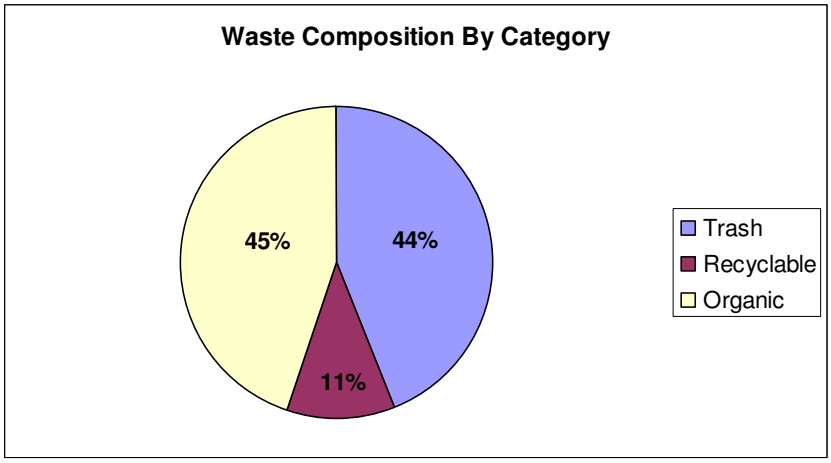
Forty samples were collected, sorted and weighed during the waste audit, totaling 428 pounds. 180 pounds of waste and 248 pounds of recyclables were collected. Figure 2 shows the equation used to determine the recycling rate for the facility. Based on sample results, it appears that the building diversion rate is approximately 58%.

Figure 2: Municipal Solid Waste Recycling Rate Equation:

$$\textbf{MSW Recycling Rate} = \frac{\textbf{Total MSW Recycled}}{\textbf{Total MSW Generated}} \times 100$$

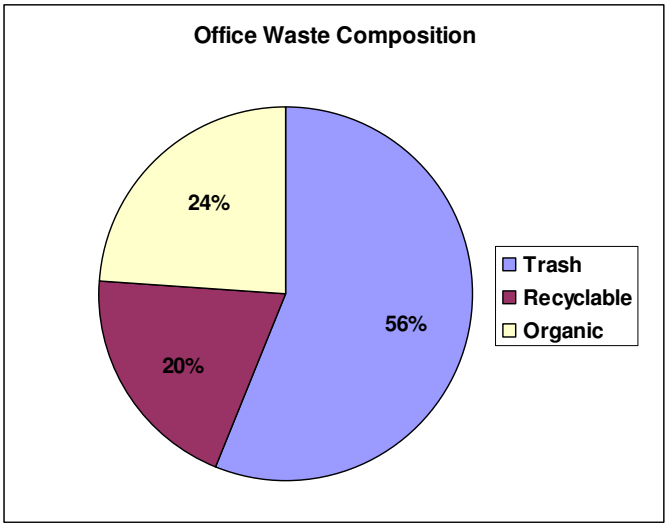
Figure 3 illustrates the overall composition of EPA Region 8 waste by material category. In total, 11% of the materials in the waste stream were items that could have been recycled based on our current recycling program.

Figure 3



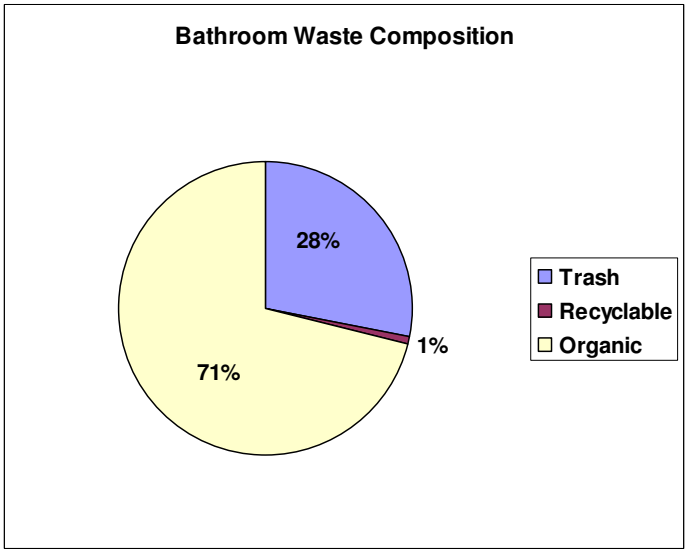
The office waste was collected from each individual office waste container from offices on each of the 9 floors. Office waste collected during the waste audit totaled approximately 93 pounds. Figure 4 illustrates the composition of the office waste collected. While 56% of the office waste sample by weight is truly trash, there could exist an opportunity to divert another 44% either through recycling or composting.

Figure 4



The bathroom waste was collected from waste containers in bathrooms on each of the 9 floors. Bathroom waste collected during the waste audit totaled 30 pounds. Figure 5 illustrates the composition of the bathroom waste collected. 71% of the bathroom waste sample by weight is compostable material.

Figure 5



The kitchen waste was collected from the waste container located in each of the 9 break rooms. Kitchen waste collected during the waste audit totaled approximately 58 pounds. Figure 6 illustrates the composition of the kitchen waste collected. 65% of the kitchen waste sample by weight is compostable material.

Figure 6

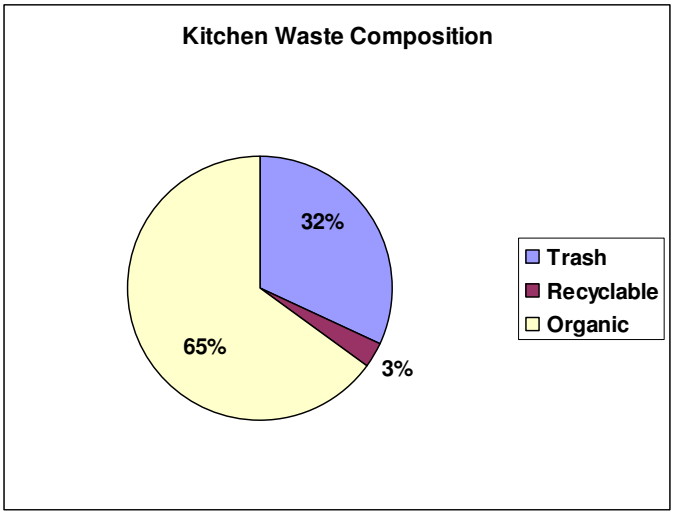
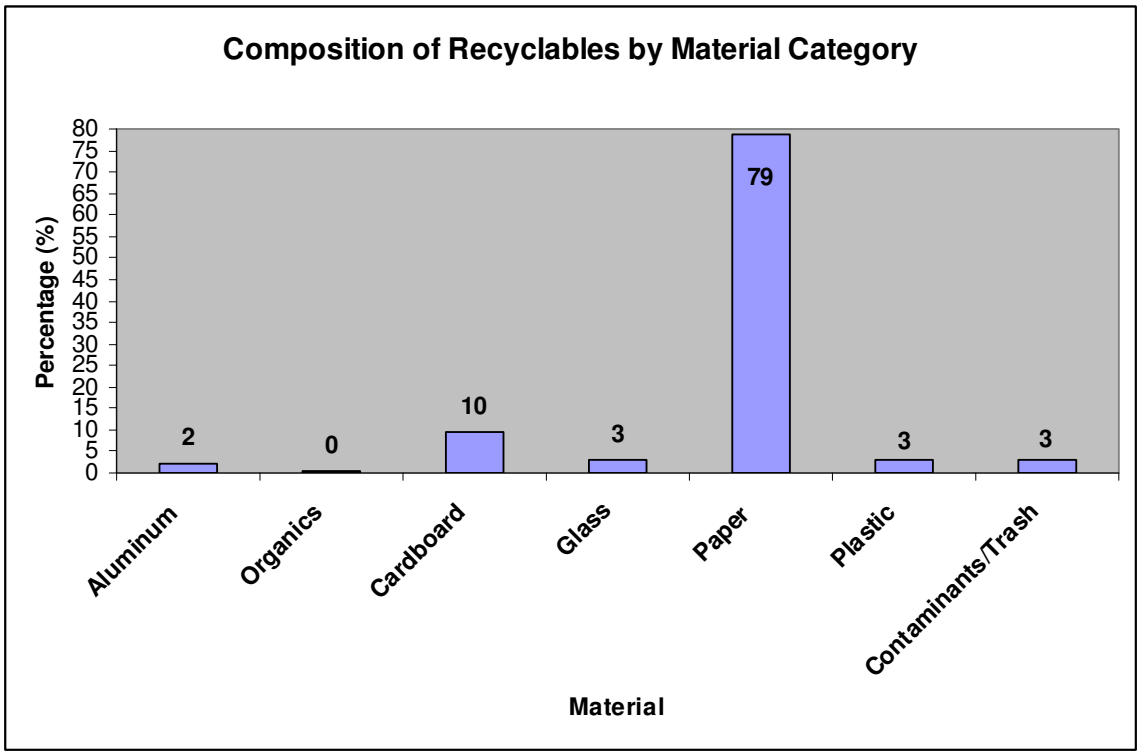


Figure 7 illustrates the overall composition of EPA Region 8 recyclables by material category. As shown, the paper category represents the majority of recyclables collected (in total, 79% of the recycle sample waste by weight).

Figure 7



Based on the overall WA results, it appears that many recyclables that could currently be diverted through Region 8's existing recycling program are being placed in the trash by

employees and visitors. In addition, organic materials that were discarded in the samples have the potential to be diverted in the future through a composting program.

5.0 CONCLUSIONS & RECOMMENDATIONS

Significant Opportunities Exist to Capture More Recyclables & Compostable Materials

Based upon a 251 day work year and the assumption that the October 27th WA results are representative of EPA Region 8's daily waste and recycling stream, it appears that up to 4970 pounds of recyclables are "wasted" in the trash in a year. These are materials that could potentially be recycled through Region 8's existing recycling program. Similarly, the opportunity exists to capture as much as an additional 20,206 pounds of organics a year if a composting program were implemented.

If Region 8 increased its current recycling quantity (about 31 tons a year) to include the 2.5 tons of recyclables currently being "wasted" and the 10 tons which could potentially be composted in the future, it appears that the total potential diversion could reach over 43 tons or nearly 82%. Achieving this diversion success could be an optimistic goal given several uncontrolled factors. Nevertheless, the WA confirms that Region 8 has the potential to notably increase its current diversion levels.

Recommendations

1. **Implement a composting program** targeting the compostable items specifically in each kitchen/break room and the bathrooms. High levels of potentially compostable materials (mainly paper towels, coffee grounds and filters, and produce) were found in the trash, specifically in the kitchen and bathroom waste. Kitchen and bathroom compostables could be separated out into their own bin by employees, then collected and deposited by the janitorial staff in a roll off container located on the dock. The current waste/recycle hauler would pick these materials up in addition to the building trash and recyclables.

2. **Increase education and outreach** messages to increase diversion. The messages should target the removal of lids from plastic and glass beverage containers, rinsing food residue from plastic containers, and discarding paper towels in the trash until composting becomes an option.

3. **Analyze waste and recycling process** to potentially make changes to the daily waste/recycling operations:

- Evaluate the efficiency and cost of daily pick up of trash and recycling at the dock by waste hauler. Take into consideration the overall carbon footprint associated with daily transportation to and from EPA Region 8 and waste facility. Possibly change to a less frequent pick up schedule.
- Evaluate how often individual office trash bags are changed out.

APPENDIX A - MATERIAL CATEGORIES & DESCRIPTION

Appendix A: Material Categories and Description	
Materials:	**Categories and Description:**
Trash	
Pliable Plastics	Plastic wrappers, safety top zippers
Plastic Cutlery	Non #s 1-7 labled plastic cutlery
Batteries	Alkaline batterries
Organics	
Lavatory Waste	Primarily paper towels
Food Waste	Non Dairy or Meat food waste.
Plant Material	dirt, vegetation, flowers
Recyclables	
Plastics #s 1-7	All Plastics numbered 1-7. Drink containers without caps.
Glass Food & Beverage Containers	All colors of food and beverage containers.
All other glass	Non-flourescent light bulbs, glassware, window glass, ceramic dishware
Aluminum/Steel/Tin Food/Beverage Containers and Storage	Aluminum, tin, steel and bi-metal beverage & food cans
Cardboard	unwaxed/uncoated corrugated conatiners and boxes
Paper	Office paper, envelopes, mail,telephone directories and paperboard

APPENDIX B – Recycle Sort Log Sheet

Recycle Sort Worksheet			
Location:			
Date:			
Recyclable Material	**Floor #**	**Weight (LBS)**	**Observations/Comments**
Aluminum	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
Organics (Food waste, paper towels, plant material…etc)	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
Cardboard	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		

Glass	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
Paper (office paper, newspaper, magazines, junk mail, etc)	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
Plastic Bottles and Tubs (#1-7)	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
Contaminants/Trash	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	Subtotal:		
	TOTAL:		

APPENDIX C – Waste Sort Log Sheet

Waste Sort Worksheet					
Location:					
Date:					
Waste Material	**Floor #**	**Weight (lbs)**	**Weight (lbs)**	**Weight (lbs)**	**Observations/Comments**
		OFFICE	**BATH**	**KITCHEN**	
Trash	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	Subtotal:				
Organics (Food waste, paper towels, plant material…etc)	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	Subtotal:				
Recyclable	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	Subtotal:				
TOTAL:					
Percentage:					
Total Trash (lbs)					
Total Organic (lbs)					
Total Recyclable (lbs)					
TOTAL LBS MATERIALS COLLECTED					