



# **Township of Augusta Waste Audit 2000**

**WDO Project #: OPT-R1-04**

***Submitted to:***



***Submitted by***

**Corporation of the  
Township of Augusta  
3560 County Road #26, RR#2  
Prescott, Ontario  
K0E 1T0**

***Prepared with funding from the  
Ontario Waste Diversion Organization***

***January 2001***

## EXECUTIVE SUMMARY

It soon became apparent to us when analyzing the data collected from our waste audit that it would be difficult to relate our results to other Ontario municipal data. The audit was conducted before WDO issued the Waste Audit Guide and, as can be seen in the results table, we did not have as many categories as was suggested in the guide. Though not a conscious decision, we did, however, manage to sample a larger quantity of "households". We set up our waste audit at the entrance to our landfill site, which allowed us the ability to divert each vehicle that entered the site. We have made an assumption that the number of vehicles sampled would be equivalent to the number of households sampled. Together with a group of students and only 16 categories instead of the suggested 57, this allowed us to sample a larger quantity (345) of households. It was believed that a lot of the suggested categories were too finite or specific and separation costs much too great for any real consideration. For example plastic is too light and volumous to separate out all the various types, the cost of separation, storage, and freight are much too high for one single tonne of waste. Therefore we were not concerned that the smaller audit would leave our data non-transferable through the rest of the province. The larger sampling should provide us with better initial accuracy and thus better extrapolation of the numbers over the entire community.

The waste audit guide from the WDO is setup for sampling a curbside collection system and does not leave flexibility for other types of systems. For example our waste management plan enables recycling to occur 7 days a week 24 hours per day, and does not necessarily enter the waste stream at the same time as regular garbage. Therefore data produced from waste audits on other types of systems may require some manipulation and estimates that risk disproportional conclusions. Our waste audit focussed on waste intended for the landfill site only and did not concern the recycling activities that currently take place elsewhere in the community. This part of the data had to be estimated from other sources such as

yearly tonnage reports from our waste hauler, gate receipts, and quarterly inventories. This process and the calculations used are outlined in the report.

In conclusion, we learned a great deal from the waste audit. The figures are accurate enough to share with the province and should prove to be valuable data to the WDO. I would not suggest we extract more than 20 categories. Most of the waste streams such as plastics are so light in weight, that it would not be feasible to separate out these waste streams for small municipalities; transportation costs being the most prohibitive. It will be recommended to our council that similar waste audits be conducted periodically in the future to maintain a “picture” of waste management in Augusta Township.

## **1.0 INTRODUCTION**

Augusta Township is a rural municipality incorporating diverse agricultural establishments and a scattering of residential development located in various hamlets and villages. We are located between two largely concentrated municipalities, Brockville and Prescott, which help to encompass a strong industrial base.

Augusta Township has for some years kept data on the number of vehicles entering their landfill sites, but has never had the ability to establish the composition or mass of garbage brought into the landfill sites. Augusta has two landfill sites one is monitored continuously and the other is left to the responsibility of the users. It was hoped that a waste audit conducted at the two sites would show any differences in waste composition and to establish overall weights for use in planning waste management for the future.

This report focuses on the composition of garbage that was intended for the landfill site rather than discerning the differences in composition due to differences in management styles. However, early indications show that the unmonitored site has a far less rate of diversion of recyclable materials than our main landfill site, which employs more persons to monitor daily activity. The unmonitored site also appears to be landfilling larger quantities of textiles and paper products, including some household special waste products.

Our waste management plan in Augusta establishes recycling depots through out the municipality enabling residents to rid themselves of recyclable waste at any time. Residents of the Township are required to bring their general waste at no cost to either of the landfill sites provided, during regular business hours. Both of these landfill sites have recycling depots and our main landfill site (Maynard) is also equipped with a transfer station for Household Special (Hazardous) Waste Products, Steel, Appliances, Tires, Batteries, Oil, etc. The establishment of this transfer station should provide us with lower quantities of these types of wastes in our Waste Audit. The review of other Waste Audits in the province should prove this hypothesis.

## 1. METHODOLOGY

Starting August 14, 2000 and continuing for four days, we set up our waste audit at the entrance to our landfill site. We started at our North Augusta Landfill Site (unmonitored site) and moved our equipment to the Maynard Landfill Site on the following two days, returning to the North Augusta Site on the last day. The last day was Saturday, a decidedly important day to capture to include any potential change in landfill use habits due to the “weekend” status. Setting up our equipment out of view and after the recycling depot and transfer station, we accepted garbage only intended for the landfill site. We set up sixteen large containers and a portable scale along side a 20 cubic yard metal “roll-off” container. Our goal was to accept all the waste that was brought in by 50 vehicles, separate that material into the 16 categories of waste, measuring each of the smaller containers as they filled and emptying their contents into the larger 20yd. bin. We were to repeat the process as much as possible through out each day, please refer to file [Waste Audit 2000 DATA.XLS](#) or **Appendix A** for detailed information. However several difficulties did arise, first and foremost was finding enough individuals willing to perform the duties required in a waste audit. (Understandably not the most desired of employment opportunities) Secondly, was the amount of persons and the space required to perform the job comfortably. (we caused a few traffic jams at the beginning of our learning curve) Thirdly, the separation of waste into various categories was not as easy as one might believe. There is a large discrepancy even among experienced people as to what constitutes “box board” versus “cardboard”, or types of “plastic”, or combination materials such as foil backed paper ... the list goes on, there are far too numerous of product “packaging combinations” to easily determine category suitability. Lastly, there were many situations where recyclable material was un-recoverable due to the “organic nature” of the garbage. (some stuff was just far to disgusting to pick through) A system to wash or hose down certain garbage bags would have been an asset to the project. Also some residents

brought garbage in bulk, so large that it was not practical to weigh, these items were noted and estimated into the results based on similar materials.

## **2. RESULTS**

As stated in the executive summary the format that the WDO requested ([2000 Waste Audit Summary.xls](#) or **Appendix B**) for Waste Audits was structured in such a way that accommodated primarily waste management systems utilizing curbside pickup. This is not a practical system for all municipalities and is deemed far too expensive for our rural municipality. We developed a system that utilizes depots and transfer stations that provide a much greater flexibility for the residents of the municipality, and was hoped that this would result in a better diversion rate. The proof of that though will have to be researched using other waste audits conducted through the WDO. In order to “fit” our data into the table structure some manipulation of the figures were required. (Please refer to the notes at the bottom of the table) The data was manipulated in such a way as to convert units or to calculate yearly records into per day or per vehicle data, and then inserted into the formulas set out by the WDO. Although the report was developed from per vehicle data into per household data (specifically the “GENERATION” column “kg/hhld/yr”), we believe the results shown in the summary in Appendix B, to be accurate and transferable to the rest of the province.

## **3. TRANSFERABILITY TO OTHER REGIONS/MUNICIPALITIES IN ONTARIO**

While it may be necessary to have a uniform system for reporting waste figures, it must be remembered that the variety of waste management systems will require data transferable to other units of measurement. Our landfill sites can neither calculate the weight of materials received nor account for the number of residential units using the system. While a person using our system must be a resident of the Township there is no clear way to enforce that bylaw. However the undetermined outside influence on the data collected is believed to be a small percentage and typical to similar waste

management systems. Any municipality capable of determining the number of vehicles using a particular part of a waste management system; should be able to “plug” our data into their formulas assisting in planning initiatives.

***Corporation of the Township of Augusta, 3560 County Rd. #26, RR#2 Prescott ON., K0E 1T0***  
**January 19, 2001**

<b>Waste Audit Description</b>	
<b>Municipality:</b>	Augusta Township
<b>Municipal Contact Name:</b>	Gregory Trizisky
<b>Municipal Contact Phone:</b>	613-925-4231
<b>Study Undertaken By:</b>	Water and Earth Sciences Inc.
<b>Area:</b>	Maynard Landfill Site & North Augusta Landfill Site
<b>No. of Vehicles Sampled:</b>	345
<b>Types of Vehicles Sampled:</b>	Residential Bagged Garbage - No Recycling Material
<b>Study Start Date:</b>	August 16, 2000
<b>Study End Date:</b>	August 19, 2000
<b>No. of Garbage Collections:</b>	N/A
<b>Ave. no. of containers / hhd / pickup:</b>	N/A
<b>Weight of Garbage in kilograms:</b>	7,345 kg was collected, some other items were estimated
<b>Garbage Percentage of Total :</b>	53.29% of what was collected was deemed to be unrecyclable
<b>Any user fees or bag restrictions?:</b>	None
<b>No. of Recyclable Collections:</b>	N/A
<b>Ave. no. of containers / hhd / pickup:</b>	N/A
<b>Weight of Recyclables in kilograms:</b>	3,680 kg
<b>Recyclables Percentage of Total :</b>	28%
<b>Frequency of collection service:</b>	No collection, 24 hour availability
<b>No. of Organic Collections:</b>	None
<b>Ave. no. of containers / hhd / pickup:</b>	N/A
<b>Weight of Organics in kilograms:</b>	5,254 kg
<b>Organics Percentage of Total :</b>	40%
<b>Are grass clippings collected?:</b>	No
<b>Are food wastes collected?:</b>	No
<b>Total Weight Collected in kilograms:</b>	13,132 kg
<b>Total kilograms per hhd per year:</b>	495
<b>General Weather Conditions</b>	Sunny
<b>Other Notes:</b>	The general audit guide is setup to accommodate curb side collection and does not meet the needs for a rural depot collection system. For example it is impossible to get an accurate waste + recycling sample because recycling depots are set up in other locations through out the municipality. In order to make this report similar to the Waste Audit Guide, it was necessary to estimate the amount of recyclables that would have been received on the sampling days and by the number of vehicles sampled. Therefore monthly and yearly tonnage data was collected and averaged out over the time and number of vehicles. Similarly steel and appliances are mostly collected during a series of amnesty days and thus had to be estimated in order to develop numbers that were consistent with the standard depicted in the guide.

## Summary of Waste Composition by Percent Weight

Waste Categories	Percent by weight					Actual weights collected				Total weight (kg)	# of cars	(kg/100 cars)
	Maynard - 17/08/00	Maynard - 18/08/00*	North Augusta - 16/08/00**	North Augusta - 19/08/00***	Average Percent Weight	Maynard - 17/08/00	Maynard - 18/08/00	North Augusta - 16/08/00	North Augusta - 19/08/00			
Aluminum Cans	1.03	0.67	4.08	0.73	1.6	23.3	14.1	35.6	15.4	88.4	345	25.6
Cardboard	1.52	0.78	2.35	1.77	1.6	34.4	16.4	20.5	37.6	108.9	345	31.6
Clear glass	1.00	0.72	1.56	1.08	1.1	22.7	15.1	13.6	22.9	74.3	345	21.5
Coloured Glass	0.31	0.70	3.47	0.36	1.2	7.1	14.7	30.2	7.7	59.7	345	17.3
Fine Paper	2.18	2.48	3.71	2.10	2.6	49.3	51.9	32.3	44.5	178	345	51.6
Newspaper	0.87	1.06	1.56	3.43	1.7	19.8	22.2	13.6	72.8	128.4	345	37.2
Waxed paper cups & lids (milk containers)	0.53	0.73	0.56	1.37	0.8	12.1	15.3	4.9	29	61.3	345	17.8
Fabric	10.28	6.40	8.53	8.96	8.5	232.7	134.1	74.3	190.3	631.4	345	183.0
Mixed Plastics	3.62	3.43	12.59	5.35	6.2	81.9	71.9	109.7	113.5	377	345	109.3
Boxboard	1.39	1.84	2.25	1.89	1.8	31.4	38.6	19.6	40.2	129.8	345	37.6
Residue (food waste, organics)	56.66	48.03	49.75	58.75	53.3	1282.3	1005.8	433.6	1247.2	3968.9	345	1150.4
Garden Waste	16.63	31.81	2.38	10.44	15.3	376.4	666	20.7	221.6	1284.7	345	372.4
Styrofoam	0.54	0.22	0.29	0.23	0.3	12.3	4.7	2.5	4.8	24.3	345	7.0
Paint cans, etc.	0.48	0.00	1.25	0.00	0.4	10.9	0	10.9	0	21.8	345	6.3
Rubber	0.00	0.00	0.44	0.00	0.1	0	0	3.8	0	3.8	345	1.1
Wood	1.80	0.48	2.21	1.10	1.4	40.8	10.1	19.3	23.4	93.6	345	27.1
Renovation waste	1.61	0.63	7.09	0.00	2.3	36.5	13.2	61.8	0	111.5	345	32.3
Scrap metal	0.00	0.00	0.00	2.43	0.6					0	345	0.0
<b>Total</b>						<b>2273.9</b>	<b>2094.1</b>	<b>906.9</b>	<b>2070.9</b>	<b>7345.8</b>	<b>345</b>	<b>2129.2</b>

\* Full truck loads of construction debris were not included in the audit

Overall Total 7345.8

\*\* Full truck loads of construction debris were not included in the audit. One full truck load of scrap metal was not included in the audit. Five truck loads of furniture were not included.

\*\*\*Metal is from a television and a computer monitor



## Waste Audit Results Table

Municipality: Augusta Township

4 day survey

# of hhlds

**345**

see note 7

Waste collection streams	C@D	Depots	Organics	Waste Audit	Generation			Recovery
Waste sort categories and descriptions	Y/N	Net Weight (kg)	Net Weight (kg)	Net Weight (kg)	Total Net Weight (kg)	Percent of Total (%)	kilograms per hhd per year	Blue Box Rate (%)

\* = Weights estimated using percentages from waste audit and visual inspections of tonnage data. \*\* = Weights calculated for 1999 Datacall. C@D= Currently collected at Depot

### 1. PAPER FIBRES

Newspaper	ONP, inserts, phone books	Y*	490.3		128.4	618.7	4.7	38	79%
Cardboard	OCC + molded pulp (egg cartons, etc.)	Y*	405.5		108.9	514.4	3.9	32	79%
Boxboard/Rolls	OBB	Y*	345.6		129.8	475.4	3.6	29	73%
Mixed Papers & Kraft & Mags	junk mail/fine paper/magazines/paper bags	Y*	393.3		178.0	571.3	4.4	35	69%
Tissue/Toweling/Napkins	used or not collected as residue garbage	N				0.0	0.0	0	
Other Paper	multi-layered/waxed/tetra/milk/juice/books	N	0.0		61.3	61.3	0.5	4	0%
<i>Sub-total Paper Fibres</i>						<b>2,241.1</b>	<b>17.1</b>	<b>138</b>	<b>73%</b>

### 2. PLASTICS

PETE Soft Drink	# 1 soft drink (see below)					0.0	0.0	0	
LCBO containers	alcoholic beverage (see below)					0.0	0.0	0	
PETE Other	water, juice, food, cleaners, trays (see below)					0.0	0.0	0	
HDPE bottles	# 2 (see below)					0.0	0.0	0	
PVC	# 3, bottles, packaging (see below)					0.0	0.0	0	
LDPE & PP Bottles	# 4 and # 5, squeezable (see below)					0.0	0.0	0	
PS	# 6, trays, cups, packaging (see below)					0.0	0.0	0	
Recyclable Film	collected as residue garbage	N				0.0	0.0	0	
Non-Recyclable Film	collected as residue garbage	N				0.0	0.0	0	
Wide Mouth Tubs & Lids	# 2, 4, 5 & 6 (see below)					0.0	0.0	0	
Mixed Plastics(All the above)	75% Types 1&2, 25% Types 3 thru 8	Y	126.9		377.0	503.9	3.8	31	25%
<i>Sub-total Plastics</i>						<b>503.9</b>	<b>3.8</b>	<b>31</b>	<b>25%</b>

3. METALS									
Aluminum/Steel Mixed Cans	food & beverage cans, pie plates, foil	Y	250.1		88.4	338.5	2.6	21	74%
Other Metal+Empty Cans	scrap metal, other containers, bikes	Y**	989.0		24.9	1,013.9	7.7	62	98%
						0.0	0.0	0	
<b>Sub-total Metals</b>			<b>1,239.1</b>	<b>0.0</b>	<b>113.3</b>	<b>1,352.4</b>	<b>10.3</b>	<b>83</b>	<b>92%</b>

4. GLASS									
Clear+ LCBO clear	food & beverage containers	Y	243.4		74.3	317.7	2.4	20	77%
Coloured+ LCBO colour	food & beverage containers	Y	143.6		59.7	203.3	1.5	13	71%
Other Glass	collected as residue waste					0.0	0.0	0	
<b>Sub-total Glass</b>			<b>387.0</b>	<b>0.0</b>	<b>134.0</b>	<b>521.0</b>	<b>4.0</b>	<b>32</b>	<b>74%</b>

5. HOUSEHOLD SPECIAL WASTES ( not in waste audit however we did capture the odd paint can)									
Batteries	all types	Y				0.0	0.0	0	
Paint, Oil, Other HSW	mostly half to full containers	Y			21.8	21.8	0.2	1	
Motor Oil	used oil, filters	Y				0.0	0.0	0	
Flammables	starter fluid, solvents	Y				0.0	0.0	0	
Other HSW	sharps, drugs, acids, antifreeze	Y				0.0	0.0	0	
<b>Sub-total HSW</b>			<b>0.0</b>	<b>0.0</b>	<b>21.8</b>	<b>21.8</b>	<b>0.2</b>	<b>1</b>	

6. COMPOSTABLES									
Residue Waste	vegetable and fruit peelings	N				0.0	0.0	0	
- Animal Food Waste	meats, fats, oils, contaminated packaging	N				0.0	0.0	0	
- diapers, used tissues, contaminated core recyclables, fecal matter		N				0.0	0.0	0	
(residual waste collected during waste audit not matching material criteria)		N			3,968.9	3,968.9	30.2	244	
General Yard Waste	leaves, garden wastes, ashes, brush, grass	N			1,284.7	1,284.7	9.8	79	
<b>Sub-total Compostables</b>			<b>0.0</b>	<b>0.0</b>	<b>5,253.6</b>	<b>5,253.6</b>	<b>40.0</b>	<b>324</b>	

<b>7. OTHER WASTE MATERIALS</b>									
Textiles	clothing, shoes	N			631.4	631.4	4.8	39	
Building Renovations	drywall, lumber, carpeting	N**			1,338.0	1,338.0	10.2	82	
White Goods	large appliances	Y**	197.2		0.0	197.2	1.5	12	
Wood	small carpentry, modelling, etc.	N				93.6	0.7	6	
Electronics/Appliances	small appliances, computers, radios	N			72.1	72.1	0.5	4	
Rubber	tires, mats, tubing	Y**	95.4		3.8	99.2	0.8	6	
Furniture	sofas, chairs, cabinets,	N			900.0	993.6	7.6	61	
Styrofoam	clean packaging, food trays, etc.	N				24.3	0.2	1	
<b>Sub-total Other Waste Materials</b>			<b>292.6</b>	<b>0.0</b>	<b>2,945.3</b>	<b>3,237.9</b>	<b>24.7</b>	<b>199</b>	
<b>Total weight in kilograms</b>			<b>3,680</b>	<b>0</b>	<b>9,451</b>	<b>13,132</b>		<b>809</b>	
<b>Total percentages by waste type</b>			<b>28%</b>	<b>0%</b>	<b>72%</b>	<b>100%</b>			

**Notes:**

"C@D" refers to the municipal Depot collection program list of materials. Insert a "Y" in column only if the material is an official part of the Depot program

"Depots" refers to all recyclables collected at the Depots, either in a box, bag or other container and the container can be a variety of colours

"Organics" currently Augusta does not collect organic material in any way. All material goes to the landfill sites.

"Garbage" refers to all waste residue materials collected during the Waste Audit that was intended for the landfill sites. Recycling activities were not

" \* " as described above this refers to the collected recyclable estimated weight taken from our monthly tonnage data sources and not from this waste audit

" \*\* " refers to a calculated weight due to the collection data in different measurement units (ex. 410 appliances @ avg. 200# = 3.7 ton

Column "kg/hhld/year" is calculated based on 65,870 vehicles per year (of which 345 were sampled over a 4 day period) divided by the number of households in the municipal