

RESULTS HIGHLIGHTS

Preliminary Waste Characterization Study

The Preliminary Waste Characterization Study provides a first look at the generation and composition curbside refuse and recycling for New York City as a whole. It is an initial step in what will be a larger examination of DSNY-managed waste in New York City. The full New York City Waste Characterization Study will not only assess the City's curbside waste stream in its entirety, but will also look at how waste generation and composition varies by housing density, median income, borough, and season.

The Department of Sanitation conducted the Preliminary Study for several reasons. First, we wanted to be able to provide some data on the material characteristics of the curbside waste stream (the largest fraction of DSNY-managed waste) to inform the Solid Waste Management Plan. Second, conducting the Preliminary Study was an important test of study methodology and operational logistics in advance of the anticipated full study.

The sampling procedures used, which are detailed in this Report, ensure that its results are statistically accurate – in other words, we have taken enough samples of waste from enough trucks to be confident that the results presented here reflect what was in the waste in May and June of 2004. The methods used to analyze the data conform to rigorous statistical standards, and the results have been calculated so as to objectively convey what was observed.

The analysis yielded some surprising and interesting results, which are summarized and highlighted below.

MGP Composition

As shown in Figure 1 and Table 1, the composition of the MGP stream is lower in non-designated materials and mixed cullet than previously thought, and correspondingly higher in ferrous metals, aluminum, and plastics, painting a quite different picture than suggested in reports from our prior MGP processors under past contracts, which were in place 1994 through 2002.

Figure 1

MGP Composition

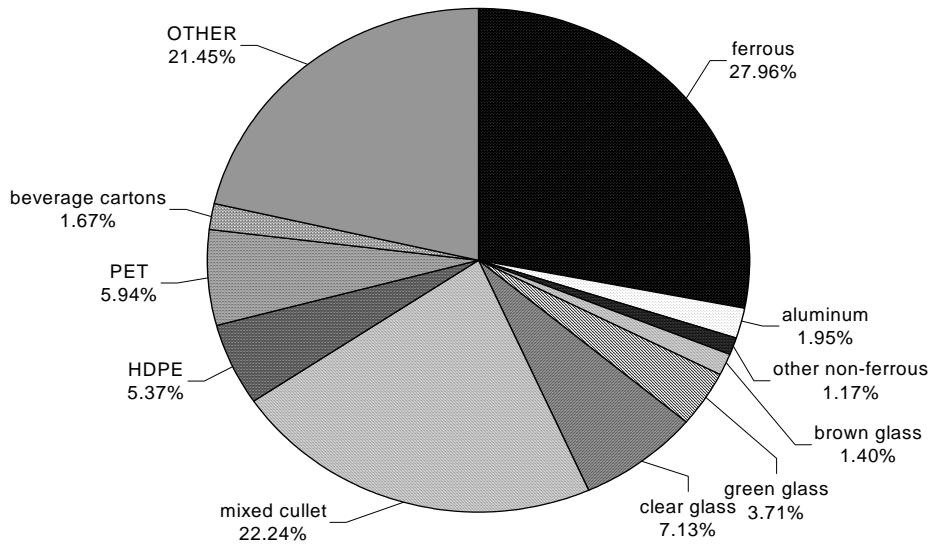


Table 1

Data Source	PWCS, June 2004	PRIOR CONTRACTS FOR MGP ACCEPTANCE, PROCESSING, MARKETING			
		Processor 1	Processor 2	Processor 3	Processor 4
MGP Composition					
ferrous	27.96%	20.43%	30.42%	28.18%	22.87%
aluminum	1.95%	0.60%	0.41%	1.07%	0.96%
other nonferrous	1.17%	0.00%	0.00%	0.00%	0.00%
METAL	31.08%	21.03%	30.84%	29.25%	23.83%
brown glass	1.40%	0.00%	0.75%	0.00%	0.00%
green glass	3.71%	0.00%	2.04%	0.00%	0.00%
clear glass	7.13%	0.00%	3.26%	0.00%	4.42%
mixed cullet	22.24%	48.99%	13.24%	30.33%	49.03%
GLASS	34.49%	48.99%	19.29%	30.33%	53.46%
HDPE	5.37%	3.06%	4.94%	3.56%	3.91%
PET	5.94%	1.45%	2.41%	2.23%	1.93%
HDPE/PET BOTTLES	11.31%	4.50%	7.35%	5.80%	5.84%
beverage cartons	1.67%				
Total MGP	78.55%	74.52%	57.47%	65.38%	83.12%
Non-Designated Materials					
non-designated plastics	6.49%	0.28%	0.67%	0.44%	0.18%
other	14.96%	25.19%	41.86%	34.18%	16.69%
TOTAL	21.45%	25.48%	42.53%	34.62%	16.88%

These results hold even when we recognize that glass was recently reintroduced to the recycling program. The total fraction of recyclable glass in the overall waste (refuse + recycling) streams was found to be 4.35%. Roughly 35% of the collected MGP consisted of glass (either intact, which we defined as glass pieces greater than 3 x 3 inches, or as mixed cullet).

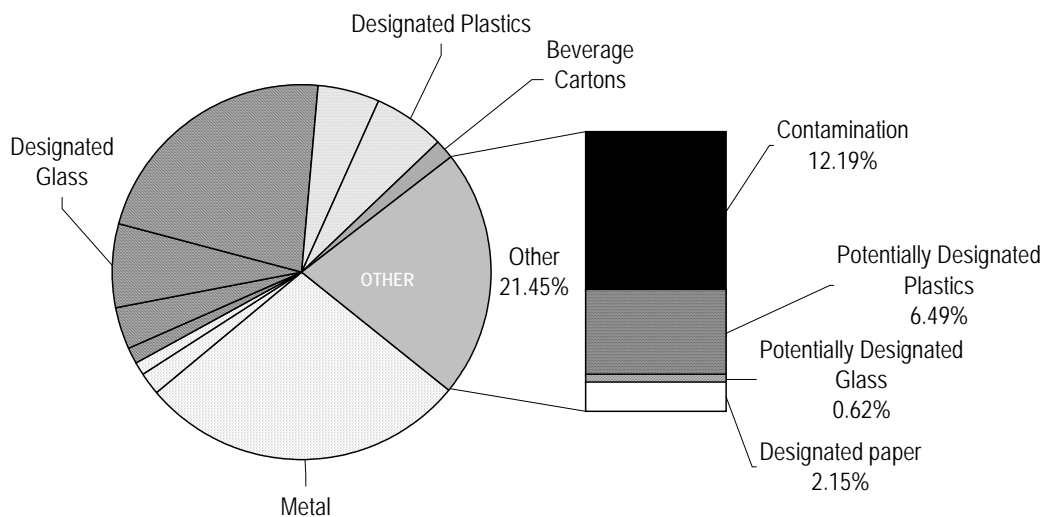
We know that on average, nearly 72,000 tons of waste (refuse + recycling) were collected each week during May and June, and that an average of almost 4,900 tons of MGP were collected during this same period. Applying the glass percentages listed above to these numbers enables us to calculate a capture rate of 54% – a good rate under any circumstances but especially so in light of the recent program changes.

What this means is that if more glass is recycled as residents acclimate to the reinstated program, the fraction of glass in MGP may increase somewhat, and other materials fractions will correspondingly decrease. But such changes will not affect the fact that our MGP stream is richer in metals and plastics, and also contains fewer non-designated materials, than the conventional wisdom has held.

In addition, as shown in Figure 2, out of the fraction of the roughly 21% of the MGP stream labeled consisting of non-designated materials, only 12.2% consists of refuse or garbage materials thrown into the recycling bin. The rest includes plastic containers (#1 and #2 tubs, #3 through 7 containers) which could be potentially designated for recycling under future program expansion, together accounting for around 6.5% of nondesignated materials, plus a very small amount of nondesignated glass and a little over 2% designated paper.

Figure 2

Sources of Non-Designated Materials in MGP Stream



Capture Rate

As shown in Table 2, the capture rate, when calculated as it has traditionally been calculated (tons of recycling actually collected as a percentage of the estimated total amount of materials designated for recycling in the waste stream) is over ten points **higher** than the rates estimated for May and June using data from the 1989/90 Study. It is also interesting to note that the capture rate for MGP is *higher* than that for Paper. This is a notable result given the recent reintroduction of glass to the curbside recycling program.

Table 2

Average Weekly Tonnage Collected, May and June 2004 ¹

Refuse	59,618.81
Paper	7,301.44
MGP	4,882.01
Total Waste	71,802.25

Estimated Weekly Tonnage of Materials Designated for Recycling in Total Waste Stream ²

Designated Paper	21.47%	of waste	15,415.94
Designated MGP	11.93%	of waste	8,566.01
Total	33.40%		23,981.95

Capture Rates

Paper	47.36%
MGP	56.99%
Total	50.80%

Capture Rate Calculated Based on 1989/1990 Study Estimates of Designated Recyclables in the Waste <i>for reference</i>	
<u>May</u>	<u>June</u>
39.80%	39.50%

NOTES

1. Refuse Collection Productivity Reports and Curbside Recycling Collection Reports, May and June 2004
2. Based on PWCS Results
3. Preliminary Recycling Diversion Report, May 2004; Mid-Month Recycling Diversion Report, June 2004. Capture rates are for total recycling; separate Paper and MGP capture rates were not reported

Presence of Materials Designated for Recycling in the Total Waste Stream

A related observation is a lower than expected fraction of recyclable materials in the overall waste (refuse + recycling) streams than previously estimated. According to this analysis, only **34%** of the waste stream consists of materials designated as recyclable under our current recycling program. This contrasts with an estimate of 45%, based on the 1989/90 Study, as reported in the 1992 SWMP [Copy of Results Page is Attached].

Yard Waste

In choosing May and June to sample and sort, we knew we would be getting more yard waste than at other times of the year. What we did not expect was that the fraction of yard waste would be substantially higher than that measured in Spring Seasonal Sort of the 1989-1990 Study. That study measured yard waste at only 4.11% of the total waste stream. The PWCS, in contrast, found that 7.7% of combined refuse and recycling sorted was yard waste, including leaves, grass and prunings.

Textiles

Another notable finding was that 6.5% of the total waste stream consisted of clothing and nonclothing textiles. This figure is up roughly a percentage point from the 1990 Spring Sort results.

Growth of Plastics

Another notable finding was the relative increase in the plastic fraction of the overall waste stream, which went from 9.16% in the Spring 1990 sort to 13.41%. There were smaller decreases in glass (5.67% in 1990 to 4.56% in 2004), metal (5.73% in 1990 to 5.07% in 2004), and paper (31.49% in 1990 to 29.4% in 2004), while organics and other categories remained steady. Appliances and electronics (including e-waste and audiovisual equipment), a category not assessed in 1990, comprised a very small fraction of the overall waste stream in 2004 - 0.92%.¹

1. Note: the Comparisons cited here contrast summary data for the Spring from Exhibit 8-1 of the New York City Waste Composition Study [1989-90] published by the Operations Planning, Evaluation and Control Unit of DSNY (attached) with results reported in the main body of the Preliminary Waste Characterization Study Report (PWCS Report). Several caveats should be applied to the comparison. First, the 1989-90 Study characterized the waste stream without bulk, while the PWCS Report results incorporate bulk items. Further detail on bulk vs. nonbulk composition can be found in Appendix U of PWCS Final Report for those who are interested in further comparison of 1989-90 Study Results. Second, the 1989-90 Study characterized Residential Waste separately from Institutional Waste, while the PWCS examined waste from both categories of generators (“curbside waste.”) The full Waste Characterization Study will differentiate these two streams.

EXHIBIT 8-1

SUMMARY OF RESIDENTIAL COMPOSITION BY SEASON *

WASTE COMPONENT	SUMMER	FALL	WINTER	SPRING	ANNUAL
Corrugated/Kraft	5.02%	5.22%	5.27%	4.81%	5.08%
Newsprint	9.48%	11.08%	8.28%	8.39%	9.31%
Office/Computer	1.51%	0.91%	0.46%	0.23%	0.78%
Magazines and Glossy	3.00%	3.22%	2.62%	2.61%	2.86%
Book/Phone Book	1.18%	1.15%	0.42%	0.54%	0.83%
Non-Corrugated OCC	4.14%	2.44%	2.76%	2.03%	2.85%
Mixed	8.03%	12.88%	12.45%	12.88%	11.52%
TOTAL PAPER FRACTION	32.35%	36.91%	32.25%	31.49%	33.24%
Clear HDPE containers	0.57%	0.49%	0.54%	0.47%	0.52%
Colored HDPE containers	0.69%	0.62%	0.62%	0.57%	0.63%
LDPE	0.23%	0.15%	0.05%	0.08%	0.13%
Films and Bags	5.05%	4.93%	5.05%	5.03%	5.01%
Green PET containers	0.13%	0.08%	0.11%	0.12%	0.11%
Clear PET containers	0.47%	0.37%	0.52%	0.44%	0.45%
PVC	0.15%	0.16%	0.11%	0.12%	0.13%
Polypropylene	0.16%	0.21%	0.08%	0.13%	0.14%
Polystyrene (Est. in Summer)	0.86%	0.68%	0.98%	0.93%	0.86%
Miscellaneous Plastic	1.59%	1.09%	1.09%	1.27%	1.26%
TOTAL PLASTIC FRACTION	9.89%	8.78%	9.15%	9.16%	9.25%
Grass/Leaves	2.80%	5.96%	7.59%	2.79%	4.72%
Brush/Prunings/Stumps	1.86%	0.28%	0.77%	1.32%	1.07%
TOTAL YARD WASTE FRACTION	4.66%	6.25%	8.36%	4.11%	5.80%
Lumber	2.87%	2.28%	2.09%	3.63%	2.73%
Textiles	6.71%	4.72%	5.08%	5.31%	5.47%
Rubber	0.22%	0.32%	0.06%	0.21%	0.21%
Fines	2.49%	2.26%	2.33%	2.98%	2.52%
Diapers	3.84%	3.49%	4.34%	3.80%	3.86%
Foodwaste	14.18%	14.34%	13.82%	14.87%	14.31%
Miscellaneous Organic	9.35%	8.26%	8.72%	9.12%	8.87%
TOTAL ORGANIC FRACTION	39.66%	35.66%	36.45%	39.93%	37.97%
Clear Glass containers	3.20%	2.95%	3.51%	3.52%	3.29%
Green Glass containers	1.18%	0.97%	1.17%	1.05%	1.09%
Brown Glass containers	0.97%	0.83%	0.96%	0.94%	0.92%
Miscellaneous Glass	0.47%	0.16%	0.06%	0.17%	0.22%
TOTAL GLASS FRACTION	5.82%	4.91%	5.69%	5.67%	5.52%
Aluminium Food Containers/Foil	0.46%	0.48%	0.56%	0.50%	0.50%
Aluminium Beverage Cans	0.35%	0.33%	0.37%	0.31%	0.34%
Miscellaneous Aluminium	0.21%	0.21%	0.04%	0.04%	0.12%
TOTAL ALUMINIUM FRACTION	1.02%	1.02%	0.97%	0.85%	0.96%
Ferrous Metal Food containers	1.96%	2.00%	2.30%	2.09%	2.08%
Other Ferrous Metal	1.94%	2.45%	2.22%	2.78%	2.35%
TOTAL FERROUS METAL FRACTION	3.89%	4.45%	4.52%	4.88%	4.43%
Bimetal Cans	0.01%	0.03%	0.02%	0.00%	0.01%
TOTAL METAL FRACTION	4.92%	5.50%	5.51%	5.73%	5.41%
Non-bulk Ceramics	0.05%	0.22%	0.27%	0.22%	0.19%
Miscellaneous Inorganic	2.24%	1.65%	2.06%	3.16%	2.29%
TOTAL INORGANIC FRACTION	2.29%	1.88%	2.33%	3.38%	2.48%
Pesticides	0.02%	0.00%	0.00%	0.01%	0.01%
Non-pesticide Poisons	0.02%		0.01%	0.01%	0.01%
Paint/Solvent/Fuel	0.04%	0.06%	0.14%	0.13%	0.09%
Dry Cell Batteries	0.05%	0.02%	0.02%	0.02%	0.03%
Car Batteries	0.09%	0.02%	0.01%	0.20%	0.08%
Medical Waste	0.01%	0.00%	0.02%	0.03%	0.02%
Miscellaneous HHW	0.17%	0.04%	0.07%	0.14%	0.11%
TOTAL HHW FRACTION	0.41%	0.15%	0.28%	0.54%	0.35%

* Does not include bulk items