

Chapter 8: Macon

COMMUNITY PROFILE

Much of the solid waste in Northern Missouri is taken to Teter's landfill in Macon, Missouri. This landfill accepts waste from Kirksville, in Adair County (District C); Chariton, Putnam, and Linn Counties (District B), Howard County (District H), and all the counties in the Mark Twain Solid Waste Management District (District G) Much of the waste sampled at this location originated in Macon County and Adair County.

The principal industry in the area is agri-business. Tourism is important in the Mark Twain lake area and in the City of Hannibal. Kirksville is the home of Northeast Missouri State University and have a strong retail and service sector.

Teeters landfill is located on a county road 3 miles south of highway 36. It is 150 miles northeast of Kansas City, 178 miles northwest of St. Louis, and 221 miles north of Springfield.

Demographics:

	Macon County	Adair County
Area (sq. miles)	804	568
Population (1992)	15,030	24,407
Density (per sq. mile)	19	43
Pop. Change since 1980	-7.9%	-1.9%
Number of households	6,160	9060
Persons per household	2.44	2.35
High school graduates	70.3%	74.3%
Median Family Income	\$24,370	\$25,447
Percent below poverty level	24.9%	14.4%

Solid waste collection

Most of the waste sampled was collected by Teeter's sanitation trucks. Kirksville has implemented a volume based pricing system for solid waste and contracts with Teeter Sanitation for waste collection, curbside recycling collection, and disposal. The only other commercial waste hauler the City of Huntsville.

Solid waste disposal

Teeters Landfill receives approximately 120,000 cubic yards (40,000 tons) of waste per year. They do not have a scales on the premise and therefore charge by the cubic yard. The current tipping fee is \$6.50 per cubic yard.

Waste reduction and recycling programs

The area has numerous public and private drop-off sites, and every county has a composting site. There are two curbside programs (Monroe City, and Kirksville). The Mark Twain Solid Waste Management District is studying the feasibility of a material recovery facility and renewable energy/waste recovery facility.

Approximately 360 tons of recyclables are picked up on the curbside routes in Kirksville and Monroe City and taken to NEMO Recycling PPC in Kirksville.

Macon Results

The first sort was scheduled for March 4th through the 7th at Sutton and Son's Landfill in Bowling Green. Heavy rain and muddy conditions forced the cancellation of the sort. Teeter's landfill in Macon was chosen as a location for Sorts # 2 and # 3. Information about sample size and composition are listed in tables 7-1 through 7-8.

All weights are listed in pounds and all volumes are in cubic feet.

SORT # 2

Sort Conditions

The remaining two sorts were scheduled at Teter's Landfill in Macon. The second sort was conducted on June 10th through the 12th. The sort facility was set up in a grassy area across from the main administrative building. Weather conditions were misty and overcast.

Statistics	
Estimated MSW (lbs) Collected by Site During Sampling Period	67,600
Total Sample Weight (lbs)	2,751
Significance Test Results	.000
Number of Samples	12

OTHER WASTE CATEGORIES			
Over-the-counter Medication (OTC)	3	Beauty/Hygiene Aerosol Products	2
Prescription Medication (Rx)	3	Household Cleaning Aerosol Products	0
Beauty/Hygiene Products	12	Gardening/Yard Care Products	1
Household Cleaning Products	2	Pet Groom Products	0
Sharps/Blades	0	Disposable Razors	10
Syringes	17	Alkaline Batteries	14
Hardware/Shop Products	3	Automobile Maintenance/Cleaning Products	2
Aerosol Cans	14		
Miscellaneous items: 1 can polyethylene, 1 can isotonic liquid nutrition, 5 medical stitching kits, 1 package moist towlettes.			

**MACON
SORT # 2**

Sample #	Sample Size		Composition		Recycling Activities	Collection Location
	Weight	Volume	Res.	Comm.		
1	211	47.7	20%	80%	Curbside	Glasgow and Fayette
2	218	52.5	100%	0%	None	Huntsville
3	235	45.8	50%	50%	Curbside	Fayette
4	284.2	45.8	60%	40%	None	Brunswick
5	236.8	54	70%	30%	None	La Plata
6	202	45.7	80%	20%	None	Brookfield and Marceline
7	211	43.5	50%	50%	None	Unionville
8	223	48.6	50%	50%	Curbside/Drop-off	Kirksville
9	276	50.3	60%	40%	Curbside/Drop-off	Kirksville
10	223	44.9	70%	30%	Curbside/Drop-off	Kirksville
11	211	45.2	75%	25%	None	Shelbina
12	220	38.5	80%	20%	None	Shelbina and Macon
TOTALS	2751.0	562.5				
AVERAGE	229.3	46.9	64%	36%		

TABLE 8-1

CATEGORY	MACON				SORT # 2	
	TOTALS		AVERAGE		PERCENTAGE	
	wt.	vol.	wt.	vol.	Pct. by wt.	Pct. by vol.
Cardboard	215.5	79.8	18.0	6.7	7.83%	14.15%
Newsprint	185.0	29.1	15.4	2.4	6.73%	5.16%
Magazines	87.0	10.8	7.3	0.9	3.16%	1.91%
High Grade	160.0	26.8	13.3	2.2	5.82%	4.75%
Mixed	466.5	94.5	38.9	7.9	16.96%	16.76%
PAPER TOTALS	1114.0	241.0	92.8	20.1	40.50%	42.73%
Clear	75.0	6.0	6.3	0.5	2.73%	1.06%
Brown	26.0	2.9	2.2	0.2	0.95%	0.51%
Green	9.0	0.9	0.8	0.1	0.33%	0.16%
Other	18.5	1.8	1.5	0.2	0.67%	0.32%
GLASS TOTALS	128.5	11.6	10.7	1.0	4.67%	2.06%
Alum. Cans	42.0	10.2	3.5	0.9	1.53%	1.81%
Other Alum	19.6	3.9	1.6	0.3	0.71%	0.69%
Non ferrous	6.1	0.6	0.5	0.1	0.22%	0.11%
Food Cans	58.0	8.0	4.8	0.7	2.11%	1.42%
Ferrous	28.5	2.7	2.4	0.2	1.04%	0.48%
Oil Filters	1.0	0.1	0.1	0.0	0.04%	0.02%
METAL TOTALS	155.2	25.5	12.9	2.1	5.64%	4.52%
PET # 1	49.5	19.7	4.1	1.6	1.80%	3.49%
HDPE # 2	42.0	17.5	3.5	1.5	1.53%	3.10%
Film	91.0	51.5	7.6	4.3	3.31%	9.13%
Other Plastic	256.0	90.9	21.3	7.6	9.31%	16.12%
PLASTIC TOTALS	438.5	179.6	36.5	15.0	15.94%	31.84%
Food Waste	436.0	41.5	36.3	3.5	15.85%	7.36%
Wood Waste	24.5	3.4	2.0	0.3	0.89%	0.60%
Textiles	210.0	31.9	17.5	2.7	7.63%	5.66%
Diapers	78.2	8.8	6.5	0.7	2.84%	1.56%
Other Organics	71.5	9.4	6.0	0.8	2.60%	1.67%
ORGANIC TOTALS	820.2	95.0	68.4	7.9	29.82%	16.84%
Fines	41.0	6.2	3.4	0.5	1.49%	1.10%
Other Inorganics	53.2	5.1	4.4	0.4	1.93%	0.90%
INORGANIC TOTALS	94.2	11.3	7.9	0.9	3.42%	2.00%
GRAND TOTAL	2750.6	564.0	229.2	47.0	100.00%	100.00%

TABLE 8-2

SORT # 3

Sort Conditions

The third round of sorts (second sort in Macon) was conducted on October 7th through the 8th. The sort facility was set up in the same location as Sort # 1. Weather conditions were overcast and cool.

Statistics	
Estimated MSW (lbs) Collected by Site During Sampling Period	67,600
Total Sample Weight (lbs)	3,035.4
Significance Test Results	.000
Number of Samples	12

OTHER WASTE CATEGORIES			
Over-the-counter Medication (OTC)	0	Beauty/Hygiene Aerosol Products	0
Prescription Medication (Rx)	5	Household Cleaning Aerosol Products	0
Beauty/Hygiene Products	4	Gardening/Yard Care Products	0
Household Cleaning Products	1	Pet Groom Products	0
Sharps/Blades	1	Disposable Razors	17
Syringes	16	Alkaline Batteries	14
Hardware/Shop Products	0	Automobile Maintenance/Cleaning Products	0
Aerosol Cans	0		
Miscellaneous items: 1 can aluminum paint, 1 container copier toner, 1 package of fireworks, 1 lighter.			

**MACON
SORT #3**

Sample #	Sample Size		Composition		Recycling Activities	Collection Location
	Weight	Volume	Res.	Comm.		
1	239	52.9	50%	50%	Drop-off	Macon
2	206	59.2	50%	50%	Drop-off	Hanibal and New London
3	208	39	100%	0%	Drop-off	Macon (trailer park)
4	268.5	50.6	100%	0%	Drop-off	Brunswick
5	241.6	47.2	100%	0%	Drop-off	Marceline
6	331.3	71.7	80%	20%	Curbside/drop-off	Monroe
7	303	63.9	70%	30%	Drop-off	La Plata
8	274	53.3	90%	10%	Drop-off	Moberly (southside)
9	303	58	70%	30%	Drop-off	Shelbina and Paris
10	228	45	50%	50%	Curbside/drop-off	Kirksville
11	204	45.7	70%	30%	Curbside/drop-off	Kirksville
12	229	49.7	75%	25%	Curbside/drop-off	Kirksville
TOTALS	3035.4	636.2				
AVERAGE	253.0	53.0	75%	25%		

TABLE 8-3

CATEGORY	MACON				SORT # 3	
	TOTALS		AVERAGE		PERCENTAGE	
	wt.	vol.	wt.	vol.	Pct. by wt.	Pct. by vol.
Cardboard	215.0	71.5	17.9	6.0	7.09%	11.24%
Newsprint	149.5	31.2	12.5	2.6	4.93%	4.90%
Magazines	126.0	13.5	10.5	1.1	4.15%	2.12%
High Grade	116.5	20.8	9.7	1.7	3.84%	3.27%
Mixed	434.5	107.7	36.2	9.0	14.32%	16.93%
PAPER TOTALS	1041.5	244.7	86.8	20.4	34.32%	38.46%
Clear	75.5	7.3	6.3	0.6	2.49%	1.15%
Brown	46.5	4.0	3.9	0.3	1.53%	0.63%
Green	16.0	1.8	1.3	0.2	0.53%	0.28%
Other	31.0	3.4	2.6	0.3	1.02%	0.53%
GLASS TOTALS	169.0	16.5	14.1	1.4	5.57%	2.59%
Alum. Cans	54.5	22.6	4.5	1.9	1.80%	3.55%
Other Alum	28.6	6.0	2.4	0.5	0.94%	0.94%
Non ferrous	10.1	2.0	0.8	0.2	0.33%	0.31%
Food Cans	118.0	20.9	9.8	1.7	3.89%	3.29%
Ferrous	37.0	3.3	3.1	0.3	1.22%	0.52%
Oil Filters	0.0	0.0	0.0	0.0	0.00%	0.00%
METAL TOTALS	248.2	54.8	20.7	4.6	8.18%	8.61%
PET # 1	56.5	26.4	4.7	2.2	1.86%	4.15%
HDPE # 2	68.5	30.8	5.7	2.6	2.26%	4.84%
Film	86.0	44.5	7.2	3.7	2.83%	6.99%
Other Plastic	226.2	83.7	18.9	7.0	7.45%	13.16%
PLASTIC TOTALS	437.2	185.4	36.4	15.5	14.41%	29.14%
Food Waste	602.5	55.2	50.2	4.6	19.86%	8.68%
Wood Waste	27.6	3.1	2.3	0.3	0.91%	0.49%
Textiles	113.5	20.2	9.5	1.7	3.74%	3.18%
Diapers	213.0	26.7	17.8	2.2	7.02%	4.20%
Other Organics	97.3	17.6	8.1	1.5	3.21%	2.77%
ORGANIC TOTALS	1053.9	122.8	87.8	10.2	34.73%	19.30%
Fines	58.0	8.5	4.8	0.7	1.91%	1.34%
Other Inorganics	26.5	3.5	2.2	0.3	0.87%	0.55%
INORGANIC TOTALS	84.5	12.0	7.0	1.0	2.78%	1.89%
GRAND TOTAL	3034.3	636.2	252.9	53.0	100.00%	100.00%

TABLE 8-4

SORT SUMMARY

Seasonal variations

- Paper totals were higher in the second sort. No obvious cause.
- Disposable diapers were considerably higher in the third sort due to a large amount of adult diapers in a sample from a nursing home.
- Textiles were considerably higher in the second round. No obvious cause.

Sort results

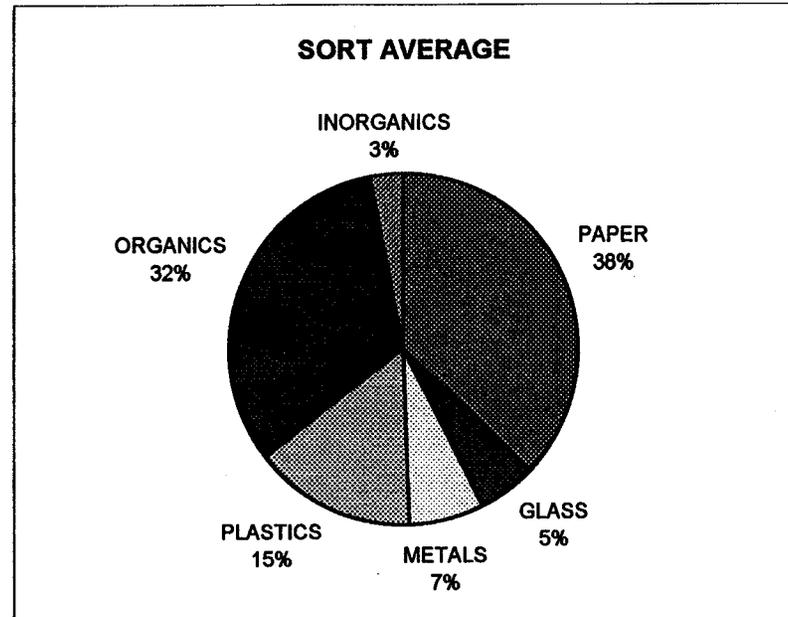
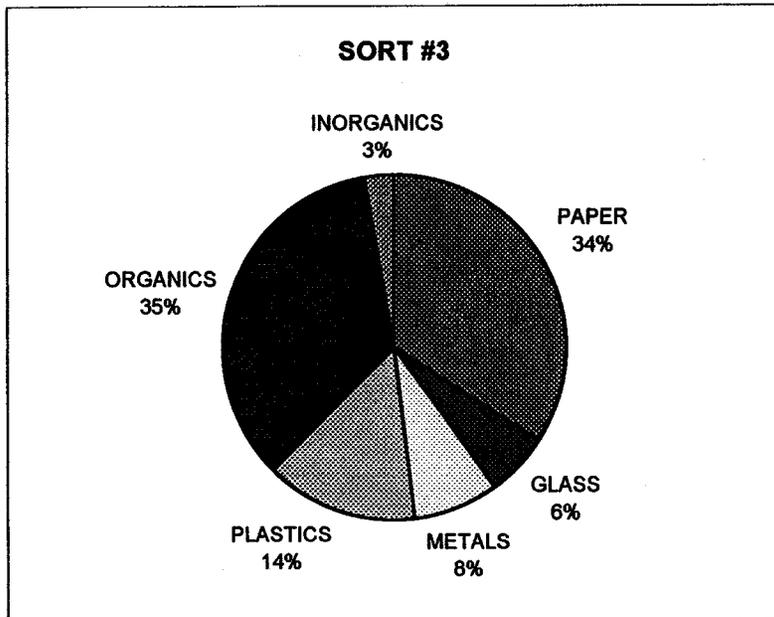
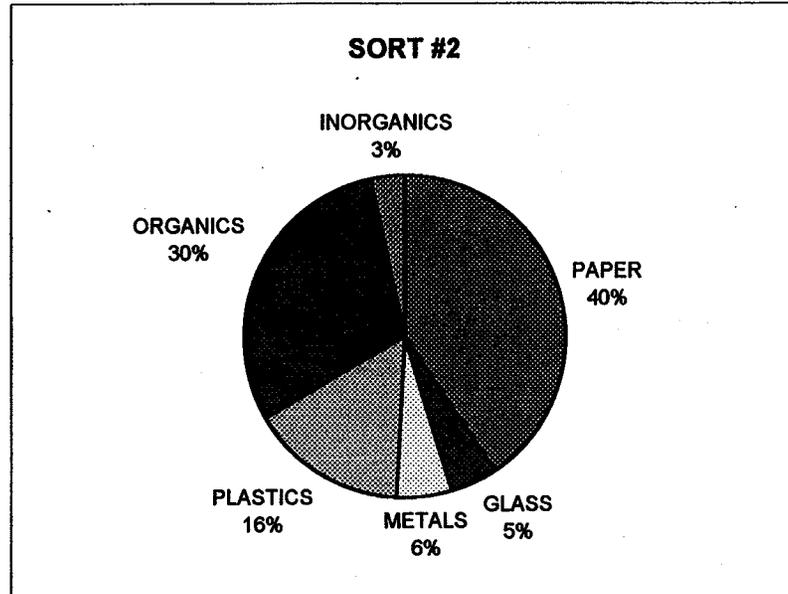
- Chart 8-1 graphically compares the three seasonal waste sort results and shows the average waste composition, by major category, for Macon.
- The sample data for all Macon sorts is listed on table 8-5.
- The sort results for all Macon sorts are listed on table 8-6.
- The summary of statistical relevance for the Macon sorts is located on page 122.
- The total for all “other wastes” found during the Macon sorts is on page 122.

All weights are in pounds and volumes are listed in cubic feet.

Comparisons of the Macon waste stream to previous studies and other communities can be found in chapter 13.

MACON RESULTS BY WEIGHT

**SORT #1 WAS
CANCELLED
DUE TO HEAVY
RAIN AND ICE**



MACON SAMPLE SUMMARY

Sort #	Dates	Number of Samples	Sample Size		Composition	
			Weight	Volume	Residential	Commercial
1	3/4-3/6	0	CANCELLED SORT DUE TO HEAVY RAIN			
2	6/10-6-12	12	2751.0	562.5	64%	36%
3	10/7-10/8	12	3035.4	636.2	75%	25%
TOTALS		24.0	5786.4	1198.7		
AVERAGE		12.0	2893.2	599.4	70%	30%

TABLE 8-5

CATEGORY	MACON						SUMMARY	
	SORT # 1		SORT # 2		SORT # 3		AVERAGE	
	WT.	VOL.	WT.	VOL.	WT.	VOL.	WT.	VOL.
Cardboard	N/A	N/A	7.8%	14.1%	7.1%	11.2%	7.4%	12.6%
Newsprint	N/A	N/A	6.7%	5.2%	4.9%	4.9%	5.8%	5.0%
Magazines	N/A	N/A	3.2%	1.9%	4.2%	2.1%	3.7%	2.0%
High Grade	N/A	N/A	5.8%	4.8%	3.8%	3.3%	4.8%	4.0%
Mixed	N/A	N/A	17.0%	16.8%	14.3%	16.9%	15.6%	16.8%
PAPER TOTALS	N/A	N/A	40.5%	42.7%	34.3%	38.5%	37.3%	40.5%
Clear	N/A	N/A	2.7%	1.1%	2.5%	1.1%	2.6%	1.1%
Brown	N/A	N/A	0.9%	0.5%	1.5%	0.6%	1.3%	0.6%
Green	N/A	N/A	0.3%	0.2%	0.5%	0.3%	0.4%	0.2%
Other	N/A	N/A	0.7%	0.3%	1.0%	0.5%	0.9%	0.4%
GLASS TOTALS	N/A	N/A	4.7%	2.1%	5.6%	2.6%	5.1%	2.3%
Alum. Cans	N/A	N/A	1.5%	1.8%	1.8%	3.6%	1.7%	2.7%
Other Alum	N/A	N/A	0.7%	0.7%	0.9%	0.9%	0.8%	0.8%
Non ferrous	N/A	N/A	0.2%	0.1%	0.3%	0.3%	0.3%	0.2%
Food Cans	N/A	N/A	2.1%	1.4%	3.9%	3.3%	3.0%	2.4%
Ferrous	N/A	N/A	1.0%	0.5%	1.2%	0.5%	1.1%	0.5%
Oil Filters	N/A	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
METAL TOTALS	N/A	N/A	5.6%	4.5%	8.2%	8.6%	7.0%	6.7%
PET # 1	N/A	N/A	1.8%	3.5%	1.9%	4.1%	1.8%	3.8%
HDPE # 2	N/A	N/A	1.5%	3.1%	2.3%	4.8%	1.9%	4.0%
Film	N/A	N/A	3.3%	9.1%	2.8%	7.0%	3.1%	8.0%
Other Plastic	N/A	N/A	9.3%	16.1%	7.5%	13.2%	8.3%	14.5%
PLASTIC TOTALS	N/A	N/A	15.9%	31.8%	14.4%	29.1%	15.1%	30.4%
Food Waste	N/A	N/A	15.9%	7.4%	19.9%	8.7%	18.0%	8.1%
Wood Waste	N/A	N/A	0.9%	0.6%	0.9%	0.5%	0.9%	0.5%
Textiles	N/A	N/A	7.6%	5.7%	3.7%	3.2%	5.6%	4.3%
Diapers	N/A	N/A	2.8%	1.6%	7.0%	4.2%	5.0%	3.0%
Other Organics	N/A	N/A	2.6%	1.7%	3.2%	2.8%	2.9%	2.2%
ORGANIC TOTALS	N/A	N/A	29.8%	16.8%	34.7%	19.3%	32.4%	18.1%
Fines	N/A	N/A	1.5%	1.1%	1.9%	1.3%	1.7%	1.2%
Other Inorganics	N/A	N/A	1.9%	0.9%	0.9%	0.6%	1.4%	0.7%
INORGANIC TOTALS	N/A	N/A	3.4%	2.0%	2.8%	1.9%	3.1%	1.9%
SORT TOTALS	N/A	N/A	100%	100%	100%	100%	100%	100%

TABLE 8-6

Macon Statistical Summary	
Estimated MSW (lbs) Collected by Site During Sampling Period	67,600
Total Sample Weight (lbs)	5,786.4
Total Number of Samples Collected	24
Significance Test Results	.000
Mean Sample (lbs) and Confidence Interval (95%)	241.10 (+/-) 15.5

Macon "Other Waste" Summary			
Over-the-Counter Medication (OTC)	3	Beauty/Hygiene Aerosol Products	2
Prescription Medication (Rx)	8	Household Cleaning Aerosol Products	0
Beauty/Hygiene Products	16	Gardening/Yard Care Products	1
Household Cleaning Products	3	Pet Groom Products	0
Sharps/Blades	1	Disposable Razors	27
Syringes	33	Alkaline Batteries	28
Hardware/Shop Products	3	Automobile Maintenance/Cleaning Products	2
Aerosol Cans	14		
Miscellaneous items: 1 can polyethylene, 1 can isotonic liquid nutrition, 5 medical stitching bags, 1 package moist towlettes, 1 can of aluminum paint, 1 container copier toner, 1 package of fireworks, 1 lighter.			