

SMALL METROPOLITAN AREAS

There are three small metropolitan areas within the state of Missouri according to the Missouri State Census Data Center. These are the Springfield metropolitan area (240,593), The Columbia metropolitan area (112,379), and the St. Joseph metropolitan area (83,083). The remaining population centers are classified as rural.

The three metropolitan areas have different waste characteristics than St. Louis or Kansas City. They also have different waste characteristics than their rural counterparts.

City of Columbia

The City of Columbia owns and operates their own landfill. They also operate a fleet of refuse trucks that collect all of the residential waste within the City of Columbia and most of the commercial waste. The City of Columbia has been active in waste management for several years and have implemented some very progressive waste reduction and recycling programs. Columbia is the only City in the U.S. to have an independent bottle deposit bill. Landfill observation was done in October of 1998 and results are on page 27.

City of St. Joseph

The City of St. Joseph also owns and operates their landfill. However the City has contracted the residential waste hauling to Deffenbaugh waste services and all residential and commercial waste collected within the city limits by Deffenbaugh is hauled to their landfill in Kansas. However, industrial waste in compactor units and roll-off were delivered to the St. Joseph Landfill. The landfill observation was done in November of 1998 and results are on page 33.

City of Springfield

The City of Springfield owns and operates their own landfill but due to limited time and resources this landfill was not observed. However, from a waste perspective, Springfield is like St. Joseph in many ways. BFI, which hauls to their landfill in Lamar, or Waste Management Inc., which hauls to their landfill in Hartsville (Black Oak), collect most of the residential and commercial waste in Springfield. Both the Lamar and Black Oak landfills were observed. The Springfield landfill receives less waste than any of the other landfills observed. Although Springfield is the third largest metropolitan area in the state, the landfill only received 101,284 tons in 1998. The percentage of waste found at the St. Joseph Landfill was applied to the tonnage for Springfield.

Waste Components for Small Metropolitan Areas

There were some significant differences in the solid waste components of small metropolitan areas when compared to large metro areas and rural areas. The MSW component was much less than either the large metro landfills or the rural landfills. The waste components at the City of Columbia landfill was very close to state averages, but the St. Joseph (and Springfield because it was considered similar to St. Joseph) percentages were very different.

The table on page 156 list the results for the three small metro landfills observed, and the charts on page 157 illustrate those findings.

SMALL METROPOLITAN SOLID WASTE COMPONENTS

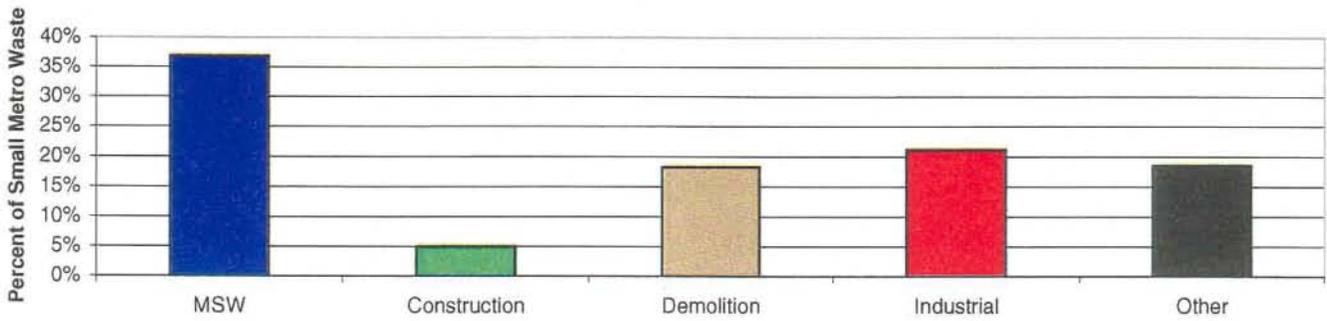
MATERIAL	Columbia		St. Joseph		Springfield		Total Small Metro	
	Pct.	Estimated Tonnage*	Pct.	Estimated Tonnage*	Pct.	Estimated Tonnage**	Pct.	Estimated Tonnage
Municipal Solid Waste								
Paper	24.1%	30,285	10.0%	11,995	10.0%	10,128	15.1%	52,408
Glass	2.1%	2,691	1.6%	1,943	1.6%	1,621	1.8%	6,255
Metals	3.1%	3,858	1.8%	2,186	1.8%	1,823	2.3%	7,866
Plastics	7.2%	9,064	3.2%	3,852	3.2%	3,241	4.7%	16,158
Organics	16.3%	20,518	7.4%	8,939	7.4%	7,495	10.6%	36,951
Inorganics	5.0%	6,324	1.0%	1,246	1.0%	1,013	2.5%	8,582
TOTAL MSW	57.8%	72,739	25.1%	30,161	25.1%	25,422	36.9%	128,322
Construction Waste								
Wood	4.0%	4,975	1.5%	1,759	1.5%	1,519	2.4%	8,253
Dry Wall	1.3%	1,693	0.8%	957	0.8%	810	1.0%	3,461
Masonry	0.3%	408	1.1%	1,315	1.1%	1,114	0.8%	2,837
Metal	0.2%	288	0.1%	87	0.1%	101	0.1%	476
Plastic	0.2%	246	0.1%	63	0.1%	101	0.1%	411
Cardboard	0.7%	850	0.1%	161	0.1%	101	0.3%	1,113
Other	0.7%	892	0.0%	58	0.0%	-	0.3%	950
TOTAL CONSTRUCTION	7.4%	9,352	3.7%	4,400	3.7%	3,748	5.0%	17,500
Demolition Waste								
Wood	4.1%	5,200	11.2%	13,437	11.2%	11,344	8.6%	29,980
Dry Wall	1.1%	1,440	0.9%	1,119	0.9%	912	1.0%	3,471
Roofing	3.8%	4,722	3.8%	4,585	3.8%	3,849	3.8%	13,155
Masonry	3.0%	3,724	3.8%	4,527	3.8%	3,849	3.5%	12,100
Metal	0.5%	576	0.2%	294	0.2%	203	0.3%	1,073
Carpet	0.3%	415	0.8%	963	0.8%	810	0.6%	2,188
Other	1.0%	1,209	0.2%	242	0.2%	203	0.5%	1,653
TOTAL DEMOLITION	13.7%	17,285	20.9%	25,167	20.9%	21,168	18.3%	63,620
Industrial Waste								
Cardboard	5.3%	6,682	3.5%	4,169	3.5%	3,545	4.1%	14,397
Paper	1.2%	1,462	2.1%	2,560	2.1%	2,127	1.8%	6,149
Food	1.4%	1,806	8.1%	9,688	8.1%	8,204	5.7%	19,698
Metal	0.1%	155	0.9%	1,044	0.9%	912	0.6%	2,110
Wood	3.0%	3,787	3.6%	4,308	3.6%	3,646	3.4%	11,741
Plastic	4.6%	5,818	1.3%	1,569	1.3%	1,317	2.5%	8,703
Textiles	0.2%	253	0.0%	-	0.0%	-	0.1%	253
Rubber	0.6%	752	0.0%	-	0.0%	-	0.2%	752
Other	1.7%	2,101	3.5%	4,198	3.5%	3,545	2.8%	9,844
TOTAL INDUSTRIAL	18.1%	22,815	22.9%	27,537	22.9%	23,194	21.2%	73,546
Special Wastes								
Bulky Items	1.7%	2,185	1.3%	1,569	1.3%	1,317	1.5%	5,071
Soil and Inert Materials	0.0%	-	25.4%	30,564	25.4%	25,726	16.2%	56,290
Asbestos	0.0%	-	0.6%	761	0.6%	608	0.4%	1,369
Other	1.2%	1,490	0.0%	-	0.0%	-	0.4%	1,490
TOTAL SPECIAL	2.9%	3,675	27.4%	32,894	27.4%	27,752	18.5%	64,321
TOTAL WASTE STREAM	100%	125,867	100%	120,158	100%	101,284	100%	347,309

* Based on observation data

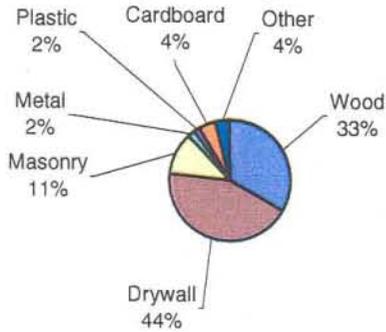
**City of Springfield landfill was not observed. Estimates are based on the City of St. Joseph landfill.

SMALL METROPOLITAN SOLID WASTE COMPONENTS

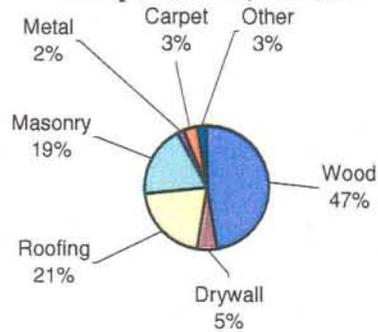
Composition of Small Metropolitan Areas



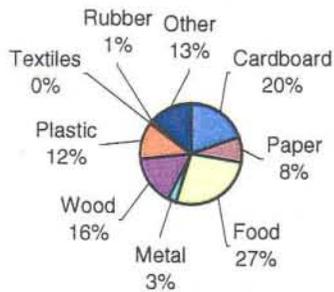
Small Metropolitan Construction Component - 17,500 Tons



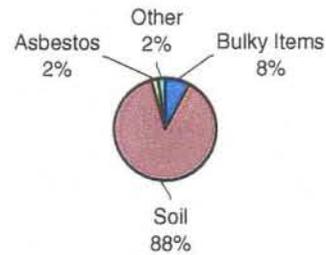
Small Metropolitan Demolition Component - 63,626 Tons



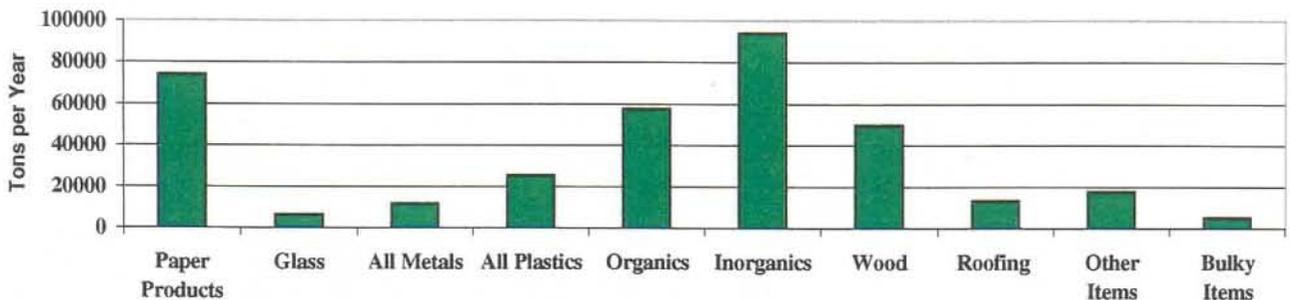
Small Metropolitan Industrial Component - 73,546 Tons



Small Metropolitan Other Component - 64,321 Tons



Combined Materials from all Waste Components in Small Metropolitan Areas



RURAL AREAS

Much of the state of Missouri is rural. There are some larger cities outside of the metropolitan areas (Joplin 41,000, Cape Girardeau 35,000, and Jefferson City 35,000), but for the most part these areas are sparsely populated compared to the metropolitan areas. The population of rural Missouri is about two million. The following rural landfills were observed.

Black Oak

The Black Oak Landfill is located near Hartsville, MO and is owned and operated by Waste Management Inc. The large majority of waste received at their landfill was MSW from their transfer stations in Springfield, Lebanon, Roll, and St. Roberts. Since the landfill was observed, the operation of two of the transfer stations (Phelps County and St. Roberts) has been taken over by Superior Waste Services, and the waste from these transfer stations are no going to the Oak Ridge Landfill in St. Louis County. The landfill observation was conducted in April and the results are on page 9.

Butler County

The Butler County Landfill is located near Poplar Bluff, MO and is owned and operated by Allied Waste Services. Much of their waste is MSW received from independent transfer stations in Park Hills, Fredericktown, and the Bootheel. The landfill observation was conducted in October 1998 and the results are on page 21.

Lamar Landfill

The Lamar Landfill is located near Lamar, MO and is owned and operated by BFI. Much of their waste is MSW received from their transfer station in Springfield. The landfill observation was conducted in October 1998 and the results are on page 51.

Lemons Landfill

The Lemons Landfill is located near Dexter, MO and is operated by Allied Waste Services. Much of their waste is MSW received from transfer stations in Cape Girardeau, Jackson, and Pemiscot County. Landfill observation was conducted in January 1999. The results are on page 57.

Maple Hill Landfill

The Maple Hill Landfill is located near Macon, MO. and is owned and operated by Superior Waste Services. Much of their waste was MSW received from their own fleet of packer trucks and transfer stations in Bethany and Mexico, MO. The landfill observation was conducted in April 1999 and the results are on page 63.

Waste Components of Rural Landfills

Almost 82% of the waste received in rural landfills was MSW. They received about the same percentage of industrial waste as the state average but were considerably lower in construction, demolition and other waste categories.

The table on pages 160 and 161 list the results for the five rural landfills observed and the estimated waste components for rural landfills not observed. The charts on pages 163 and 165 illustrate those findings.

RURAL SOLID WASTE COMPONENTS

MATERIAL	Black Oak		Butler Co.		Lamar		Lemons	
	Pct.	Estimated Tonnage*						
Municipal Solid Waste								
Paper	35.6%	100,943	27.7%	33,823	27.0%	45,467	26.5%	51,961
Glass	5.5%	15,711	4.2%	5,135	3.8%	6,339	4.1%	8,105
Metals	6.6%	18,671	6.2%	7,556	5.5%	9,203	4.9%	9,608
Plastics	13.7%	38,935	11.0%	13,399	11.9%	20,052	10.2%	20,065
Organics	29.4%	83,335	23.8%	29,101	25.3%	42,725	21.9%	42,941
Inorganics	4.6%	12,978	3.5%	4,250	3.3%	5,565	3.4%	6,667
TOTAL MSW	95.4%	270,573	76.3%	93,263	76.7%	129,351	71.1%	139,347
Construction Waste								
Wood	0.1%	304	0.7%	885	0.3%	581	0.2%	425
Dry Wall	0.0%	76	0.8%	1,003	0.0%	43	0.1%	288
Masonry	0.3%	911	0.0%	-	0.0%	-	0.0%	-
Metal	0.0%	-	0.0%	-	0.1%	112	0.0%	-
Plastic	0.0%	-	0.0%	-	0.0%	-	0.0%	-
Cardboard	0.0%	76	0.1%	177	0.1%	101	0.0%	-
Other	0.0%	-	0.2%	302	0.2%	293	0.0%	-
TOTAL CONSTRUCTION	0.5%	1,366	1.9%	2,368	0.7%	1,129	0.4%	712
Demolition Waste								
Wood	0.3%	759	1.1%	1,328	1.7%	2,798	2.9%	5,752
Dry Wall	0.1%	228	1.9%	2,278	0.1%	222	0.6%	1,111
Roofing	0.3%	835	3.8%	4,657	3.7%	6,156	2.1%	4,052
Masonry	0.1%	152	0.2%	285	0.2%	282	1.2%	2,353
Metal	0.0%	76	0.0%	-	0.2%	410	0.1%	294
Carpet	0.2%	455	0.8%	950	0.5%	890	0.4%	719
Other	0.1%	379	0.0%	-	0.4%	646	0.0%	65
TOTAL DEMOLITION	1.0%	2,884	7.8%	9,499	6.8%	11,403	7.3%	14,346
Industrial Waste								
Cardboard	0.7%	1,897	0.4%	515	2.3%	3,797	1.2%	2,418
Paper	0.3%	835	0.3%	322	0.4%	616	3.6%	7,124
Food	0.0%	-	0.0%	-	0.0%	-	0.9%	1,765
Metal	0.0%	-	0.0%	-	0.6%	1,085	0.1%	131
Wood	0.6%	1,594	0.3%	386	0.7%	1,207	2.4%	4,641
Plastic	0.1%	304	0.4%	515	0.7%	1,128	2.4%	4,771
Textiles	0.0%	-	1.4%	1,670	0.8%	1,359	0.7%	1,438
Rubber	0.0%	-	2.5%	3,022	0.3%	524	0.6%	1,176
Other	0.0%	-	7.7%	9,350	9.2%	15,432	8.8%	17,255
TOTAL INDUSTRIAL	1.6%	4,630	12.9%	15,780	14.9%	25,147	20.8%	40,719
Special Wastes								
Bulky Items	1.4%	4,023	1.0%	1,275	0.5%	823	0.5%	967
Soil and Inert Materials	0.0%	-	0.0%	-	0.0%	-	0.0%	-
Asbestos	0.0%	-	0.0%	-	0.4%	737	0.0%	-
Other	0.0%	-	0.0%	-	0.0%	-	0.0%	-
TOTAL SPECIAL	1.4%	4,023	1.0%	1,275	0.9%	1,560	0.5%	967
TOTAL WASTE STREAM	100%	283,475	100%	122,185	100%	168,591	100%	196,092

* Based on observation data

** Based on the weighted average from the 5 observed landfills and the 2 C&D landfills observed.

*** Total estimated material based on observation data and weighted average from remaining rural landfills.

RURAL SOLID WASTE COMPONENTS

Maple Hill		Other Rural Landfil		Total Rural Landfills		MATERIAL
Pct.	Estimated Tonnage*	Pct.	Estimated Tonnage**	Pct.	Estimated Tonnage***	
29.1%	33,441	30.0%	192,321	30.0%	457,956	Municipal Solid Waste
4.0%	4,646	4.5%	28,912	4.5%	68,848	Paper
5.4%	6,152	5.8%	37,054	5.8%	88,243	Glass
11.7%	13,481	12.0%	76,736	12.0%	182,669	Metals
25.2%	28,991	25.7%	164,434	25.7%	391,527	Plastics
2.4%	2,749	3.6%	23,335	3.6%	55,543	Organics
77.8%	89,460	81.6%	522,792	81.6%	1,244,785	Inorganics
						TOTAL MSW
						Construction Waste
0.3%	393	0.3%	1,859	0.3%	4,447	Wood
0.1%	131	0.2%	1,090	0.2%	2,630	Dry Wall
0.1%	65	0.1%	705	0.1%	1,681	Masonry
0.1%	65	0.0%	128	0.0%	305	Metal
0.1%	131	0.0%	64	0.0%	195	Plastic
0.1%	65	0.1%	321	0.0%	740	Cardboard
0.1%	65	0.1%	449	0.1%	1,109	Other
0.8%	916	0.7%	4,680	0.7%	11,172	TOTAL CONSTRUCTION
						Demolition Waste
4.3%	4,908	1.8%	11,283	1.8%	26,827	Wood
0.9%	1,047	0.6%	3,526	0.6%	8,413	Dry Wall
1.5%	1,767	2.0%	12,629	2.0%	30,096	Roofing
0.2%	262	0.4%	2,436	0.4%	5,770	Masonry
0.5%	524	0.2%	962	0.1%	2,265	Metal
0.3%	393	0.4%	2,436	0.4%	5,843	Carpet
0.6%	654	0.2%	1,282	0.2%	3,027	Other
8.3%	9,555	5.4%	34,554	5.4%	82,241	TOTAL DEMOLITION
						Industrial Waste
0.9%	1,047	1.1%	6,988	1.1%	16,662	Cardboard
0.2%	262	1.0%	6,603	1.0%	15,761	Paper
2.8%	3,272	0.6%	3,654	0.6%	8,691	Food
0.6%	654	0.2%	1,346	0.2%	3,216	Metal
0.7%	851	1.0%	6,282	1.0%	14,960	Wood
2.9%	3,338	1.1%	7,308	1.1%	17,363	Plastic
0.4%	458	0.6%	3,590	0.6%	8,516	Textiles
1.1%	1,243	0.7%	4,295	0.7%	10,261	Rubber
1.1%	1,243	4.9%	31,348	4.9%	74,629	Other
10.8%	12,369	11.1%	71,415	11.1%	170,060	TOTAL INDUSTRIAL
						Special Wastes
1.2%	1,374	1.0%	6,154	1.0%	14,616	Bulky Items
0.0%	-	0.0%	-	0.0%	-	Soil and Inert Materials
0.0%	-	0.1%	513	0.1%	1,250	Asbestos
1.1%	1,309	0.2%	962	0.1%	2,270	Other
2.3%	2,683	1.2%	7,629	1.2%	18,137	TOTAL SPECIAL
100%	114,982	100.0%	641,069	100%	1,526,394	TOTAL WASTE STREAM

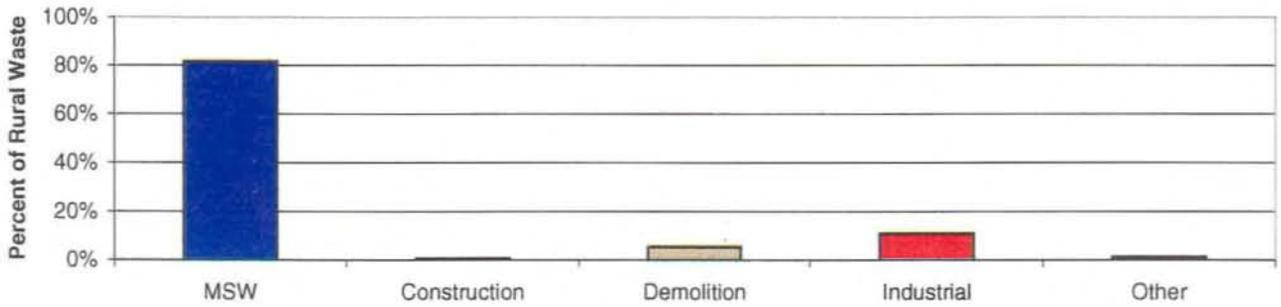
* Based on observation data

** Based on the weighted average from the 5 observed landfills and the 2 C&D landfills observed.

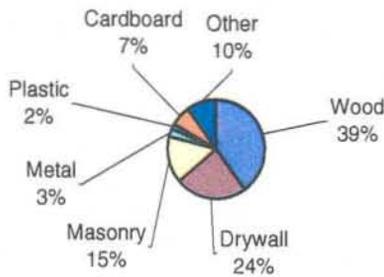
*** Total estimated material based on observation data and weighted average from remaining rural landfill:

RURAL SOLID WASTE COMPONENTS

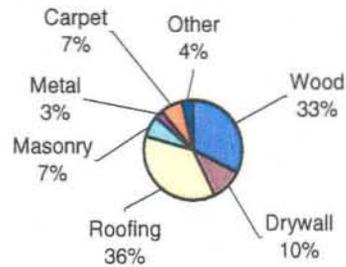
Composition of Rural Waste



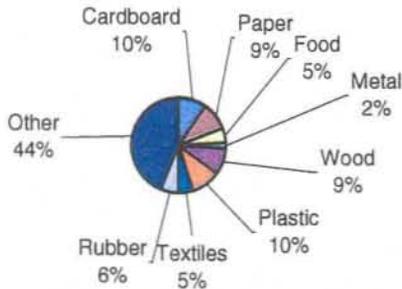
Rural Construction Component - 11,172 Tons



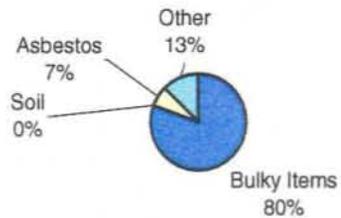
Rural Demolition Component - 82,241 Tons



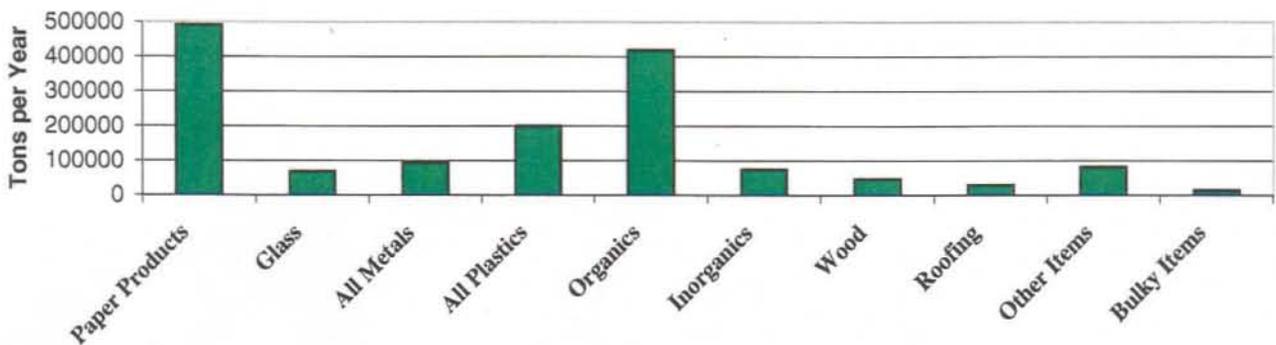
Rural Industrial Component - 170,060 Tons



Rural "Other" Waste Component - 18137 Tons

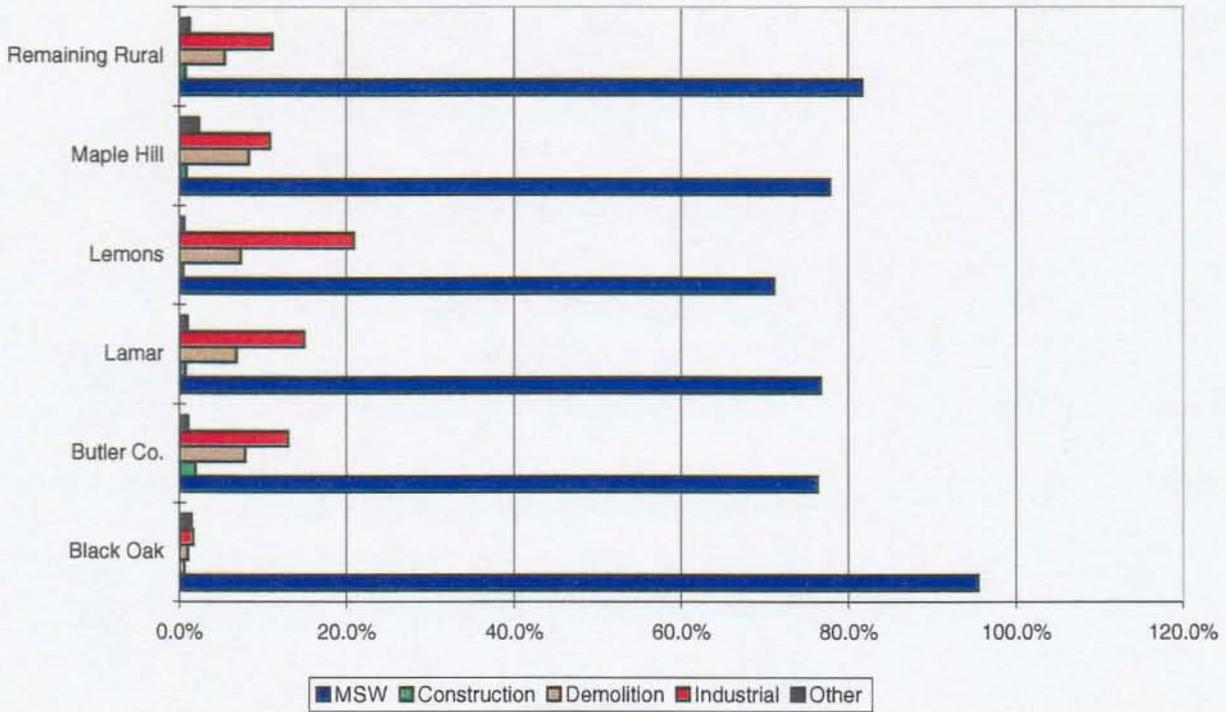


Combined Materials from all Waste Components in Rural Areas



RURAL SOLID WASTE COMPONENTS

Solid Waste Components for Rural Landfills



1998 Tonnage Totals for Missouri Rural Landfills

