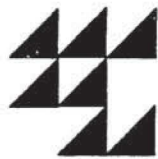


**1992**  
**ABATEMENT PROGRESS REPORT**  
**FOR THE**  
**TWIN CITIES METROPOLITAN AREA**



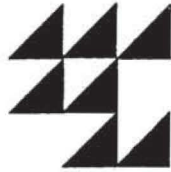
**Metropolitan Council**

CALENDAR YEAR 1992

**ABATEMENT PROGRESS  
REPORT  
FOR THE TWIN CITIES  
METROPOLITAN  
AREA**

Report of the Metropolitan Council  
to the  
Legislative Commission on Waste Management

November 1993



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The Metropolitan Council coordinates the planning and development of the seven-county Metropolitan Area. The Council strives to improve the region by strengthening the economic, societal and environmental health and vitality of the metropolitan area. The Council is authorized by state and federal laws to plan for solid waste management, highways and transit, sewers, parks and open spaces, airports, land use, air and water quality, health, housing and aging.

This report has been written and edited under  
the direction of John Rafferty  
by Darrell Washington and James Uttley  
with the assistance of Sunny Jo Emerson and Paul Smith.

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## ABOUT THIS REPORT

The Metropolitan Council's *Abatement Progress Report* is required by the Minn. Stat. §473.149, Subd. 6.

The report also satisfies the requirements of Minn. Stat. §115A.551, Subd. 4, which requires the Council to monitor the progress of each county towards recycling 35 percent of total solid waste generation by December 31, 1993.

This is the ninth annual *Abatement Progress Report* to the Legislative Commission on Waste Management (LCWM).

Information contained in this report covers the period January 1, 1992, through December 31, 1992. The next *Abatement Progress* report will be submitted to the LCWM on July 1, 1994.

This report contains a section addressing the restricted disposal of unprocessed waste,

required by Minnesota Stat. 473.848, Subd. 4.

The seven major sections contained in this report include: 1) waste generation; 2) waste composition; 3) source reduction; 4) recycling; 5) centralized processing; 6) land disposal; and 7) a summary of county certification reports. Each section contains or summarizes the most recent data available on the subject, the issues raised by the data, and the conclusions reached.

A copy of a Council report on County Waste Certification Reports -- January 1, 1992 - December 31, 1992 is found in Appendix A.

Detailed information about recycling tonnages reported for 1992 by city and township is found in Appendix B.

## SUMMARY & CONCLUSIONS

### Waste Generation

The metropolitan counties (counties) reported managing 2,721,000 tons of municipal solid waste (MSW) in 1992, which is five percent less than the Council's waste generation forecast for 1992. The counties' reports do not include unprocessed waste that escaped designation.

The Council estimates that in 1992 approximately 123,000 tons of unprocessed MSW escaped designation and was landfilled. When this tonnage is added to the county numbers, the actual amount of MSW generated in the region in 1992 was 2,844,000 tons; slightly under the Council's forecast of 2,845,000 tons. The region's waste stream continued to grow at slightly less than 2 percent per year despite expanded source reduction efforts by some of the counties.

This means that unprocessed waste from the region will continue to be landfilled into the next century, unless further changes are made in the solid waste management system. By 2000, unless source reduction efforts become much more effective, the region can expect to generate 3,200,000 tons of MSW. If the counties recycle 50 percent (1,600,000 tons) and process waste for resource recovery at today's rates (1,200,000 tons), there will be 400,000 tons of unprocessed waste remaining to be landfilled.

### Waste Composition

The Council completed its regional Waste Composition Study in 1992, in a cooperative venture with the Minnesota Pollution Control Agency (MPCA). Results from that study were presented to the LCWM in early 1993.

Even with the region's high level of recycling, the study found that 24.5 percent of the post-recycling waste consisted of recyclable food and beverage containers, corrugated cardboard, magazines, high grade paper and newsprint. Food waste, wood waste and plastic film accounted for another 24.5 percent of the waste. If counties were able to remove all of these recyclables today, it would increase recycling by 755,000 tons, leaving approximately 786,000 tons of MSW and 71,000 tons of banned waste needing to be processed.

### Source Reduction

Regional efforts to reduce the size and toxicity of the waste stream focused in three areas in 1992. The Council funded a series of 30-second television ads to promote the Office of Waste Management's (OWM) SMART Shopping campaign in the Metropolitan Area. The ads ran every other week beginning in October 1992.

In addition, the Council financed a study by the Solid Waste Management Coordinating Board (SWMCB) of paint toxicity and alternatives to handling all paint as household hazardous waste.

The Council continued a project, begun in 1991, to provide technical information, publications, training materials and other assistance to facilitate city and county outreach to area businesses and institutions in the areas of source reduction and recycling.

These source reduction efforts have helped keep the region's waste generation rate below two percent annually, but have not yet been effective in curtailing the growth in the waste stream.

## Recycling

All of the counties reported exceeding the Council's 30 percent recycling goal for 1992. Counties report 1,232,000 tons of waste was recycled, 45 percent of the MSW managed by the counties. This number includes 1,153,000 tons of residential and commercial recycling; 40,000 tons of banned wastes assumed to have been recycled (primarily lead-acid batteries and major appliances); and 39,000 tons recycled by processing plants.

More than 90 percent of the cities and townships in the Metropolitan Area have residential curbside collection of recyclables. County efforts to ensure that recycling options are available to most residents in cities and townships have been successful. However, cities and counties need to place more emphasis on recycling in the commercial/industrial sector, which now accounts for 57 percent of the recycling reported by counties.

Future gains in recycling will come from enhancing existing program features. The region would benefit from a uniform list of recycled materials. This would make it easier to educate the public about what and how to recycle, and result in a more consistent supply of recyclable materials for market.

Some communities recycle only four materials as required by statute, while others recycle seven or more different types of materials. Banning more materials from the waste stream, similar to the successful bans on yard waste, batteries, major appliances, oil and tires should be examined.

In 1992, the Council began an investigation to identify market pressure points for recycled PET plastic containers and mixed office paper. Concentrating efforts on activities that will lead to expanded, stable markets is essential for the long-term success of recycling programs in the region. Other materials that need market development

work include corrugated cardboard, magazines and film plastics.

Increasing the amount of recycling in the region will allow existing resource recovery facilities to process a greater percentage of the region's remaining waste, so that less unprocessed waste needs to be landfilled.

## Centralized Processing

After recycling, there were 1,457,000 tons of managed MSW, excluding 71,000 tons of banned wastes, remaining that needed to be processed in 1992. This waste was sent primarily to five resource recovery facilities for processing. The five facilities processed 1,167,000 tons of MSW in 1992, 80 percent of the managed waste remaining after recycling in 1992. Three of the counties--Carver, Dakota and Scott--sent all of their MSW remaining after recycling to landfills without processing.

In 1992, an estimated 675,000 tons of processing rejects, residuals, ash and unprocessed MSW managed by the counties was landfilled. In addition, the Council estimates that 123,000 tons of waste escaped county waste designation and was landfilled unprocessed.

Several alternatives are available to the counties to deal with the processing shortfall. These are discussed in the report on page 9 and pages 23 to 28. The alternatives include greater source reduction efforts, more recycling, improved waste sharing agreements among the counties, facility improvements, removal of the legislative limitation on processing at Hennepin County's burn plant, and more use of non-metro processing facilities. In addition, Council policies direct counties to seek alternatives to landfilling processing rejects, residuals and ash.

In order to accomplish this objective and the objective of eliminating the landfilling of unprocessed waste, the counties need to

develop a true regionally integrated waste management system.

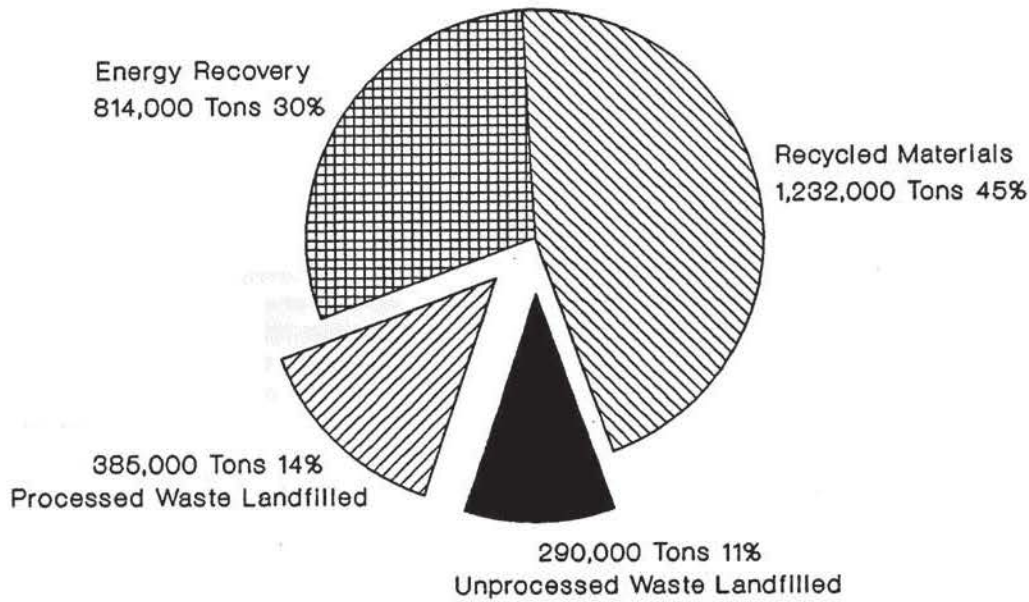
### Land Disposal

Regional landfill capacity at the end of 1992 was 5,084 acre-feet in four landfills, with two of these scheduled to close in 1993. An average 536 acre-feet of regional landfill space per year was used in 1991 and 1992. At existing use rates, landfill space in the Metropolitan Area will be used up in approximately 10 years. Two large landfills--Elk River and McLeod--located in counties outside but adjacent to the Metropolitan Area have been upgraded to meet state standards with liners and leachate collection systems and are expected to be available to take regional waste by 1994.

Figure 1 shows how the counties reported managing this region's MSW in 1992.

The energy recovery number is calculated by subtracting residuals, rejects and excess waste from total waste receipts plus banned wastes. The landfill number includes excess/unprocessed waste, residuals, rejects and ash.

Figure 1  
REGIONAL MSW MANAGEMENT BY COUNTIES  
1992



TOTAL MSW MANAGED BY COUNTIES 2,721,000 TONS



## RECOMMENDATIONS

### Source Reduction

Weight-based waste collection fees are needed as an incentive to encourage the aggressive source reduction necessary to slow and eventually stop the continuing growth in regional waste generation. Counties should continue their efforts to implement weight-based strategies. The Council prefers weight-based over volume-based fees because compaction and large container sizes can defeat the incentive to actually reduce the amount of waste generated.

Unlimited service options offered by some haulers at a single fee should be actively discouraged by the counties. A single fee for unlimited volume provides no incentive to reduce waste generation either by source reduction or recycling.

A tax or fee should be assessed on materials determined by the MPCA to cause negative environmental impacts. Monies accumulated from the tax should be placed in a dedicated fund used by the State to help reduce the toxicity of the waste stream.

Special emphasis on source reduction needs to continue both within the region and statewide. Collaborative efforts should continue with the OWM as the lead provider of source reduction information and public education outreach.

Counties should step up their overall source reduction efforts, working more closely together in developing and presenting joint programs for public education and expanding efforts to target source reduction technical assistance at the commercial and industrial sector, particularly small businesses.

### Recycling

Cities and counties should develop a single, uniform list of recyclable materials to be collected throughout the region, and require same-day recycling and MSW collection. The number of materials to be recycled should be expanded as markets and/or sorting technology permit.

Commingled collection should continue to be promoted where an advantage can be attained and an acceptable quality of recycled materials can be produced.

### Waste Processing

Until waste designation becomes more effective in controlling waste exported from the region, counties should focus their processing efforts on those wastes over which they have some control.

There is an opportunity at this time for the counties, within the context of the SWMCB, to address the lack of processing by three of the member counties through a region-wide waste sharing agreement.

The counties and SWMCB should work with the Council to develop a true regionally integrated waste management system.

The counties and SWMCB should encourage facility operators to make facility improvements and expand operating schedules as needed to improve the processing at existing public and private waste processing facilities and assure that no unprocessed regional waste is landfilled.

The statutory limit of 1,000 tons per day should be lifted from the HERC facility. This will improve the effectiveness and efficiency of the facility and add to the regional processing capacity without further capital expenditures.

The counties and SWMCB should investigate secondary processing to further reduce the amount of rejects, residuals and ash produced from primary processing at resource recovery facilities serving the Metropolitan Area.

## REGIONAL WASTE MANAGEMENT ISSUES

The Council's 1991 *Solid Waste Management Development Guide/Policy Plan* directs future development of the regional solid waste system toward integrated, cost effective programs and facilities.

The Council's policy plan assigned the development of the regional integrated system to the counties. During 1992, the counties responded to this charge in three steps.

First, the counties, acting together through the SWMCB, prepared and adopted a Regional Operations Plan (ROP). The ROP was prepared by the SWMCB in early 1992, and approved by the majority of the members with two counties--Carver and Hennepin--opposed.

The ROP stated that joint implementation efforts would be identified in the individual county master plans and called for the creation of a regional solid waste management authority that would:

- a. apply for permits and approvals required to construct facilities;
- b. incur debt, liabilities or obligations to develop programs and facilities;
- c. acquire property through eminent domain; and
- d. lease, acquire, construct, manage, sell or otherwise convey and maintain any lands, buildings and improvements.

The ROP was submitted to the Council for review and approval in early 1992.

Second, the counties revised their individual county master plans, as required, to make them consistent with the Council's policy plan. Five of the county master plans made

a commitment to develop a regional authority as proposed in the SWMCB's ROP. All five of the master plans proposed that the regional authority would implement regionally integrated solid waste management programs and integrate the use of facilities among the counties on a regional basis.

In reviewing and approving the individual county master plans in the summer of 1992, the Council indicated that the development and implementation of a regional governance structure and implementation of regionally consistent, cost effective waste management programs were critical to the success of the counties' plans to meet the Council's regional goals.

In late 1992, the Council provided \$150,000 to the SWMCB to underwrite the costs of developing and implementing a regional authority that would integrate the programs and operations of the metropolitan solid waste management system. The SWMCB was expected to review alternatives for a regional authority, select the preferred alternative and then implement it in 1993.

## WASTE GENERATION

The Council requires information from counties and regional waste facility operators in order to determine the total amount of waste generated and managed in the region. In order to obtain a complete picture of regional solid waste management, it has been necessary for the Council to obtain information from a variety of additional sources. The Council collects waste management information from municipalities, the Department of Revenue, the MPCA, and non-metropolitan sanitary landfills to supplement its information needs.

### Data - Waste Generation

The Council forecasts solid waste generation in the seven-county Metropolitan Area for a 20-year planning horizon.

The waste generation forecasts in the 1991 *Solid Waste Development Guide/Policy Plan* were made by the Council with the assistance of consultants from Cal Recovery, and Franklin and Associates. The policy plan estimated that the total amount of MSW generated in the region grew at a rate of 2.34 percent between 1987 and 1990. After 1990, the average annual rate of increase is forecasted to decline to 1.61 percent through the year 2010.

The decrease in the growth rate reflects the Council's expectation that higher recycling, waste processing and disposal costs along with increased public education about source reduction will result in lower per capita residential waste generation and per employee business/institutional generation.

The Council's forecast focuses on the total amount of MSW expected to be generated in the seven-county Metropolitan Area. Table 1

shows the Council's forecast of MSW generation for the years 1991 through 1995 by year, and for the year 2000. For 1992, the Council forecasted 2,845,000 tons of MSW would be generated in the region. For purposes of the Council's forecasts, yard wastes were considered as MSW.

The non-MSW tonnages shown in Table 1 includes materials that are not defined as MSW, such as construction-demolition debris, separately managed wastes and other materials specifically banned from being collected with MSW (such as tires, oil, lead-acid batteries and major appliances). The forecast assumes that the relative proportion of the non-MSW to MSW in the solid waste stream will remain fairly constant over time. For 1992, the Council forecasted 825,000 tons of non-MSW would be generated in the region.

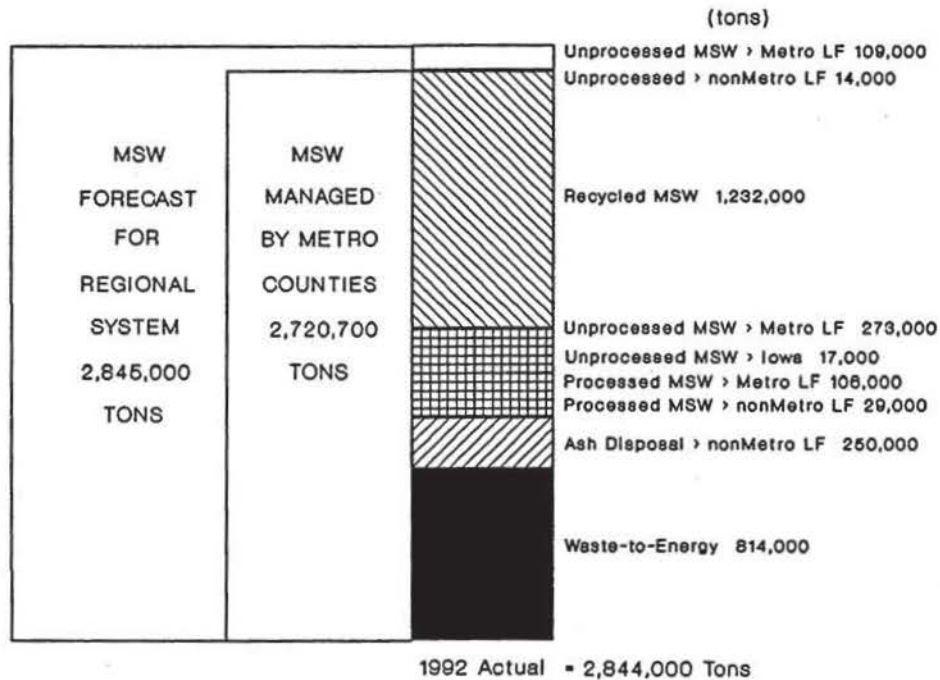
The counties identify, through reports submitted to the Council, the amount of MSW that they have managed the previous year through recycling, yard waste composting, resource recovery and land disposal. For 1992, the counties reported managing 2,721,000 tons of MSW, a 4.6 percent increase over the managed waste reported in the *1991 Abatement Progress Report*.

Figure 2 shows the actual 1992 waste generated and how it was managed (right bar), and compares it to the Council's 1992 forecast (left bar) and the total amount reported managed by the counties (center bar). The top two numbers (right bar) add to 123,000 tons, bringing the actual MSW generated in the region in 1992 to 2,844,000 tons. This number is five percent more than the tonnage reported managed by the counties, and less than one percent below the Council's forecast for the year.



Table 1 REGIONAL FORECASTS OF TOTAL SOLID WASTE GENERATION, 1991 - 2000						
Waste Type	1991	1992	1993	1994	1995	2000
MSW	2,800,000	2,845,000	2,891,000	2,938,000	2,985,000	3,233,000
Non-MSW	812,000	825,000	838,000	852,000	865,000	937,000
Total	3,612,000	3,670,000	3,729,000	3,790,000	3,850,000	4,170,000

Figure 2  
COMPARISON OF REGIONAL FORECAST WITH MSW MANAGED BY COUNTIES  
1992



### Issues - Waste Generation

For management purposes, three types of waste streams can be identified in the region: MSW; special wastes; and all other solid waste.

The counties can plan and develop facilities for MSW and direct its flow to particular waste processing facilities using waste designation authority. The counties are

required to plan for the management of other solid waste but are not required to develop facilities or direct the flow of non-MSW.

The Council assumes that non-MSW will grow at the rate of MSW during the next 20 years. Studies are underway that will help verify the validity of this assumption. If the entire solid waste stream continues to grow, the management challenges will be more

difficult than those associated with MSW and special wastes that have been the focus of public sector attention in recent years.

If the volume of hazardous materials present in the waste stream increases in conjunction with the forecasted growth, it will affect the price generators pay to dispose of their waste and cause more severe environmental impacts. Consequently, Council waste management policies emphasize hazardous waste management and waste reduction strategies.

In addition to knowing how wastes will be managed, the Council forecasts waste generation to evaluate if there is enough processing capacity in the region to prevent large amounts of waste from being land disposed. The Council, as outlined in the policy plan, has developed a schedule for additional waste processing capacity. The Council has determined that additional capacity is needed to handle the increasing amounts of waste projected to be generated in the near future. In 1992, the regional facilities received approximately 1.2 million tons of MSW for primary processing including some waste which went to facilities or transfer stations and then was sent to landfills without processing.

In the year 2000, the Council forecasts that 3.2 million tons of MSW will be generated in the Metropolitan Area. Council policy directs that 50 percent of the MSW in 2000 should be recycled. If this policy is successfully implemented, one-half of the region's MSW (1.6 million tons) will be recycled. This will leave 1.6 million tons that will need to be processed. If regional resource recovery facilities process waste at the same rate they did in 1992--1.2 million tons annually--there will be 400,000 tons of unprocessed waste landfilled.

### **Conclusions - Waste Generation**

The Council's current forecasts assume that Council policies will effectively slow the growth in the waste stream.

The data reported by the seven counties on their management of MSW in 1992 confirms the Council's annual forecasts of MSW generation. This gives the Council confidence that the policy plan continues to offer a responsible vision for successful solid waste system management for the region.

The Council's waste generation forecasts suggest that unless things change, unprocessed wastes from the Metropolitan Area will continued to be landfilled into the next century. In order to eliminate unprocessed wastes from being landfilled, several things could be done, alone or in combination with other alternatives:

- 1) reduce waste generation in the region by 25 percent by the year 2000. Instead of 3.2 million tons of MSW being generated in 2000, the region would generate only 2.4 million tons. Existing resource recovery facilities could process 1.2 million tons, leaving 1.2 million tons (50 percent) to be recycled.
- 2) increase recycling from 50 to 62.5 percent by 2000. This would reduce the MSW needing to be processed from 1.6 million tons annually to 1.2 million tons, which is the amount that resource recovery facilities processed in 1992 in the Metropolitan Area.
- 3) improve the efficiency and effectiveness of the existing resource recovery facilities through improved system integration and improved separation and materials recovery at transfer stations and resource recovery plants. This would allow waste to go to the facilities best suited to process it.
- 4) add wood processing facilities to remove and recycle tree wastes and
- 5) add composting capacity to handle compostable rejects and residuals from other processing plants serving the region.

## WASTE COMPOSITION

Accurate information about the types of materials that make up MSW is essential for planning, implementing, and evaluating solid waste programs. Solid waste officials must understand the components of the solid waste stream in order to determine how each can be managed at the highest level in the waste management hierarchy.

### Data - Waste Composition

Previous waste composition studies performed were limited in scope by length (one or two seasons), the number of locations (one or two), and the waste stream studied (MSW only). To address this issue, the legislature directed the MPCA in cooperation with the Council to conduct a statewide and regional analysis of the composition of municipal solid waste.

The composition study for the Metropolitan Area was conducted at the following facilities: Hennepin County's HERC plant in Minneapolis, NRG's Elk River plant, NRG's Newport plant, Hennepin County's Brooklyn Park transfer station and at the Pine Bend landfill in Inver Grove Heights.

Figure 3 illustrates the findings of the study for the region as a whole. Each of the major waste composition categories used in the 16-month study are shown.

It is important to note that the findings summarized in Figure 3 and Table 2 are for post-recycling MSW only. The figures do not reflect actual waste composition of the waste stream in the region as generated and before recycling. All communities have some type of residential and commercial source-separation recycling programs; although only 85 percent have curbside collection of recyclables.

In addition to recycling, a variety of other waste management programs were existent in communities that were sampled and these

programs could be expected to impact the results of the study. These programs include such things as source reduction, reuse, institutional recycling and waste exchanges.

Figure 3  
MSW COMPOSITION BY MAJOR CATEGORY  
1992

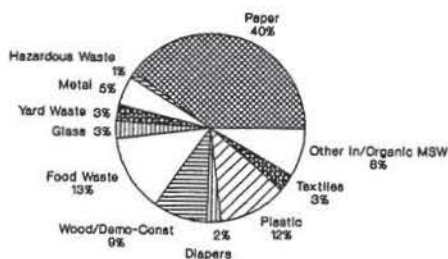


Table 2 shows the percentage estimates by weight of materials in the sampled MSW at each site.

The study found that paper and food waste represented the largest portion of the waste stream. Paper accounted for slightly more than 40 percent of the sampled waste stream by weight.

The largest individual paper category was Other Paper. This category contained all paper that did not fit into preceding paper categories. Some examples of "other paper" include greeting cards, wrapping paper, books, non-corrugated paperboard (boxboard), ice cream cartons, tissue, waxed paper, cups, napkins, towels, coffee filters and popcorn bags. Careful study of this category found that most of the items in it would be difficult to recycle. The only exception is unsoiled paperboard (boxboard).

Food waste accounted for approximately 13 percent of the sampled waste stream by weight. This category included mostly



Table 2  
**1991 MSW COMPOSITION STUDY - METROPOLITAN DATA**  
 PERCENTAGE OF MATERIALS FOUND AT RESEARCH SITES

Sorting Categories	Anoka	Newport	Pine Bend	Brooklyn Park	HERC	Total
Newsprint	4.7	3.4	4.0	3.5	4.8	4.0
High Grade Paper	2.8	4.7	3.5	4.1	5.6	4.5
Corrugated/Kraft	7.5	9.4	11.1	6.8	8.5	8.7
Magazines	2.6	2.7	1.9	3.0	3.8	2.9
Other Paper	19.4	19.3	17.2	21.5	21.5	20.0
<b>Total Paper</b>	<b>36.9</b>	<b>39.6</b>	<b>37.6</b>	<b>38.9</b>	<b>44.3</b>	<b>40.1</b>
HDPE	1.0	0.6	0.6	0.7	0.6	0.7
Plastic Film	4.2	4.5	4.7	4.3	5.4	4.7
PET	0.4	0.2	0.2	0.3	0.3	0.3
Polystyrene	1.2	0.9	1.4	1.0	1.3	1.1
Other Plastic	4.1	5.7	4.6	5.0	4.1	4.8
<b>Total Plastic</b>	<b>10.9</b>	<b>12.0</b>	<b>11.6</b>	<b>11.2</b>	<b>11.6</b>	<b>11.6</b>
Aluminum Containers	0.7	0.4	0.5	0.5	0.6	0.5
Other Aluminum	0.3	0.4	0.3	0.4	0.4	0.4
Ferrous Food Cans	0.9	0.9	0.9	0.8	0.8	0.9
Other Ferrous	3.4	2.5	2.4	2.8	3.0	2.8
Other Non-Ferrous	0.5	0.3	0.5	0.4	0.7	0.5
<b>Total Metal</b>	<b>5.8</b>	<b>4.6</b>	<b>4.6</b>	<b>4.9</b>	<b>5.4</b>	<b>5.0</b>
Glass Food/Beverage Cans	2.3	1.6	1.8	2.0	2.4	2.0
Other Glass	0.1	0.3	0.1	0.0	0.1	0.1
<b>Total Glass</b>	<b>3.6</b>	<b>2.4</b>	<b>2.8</b>	<b>3.3</b>	<b>3.6</b>	<b>3.1</b>
Yard Waste Total	4.0	3.4	1.8	3.7	1.4	2.8
Food Waste	13.0	14.3	11.6	12.8	12.7	13.2
Wood/Demo/Const. Debris	8.7	10.2	15.6	9.1	6.3	9.4
Adult & Infant Diapers	3.1	2.3	2.3	2.7	2.0	2.4
Textiles	3.2	2.5	2.6	3.2	3.6	3.0
Tires	0.0	0.1	0.1	0.0	0.1	0.1
Major/Small Appliances	0.7	0.8	0.5	0.5	1.3	0.8
Oil Filters/Hazardous Waste	1.1	0.7	0.9	1.1	1.3	0.9
Other Organic Waste	3.7	3.4	3.3	4.2	4.2	3.8
Other Inorganic Waste	5.3	3.7	4.6	4.3	2.4	3.8

uneaten food and food scraps, but it also contained a small amount of dead animals, and the remains from hunting and fishing seasons. It was observed that large quantities of expired food were disposed of from small and large grocery stores. Establishments, including commercial and industrial kitchens, that produce large quantities of food waste should be targeted for animal feed programs, composting and, if possible, provided to centers that feed the homeless and poor populations.

Corrugated cardboard (8.7%), food waste (13.2%), wood waste (6.6%), and plastic film (4.7%) were found to have some of the highest percentages by weight of easily recyclable or compostable materials in the sampled waste stream. In the study, it was found that corrugated cardboard, wood waste and plastic film came mostly from the commercial-industrial sector. Note that the wood waste percentage is combined with demolition/construction debris in Table 2.

Newsprint, high-grade paper, and magazines accounted for 11.4 percent of the waste stream. These materials are also easily recycled in community recycling programs and by individual businesses.

Food and beverage containers accounted for approximately 4 percent of the waste stream. Aluminum, glass, metal and plastic food/beverage containers are still being disposed despite the numerous opportunities for recycling.

### **Issues - Waste Composition**

The composition of solid waste streams, both MSW and non-MSW, need to be monitored regularly to provide better insights on the potential waste recovery alternatives.

The information now available indicates that there continues to be a significant potential

to recycle wastes that are currently being disposed of in landfills or incinerated.

Even with the high level of recycling in the region, the study found that 378,000 tons of recyclable food/beverage containers, corrugated cardboard, magazines, high grade paper and newsprint remain in the region's waste stream. Adding food waste, wood waste and plastic film would bring the total to 755,000 tons per year of additional waste that could be managed by methods other than land disposal or incineration. This figure represents 27 percent of the region's 1992 total waste generation.

### **Conclusions - Waste Composition**

Residential recycling programs are successful in removing significant quantities of recyclables from MSW. Bags of household garbage that included recyclables stood out.

Banning appears to be a successful way of managing portions of the waste stream. Banned household items such as batteries, tires, major appliances, and yard waste were not present in the waste samples taken during the study, indicating that the unenforced bans are effective.

Commercial establishments such as office buildings, grocery stores, bars and convenience stores still contribute large quantities of recyclable materials like corrugated cardboard, high grade paper, wood waste and plastic film to the waste stream. Additional resources for public education, technical assistance, and collection should be directed at this sector, helping it to remove greater volumes of recyclables from the MSW stream. This could enhance the capacity of processing facilities to accept additional wastes and reduce the amount of unprocessed waste disposed in landfills.

## SOURCE REDUCTION

Source reduction is the highest ranking of solid waste management options because it has virtually no negative effect on the environment, conserves energy and resources, and does not require new waste management facilities.

The Organization for Economic Cooperation and Development estimated in 1989 that each person in the United States produced about 5.3 pounds of MSW per day. This compares with an estimated 3.8 lbs. per capita generated in Canada and less than 2 lbs. per capita generated in most European countries. In the Metropolitan Area, in 1990, the average per capita MSW generation was 6.6 lbs. per person per day. This number is based on the total MSW tonnage generated by the Metropolitan Area.

### Data - Source Reduction

Data on the amount of source reduction occurring in the Metropolitan Area continues to be largely anecdotal. The joint Council and MPCA waste composition study mentioned above found an average of less than three percent yard waste in the waste stream, down from an average of 11.8 percent before the yard waste ban took effect. This reduction in yard waste is attributable to both source reduction (mulching and backyard composting) and city/county yard waste composting programs.

Strategies for promoting waste volume and toxicity reduction in the region include: general public information campaigns; education programs aimed at the region's schools; weight-based waste collection fees; and technical assistance to commercial and industrial generators. Household hazardous waste collection and drop-off programs reduce the toxicity of MSW through separation and control programs and are

more closely related to recycling than to source reduction programs.

### Regional Public Education

In 1992, a major component of the Council's grant program involved the expenditure of \$350,000 for a regional public education campaign. The emphasis of the campaign for FY92-93 was to promote source reduction and reuse in the residential sector, while building on the successful recycling efforts of the region. A 30-second television ad was produced in the fall of 1992. It ran in alternate weeks from October 1992 through June of 1993.

Council and OWM staff worked together to ensure that the ad was coordinated with the availability of OWM's SMART Shopping campaign publications. To further enhance the campaign, the counties promoted SMART Shopping at the local level through messages in their newsletters and newspaper ads, and distribution of SMART Shopping brochures in local grocery stores and schools. In addition, the Council and OWM have worked with the state's major grocers to have a SMART Shopping logo printed on millions of grocery bags in the months ahead. The integration of the efforts of a variety of entities has resulted in a comprehensive campaign that has blanketed the entire state with source reduction messages.

### The Commercial and Industrial Source Reduction and Recycling (CISRR) Project

In late 1991, the Council directed staff to develop a project to help foster waste minimization and source reduction among businesses and institutions in the Twin Cities Area. Council staff worked closely with counties, the OWM, MPCA, Minnesota Technical Assistance Program and others to

develop a work program for the Council's source reduction efforts. During the development of the work program, the Council was encouraged to refrain from providing source reduction technical assistance directly to area businesses. Instead, the Council was encouraged to provide technical support to cities and counties by helping them make their technical assistance outreach to area businesses more effective.

#### Other Source Reduction Efforts

In 1992, the Council agreed to provide a \$50,000 grant to the SWMCB to study paint toxicity and alternatives to handling paint as a household hazardous waste. The SWMCB is examining the feasibility of various paint reuse options, and looking at the cost and applicability of reuse options to the region. It is anticipated that the study methodology will be useful in examining other household hazardous wastes for potential reuse in the future.

In 1992, the Council provided a grant for the cost of updating and distributing the highly regarded publication *Resourceful Waste Management -- A guide for Minnesota/ Metropolitan Area businesses and industries*, first published in May 1991. The guide will be updated twice, once in 1993 and again in 1994.

The Council also gave a grant to the City of Blaine for a source reduction pilot project which will give before and after data on the effectiveness of various source reduction techniques.

#### **Issues - Source Reduction**

Source reduction means less waste. It not only reduces the amount of waste that must be managed, it reduces costs to waste generators and local governments. Because

source reduction actually prevents the generation of waste in the first place, it comes before other management options that deal with waste after it is already generated.

Source reduction, if it is to be successful, requires an intense and consistent effort on the part of generators, state and local governments, and private industry. Getting the word out to waste generators is expensive. Besides the TV commercial financed by the Council, the counties and some cities made an active effort to publicize source reduction.

In particular, Ramsey County ran several ads in local editions of the Wall Street Journal, other local business publications, and daily newspapers. It prepared and distributed flyers, colored posters, and copies of the *Resourceful Waste Management* publication to all businesses in the county.

Besides public education, another option to prevent waste is to charge consumers for the full cost of disposing of their garbage. The Council supports the establishment and use of weight-based fees in the region and throughout the state. Paying by weight gives the generator an economic incentive to reduce disposal. Paying by volume provides some incentive but the response may be directed merely toward compacting the waste instead of reducing the actual amount generated.

The Council's solid waste policy plan supports these source reduction strategies with specific policies. It promotes the addition of an environmental protection fee at landfills and a tax on hazardous materials, with both used to pay for environmental protection costs and to provide more economic incentives for source reduction.

## **Conclusions - Source Reduction**

The Council will continue to monitor growth in the waste stream managed in the region. Both the counties and the Council should continue to promote source reduction through the public education and technical assistance programs previously described, and to work on developing improved methods for documenting results. Significant source reduction must occur in order for the waste management system currently planned to be sufficient for the region's needs.

The Council will continue to work towards the establishment of the environmental protection fee and toxic materials tax called for in its policy plan as additional incentives for source reduction. If these strategies are not sufficient to keep waste generation at or below projected levels, additional legislation may be sought.



## RECYCLING

Integrated waste management refers to the complementary use of a broad spectrum of practices to safely and effectively manage municipal solid waste. After waste reduction and reuse, the most preferred waste management strategy is recycling. Recycling is the process by which materials are separated from MSW, cleaned to remove contaminants, processed for shipment and sold to manufacturers for use as raw materials for new products.

Recycling reduces the need for virgin raw materials which often require substantial energy investments and have detrimental environmental impacts in developing countries.

Recycling also prevents potentially useful materials from being landfilled or incinerated, thus preserving our capacity for energy recovery and disposal for those parts of the waste stream that can best be managed in those ways.

Most recycling in the region involves an added step between separation of recyclables from MSW and cleaning to remove contaminants. This step is collection, and it adds the biggest cost to recycling. In the metropolitan area, most recycling collection involves source separated materials that are collected in separate compartments for transport to the processing center. Some cities in other parts of the country are experimenting with commingled collection, where all the recyclable materials are put together and separated at the processing facility.

In reporting the counties' recycling progress, the Council assumes the legislative definition of "total solid waste generation described in Minn. Stat. §115A.551, Subd. 1.

### Recycling Objectives

Minnesota Statutes 115A.551, subd. 2, establishes a minimum recycling goal of 35 percent, by weight, of total solid waste generation (as defined above) by Dec. 31, 1993, for each county. The Council no longer sets individual recycling objectives for the counties, but rather has established regional recycling objectives in its 1991 *Solid Waste Management Development Guide/Policy Plan*. The Council's recycling objectives for 1990 - 2010 are shown below.

Table 3  
**RECYCLING OBJECTIVES  
FOR THE METROPOLITAN AREA**

1990	20%
1991	25%
1992	30%
1993	35%
1994	40%
1995	45%
2000	50%
2010	50%

### **Data - Recycling**

Table 4 shows the total amount of recycling by each county and the county's estimate of MSW managed. The numbers include 71,000 tons of banned waste (primarily lead-acid batteries and major appliances) assumed to have been recycled. Including the banned waste, 45 percent of the MSW managed by the counties was recycled in 1992. This represents 43 percent of the total MSW generated in the region.

Clearly, by either measure, recycling in 1992 far surpassed the Council's recycling objective of 30 percent. If no major changes occur, all of the counties are expected to meet or exceed the legislatively mandated 35 percent recycling goal by December 31, 1993.

Figure 4 compares the recycling recovery amounts for the last three years. As the figure suggests, there has been steady increase in the reported volumes of recyclables in most of the counties. Ramsey County stands out as having experienced the single biggest increase. Ramsey's tonnages in 1992 were 33 percent higher than in 1991, and accounted for 49 percent of the total regional increase over 1991.

Figure 5 illustrates the relative contribution of each type of recycling reported by counties. In 1992, all seven counties show commercial/industrial (C/I) recycling as the leading recovery category. Residential recycling is the next highest in volume.

In 1992, C/I recycling accounted for 57 percent of the total recycling reported by the seven counties. Table 5 compares the C/I recycling data reported by the counties. Documented C/I materials refer to the recycling tonnages reported by individual businesses, city offices, school districts, hospitals and other institutional uses. Undocumented C/I recycling tonnages are estimated by counties based on limited survey data.

Undocumented C/I figures are the least reliable of the recycling data reported by the counties. They represent an area of concern with respect to the accuracy of the entire recycling report prepared by each of the counties. Undocumented C/I tonnage estimates make up 73 percent of the total C/I tonnage reported by the counties, which in turn make up from 43 to 69 percent of the total recycling reported by the counties.

Table 4  
**RECYCLING MATERIALS RECOVERED, 1992**

County	MSW Recycled <sup>1</sup> (tons)	MSW Managed <sup>2</sup> (tons)	Percent Recycled of MSW Managed
Anoka	95,000	230,000	41%
Carver	19,000	48,000	40%
Dakota	114,000	284,000	40%
Hennepin	659,000	1,383,000	48%
Ramsey	264,000	559,000	47%
Scott	31,000	54,000	57%
Washington	50,000	158,000	32%
Metropolitan Area	1,232,000	2,721,000	45%

<sup>1</sup> Includes materials reported by counties as having been recycled, including 39,000 tons of materials recycled by resource recovery processing facilities and the OWM's estimate of 40,000 tons of recycled banned wastes (primarily major appliances and motor-vehicle batteries).  
<sup>2</sup> Waste managed includes facility receipts, waste disposed from transfer stations, waste recycled and the OWM's estimate of banned waste. In addition 5,000 tons of undifferentiated waste reported by one hauler was included in the total managed figure.

Source: County Recycling & Certification Progress Reports, March and August 1993.

Figure 4  
COMPARISON OF RECYCLING VOLUMES BY COUNTY  
1990 - 1992

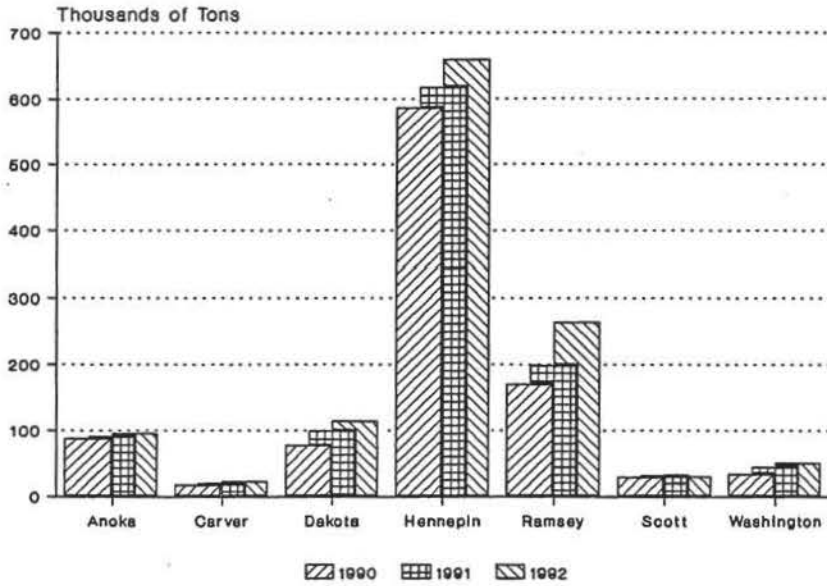
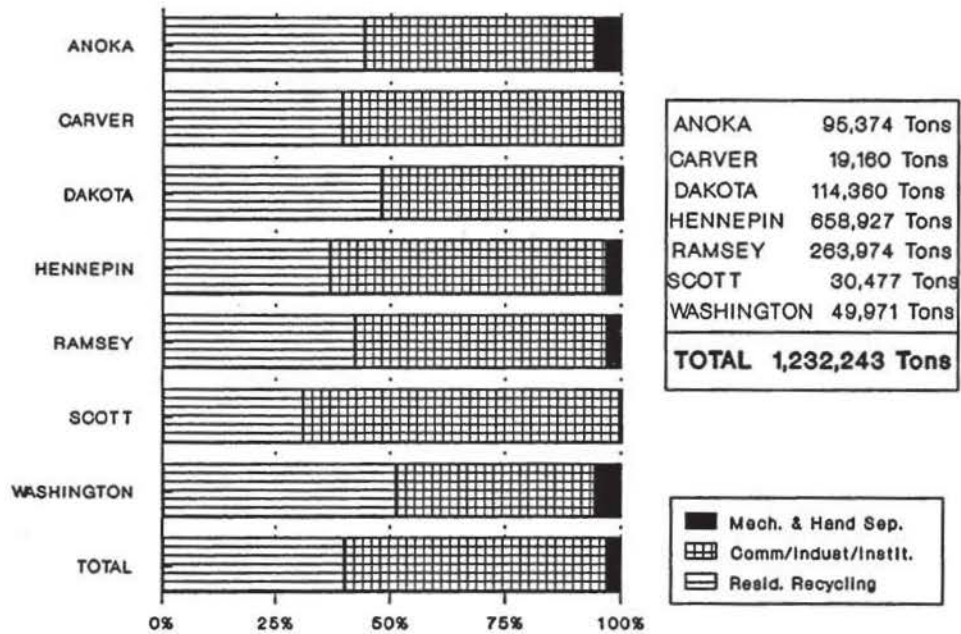


Figure 5  
RELATIVE CONTRIBUTION OF EACH TYPE OF RECYCLING BY COUNTY  
1992



Source: County Recycling Reports

County	Documented C/I	Undocumented C/I	Total C/I	Total Recycling	Percent of Recycled
Anoka	1,535	46,225	47,760	95,374	50%
Carver	11,656	0	11,656	19,160	61%
Dakota	5,417	54,241	59,658	114,360	52%
Hennepin	150,551	244,796	395,347	658,927	60%
Ramsey	5,436	139,261	144,697	263,974	55%
Scott	5,483	15,620	21,103	30,477	69%
Washington	484	21,070	21,554	49,971	43%
Metropolitan Area	180,562	521,213	701,775	1,232,243	57%

Source: County Recycling & Certification Progress Reports, March and August 1993

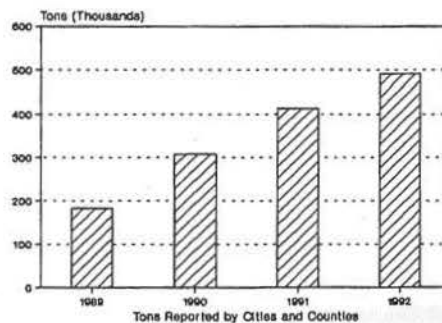
In many cities, curbside collection is provided primarily to single-family residences and to residential buildings containing up to four dwelling units. In some cities curbside recycling collection includes small businesses and other institutions that usually are located in residential neighborhoods.

Most curbside recycling programs collect aluminum and bimetal beverage and food containers, glass containers and newsprint. Many also collect corrugated cardboard and plastic bottles. Some collect magazines, junk mail, plastic wrap, textiles and other materials. A number of cities recycle only four materials as required by Minn. Stat. §115A.552, Subd. 2.

Multifamily buildings of five or more units have not traditionally been provided with curbside collection in most communities. Significant efforts to include multifamily buildings as part of the recycling infrastructure have, however, begun in the region. Figure 6 compares total residential recycling as reported by the counties for 1989 - 1992. Note that the 1992 total represents a 19 percent increase over the tons reported recycled for 1991 and a 59

percent increase over the tonnage reported in 1990.

Figure 6  
REGIONAL RESIDENTIAL RECYCLING TRENDS  
1989 - 1992



### Issues - Recycling

The counties reported that they met or exceeded the 30 percent recycling rate as outlined in the Council's policy plan. Scott County reported the highest recycling rate of 56 percent. Washington County reported the lowest rate of 32 percent. Ramsey County reported the largest percentage increase over the preceding year, 33 percent.

Most of the difference between these recycling rates can be attributed to the high proportion of C/I recycling estimated by Scott County.

### Residential Recycling

With counties and cities facing increased pressures to recycle at greater levels than previously achieved, recycling programs have begun to expand their collection programs to include nontraditional materials such as magazines, plastics, textiles and several additional paper grades, including computer and mixed paper. Currently, the City of Edina is collecting junk mail and magazines from its residents. While a better solution may be to prevent it from being delivered, this expansion of the city's recycling materials with a corresponding increase the city's recycling rate is promising.

However, the variation between cities in what materials are being recycled is confusing to the public, and makes it difficult for recyclers and haulers to use the same vehicles for all collections. This increases their capital and operating costs which are passed along to participating cities, residents and businesses. The variations in recyclable materials also makes it difficult for counties to cost-effectively develop public education materials, and for good markets to be established for materials collected by only a few cities. A region-wide uniform list of recycled materials should be explored by the counties.

One way to increase participation rates is to collect recyclables on the same day as regular trash collection. Same-day collection allows recycling to benefit from the pre-established memory association of needing to "set out" the trash. It helps to reduce the argument that recycling requires "extra" effort. Same-day collection has the added community benefit by reducing the number of days when materials need to be set out for collection.

It also reduces truck traffic associated with trash and recycling collections, and thereby reduces truck noise, air emissions (fumes) and wear on local streets.

There is concern that traditional curbside collection programs that require households to separate recyclables by type (old corrugated cardboard, old newspapers, cans, glass, yard wastes, etc.) will experience a decline in participation rates if households are required to separate and store even more materials (junk mail, plastics, mixed paper, magazines, etc.) in order to meet recycling objectives.

A way to deal with the problem may be an alternative source separation and collection program known as commingling. Commingling involves the mixing of recyclables into only one or two groups rather than separating into five, six or more discrete component groups. By reducing the number of separations, people can save both time and storage space.

Recycling collection vehicles can be made simpler and the cost of collection can be reduced because of the reduction in the number of curbside sorting operations (separation at curbside into the various bins in the collection vehicle).

Such a commingled recycling system would likely reduce collection costs per stop slightly, create some increased revenues from the additional amount of materials collected, and require added costs for processing to separate the commingled recyclables into their components for shipment to market. Contamination problems will offset some of the potential increase in collection. The principal advantage accrues mostly to the household by making recycling more convenient. Greater convenience should bring greater participation and higher recycling tonnages.



### Commercial and Industrial Recycling

Much of the C/I recycling data reported by the counties is based on estimates reflecting increases predicted from surveys of businesses and industries in the counties, which often includes local institutions and governments as well. Recyclers and haulers providing recycling services to these generators will not report tonnages to either cities or counties. This practice is in sharp contrast to the better documented tonnage figures for residential recycling programs, which are supported by weight-receipts that the recyclers/haulers provide to cities.

While it would be reassuring to have documentation of C/I recycling, reporting requirements are not necessary, if abatement results continue to be achieved. The estimates for this sector appear to be corroborated by the success of the landfill abatement effort as witnessed by the decreasing percentage of unprocessed MSW being landfilled.

Further as the state bans additional materials from the waste stream, such as telephone books and mercury bearing products, the recycling rates from businesses will undoubtedly increase. This will occur in part because of new recycling markets that develop as the amount of certain "banned" materials increase. Several years ago no businesses in the state were actively pursuing collection and recycling of the mercury and other materials contained in fluorescent tubes. Today, several businesses are competing to capture this growing market in response to this ban.

### Markets

In 1992, the Council began an investigation to identify market pressure points for recycled PET plastic containers and mixed office paper. Concentrating efforts on activities that will lead to expanded, stable

markets is essential for the long-term success of recycling programs in the region. In the future, the Council will investigate the market pressure points for corrugated cardboard, magazines and film plastics.

### **Conclusions - Recycling**

Recycling in the Twin Cities Area has exceeded the Council's recycling objectives for 1992. It appears likely that all of the counties will meet or exceed the legislative goal of 35 percent recycling by Dec. 31, 1993.

County efforts to ensure that recycling options are available to most residents in cities and townships appear to have been successful. With 92 percent of the cities and townships in the Metropolitan Area reporting recyclables collected at curbside, it appears that the regional recycling infrastructure as envisioned in the Council's 1991 *Solid Waste Management Development Guide/Policy Plan* has been successfully developed.

While recycling appears to be expanding rapidly in the region, there are areas of concern. Recycling objectives for later in the decade will be difficult to meet, unless recycling programs expand to add more materials and recycling becomes a habit for all people at home, at school and at work. People will be asked to recycle as much of the waste stream as possible. It is expected that recycling programs may involve seven or more different recyclable materials in the future. Separating each of these materials into component types will require more storage and collection which may be an inconvenience to many; adversely affecting participation rates and recycling tonnages in the future. If the cost to collect these separated materials increases relative to the price received from marketing the materials, it may not be practical to continue to require

generators to separate materials into numerous categories or require haulers to collect several separated components.

Fundamental changes may be required to handle the increase projected over the next decade in the types and amounts of materials collected. Same-day collection of waste and recyclables will promote the recovery of recyclables. This may prove to be a hardship for some haulers initially as schedules are juggled to fit community-pickup days. In addition, commingled recycling and commingled recycling/trash collection appear to offer the potential for improved convenience and the opportunity to recycle additional materials cost effectively. These alternatives need to be evaluated through pilot studies to determine their economic and volume impacts.

Existing reporting methods rely on estimated recycling efforts in the C/I sectors. The data presented in county recycling reports suggest that C/I recycling is widespread and being successfully implemented in all counties. The consistency of county reported MSW with the Council's forecasts coupled with the achievement of the Council's landfill limits corroborates the C/I recycling data. It may become important to obtain documentation on this recycling activity in the future, if the estimated recovery is not consistent with other indicators of waste management.

## CENTRALIZED PROCESSING

In order to conserve landfill space and make some use of waste instead of just burying it, the Council directed the counties to develop centralized processing facilities to recover energy from incinerated waste, recyclable materials from mixed waste delivered to the facilities, and/or to produce humus from composted organic wastes. In 1985, each county was given the freedom to select technologies that best fit its needs. This flexible approach seemed appropriate at the time because many of the resource recovery technologies were new and untried.

Three resource recovery technologies emerged. One technology, known as "mass burn", burns incoming MSW with little pre-processing to produce steam or electricity.

A variation, known as "refuse-derived-fuel" (RDF) processes incoming MSW to remove non-burnables; the heavier garbage portion of the MSW, which is too wet to be good as fuel; recyclables; and anything too big and bulky for the processing line to handle. The remaining burnable wastes are cut into a uniform size for use as fuel in furnaces, usually in electric power plants.

The third technology is MSW composting. It is similar to RDF in that it removes metals, glass and other non-compostables, large bulky wastes, recyclables and the lighter (paper/plastic) fraction of MSW, leaving the garbage and wet paper for composting. The compostable material is mixed with water, and a nitrogen source, and then encouraged to decompose under controlled conditions to produce humus (the organic portion of soil).

Transfer stations help to regulate the flow of waste to processing facilities and may also be involved in removing recyclable materials

from the waste stream prior to resource recovery processing.

### Data - Centralized Processing

In 1985, only one MSW resource recovery processing facility operated in the region--Richard's Asphalt, a small privately operated mass burn plant, capable of processing up to 75 tons per day of MSW. By 1992, the region had five operating resource recovery facilities capable of processing an average of 3,850 tons of MSW per day. Table 6 shows the current centralized (resource recovery) processing facilities for the Metropolitan Area, the type of processing done at each facility, and each facility's relative size as measured by average daily throughput capacity.

All of the plants are privately-owned and operated. Three of the plants--HERC, NRG's Elk River RDF, and NRG's Newport RDF--are publicly financed using county bonding authority. Richard's Asphalt and Green Isle (formerly Reuter's) are privately financed.

The publicly financed facilities have put-or-pay contracts with four of the counties that guarantee the counties will "put" (provide) a certain amount of MSW to each facility or pay a penalty to make up the difference in revenues. In order to supply the guaranteed tonnages of MSW, these counties have imposed waste designation, directing haulers operating in their jurisdictions to bring their collected waste directly to the processing facilities. In the case of Hennepin County, it is brought to designated transfer stations where the waste is forwarded to the processing facilities.



Resource Recovery Processing Facilities	Type	Avg. Daily Throughput (Tons per Day)
Hennepin Energy Resource Corp. (HERC)	mass burn	1,000
NRG's Newport Resource Recovery Project (Newport)	RDF	1,000
NRG's Elk River Resource Recovery Facility (Elk River)	RDF	1,300
Green Isle's Eden Prairie Recycling (EPR formerly Reuter)	RDF	475
Richard's Asphalt (Richard's)	mass burn	75
<b>TOTAL PROCESSING CAPACITY</b>		<b>3,850</b>

The two privately financed facilities compete in the open market for the waste volumes they need to operate. Because both compete for Hennepin County waste, they have pegged their tipfees at prices slightly under the \$95 per ton tipfee charged by the county during 1992.

In addition to these resource recovery facilities, Recomp, a privately owned and operated MSW composting plant, located in St. Cloud, composts selected restaurant wastes received from the Twin Cities area.

All of the facilities discussed above receive and process MSW as it comes from generators transported directly by haulers or indirectly from transfer stations where minimal pre-processing may occur.

In addition to primary processing of MSW, some of these facilities are sending rejects and residuals to other facilities for secondary processing. In 1992, HERC and NRG's Elk River RDF plant received 33,000 tons of rejects and residuals, 50 percent of that from Green Isle's Eden Prairie Recycling (EPR) for secondary processing. In addition, EPR

sent a portion of its heavy, wet residuals to the Wright County MSW composting plant.

Table 7 shows how the five resource recovery facilities serving the metropolitan area processed the primary MSW waste they received in 1992. One facility, NRG's Newport RDF plant did not process all of the primary wastes received. It sent 59,000 tons of potentially processable MSW to landfills without processing it. In addition, Hennepin County diverted 16,000 tons of potentially processable MSW from its transfer stations directly to landfills in 1992 because of insufficient processing capacity at its two primary processing facilities--HERC and NRG's Elk River RDF plant. These numbers are 19 percent less than in 1991.

According to county data presented earlier in Table 4, the counties collectively managed a total of 2,721,000 tons of MSW and banned waste. They recycled a total of 1,193,000 tons in 1992 including banned waste but excluding 39,000 tons of recyclable material that was pulled out during processing. This left a remainder of 1,457,000 tons of MSW that needed to be processed to produce energy, compost and additional recyclables;

and 71,000 tons of banned waste that was separately managed for energy recovery. The number excludes an additional 123,000 tons of MSW that the Council estimates bypassed the counties' management system.

Table 7 shows that the counties collectively "processed" a total of 1,238,000 tons in 1992. This number includes 71,000 tons of banned waste processed outside the county MSW processing system. Excluding banned waste, the counties actually processed 1,167,000 tons of MSW in 1992. Thus, the counties processed approximately 80 percent of the region's managed waste remaining after recycling.

None of the MSW collected in Carver, Dakota or Scott counties was sent to resource recovery facilities for processing. All of the waste that remained in those counties after recycling, approximately 210,000 tons of managed waste excluding 14,000 tons of banned waste, was landfilled without being processed.

Unprocessed managed waste landfilled in 1992 was 290,000 tons, 11 percent of the MSW managed by the counties. Also, the counties landfilled 135,000 tons of rejects and residuals, and 250,000 tons of ash. A total of 385,000 tons of post-processed waste; 14 percent of the MSW managed by the counties. Total waste reported landfilled was 675,000 tons, or 25 percent of the waste managed by the counties.

The Council estimates that another 123,000 tons of MSW escaped county management in the region and ended up in landfills in the metropolitan area, Greater Minnesota, Iowa and Wisconsin. Combined with the 290,000 tons of unprocessed waste managed by the counties, this means that 15 percent of the total MSW generated in the region was landfilled unprocessed in 1992.

NRG's Elk River Resource Recovery and Green Isle's Eden Prairie Recycling (EPR) facilities had processing capacity that was not fully used in 1992. NRG's Elk River facility has an expected average daily capacity of 1,300 tons assigned for metropolitan area wastes, with another 200 tons per day (TPD) of capacity assigned to counties in the St. Cloud area. In 1992, the Elk River facility received 370,000 tons of metropolitan area waste (an average of 1,186 TPD based on a 312 day operating year). The EPR facility limited the waste it received to 104,000 tons in 1992 (an average of 339 TPD based on a 307 day operating year). Its permitted capacity is 475 TPD. Together, the two plants had an average available unused capacity of 251 TPD.

During 1992, Anoka County did not have sufficient waste to meet its contractual obligation to NRG's Elk River Resource Recovery facility. Anoka delivered an average of 433 TPD to Elk River but was obligated to deliver an average of 500 TPD to the facility under its put-or-pay contract.

In 1992, approximately 743,000 tons of MSW and RDF were converted to energy in the region's mass burn plants and in electricity-generating power plants located in Elk River, Red Wing, Mankato and in South Dakota. This is 28 percent of the total MSW managed in the region. This percentage excludes 71,000 tons of banned wastes (tires and used oil) that were burned to produce energy, but were not actually handled by the region's centralized processing facilities.

Burning of the MSW and RDF produced 250,000 tons of wet ash. All ash was landfilled outside of the metropolitan area, in Greater Minnesota, Wisconsin and Illinois.

Processing facilities rejected approximately 10,000 tons of MSW in 1992 (waste that could not be processed at the facility that received it). In addition, the three RDF

plants produced 125,000 tons of processing residuals (non-burnable and wet materials separated from the MSW during processing to produce RDF). These post-processing materials (rejects and residuals) were landfilled in Minnesota.

Table 7 shows the total primary MSW tonnage processed at each of the facilities, and how it was managed. Regional facilities converted 64 percent of the MSW processed into energy, 3 percent was recycled, and the remaining 33 percent was landfilled.

### Issues - Centralized Processing

The Council's 1991 policy plan calls for regional processing facilities to be operated in an integrated manner. This means that excess waste from processing plants and transfer stations should be sent to other processing facilities having available capacity so that the waste can be processed, thereby reducing the amount of unprocessed waste needing to be landfilled. It also means that residuals and rejects from one facility should be sent to other facilities having available capacity to be further reduced by other methods, such as mass burn or composting, rather than landfilled. Regional integration

Table 7  
PRIMARY PROCESSING  
AT MAJOR REGIONAL RESOURCE RECOVERY FACILITIES, 1992

Facility	Tons Processed <sup>1</sup>	Tons Rejects <sup>2</sup>	Tons Residuals <sup>3</sup>	Tons Recycled <sup>4</sup>	Tons Ash (wet) <sup>5</sup>	Waste to Energy <sup>6</sup>
HERC <sup>7</sup>	343,000	1,000	0	10,000	101,000	231,000
Richard's	22,000	0	0	0	7,000	15,000
Elk River	360,000	5,000	60,000	13,000	74,000	208,000
EPR	105,000	4,000	34,000	5,000	4,000	58,000
Newport <sup>8</sup>	337,000	0	31,000	11,000	64,000	231,000
<b>TOTAL</b>	<b>1,238,000</b>	<b>10,000</b>	<b>125,000</b>	<b>39,000</b>	<b>250,000</b>	<b>814,000</b>
Percentage of MSW Processed	1,167,000	1%	11%	3%	21%	64%

All numbers rounded to nearest 1,000.

<sup>1</sup> Tons shown are "primary" waste processed for each facility. Total includes an additional 71,000 tons of banned waste (primarily oil and tires) estimated by OWM to have been incinerated for energy recovery at other facilities. Ash produced from burning banned waste is assumed to be nil. In addition, HERC and Elk River received 33,000 tons of secondary waste for processing.

<sup>2</sup> Rejects are those wastes that the facility is incapable of processing with its existing technology.

<sup>3</sup> Residuals are materials left over from processing, but also include RDF and recyclables that were landfilled.

<sup>4</sup> Recycled materials from processing plants are counted in the 1,232,000 tons of total recycling done in the region.

<sup>5</sup> At this time, only HERC and Richard's Asphalt produce ash from burning MSW in the metropolitan area; however, this ash is landfilled in Wisconsin and Illinois. The NRG plants in Elk River and Newport, and Green Isle's EPR plant produce but do not actually burn RDF themselves. NRG sells its RDF to United Power and NSP which burn the RDF in power plants to produce electricity; and Green Isle has similar types of markets. The tonnages shown are for (wet) ash still damp from squelching. No ash from RDF is landfilled in the metropolitan area.

<sup>6</sup> This figure represents the amount of waste and/or RDF converted into energy when burned at mass burn plants and electric power plants. Total includes 71,000 tons of banned waste (oil and tires) burned for energy recovery at other facilities, estimated by OWM.

<sup>7</sup> Excludes 16,000 tons of excess waste diverted from Hennepin County transfer facilities in 1992.

<sup>8</sup> Excludes 59,000 tons of excess waste delivered to Newport plant but transferred out to landfill without processing.

SOURCES: Metropolitan Area Solid Waste Certification Reports - 1992; OWM

should enable the facilities to effectively and efficiently process an optimum amount of waste at the lowest cost to the consumer.

It does not seem reasonable for Anoka County to pay a penalty for not meeting its put-or-pay agreement with NRG's Elk River facility, while NRG's sister plant in Newport has to landfill excess unprocessed waste, or for Hennepin County to divert unprocessed waste from its transfer stations to landfills.

Anoka County was short 18,400 tons in 1992, an average of 60 TPD (assuming a 307 day operating year and a 500 TPD contract obligation). NRG's Newport plant landfilled more than three times that amount of "excess" waste unprocessed in 1992. Hennepin County may have been able to send all its transfer station overage (15,800 tons) through Anoka County, helping to reduce Anoka County's shortfall while achieving 100 percent processing of all its unrecycled wastes.

Laws of Minnesota 1984, Chapter 654, Article 2, Section 29 was intended to limit Hennepin County to two 1,000 TPD burn plants. As written, it limits the county's only burn plant, HERC, to 1,000 TPD (365,000 tons per year). HERC's design capacity is 442,000 tons annually (1,212 tons per day). If the legislative capacity limitation could have been lifted in 1992, HERC would have had sufficient additional capacity (77,000 tons) to process all of Hennepin County's unprocessed waste (15,826 tons), together with all of Carver County's unprocessed waste (28,000 tons) and all of Scott County's unprocessed waste (22,000 tons). The additional capacity would require no additional capital outlays and would allow HERC to spread its operating costs over a broader revenue stream, thereby lowering its per unit processing costs.

Waste designation ordinances, which require wastes to go to certain designated facilities,

are being challenged in the courts. The county-sponsored resource recovery facilities were built using this form of financial assurance. The counties are investigating new financing and legal strategies to replace waste designation. In the meantime, resource recovery facilities will have to compete in a more open-market situation with potentially lower-priced tipfees at land disposal facilities.

Coordination and regional integration are necessary for this region to make optimal use of existing waste processing capacities and lowering costs to assure adequate waste supplies are preserved. However, as the numbers above show, there is not enough existing resource recovery processing capacity to meet regional needs given the way the system and the facilities are now being operated with individual county agreements. Inter-county waste sharing agreements could be developed by the SWMCB to deal with Anoka County's shortfall. The legislative limitation on HERC could be lifted permitting HERC to take all of the existing unprocessed waste from Hennepin, Carver and Scott counties. Elk River and EPR could be encouraged to operate at full capacity. Even so, there would be insufficient existing capacity to assure that all of Dakota's unprocessed waste could be processed, as things now stand. The extra needed capacity might be developed from a variety of possible sources without resorting to building additional processing plants in the region.

One part of the capacity problem is that NSP and United Power have reached their capacity to burn RDF at the three power plants that have been modified to accept RDF. If NSP's Black Dog or King plants could be modified to burn RDF, this capacity limitation could be resolved. With a bigger local market for RDF, NRG and/or EPR could consider going to longer shifts or 24-hour per day operation which would provide



additional processing capacity without further capital expenditures; or they could consider upgrading their equipment to process more waste in existing shifts.

It also might be possible for the region to make use of available capacity at MSW composting plants in Wright County, Mora and Fairmont. These facilities, especially the plant at Fairmont, could be used for both primary processing of unprocessed MSW and for secondary processing of the heavy, wet residuals from the RDF processing plants; although transportation costs might make this option uncompetitive.

Another possibility is to build on the Minnesota and Wisconsin experiences with banning waste. The state of Wisconsin has successfully demonstrated a 71 percent reduction in the amount of recyclables found in the waste stream after banning them from disposal. In the Metropolitan Area, according to the waste composition study, yard waste in MSW was reduced 70 percent after the state's yard waste ban. This one action had the impact of freeing up over 240,000 tons of regional processing capacity annually, more than the process capacity needs of Scott, Carver and Dakota counties.

If banning of any of these materials (corrugated cardboard, food waste, wood/demo/construction debris, or a ban on a combination of existing recyclable materials--newsprint, aluminum-steel-glass food and beverage containers, HDPE and PET plastic containers) were to prove as successful as the yard waste ban, it would free up enough existing processing capacity to handle all of the unprocessed wastes managed by the seven counties.

### **Conclusions - Centralized Processing**

The region has made progress in developing safe and effective waste processing facilities.

The facilities that have been developed to date are fully operational. The level of rejects, residuals and ash produced by the facilities is comparable to the predicted rates planned by the counties. The regional policy plan calls for managing the residuals, rejects, and ash by methods other than landfilling. In order to accomplish this objective, the counties must operate in an integrated manner to develop and implement programs and facilities to manage the residuals, rejects, unprocessed waste and ash.

An estimated 413,000 tons of MSW produced in the region in 1992 went to landfills unprocessed. This is more than the amount of MSW processed at any one of the facilities. The effectiveness of the resource recovery processing portion of the regional waste management system needs to be improved. In particular, there are a number of things that can be done to improve overall system efficiency and to process more of the region's MSW waste stream without additional expenditures for new capital facilities. Such improvements are difficult to make under the existing system of county/facility operator contracts, as they require a broad regional perspective aimed at creating a truly integrated regional solid waste management system.

More detailed study is needed by the counties, but it appears that there are several technically viable ways for the counties as a group to achieve full MSW processing without building additional resource recovery facilities in the region.

Instead of individual county/facility operators put-or-pay contracts, the counties could develop a regional put-or-pay agreement between the SWMCB and each facility operator, where the SWMCB guarantees adequate waste flows. This would undoubtedly require a stronger SWMCB than exists at the present time.

## LAND DISPOSAL

Landfills remain an essential element for helping to manage the region's MSW despite their placement at the bottom of the waste management hierarchy. Landfills continue to receive significant amounts of unprocessed waste, and because they are the option of last resort they receive the left-overs (rejects, residuals, ash) from regional resource recovery facilities. Increases in recycling and processing, high local landfill surcharges and increase competition from non-Metropolitan landfills, reduced the disposal volumes during 1992 for landfills in the region.

### Data - Land Disposal

The Council periodically reviews landfill capacity for the region. Aerial photo surveys of regional land disposal facilities are analyzed to account for remaining landfill capacity. Table 8 shows the remaining landfill capacity in acre-feet for each metropolitan landfill from 1984 through the

month of October in 1992. The last two months of data for 1992 are based on landfill receiving rates as reported to the Council.

The most recent aerial photographs used to determine the remaining capacity of landfills were taken in October 1992. The survey showed an estimated 5,084 acre-feet of landfill space remaining at the end of 1992 in the region's four then operating landfills.

However, two of these landfills--Anoka and Woodlake--closed in 1993 leaving only two sanitary landfills operating in the region. Burnsville and Pine Bend had a total of 4,558 acre-feet of remaining capacity at end of 1992.

The rate of consumption, measured by the 1992 survey and including corrections to earlier survey date, averaged of 536 acre-feet per year between 1990 and 1992. If this rate of consumption remains constant, available

Table 8 REMAINING LANDFILL CAPACITY FROM AERIAL SURVEYS, 1984 - 1992 (In acre-feet*)					
Facility	1984**	1986**	1988**	1990**	1992**
Anoka	756	24	20	661	377
Burnsville	2566	2098	1220	1141	734
Dakhue	207	50	closed	closed	closed
Flying Cloud	250	174	closed	closed	closed
Freeway	201	43	20	closed	closed
Louisville	595	504	758	closed	closed
Pine Bend	6797	5788	4783	4,251	3,824
Woodlake	874	598	656	374	149
<b>Total</b>	<b>12,246</b>	<b>9,279</b>	<b>7,457</b>	<b>6,427</b>	<b>5,084</b>

\* One acre-foot equals 1,613.3 cubic yard    \*\* Aerial survey data are supplemented with data on tonnages received at landfills for November and December for the year in which the aerial survey was taken.

permitted landfill space in the region will be filled in slightly less than nine years.

Table 9 shows the amount of waste received at metropolitan land disposal facilities between 1986 and 1992 as reported by the Minnesota Department of Revenue.

In 1992, the amount of waste reported landfilled within the region was 525,000 tons up from 514,000 tons in 1991, a 2 percent increase. This number includes 37,000 tons of exempt (non-MSW) waste, which is included here because it uses landfill space. In 1992, the total amount of unprocessed waste landfilled according to county reports was approximately 290,000 tons; an amount equal of approximately 300 acre-feet of landfill space. If this amount of waste had been processed at today's processing rates, they would have left 96,000 tons of rejects, residuals and ash; requiring approximately 62 acre-feet of landfill space. The net savings would have been 238 acre-feet, or a 79 percent reduction in landfill demand.

The total amount of regionally produced MSW landfilled in 1992, excluding ash and exempt waste, is estimated to have been 548,000 tons. This number includes: 487,000 tons in the four landfills; 29,000 tons of rejects and residuals landfilled in Greater Minnesota landfills; 17,000 tons of unprocessed MSW landfilled in Iowa; and an estimated 15,000 tons of unprocessed MSW landfilled in Greater Minnesota landfills. It also excludes 37,000 tons of non-MSW exempt waste that was disposed in the region's sanitary landfills.

These numbers do not include 250,000 tons of wet ash produced by burning wastes at HERC and Richard's Asphalt mass burn plants in the metropolitan area, and RDF produced from regional wastes at the United Power generating plant in Elk River, the NSP power plants at Red Wing and Mankato, and the Ottertail power plant in South Dakota.

Ash from HERC is landfilled in Illinois. Ash from Richard's Asphalt is landfilled in

Table 9 TOTAL WASTE RECEIVED AT METROPOLITAN LANDFILLS 1986 - 1992 (in tons)							
Landfills	1986	1987	1988	1989	1990	1991	1992
Anoka	286,178	207,818	78,528	45,668	64,663	52,042	90,767
Burnsville	199,830	280,001	329,106	308,945	103,756	97,039	108,607
Dakhue	56,160	41,416	13,968	closed	closed	closed	closed
East Bethel	53,412	55,366	59,905	34,392	closed	closed	closed
Flying Cloud	484,423	53,388	9,268	closed	closed	closed	closed
Freeway	43,379	43,338	24,958	22,743	3,273	closed	closed
Louisville	217,562	321,923	211,493	189,006	40,654	closed	closed
Pine Bend	625,248	819,205	884,699	803,953	385,703	315,638	184,427
Woodlake	83,895	129,634	157,430	226,307	49,481	49,433	141,010
<b>Total</b>	<b>2,050,087</b>	<b>1,952,089</b>	<b>1,769,355</b>	<b>1,631,014</b>	<b>647,530</b>	<b>514,152</b>	<b>524,811</b>
Source: Minnesota Department of Revenue							

Wisconsin. Ash from RDF burned by United Power and NSP is land disposed at NSP coal ash landfills in Greater Minnesota. Ash from Ottertail power plant is land disposed in South Dakota.

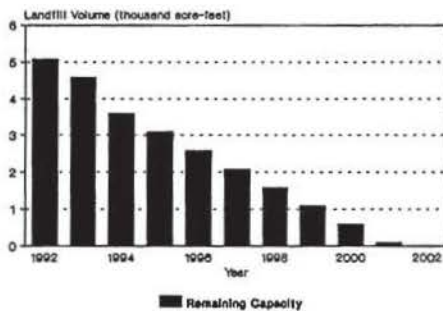
### Issues - Land Disposal

The rate at which the Metropolitan Area is consuming regional landfill capacity has decreased significantly as processing facilities have come on line and recycling and waste reduction efforts improve.

The two remaining land disposal facilities in the region are both located in Dakota County. Both are privately owned and operated, subject to stiff competition from non-metropolitan area landfills and could close at any time.

As Figure 7 illustrates, assuming that landfill use rates decline as projected and recycling objectives continue to be met, Metropolitan Area landfills will exhaust existing remaining capacity by 2002.

Figure 7  
PROJECTED REMAINING DISPOSAL CAPACITY  
IN METROPOLITAN AREA LANDFILLS  
1992 - 2002



Capacity will be affected by many factors beyond the ability of the public sector to control. Private investment may add capacity. Facilities may close prematurely, particularly if they are unable to obtain

sufficient tipping fee revenues to meet operating, environmental protection and financial responsibility requirements. Tipping fee revenues in turn may be affected by competition from landfills located outside of the metropolitan area, or by public sector decisions such as added surcharges, higher recycling rates, efforts to further reduce unprocessed wastes and efforts to further reduce rejects and residuals from processing plants through increase secondary waste processing. If the counties could have succeeded in processing all their wastes in 1992, it would have reduced the demand for landfill space from 526 to 301 acre-feet. At an annual landfill demand of 301 acre-feet, the 4,588 acre-feet of regional capacity remaining in the Burnsville and Pine Bend landfills would last for another 15 years.

Large landfills located in McLeod County and near Elk River are expected to have substantial lined landfill space available in 1994 for metropolitan area waste. Both landfills made the substantial investments in upgrading their landfills to meet current Minnesota and federal landfill standards and undoubtedly want to attract Metropolitan Area waste to help pay off their investments.

Increased success in diverting resource recovery facility rejects and residuals for secondary processing in place of land disposal can be expected to further reduce demand for landfill space and is likely to exacerbate financial problems of marginal landfills.

Surcharges for land disposal of Metropolitan Area waste averaged approximately 31 percent of the total tipping fees collected in 1992. Dakota County's out-of-county differential surcharge brought the total surcharge to 46 percent of its landfills' tipping fees for wastes generated in other counties as opposed to a 34 percent surcharge for wastes originating in Dakota County. This differential surcharge undoubtedly influenced haulers and resource recovery facility operators to look towards



other landfills in 1992 and it may well be a factor affecting landfill use rates in 1993.

Policy 1A in the Council's solid waste policy plan suggests that an Environmental Protection Fee should be added to land disposal tipping fees to pay for all environmental protection costs. These costs include the removal of toxics from the waste stream and encouraging generators to participate further in waste reduction efforts. While the Council's focus is on solid waste management in the seven county metropolitan area, such a fee would have to be applied statewide if it is to be effective.

In addition, the policy plan proposes that costs should be allocated equitably to waste generators. The long-term allocation of land disposal revenues to activities not directly related to land disposal may prove to be counterproductive. Substantial fees for unrelated activities deter the financing of landfill cleanup and post-closure maintenance.

Local city and county surcharges place local landfills at a competitive disadvantage with landfills that are not required to charge the same fees. Thus landfills in other states and, to a lesser extent, those in Greater Minnesota, are able to attract business away from the landfills in the Metropolitan Area which have the highest financial responsibility standards for environmental protection.

### **Conclusions - Land Disposal**

In 1994, the Metropolitan Area will have only two operating landfills, either of which might close from financial pressures due to such things as competition from lower cost landfills in Greater Minnesota and out of state; high local landfill surcharges; inadequate waste flows due to increased recycling and resource recovery processing.

If the counties continue to improve their recycling rates consistent with Council policy, and begin to process all of the region's MSW

as required by Council policy, landfill space in the Metropolitan Area will run out by 2007 unless landfill expansions are permitted by the MPCA.

However, it appears more likely that financial competition between metropolitan and non-metropolitan landfills will determine the longevity of the two remaining metropolitan landfills.

It is important that the counties develop contingency plans for landfilling of their unprocessed wastes, as well as for the rejects, residuals and ash from area processing plants in case one or more of the metropolitan landfills close.

The closing of the metropolitan landfills will eliminate surcharge revenues received by host cities and counties, including the Metropolitan Solid Waste Landfill Fee which provides revenues for the Metropolitan Landfill Abatement Fund including the Local Recycling Development Grant (LRDG) program administered by the Metropolitan Council, and the Metropolitan Landfill Contingency Action Fund administered by the MPCA.

## COUNTY CERTIFICATION REPORTS SUMMARY

In 1985, the *Waste Management Act* (Minn. Stat. 473.848) established a prohibition on the landfilling of unprocessed waste in the Metropolitan Area after 1990. Subsequent amendments to the Act limited the disposal of unprocessed waste to material that was not able to be processed at existing facilities.

The Council must approve or disapprove the county's waste certification reports. Approval of a county certification report reflects a Council determination that the county is reducing and will continue to reduce the amount of unprocessed waste needing to be landfilled in the future. Disapproval of a county report means that the Council is not satisfied with county's landfill abatement efforts.

If a county certification report is disapproved by the Council, the Council is required to negotiate with the county to develop and implement specific techniques to reduce unprocessed waste. If the Council does not approve two or more consecutive reports from a county, the Council is required to develop specific implementation measures which the county is required to implement.

### Data and Issues -- County Certification Reports

Each Metropolitan Area county is required to submit an annual certification report to

the Council. The county reports must detail the quantity of unprocessed waste that was landfilled; reasons the waste was not processed; strategies and a specific timeline for development of techniques to ensure processing; and progress made by the county in reducing the amount of unprocessed waste.

The Council established criteria to evaluate the efforts of the counties to abate the disposal of wastes from landfills. The criteria compares the quantity of county waste landfilled to the previous reporting periods, efforts by the county to seek alternate processing capacity for waste that was landfilled and commitment of the county to reduce the quantity of waste landfilled.

### Criteria 1 - Comparison of Waste Disposed with Previous Periods

Unprocessed waste disposal in landfills in 1992 continued to decline despite the fact that no new processing facilities were established. The volume of processed waste disposal declined slightly in conjunction with the variations in intake and operations at reported facilities. Table 10 summarizes the reported information. The tonnages shown in Table 10 are based on waste reported as "managed" by the counties, which differs from the Council's estimate of total metro

Table 10 LAND DISPOSAL AS REPORTED BY COUNTIES 1989 - 1992				
Disposal Type	1989	1990	1991	1992
Processed Disposal*	366,183	517,122	490,839	455,393
Unprocessed Disposal	1,370,212	364,764	308,521	289,705
Total	1,736,395	881,886	799,360	745,098
* Unrecycled banned wastes are included with the processed disposal figures.				

area waste landfilled found in the preceding chapter of this report. It is important to note that the reported volume of waste land disposed continues to decline on a regional basis for both processed and unprocessed wastes. This means that overall landfill abatement continues to improve.

#### Criteria 2 - Efforts to Seek Alternate Processing Capacity

With the exception of hazardous wastes, which are managed separately, the counties are required by state law to plan for the management of all solid waste consistent with the Council's policy plan. Although much of the waste that fits the definition of solid waste may be processed at a resource recovery facility, the counties are only required to develop processing capacity for MSW. They are not currently required to manage the processing of other solid wastes.

In its 1985 and 1991 policy plans, the Council established a development schedule for resource recovery processing facilities that was designed to assure that all of the MSW and special wastes remaining after recycling would be processed to recover other recyclable materials and then incinerated for energy recovery or composted.

In 1985 only one 80-ton-per-day MSW resource recovery processing facility was operating in the region. By 1992, the region had five resource recovery facilities which processed a total of 1,198,808 tons of MSW or approximately 42 percent of the MSW generated in the region.

The Facility Development Schedule in the Council's 1991 *Solid Waste Management Development Guide/Policy Plan* indicates that processing capacity to handle Scott County and Carver County wastes was to have been developed by 1992; and that processing capacity to manage Dakota County MSW should be developed by the end of 1993. By the end of 1992, none of the counties had developed or arranged processing capacity;

and neither Scott County nor Carver County had plans to reduce their unprocessed wastes. At the end of 1992, Dakota County still had plans pending, and was not yet behind schedule.

Hennepin, Ramsey and Washington Counties met the Council's processing development schedule, but continued to landfill unprocessed MSW that enter their waste management systems, albeit at a lesser rate than previous years. In 1992, Hennepin County land disposed 15,800 tons of unprocessed MSW from their waste transfer facilities. This represents a 60 percent reduction from the previous year. The Ramsey/Washington Resource Recovery Facility reported landfilling 58,845 tons of "excess" waste, 10 percent less than the amount reported in 1991.

While all three counties experienced an improvement, continued landfilling of unprocessed MSW underscores the region's need to develop an integrated system to locate and transport unprocessed MSW to regional facilities and possibly, if those facilities are full, to facilities outside the region.

#### Criteria 3 - Commitment to Reduce Disposal by Using Alternate Methods

The Council in its 1991 policy plan proposed a regionally integrated solid waste management system. Specific abatement objectives for solid waste recycling, processing and land disposal were set for the region as a whole rather than for individual counties. The Council's regional recycling objective for 1992 was 853,500 tons or 30 percent of the MSW generated in the region. The counties reported that residents and businesses recycled 1,232,200 tons of materials in 1992; a 12 percent increase over the 1991 recycling tonnages reported by the counties. Due to waste stream growth, materials recovery will have to increase to approximately 1,617,000 tons to meet the Council's goal for 50 percent recycling by the year 2000.



The achievement of Council recycling objectives may be misleading if counties continue to report increases in recyclable volumes without some type of systematic, verifiable monitoring. Presently no mechanisms or analyses exist that provide feedback on the amount or magnitude of regional materials sent to recycling markets. The counties continue to report that volumes of recyclable materials, specifically commercial and industrial wastes, are substantially increased over previous years without any type of verification.

An independent study could ascertain the actual amounts of recycled materials that are marketed regionally and statewide out of the Metropolitan Area. This information is also necessary in order to plan for adequate regional processing and disposal capacity if recycling markets are not able to manage all the materials.

In addition to recycling, waste processing through mass burn and RDF production is instrumental in abating unprocessed wastes from landfills. The region's network of processing facilities received 1.23 million tons of MSW or 45 percent of the MSW the counties managed in 1992; and processed 1.17 million tons or 43 percent of the MSW managed in 1992.

The counties should, but have not, reported on the amount of "unacceptable" wastes refused for processing by facilities. Such wastes are reported by the counties as "processed" waste, even though they are "unprocessable" with the technology available at the receiving facility possibly due to its size or inherent characteristics, so it is land disposed. The 1992 certification reports from counties with designation ordinances provided insufficient information for the Council to determine the actual volume of this type of unprocessed waste disposal. They asserted that no unprocessed MSW generated in these counties was landfilled. This assertion is wrong. Further efforts by Anoka, Hennepin, Ramsey and Washington Counties to monitor this type of waste are

warranted for an effective, integrated waste management system. Monitoring is needed to help the Council verify whether land disposed wastes are MSW and subject to certification, designation and surcharge.

Carver, Dakota and Scott share a responsibility to plan and implement additional waste processing strategies through public and/or private initiatives. These waste processing strategies should complement and integrate with existing facilities to give the region more flexibility in adapting to changing waste management needs.

#### Criteria 4 - Commitment to Achieve the Council's Landfill Limits

The amount of regional waste that is landfilled is the key indicator of how well the counties are progressing toward meeting the Council's goals and policies. The Council estimates that 548,200 tons of Metropolitan Area MSW was landfilled in 1992. This volume is a little more than half of the Council's 1992 disposal limit, but it also does not give a complete picture of disposal patterns because waste continues to be exported.

Evidence has shown that waste generated in the Metropolitan Area is not always managed and/or disposed of within the region. Until regional processing facilities were developed, waste traditionally was disposed of at landfills that presented the least cost to the hauler. Facility development, statutes restricting disposal of unprocessed MSW and waste designation ordinances have prevented a majority of haulers from continuing to dispose of unprocessed waste at landfills at the lowest cost.

A significant number of haulers continue to dispose of unprocessed waste in landfills located in and near the region. Currently, haulers that collect waste in Carver, Dakota and Scott Counties may take waste to regional processing facilities, to landfills

(disposal facilities) in or outside of the Metropolitan Area that meet MPCA guidelines, or landfills located outside the state.

A Dakota County hauler in 1992 disposed of over 17,000 tons of MSW in a landfill located in Dickinson County, Iowa. Based on anecdotal information, the Council believes that other haulers, including those licensed in counties with waste designation ordinances, are taking waste to disposal facilities located in greater Minnesota, Wisconsin and the Dakotas. In the near future, the number of haulers landfilling unprocessed metropolitan waste to surrounding states may increase due to recent court decisions on waste designation ordinances. This further emphasizes how important it is that the Metropolitan Area be able to monitor and document solid waste trends and issues in order to develop strategies that are flexible enough to adapt to the legislative and market decisions.

### **Conclusions - County Certification Reports**

The region, as reported by the counties, appears to have reduced the amount of waste disposed of compared to the previous reporting periods. Dramatic increases in recycling have contributed greatly to this reduction in landfilling.

The Council has been given inadequate information by the counties to allow it to monitor how much waste may be by-passing the resource recovery processing facilities; and the counties will need to rectify these inadequacies in the future.

Two counties--Scott and Carver--failed to develop or arrange for processing capacity according to the Council's Facility Development Schedule. Their 1992 certification reports have been disapproved by the Council, and the Council is in the

process of negotiating with them to improve their landfill abatement efforts.

The Council's Facility Development Schedule also shows that Dakota County is expected to develop or arrange its processing capacity by the end of 1993. Dakota County is currently conducting a reevaluation of its waste management strategies. Even though Anoka, Hennepin, Ramsey and Washington County are meeting the Council's processing development schedule, they continue to landfill (to a lesser degree than previous reports) unprocessed and processed MSW that enters their waste management systems. In addition, it is important to note that no regional composting initiative is being pursued by the counties at this time.

Although reported land disposal volumes are well within specified limits, continued attention is warranted. The counties should establish operational monitoring measures to identify the actual volumes of land disposal and assure that waste is not land disposed if processing capacity is reasonably available. The Council should continue to negotiate with the counties to implement specific techniques to reduce unprocessed waste.



**APPENDIX A**

COUNTY SOLID WASTE CERTIFICATION REPORTS

-- 1992



**METROPOLITAN COUNCIL**  
Mears Park Centre, 230 East Fifth Street, St. Paul, Minnesota 55101  
612 291-6359 TDD 612 291-0904

**DATE:** July 1, 1993  
**TO:** Metropolitan Council - Solid Waste Management Advisory Committee  
**FROM:** Solid Waste Division  
**SUBJECT:** County Solid Waste Certification Reports - 1992

**INTRODUCTION**

The 1980 Waste Management Act established a prohibition on the landfilling of unprocessed waste in the Metropolitan Area after 1990. Subsequent amendments limited disposal of unprocessed waste to material certified by metropolitan counties or resource recovery facilities as unprocessable. This document evaluates the 1992 waste certification reports.

The Council must approve or disapprove the county's waste certification reports. Approval of a county certification report must reflect a Council determination that the amount of landfilled unprocessed waste will be sufficiently reduced in the near future. Disapproval of a county report means that the Council is not satisfied with landfill abatement efforts. The Council may require specific implementation measures by a county if it disapproves two consecutive certification reports.

**AUTHORITY FOR REVIEW**

Each Metropolitan Area county is required by Minn. Stat. 473.848 to submit an annual certification report to the Council in a form specified by the Council. The county reports must detail:

1. The quantity of unprocessed waste that was landfilled;
2. The reasons the waste was not processed;
3. A strategy for development of techniques to ensure processing of waste including a specific timeline for implementation of those techniques; and
4. Any progress made by the county in reducing the amount of unprocessed waste.

The statute states: "The Council shall approve a county's report if it determines that the county is reducing and will continue to reduce the amount of unprocessed waste, based on the report and the county's progress in development and implementation of techniques to reduce the amount of unprocessed waste. If the Council does not approve a county's report, it shall negotiate with the county to develop and implement specific techniques to reduce unprocessed waste. If the Council does not approve two or more consecutive reports from any county, the Council shall develop specific reduction techniques that are designed for the particular needs of the county. The county shall implement those techniques by specific dates to be determined by the Council." The Council may also "adopt standards for determining when waste is unprocessable and procedures for expediting certification and reporting of unprocessed waste."

## CERTIFICATION REVIEW

The Council has established the following criteria to evaluate the efforts of the counties to abate the disposal of wastes from landfills:

1. The quantity of waste disposed in landfills compared to the quantity of waste disposed in the corresponding previous reporting periods.
2. Demonstrated efforts by the county to seek alternate processing capacity for waste that would otherwise be landfilled.
3. Commitment of the county to reduce the quantity of waste landfilled as demonstrated in county approved implementation plans to manage, by other methods, the wastes landfilled.
4. Demonstrated commitment of the counties to achieve the Council's landfill use limits as noted in the Solid Waste Policy Plan.

The criteria focus on whether the county's progress and commitment are sufficient to demonstrate that landfill abatement goals will be achieved. The Council is required to consider both the county reports and other pertinent data in evaluating the county's progress in developing and implementing techniques to reduce the disposal of unprocessed waste.

The Council review criteria also address overall landfill abatement. The legislative statutory review authority, however, extends only to whether waste is processed by at least a single operation to recover reusable resources. Consequently, the initiation of secondary processing, such as the scheduled composting of residuals from the refuse derived fuel process, cannot currently be a basis for evaluating the county reports.

## SUMMARY OF THE CERTIFICATION REPORTS

County summary results for 1992 are listed below:

### Anoka County

**1. The quantity of waste generated in the county that was not processed prior to transfer to a disposal facility.**

Anoka County reported that approximately 230,456 tons of MSW were generated and managed in the county during 1992. Anoka County estimated that no unprocessed MSW was managed at land disposal facilities in and near the Metropolitan Area.

Although Anoka County indicates that no unprocessed waste was landfilled, it does not estimate the amount of waste, including MSW, that is managed and disposed of outside of their solid waste management system. This waste includes MSW and non-MSW materials that do not proceed directly to the county's designated facilities. This other waste may be processible at NSP's Elk River-RDF facility where a majority of Anoka's MSW is currently managed.

**2. The reason(s) why the waste was not processed.**

Anoka County indicates that currently the amount of bulky MSW, such as mattresses and large rolls of paper, which ends up as rejects from the Elk River Facility is being reduced. The RDF facility has recently installed shredders which have reduced the amount of unprocessable MSW from 7.5% to 2.5% of MSW delivered. Non-MSW is still being disposed of in regional and greater Minnesota landfills. This waste is not being processed because of the incapability of the Elk River-RDF facility to handle this

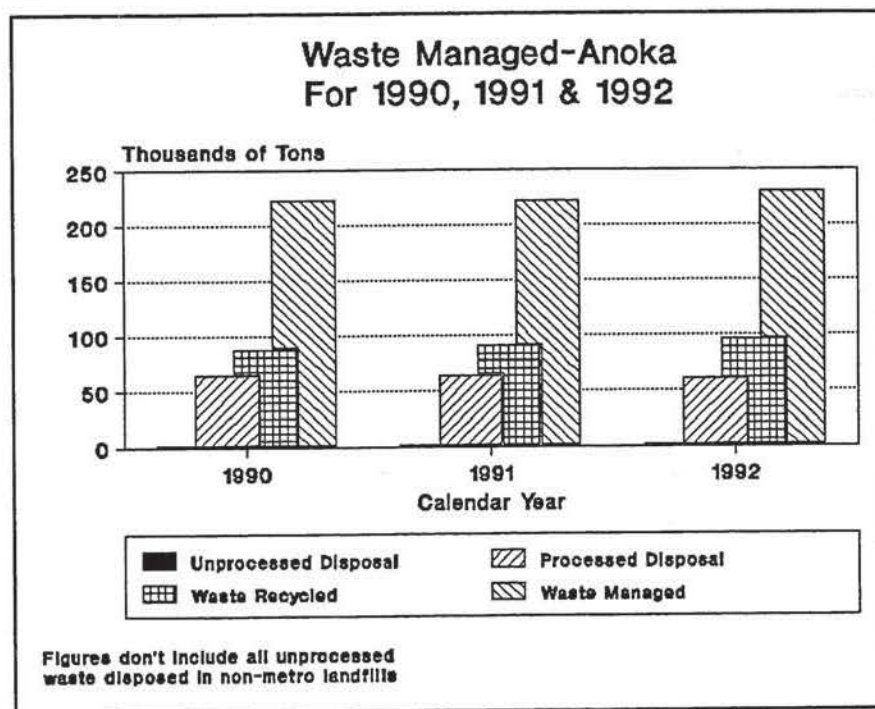
waste and statutes which permit separately managed waste streams to be exempted from designation to a county waste processing facility.

**3. The strategy and timetable for the development of techniques to ensure processing of waste.**

Anoka indicated that it has amended a contract with Hennepin County to send NSP-Elk River's unprocessable MSW to the HERC facility. Anoka also reported on its waste exchange contract with East Central Solid Waste Commission and discussions with Wright County about composting the residue fraction from the NSP-Elk River facility. Anoka County is still exchanging its residual waste streams from the facility with Burger King Corporation and Recomp of Minnesota. The agreement fosters waste management by the most appropriate technology by trading compostable material from operations in Anoka County for MSW not suitable for composting collected by Recomp.

**4. Progress in reducing the amount of unprocessed waste.**

Anoka County reported progress in reducing unprocessed MSW disposal. No information was provided on disposal patterns of waste other than MSW.



**Carver County**

**1. The quantity of waste generated in the county that was not processed prior to transfer to a disposal facility.**

Carver County reported that 43,000 tons of MSW were generated in the county during 1992. Based on the amount of MSW generation, Council staff estimates that 23,421 tons of unprocessed MSW were managed at land disposal facilities.

**2. The reason(s) why the waste was not processed.**

Carver County reported the waste was not processed due to the lack of a resource recovery facility that is designated to receive Carver County waste.



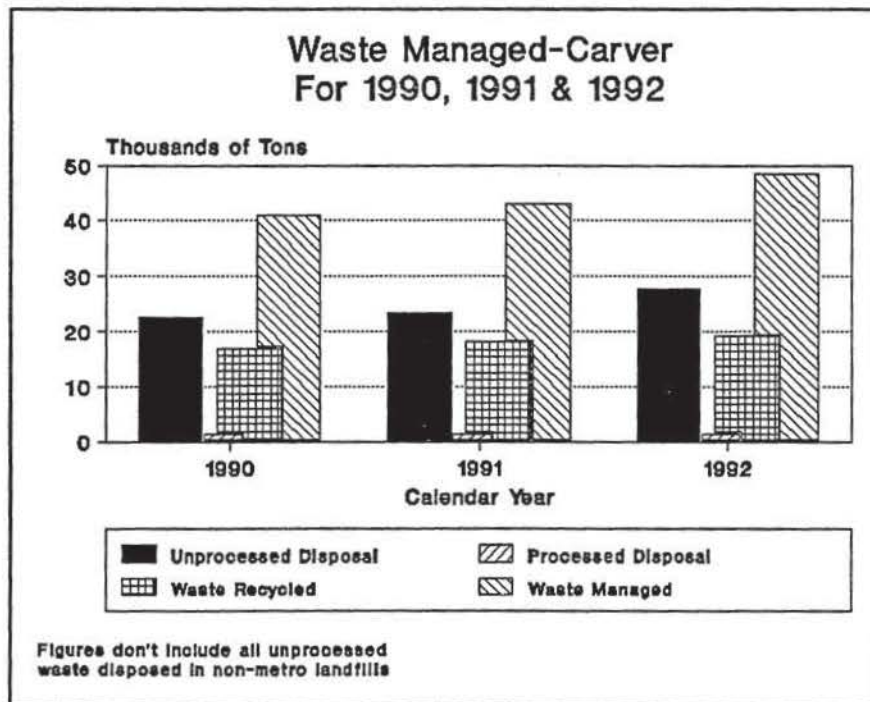
**3. The strategy and timetable for the development of techniques to ensure processing of waste.**

Carver County reported last year that they were cooperatively planning with Scott County to develop a resource recovery facility that will compost MSW. A draft permit application was submitted to MPCA. MPCA determined the Carver County application was not complete. In March, the County's financial consultant informed them that the recent court rulings on waste designation had negatively impacted the ability to issue bonds for a publicly-supported facility. As a result of these court decisions, the public facility concept was dropped and the Counties requested the vendor to provide a proposal for a privately-owned and operated facility. In addition, Carver County also requested proposals from Hennepin, Anoka, Ramsey and Washington County for use of available MSW processing capacity at resource recovery facilities.

Carver County, during the later part of 1992, issued a Request for Proposal (RFP) for the development of a MSW transfer station. The county is planning to enter into a contract by the fall of this year with a private company to build, own, and operate a transfer station which will deliver waste to existing and possibly future MSW processing facilities. Carver County expects that the siting and permitting process will begin in early 1994 with operations beginning in July of that year.

**4. Progress in reducing the amount of unprocessed waste.**

The estimated volume of unprocessed waste that was landfilled in 1992 increased slightly. No information was provided on disposal patterns of waste other than MSW.



**Dakota County**

**1. The quantity of waste generated in the county that was not processed prior to transfer to a disposal facility.**

Dakota County estimated it managed 282,728 tons of MSW in 1992. The County estimates that 159,756 tons of unprocessed MSW were disposed of at various landfills in and near the metropolitan region.

**2. The reason(s) why the waste was not processed.**

Dakota County reported the waste was not processed due to the lack of a resource recovery facility that is designated to receive Dakota County waste.

**3. The strategy and timetable for the development of techniques to ensure processing of waste.**

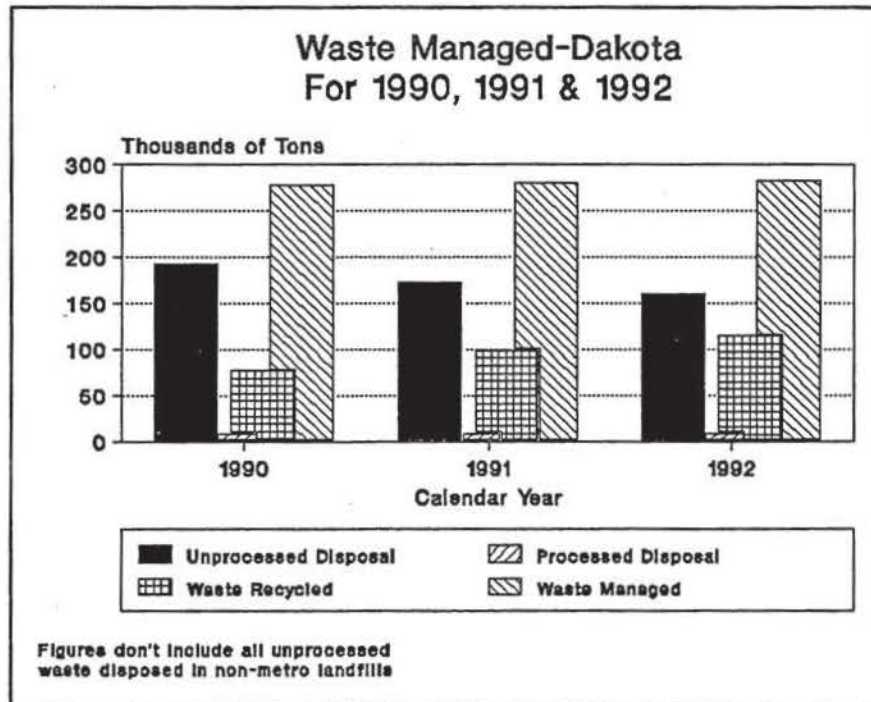
Dakota County has received a favorable, unanimous decision from the Court of Appeals, instructing the MPCA to issue a permit for the County's planned Resource Recovery Facility. In September, 1992, the County asked the MPCA to issue the permit. Dakota County has received a permit from MPCA for a 600 tpd waste-to-energy facility.

Construction of this facility is currently on hold, while the County Board conducts a re-evaluation of waste management strategies, working toward a decision to move forward with the permitted project or implement other methods of waste management.

As a part of the re-evaluation being conducted by the County Board, an assessment of potential available facility capacity within the Metropolitan Area waste management system is being completed. The possibility of sharing facility capacity and sharing waste will be determined by this analysis. To date, the analysis has not uncovered any available facility capacity within the Metro system, without additional capital investment to provide additional burn and processing capacity. Dakota County will continue to assess this system as development and/or expansion occurs.

**4. Progress in reducing the amount of unprocessed waste.**

The estimated volume of unprocessed waste decreased due to an increase in the amount of MSW reported as being recycled. No information was provided on disposal patterns of waste other than MSW.



## Hennepin County

### **1. The quantity of waste generated in the county that was not processed prior to transfer to a disposal facility.**

Hennepin County estimated that approximately 1,382,775 tons of MSW were managed. Hennepin Co. reports that of the 1,382,775 tons of MSW that enters their solid waste system, 16,067 tons of unprocessed MSW was disposed of in landfills.

The county does not estimate or include the amount of waste, including MSW and non-MSW, that is managed and disposed of outside of their solid waste management system. This other waste may be processible at a facility where Hennepin's MSW is currently managed.

### **2. The reason(s) why the waste was not processed.**

Hennepin Co. states there was no available capacity at any resource recovery facility within the region to process this waste. Hennepin also indicates that most of the landfilling that has occurred is a result of construction activity at the HERC, and the subsequent diversion of that waste from the NSP-Elk River facility pursuant to their contract.

### **3. The strategy and timetable for the development of techniques to ensure processing of waste.**

Hennepin Co. states that it is seeking additional waste sharing agreements and refining its annual Waste Management Plan to minimize the amount of unprocessed waste landfilled. Hennepin reports that the county is presently developing agreements with Wright County, East Central, and Prairieland composting facilities such that organic-rich loads of unprocessed waste may be directed to those facilities when feasible.

Hennepin County states that they are involve in the following agreements:

1. Existing Agreements
  - a. NSP-Newport

The County presently can direct waste to the NSP-Newport facility on a spot market basis. A two-way agreement which will allow NSP and/or Ramsey and Washington to direct waste to Hennepin's system is being considered.
  - b. EPR, Inc.

A two-way waste sharing agreement exists which allows Hennepin to direct MSW to the EPR, Inc., facility and allows EPR to direct its oversize and residue streams to HERC.
  - c. Anoka County's portion of NSP-Elk River Facility

Hennepin and Anoka Counties have a two-way agreement which allows Hennepin to direct waste to the NSP-Elk River facility as Anoka Waste and allows Anoka to direct waste to the Hennepin County system. In 1992, 3,359 tons of Hennepin County waste were delivered to the NSP-Elk River facility as Anoka waste under this agreement.
2. Agreements being developed
  - a. Scott County

Scott, Anoka and Hennepin Counties have been investigating opportunities for sharing Hennepin's and Anoka's waste processing capacity with Scott County. Preliminary discussions are underway and action on such an agreement is expected to occur by the second quarter of 1993.
  - b. Prairieland Compost

Hennepin and Prairieland staffs have discussed the potential mutual benefits of exchanging



organic-rich streams from Hennepin County for plastic/paper residue streams from Wright County. A draft agreement is being discussed at this time.

c. East Central Compost

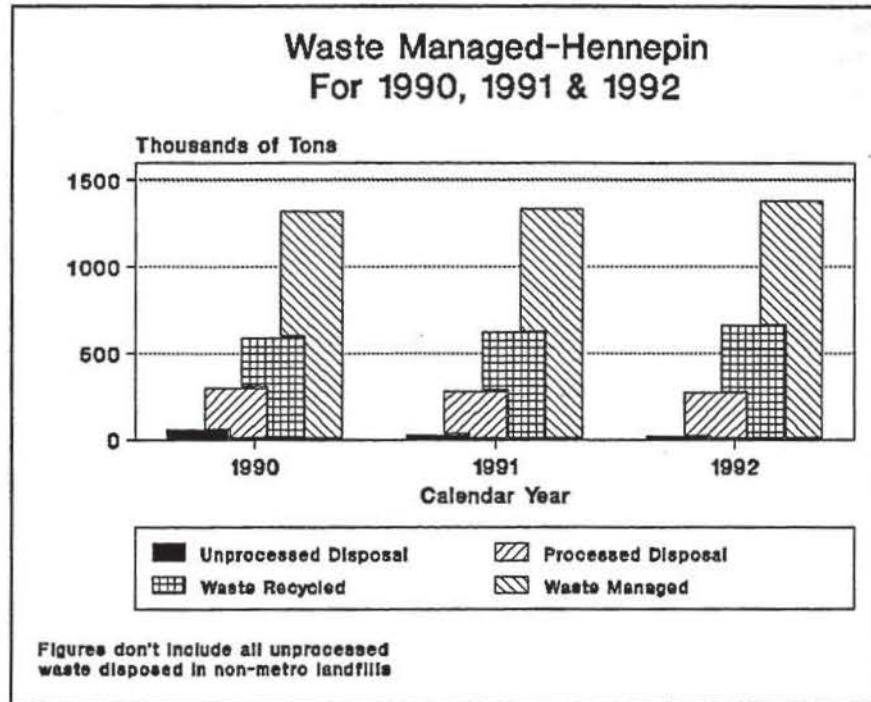
Hennepin and East Central staffs have discussed the potential mutual benefits of exchanging organic-rich streams from Hennepin County for plastic/paper residue streams from the Counties in the East Central group. A draft agreement is being discussed at this time.

d. Wright County

Hennepin and Wright County staffs have discussed the potential mutual benefits of exchanging organic-rich streams from Hennepin County for plastic/paper residue streams from the Wright County composting facility.

**4. Progress in reducing the amount of unprocessed waste.**

The estimated volume of unprocessed waste that existed in Hennepin's waste management system decreased during the period when compared to 1991. No information was provided on disposal patterns of waste other than MSW.



Ramsey & Washington County

**1. The quantity of waste generated in the counties that was not processed prior to transfer to a disposal facility.**

Ramsey and Washington County estimated that in 1992 approximately 716,501 tons of MSW were managed. Of that managed MSW figure, 58,604 tons of unprocessed MSW was disposed of in landfills during this period.

The counties did not estimate or include the amount of waste, including MSW, that is managed and disposed of outside of their solid waste management system. This waste includes MSW and non-MSW

materials that do not proceed directly to the counties designated facilities. This MSW and non-MSW may be processible at a facility where Ramsey and Washington Counties' wastes are currently managed.

**2. The reason(s) why the waste was not processed.**

Unprocessed waste is defined by NSP's Service Agreement with Ramsey & Washington Co. as waste that does not proceed directly through the processing lines at the Ramsey/Washington County Resource Recovery Facility, but is transferred to another waste facility. Unprocessed waste includes both Processible Waste and Non-Processible Waste, as defined in the Service Agreement between Ramsey and Washington Counties and NSP, as amended. The counties state in their reports that there was no available resource recovery facility capacity to process this waste.

**3. The strategy and timetable for the development of techniques to ensure processing of waste.**

Ramsey & Washington Counties state in their certification reports that;

"Installation of new equipment and establishment of incentives for NSP have resulted in reduced quantities of excess waste. New shredding and related equipment was installed which has increased the processing capacity on the processing lines at the facility. Through amendments to the Service Agreement between Ramsey and Washington Counties, an incentive fee concept was initiated in 1989 for a two-year period, and extended in July 1990 for the term of the Service Agreement; there is an incentive fee for NSP to process additional waste over the amounts specified in the original Service Agreement approved in 1986.

The Ramsey/Washington County Resource Recovery Facility is owned and operated by NSP. Pursuant to the Service Agreement, dated October 1986, and approved by the Metropolitan Council, NSP is free to receive waste from other counties, provided that receipt of such other waste does not impair NSP's contractual commitments to Ramsey and Washington Counties. This provision was included to allow NSP the ability to compete in the waste management industry to obtain waste and to maximize use of the Facility. This provision encourages waste sharing by allowing NSP to negotiate for unprocessed or excess waste with other counties, and use the Facility to its greatest extent.

The Service Agreement between NSP and the Counties has successfully privatized resource recovery in the two counties. Because of this relationship, NSP is responsible for the excess and non-processible waste. This means that it is NSP which controls where unprocessed waste flows. The requirements in Minn. Stat. 473.848, as amended in 1991, now require NSP to certify to the Counties that processing capacity is not available if waste is landfilled. It is NSP's responsibility, therefore, to seek that capacity.

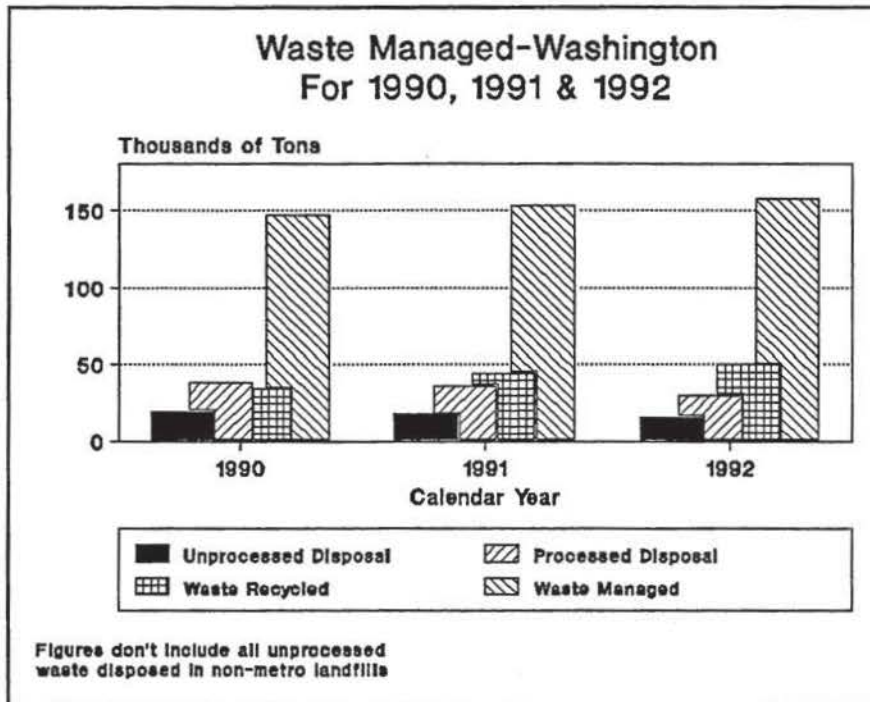
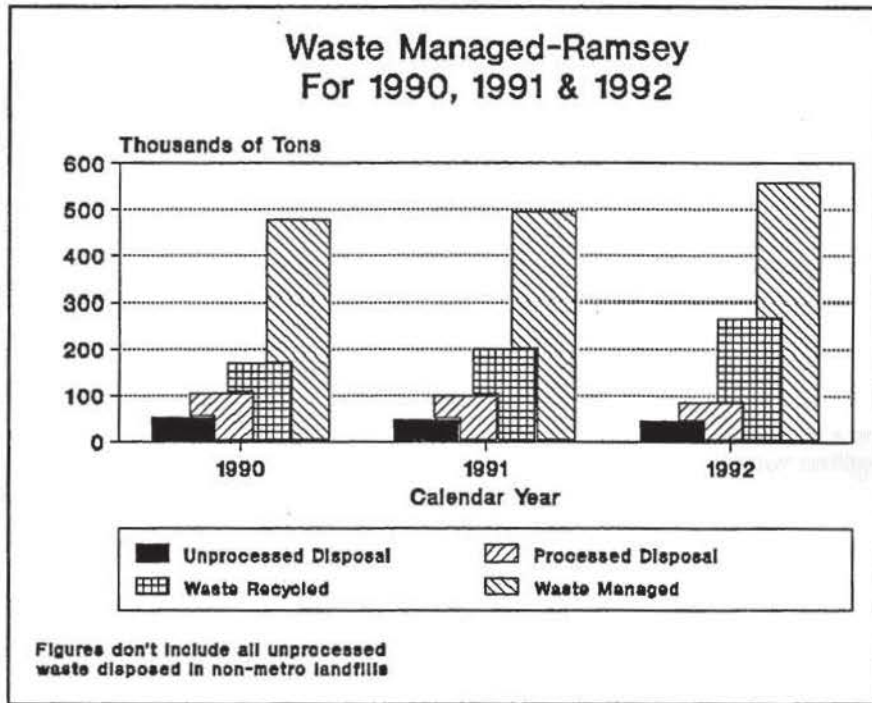
The Counties and NSP have been exploring residue management for several years, and NSP has added equipment to further process residue. Depending on the character and quantity of residue that remains after that system is fully operational, the Counties and NSP may explore other processing opportunities in the system for that material. NSP began operating the system in August 1992, and is continuing to make modifications to the residue processing system. Ramsey and Washington Counties have requested that NSP present proposals for managing the unprocessable portion of the waste stream and for further reducing excess waste. NSP has made regular updates to the Counties on preparing these proposals. One option under consideration is an oversize bulky waste shredder. NSP is also seeking ways to increase combustion capacity in existing powerplants. To do this, NSP is evaluating the densification of RDF, in order to expand into the alternate RDF markets.

The recent Federal Court of Appeals ruling on designation is cause for concern. If counties cannot control the flow of waste out of the State, it will be difficult to ensure that waste is processed and that State environmental goals are met. This could also hinder efforts to improve processing efficiency at the Resource Recovery Facility. Support from the Metropolitan Council on Federal legislative efforts could be helpful."



**4. Progress in reducing the amount of unprocessed waste.**

The estimated volume of unprocessed waste that proceeded through Ramsey & Washington Counties' MSW management system decreased during the period when compared to 1991. No information was provided on disposal patterns of waste other than MSW.



## Scott County

### **1. The quantity of waste generated in the county that was not processed prior to transfer to a disposal facility.**

Scott County estimated that approximately 54,000 tons of MSW were managed in 1992. It is estimated that 21,702 tons of unprocessed MSW was managed by land disposal facilities.

### **2. The reason(s) why the waste was not processed.**

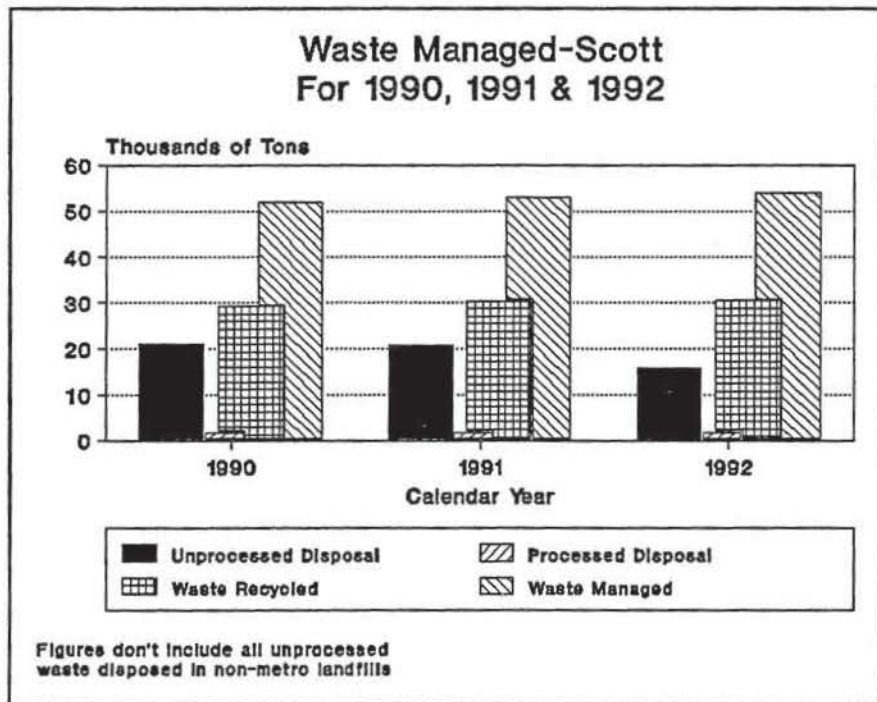
Scott County reported the waste was not processed due to the lack of a designated central processing facility in the county.

### **3. The strategy and timetable for the development of techniques to ensure processing of waste.**

Scott County reports that it is currently negotiating with several groups to pursue available waste processing capacity. The arrangement being negotiated would offer possible access to HERC, NSP-Elk River, NSP-Newport and Wright County processing facilities on an available capacity basis. Scott County is expected to make a decision in 1993 and begin to direct waste to a chosen processing facility as soon as possible via whatever arrangements are available.

### **4. Progress in reducing the amount of unprocessed waste.**

The estimated volume of unprocessed waste increased slightly during the period.



## CRITERIA ANALYSIS

The first two waste certification criteria address the counties reported results and efforts to reduce unprocessed MSW landfill disposal. The next two criteria address the commitment of metro counties to reduce landfilling and their progress toward achieving the Council's landfill policies as outlined in the Solid Waste Policy Plan. These commitments must address the strategies that will be pursued to successfully achieve landfill abatement goals.

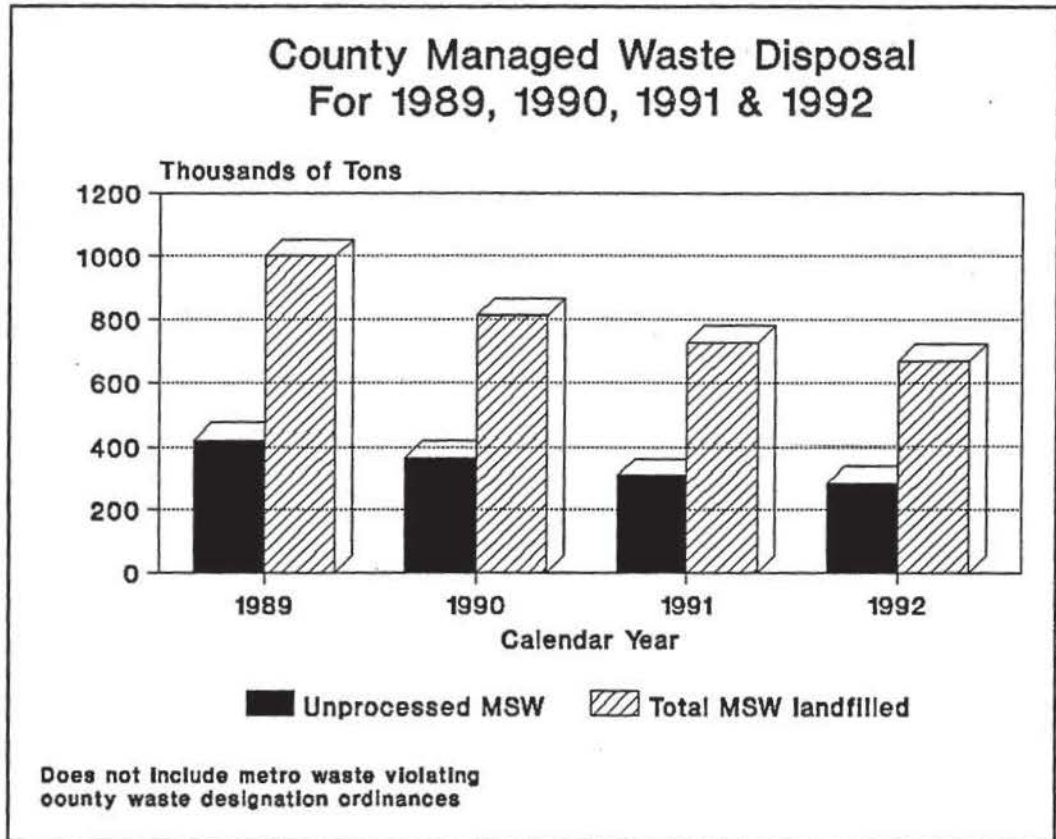
## CRITERIA 1 - COMPARISON OF WASTE DISPOSED WITH PREVIOUS PERIODS

Unprocessed waste disposal in landfills appeared to be continuing a declining trend during the last report period despite the fact that no new processing facilities were established. The volume of processed waste disposal declined slightly in conjunction with the variations in intake and operations at reported facilities. The table that follows summarizes the report information. The figure that follows this table illustrates the estimated disposal trend.

1990	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Totals
MSW Managed	222,741	40,945	278,205	1,321,237	476,759	52,000	146,936	2,538,823
Separate Waste	7,424	1,460	8,386	31,458	14,801	1,763	4,445	69,737
Reject Disposal	10,303	0	0	17,075	39	0	15	27,432
Residual Disposal	19,712	0	0	110,298	51,177	0	18,928	200,115
Ash Disposal (wet)	26,550	0	0	140,080	38,842	0	14,366	219,838
Processed Disposal	63,989	1,460	8,386	298,911	104,859	1,763	37,754	517,122
Unprocessed Disposal	0	22,516	192,959	56,297	52,553	21,002	19,437	364,764
<b>MSW Disposal</b>	<b>63,989</b>	<b>23,976</b>	<b>201,345</b>	<b>355,208</b>	<b>157,412</b>	<b>22,765</b>	<b>57,191</b>	<b>881,886</b>
1991	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Totals
MSW Managed	222,100	43,000	280,000	1,337,820	495,353	53,000	153,138	2,584,411
Separate Waste	7,577	1,503	8,612	31,661	14,880	1,822	4,591	70,646
Reject Disposal	3,405	0	0	7,916	106	0	39	11,466
Residual Disposal	24,829	0	0	85,967	42,191	0	15,605	168,592
Ash Disposal (wet)	27,638	0	0	154,341	42,454	0	15,702	240,135
Processed Disposal	63,449	1,503	8,612	279,885	99,631	1,822	35,937	490,839
Unprocessed Disposal	0	23,422	172,661	27,033	47,135	20,836	17,434	308,521
<b>MSW Disposal</b>	<b>63,449</b>	<b>24,925</b>	<b>181,273</b>	<b>306,918</b>	<b>146,766</b>	<b>22,658</b>	<b>53,371</b>	<b>799,360</b>
1992	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Totals
MSW Managed	230,456	48,380	283,962	1,382,775	558,575	54,000	157,926	2,716,074
Separate Waste	7,577	1,503	8,612	31,661	14,880	1,822	4,591	70,646
Rejects Disposal	4,632	0	0	4,974	46	0	0	9,652
Residuals Disposal	21,322	0	0	72,813	22,588	0	8,355	125,078
Ash Disposal (wet)	26,592	0	0	159,803	46,444	0	17,178	250,017
Processed Disposal	60,123	1,503	8,612	269,251	83,958	1,822	30,124	455,393
Unprocessed Disposal	0	27,717	160,990	16,067	42,781	21,702	15,823	285,080 <sup>2</sup>
<b>MSW Disposal</b>	<b>60,123</b>	<b>29,220</b>	<b>169,602</b>	<b>285,318</b>	<b>126,739</b>	<b>23,524</b>	<b>45,947</b>	<b>740,473</b>

1. Separate Wastes are tonnage estimates of oil, tires, batteries and major appliances that are land disposed.
2. There is at least an additional 4,625 tons of unprocessed MSW disposed of outside the region that is not attributed to a single county.





#### CRITERIA 2 - EFFORTS TO SEEK ALTERNATE PROCESSING CAPACITY

The solid waste produced by the region includes mixed municipal solid waste, special wastes, construction and demolition waste, non-hazardous industrial waste and hazardous waste. With the exception of hazardous wastes, which are managed under separate and specific state and federal programs, the counties are required by state law to plan for the management of all solid waste generated. However, under state law solid waste can be designated (required to go) to resource recovery facilities for processing. Although much of the waste that fit the definition of solid waste may potentially be processible, counties are only required to develop processing capacity for mixed municipal solid waste and are not currently required to manage other solid waste.

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A comprehensive network of facilities is needed to effectively manage the solid waste and recoverable materials generated or disposed of within the region. The Council put in place in the 1985 and 1991 solid waste policy plans a facility development schedule that is designed to assure a management option for 50 percent of MSW and special waste generated by 2000. The other 50 percent of MSW is to be handled by recycling efforts by 2000. In 1985 only one 80-ton-per-day mixed municipal solid waste processing facility was operating in the region. In 1993 the region has five operating resource recovery facilities capable of processing a total of 3,850 tons of MSW per day or approximately 48 percent of the MSW projected in the Council's MSW generation forecast. Since the 1991 solid waste policy plan emphasizes regional cooperation with joint county implementation of programs and facilities, the development schedule does not prescribe specific locations for facilities. The location decisions are most appropriately made by the counties.

Table 2 FACILITY DEVELOPMENT SCHEDULE		
MIXED MUNICIPAL SOLID WASTE COMPOST	DATE	ANNUAL AMOUNT
Scott/Carver Counties	1992	53,850 tons
Undetermined	1995	110,150 tons
RDF REJECT AND RESIDUAL COMPOST		
Accessible to RDF Plants	1995	165,000 tons
INCINERATION		
Dakota County	1993	234,000 tons
LANDFILL		
Undetermined	1994	8,726 acre feet
Undetermined	2000	10,000+ acre feet

Table 2 shows the Council's waste processing facility development schedule. The schedule's two components consist of a list of specific, and in some cases suggested, configurations of facilities and waste processing capacity requirements. The Council's facility development schedule indicates that processing capacity to handle Scott/Carver wastes were to have been developed in 1992. The facility development schedule also shows that waste processing capacity to manage Dakota County MSW should be developed by the end of 1993. It is unlikely that either of these two facilities will be able to meet the Council's development schedule.

Carver and Scott County report that due to recent court decisions that undermined waste designation ordinances, they are independently requesting vendors to provide proposals for privately-owned and operated facilities to manage their unprocessed wastes. Regarding the Scott/Carver processing strategy, executing any type of waste processing agreement will delay implementation of the Council's processing schedule for Scott/Carver Counties until 1995.

Dakota County is currently conducting a re-evaluation of its waste management strategies. They plan to have a decision by the end of 1993 to continue with the development of the permitted mass burn facility or implement other types of waste processing strategies. Implementation of Dakota's decision on a waste management strategy will delay the Council's processing schedule until possibly 1996.

Hennepin, Ramsey and Washington County, while meeting the Council's processing development schedule, continue to landfill unprocessed MSW that enters their waste management systems, although at a lesser rate than previous years. Hennepin County, in 1992, land disposed 15,800 tons of unprocessed MSW from their waste transfer facilities. This represents a 60 percent reduction from the previous year. The Ramsey/Washington Resource Recovery Facility reported landfilling 58,845 tons of excess waste, 10 percent less than what was reported in 1991. While this is an improvement, continued landfilling of unprocessed MSW shows that the region needs to develop an integrated system to locate and transport MSW to regional facilities (and possibly outside the region).

Despite the amounts of unprocessed waste reported as land disposed during 1992 and Council projections for continued growth in the solid waste stream, the additional MSW compost capacity and regional landfill capacity scheduled in 1994/1995 is not being planned. The Council's intent in scheduling development of these facilities were to provide waste processing capacity for materials best managed through composting (food waste and RDF processing residuals and rejects) and landfilling. The Council, through its waste abatement account funds, financed and participated in a solid waste composition study that identified food waste as being 13 percent of the MSW sent to waste processing and disposal facilities. In 1992, there were 125,078 tons of RDF residuals disposed of in regional landfills. Composting these types of waste would accomplish several objectives: it would reduce the amount of



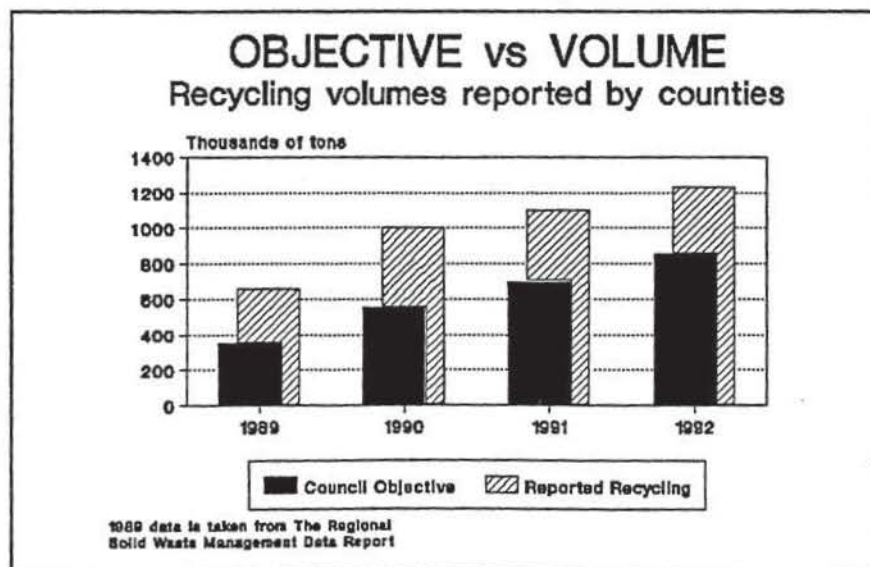
waste entering processing facilities, thus increasing their capacity to accept other regional waste streams; it would reduce the amount of waste sent to disposal facilities, thus extending their capacity and; it would support the legislative mandate to process MSW consistent with the waste management hierarchy.

Certification reports must be comprehensive to evaluate potential system changes. Ideally they should address all wastes that could become subject to the mandated restriction on disposal. Better data is important because distinction between MSW, non-MSW and separated waste streams can change based on the constituents of the waste and the capability of the facilities where waste can be managed. The Council will continue to work with counties on procedures for expediting reporting of unprocessed waste of all types. Counties currently have the authority to expand their designation ordinances, with Council approval, to manage non-MSW materials. County cooperation in gaining and sharing information on non-MSW waste streams reported in conjunction with waste disposal and processing facility licenses is important to provide the oversight anticipated in waste designation and certification authority.

### CRITERIA 3 - COMMITMENT TO REDUCE DISPOSAL BY USING ALTERNATE METHODS

The Council, as stated in its solid waste policy plan, has moved toward a regional waste management system. Specific abatement objectives for solid waste (recycling, processing and land disposal) are most appropriately set for the region rather than for individual counties. The success of the regional waste management system in reducing disposal of unprocessed wastes will be determined by the metro counties' progress in implementing the Council's goals and policies which emphasize waste reduction; increasing recycling volumes through regional cooperation (collection, processing and marketing); processing of MSW and non-MSW materials (composting, RDF production and mass burn); secondary processing of RDF rejects and residuals; development, through governance or other tools, of an integrated, cost effective and environmentally sound regional approach to solid waste management; and adherence to the principles of the waste management hierarchy to process materials at their highest levels (food waste being composted rather than incinerated for example).

The Council's regional recycling objective for 1992 was 853,500 tons or 30 percent of the MSW the Council had forecast would be generated. The counties reported that residents and businesses recycled 1,232,200 tons of materials in 1992. In 1991 the counties reported that region recycled 1,098,167 tons of materials. This represents a 12 percent increase over the previous year or an additional 134,000 tons of recycled waste materials. Due to waste stream growth, materials recovery will have to increase to approximately 1,617,000 tons to meet the goal for 2000.



The Council's policy plan suggests that continued expansion of source separation initiatives is not likely to succeed in reaching the 50 percent recovery goal for 2000. Although current reports of recycling is much higher than expected, new regional commitments and cooperation will be necessary to change the system in order to increase material recovery (recycling) accomplishments. Several collection techniques, such as commingled recycling, weight-based fees, co-collection of materials (recycling and waste discards collected in the same vehicle) and regional organized collection service, should be analyzed and, if feasible, implemented on a regional level. Commingled recycling would simplify recyclable separation for generators, streamline the transportation of recyclables from the curbside and allow trained personnel and modern equipment to respond to the dynamics of market requirements. Weight-based fees for collection of the remaining garbage would provide economic incentive to separate more of the waste stream for recycling. Recycling programs throughout the region should be moving toward collecting, processing and marketing the same materials no matter where residents live or work. Currently, many municipalities place restrictions on what materials can be collected for recycling. This is mainly due to the type of contract that was negotiated by the city for MSW and recycling collection. The numerous restrictions that are placed upon certain materials collected for recycling are not based upon if the material can be marketed, but whether the city's budget for collection can accommodate that material type in its negotiated package with the hauler(s) assigned to collect its waste. Regional cooperation and integration of waste services, including the collection and marketing of recyclables, are necessary in order to develop an efficient and cost-effective waste management system to meet recycling objectives for the year 2000.

The achievement of Council recycling objectives may be misleading if metro counties continue to report increases in recyclable volumes without systematic reality checks. Presently no mechanism or analysis exist that provides feedback on the amount or magnitude of regional materials sent to recycling markets. In lieu of such feedback, counties continue to report that volumes of recyclable materials, specifically commercial and industrial wastes, have substantially increased over the previous year without any type of verification. A study may be needed to ascertain the amount of recycled materials that are marketed regionally and statewide. This information is also necessary in order to plan for adequate regional processing and disposal capacity if recycling markets are not able to manage those materials.

In addition to recycling, waste processing through mass burn and RDF production is instrumental in abating unprocessed wastes from landfills. The region's network of processing facilities received 1.24 million tons of waste. This represents 46 percent of the MSW the counties reportedly managed in 1992.

Counties with waste designation authority have relied primarily on contracts to direct waste flows between facilities with capacity to receive "acceptable" waste. Consequently, MSW that is not acceptable to regional facilities, possibly due to its size or inherent characteristics, is land disposed. Certification reports in 1992 from counties with designation ordinances fail to provide enough information to determine the actual volume of this type of unprocessed waste disposal. In fact, counties with designation ordinances assert that no unprocessed MSW generated in these counties was landfilled. This assertion is a misnomer. In reality, counties with designation ordinances fail to provide, or may not be able to fully document, the amount of "unacceptable" MSW that is land disposed. Further efforts by Anoka, Hennepin, Ramsey and Washington Counties to monitor this type of waste are warranted for an effective, integrated waste management system. As plant modifications occur at regional processing facilities in order to accept different waste streams, knowledge of the characteristics and amounts of "unacceptable" MSW materials are needed. Also, monitoring need to address all solid waste to verify whether land disposed wastes are MSW and subject or potentially subject to certification or designation.

Carver, Dakota and Scott share a responsibility to plan and implement additional waste processing strategies through public and/or private initiative. These waste processing strategies should complement and integrate with existing facilities to more flexibly adapt to changing waste management needs. This further illustrates the need for metro counties to plan for and work within an integrated regional authority that can monitor and adjust accordingly to the market forces that affects the waste management industry.

Dakota County indicates that a waste processing strategy will be in place by the end of 1993. Any strategy that Dakota chooses to implement will also further delay the availability of waste processing capacity planned by the Council in its projections. This will further permit significant amounts of waste to be landfilled and thus reduce regional landfill capacity. While improvement has been made in Carver and Scott County to abate MSW disposal through source reduction and recycling, neither county has initiated the Council's scheduled processing capacity. As with Dakota County, any processing strategy that Scott and Carver County selects will delay implementing Council policy as it relates to abatement of MSW and effective waste management.

#### CRITERIA 4 - COMMITMENT TO ACHIEVE THE COUNCIL'S LANDFILL LIMITS

The Council's primary focus of solid waste management is the abatement of waste disposed in landfills. The amount of regional waste that is disposed of in landfills is the key indicator of how well the counties are progressing toward implementing the Council's goals and policies. The solid waste policy plan includes regional maximum limits for MSW land disposal as listed in table 3. Disposal limits do not include ash; demolition/construction; or industrial wastes tonnages.

Table 3  
Metropolitan Area Solid Waste Disposal Limits

<u>Year</u>	<u>Disposal Amount (in tons)</u>
1990	1,437,000
1991	1,270,800
1992	1,104,600
1993	938,400
1994	772,200
1995	606,000

Table 4 states the amount of waste generated and disposed of in landfills in and near the Metro Area during 1992 was 548,800 tons. This data was gathered from county certification reports, MPCA, Department of Revenue, regional processing facilities and landfill operators from outside the Metro Area. This volume is a little more than half of the Council's 1992 disposal limit, but it does not give a complete picture of disposal because waste continues to be exported, and the surcharge payments do not accurately reflect the actual weight records.

Evidence has shown that waste generated in the Metropolitan Area is not always managed and/or disposed of within the region. Until regional processing facilities were developed, waste traditionally was disposed of at landfills that presented the least cost to the hauler. Facility development, statutes restricting disposal of unprocessed MSW and waste designation ordinances have prevented a majority of haulers from continuing to dispose of unprocessed waste at landfills with the lowest cost. A significant number of haulers continue to dispose of unprocessed waste in landfills located in and near the region which do not report to the metro counties. Currently, haulers that collect waste in Carver, Dakota and Scott Counties may take waste to regional processing facilities, disposal facilities that meet MPCA guidelines, or landfills located outside the state. A Dakota County hauler in 1992 disposed of over 16,000 tons of MSW in a landfill located in Dickinson County, Iowa. Other haulers, including those licensed in counties employing waste designation ordinances, are taking waste to disposal facilities located in Wisconsin and the Dakotas. In the near future, the number of haulers landfilling unprocessed metro waste in the surrounding states may increase due to recent court decisions on waste designation ordinances. This further emphasizes how important it is that the Metropolitan Area be able to monitor and document solid waste trends and issues in order to develop strategies that are flexible to adapt to the legislative and market decisions that affect us today and in the future.



**Table 4**  
**Metro Waste Disposal Comparisons - 1991, 1992**

Metropolitan Area	1991		1992	
	Dept. of Revenue <sub>1</sub>	MPCA Report <sub>2</sub>	Dept. of Revenue	MPCA Report
Anoka	46,598	102,089	88,012	64,297
Burnsville	96,781	103,986	108,607	117,755
Pine Bend	291,217	315,745	149,777	176,393
Woodlake	49,433	50,597	141,010	140,935
<b>Sub-total</b>	<b>484,029</b>	<b>572,417</b>	<b>487,406</b>	<b>499,380</b>
Greater Minnesota	Metro Unprocessed Disposal <sub>3</sub>	Metro Processed Disposal	Metro Unprocessed Disposal	Metro Processed Disposal
Elk River	26,411	37,562	14,000	28,055
McLeod	27,919	21,489	1,440	251
Ponderosa	16,430	0	0	0
Rice	8,452	0	0	0
Tellijohn	12,285	0	0	924
Yonak	34,113	506	0	0
<b>Sub-total</b>	<b>125,610</b>	<b>59,557</b>	<b>15,440</b>	<b>29,230</b>
Out-of-State	Metro Unprocessed Disposal	Metro Processed Disposal	Metro Unprocessed Disposal	Metro Processed Disposal
Dickinson Co. Ia.	n/a	0	16,704	0
Winneshiek Co. Ia.	n/a	0	n/a	0
<b>Sub-total</b>	<b>0</b>	<b>0</b>	<b>16,704</b>	<b>0</b>
<b>Total<sub>4</sub></b>	<b>669,196</b>		<b>548,780</b>	

1. Dept. of Revenue figures are based on a \$2/c.y. fee that regional MSW landfills pay for waste disposed.  
2. Tonnage data, including material conversion factors, on regional and out-state landfills are from the MPCA. County records are used to gather data on processing residuals disposed of outside the Metro Area.  
3. Estimates of unprocessed waste disposed outside the region for 1991 & 1992 were gathered using surveys.  
4. Dept. of Revenue figures were used to calculate the total waste disposed.

**FINDINGS OF FACT AND CONCLUSIONS**

1. Specific findings relating to each county report are as follows:

a. Anoka County should certify waste as unprocessable that goes to landfills from private transfer stations. It should report estimates or other information on waste that was denied access to the processing facility. The county should also provide estimates of the amounts of MSW not processed at the facility and disposed of on-site or at landfills in and near the region. The County should provide generation and management information on county-generated non-MSW, demolition and non-hazardous

industrial waste.

b. Carver County should complete the entire waste certification form that was sent by the Council. It should report the volumes and destinations of all its waste streams, including non-MSW, demolition and non-hazardous industrial wastes.

c. Hennepin County should certify county-generated waste that goes to landfills from private transfer stations as unprocessable. The County should report the estimated amounts of their non-MSW, non-hazardous industrial and demolition wastes disposed of in landfills in and outside the region. Hennepin County should also report estimated amounts of waste that was granted "departmental exception" from facility processing. The county needs to report estimates and the final destination of waste that was not processed (escaped county waste designation authority) but was disposed of in landfills located in and near the region. This estimate must also include waste that was disposed of on-site.

d. Ramsey and Washington Counties should report supplemental information on non-MSW, demolition, non-hazardous industrial and incinerator ash disposal from the county. Ramsey and Washington Counties should report the landfill destination of materials disposed of by the NSP-Newport processing facility. The Counties should also report the estimated amounts and the destination of waste that were granted an exemption from being processed at the facility. The county needs to report estimates and the final destination of waste that was not processed (escaped county waste designation authority) but was disposed of in landfills located in and near the region. This estimate must also include waste that was disposed of on-site.

e. Scott County should report on supplemental information on non-MSW, demolition and industrial wastes disposal from the county.

2. The region appears to have reduced the amount of waste disposed of compared to the previous reporting periods. Dramatic increases in recycling have contributed greatly to this reduction in disposal. However, no estimates or information was provided by the counties in their reports on the amount and destinations of waste that by-passed the network of facilities that exist in the region. In fact, Anoka, Hennepin, Ramsey and Washington Counties admit that only certain "acceptable" MSW materials are processed at their facilities. Thus, any MSW that is deemed "not acceptable" is disposed of as unprocessed waste.

3. The Council's facility development schedule indicates that waste processing capacity to manage Scott and Carver Counties MSW should have been developed in 1992. The facility development schedule also shows that processing capacity to handle Dakota's MSW should be developed by the end of 1993. If Carver and Scott County develop any type of waste processing agreement, it shall delay implementation of the Council's processing schedule until at least 1995. Dakota County is currently conducting a reevaluation of its waste management strategies. They plan to have a decision to continue with the development of the permitted mass burn facility or implement other types of waste processing strategies. Dakota asserts that a decision regarding implementation of a waste management strategy will be reached by the end of 1993. Implementation of Dakota's decision on a waste management strategy will however delay the Council's processing schedule until possibly 1996. Even though Anoka, Hennepin, Ramsey and Washington County are meeting the Council's processing development schedule, they continue to landfill (to a lesser degree than previous reports) unprocessed and processed MSW that enters their waste management systems. In addition, it is important to note that no regional composting initiative is being pursued. This further delays the Council's processing development schedule for management of RDF residuals and food waste.

4. Although reported land disposal volumes are well within specified limits, continued attention is warranted. Reports should document the volume of waste not sent to processing facilities prior to disposal. Wastes that could be disposed as MSW in the future should also be reported. The counties



should establish operational monitoring measures to identify the actual volumes of land disposal and assure that waste is not land disposed if processing capacity is reasonably available. This further illuminate the fact that there does not exist an regional authority capable of monitoring, developing and/or implementing strategies to manage in an integrated manner, the region's diverse waste stream and waste processing byproducts. The Council should continue to negotiate with the counties to implement specific techniques to reduce unprocessed waste. Waste streams in counties with few or no processing facilities operating or under development are the most immediate concern. As the basic system components are completed, the focus should increasingly shift to facility reject and residual management and other materials that could affect MSW land disposal.

### **RECOMMENDATIONS**

That the Metropolitan Council:

1. Adopt this staff report including the findings of fact and conclusions.
2. Approve the waste certification reports of Anoka, Dakota, Hennepin, Ramsey, and Washington counties.
3. Disapprove the report of Carver and Scott counties.
4. Advise each county that they are expected to report the information indicated in finding # 1 of the Findings Of Fact And Conclusions. Each county must document, in its solid waste management master plan and future certification reports, specific programs designed to achieve the 50 percent materials recovery goal for 2000. Carver, Dakota and Scott counties will have to continue demonstrating progress on implementation of scheduled resource recovery facilities and promote the full utilization of available processing facilities in the interim or initiate appropriate contingency plans.



## **APPENDIX B**

### **RECYCLING TONNAGES BY CITY AND TOWNSHIP**

-- 1992 --



**METROPOLITAN MSW RECYCLING TOTALS - 1992**

<b>ANOKA COUNTY</b>	<b>MSW Recycled (Tons)</b>
Andover	1,072
Anoka	1,808
Bethel	22
Blaine	2,753
Burns Twp.	131
Centerville	213
Circle Pines	563
Columbia Hts.	2,220
Columbus Twp.	141
Coon Rapids	3,204
East Betel	643
Fridley	2,587
Ham Lake	595
Hilltop	59
Lexington	112
Lino Lakes	627
Linwood Twp.	202
Oak Grove	332
Ramsey	1,012
St. Francis	147
<u>Spring Lake</u>	<u>610</u>
Subtotal	19,052
<u>Unassigned</u>	<u>76,022</u>
<b>Total Recycling</b>	<b>95,374</b>
<b>ANOKA COUNTY TOTALS</b>	
RESIDENTIAL RECYCLING	41,996
DOCUMENTED C/I/I RECYCLING	1,535
NON-DOCUMENTED C/I/I RECYCLING	46,225
MECHANICAL AND HAND SEPARATED	5,618
<b>TOTAL RECYCLING</b>	<b>95,374</b>





**METROPOLITAN MSW RECYCLING TOTALS - 1992**

<b>DAKOTA COUNTY</b>	<b>MSW Recycled (Tons)</b>
Apple Valley	3,978
Burnsville	5,412
Eagan	5,433
Farmington	907
Hastings	1,604
Inver Grove Hts.	1,883
Lakeville	2,759
Lilydale	79
Mendota	30
Mendota Hts.	1,442
Rosemount	1,116
South St. Paul	2,355
Sunfish Lake	60
West St. Paul	2,243
<u>Rural SW Commission</u>	<u>1,016</u>
Subtotal	30,316
<u>Unassigned</u>	<u>84,044</u>
<b>Total Recycling</b>	<b>114,360</b>
<b>DAKOTA COUNTY TOTALS</b>	
RESIDENTIAL RECYCLING	54,702
DOCUMENTED C/M RECYCLING	5,417
NON-DOCUMENTED C/M RECYCLING	54,241
MECHANICAL AND HAND SEPARATED	0
<b>TOTAL RECYCLING</b>	<b>114,360</b>



**METROPOLITAN MSW RECYCLING TOTALS - 1992**

Wayzata	913
Woodland	59
Hennepin Recycling Group	11,794
Brooklyn Center	
Crystal	
New Hope	
W. Henn. Recycling:	1,976
Greenfield	
Independence	
Long Lake	
Loretto	
Maple Plain	
Medina	
<u>Orono</u>	
Subtotal	154,638
<u>Unassigned</u>	<u>504,290</u>
<b>Total Recycling</b>	<b>658,927</b>

**HENNEPIN COUNTY TOTALS**

RESIDENTIAL RECYCLING	241,046
DOCUMENTED C/I/I RECYCLING	150,551
NON-DOCUMENTED C/I/I RECYCLING	244,796
MECHANICAL HAND SEPARATED	22,534
<b>TOTAL RECYCLING</b>	<b>658,927</b>





**METROPOLITAN MSW RECYCLING TOTALS - 1992**

<b>SCOTT COUNTY</b>	<b>MSW Recycled (Tons)</b>
Belle Plaine	N/A
Belle Plaine Twp.	N/A
Blakeley Twp.	N/A
Cedar Lake Twp.	N/A
Credit River Twp.	N/A
Elko	N/A
Helena Twp.	N/A
Jackson Twp.	N/A
Jordan	N/A
Louisville Twp.	N/A
New Market	N/A
New Market Twp.	N/A
New Prague (Pt)	N/A
Prior Lake	N/A
St. Lawrence Twp.	N/A
Sand Creek Twp.	N/A
Savage	N/A
Shakopee	N/A
<u>Spring Lake Twp.</u>	<u>N/A</u>
Subtotal	9,374
<u>Unassigned</u>	<u>21,103</u>
<b>Total Recycling</b>	<b>30,477</b>
<b>SCOTT COUNTY TOTALS</b>	
RESIDENTIAL RECYCLING	9,374
DOCUMENTED C/I/I RECYCLING	5,483
NON-DOCUMENTED C/I/I RECYCLING	15,620
MECHANICAL AND HAND SEPARATED	0
<b>TOTAL RECYCLING</b>	<b>30,477</b>



**METROPOLITAN MSW RECYCLING TOTALS - 1992**

Willernie	35
<u>Woodbury</u>	<u>2,196</u>
Subtotal	14,476
<u>Unassigned</u>	<u>35,494</u>
<b>Total Recycling</b>	<b>49,971</b>

**WASHINGTON COUNTY TOTALS**

RESIDENTIAL RECYCLING	25,554
DOCUMENTED C/I/I RECYCLING	484
NON-DOCUMENTED C/I/I RECYCLING	21,070
MECHANICAL AND HAND SEPARATED	2,863
<b>TOTAL RECYCLING</b>	<b>49,971</b>

**1992 CALENDAR YEAR TOTALS FOR METRO AREA**

RESIDENTIAL RECYCLING	491,281
DOCUMENTED C/I/I RECYCLING	180,562
NON-DOCUMENTED C/I/I RECYCLING	521,212
MECHANICAL AND HAND SEPARATED	39,188
<b>TOTAL RECYCLING</b>	<b>1,232,243</b>