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STUDY OF ORGANIZED REFUSE COLLECTION
in the
Twin Cities Metropolitan Area

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A special thanks to the Organized Collection Task Force.

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ABOUT THIS STUDY

This study fulfills the legislative requirement that the Metropolitan Council prepare a study on the need for a system to implement organized collection of residential, commercial and industrial refuse in the region. Organized collection, as defined by the Council in its Solid Waste Management Development Guide/Policy Plan, means a solid waste collection system wherein overlap of collection service areas and types of collection services is prevented or controlled. The organizing body may be public or private and may exert its control by directly providing the collection service or contracting for collection services. This definition of organized collection covers all of the potential methods available for organizing collection services.

The Council established a task force to help it prepare the organized collection study. The task force met over a period of two months reviewing the collected data and preliminary draft of the study. Task force members were selected to assure that county, municipal and business concerns were addressed in the study.

The data used in the study were obtained from a number of sources including municipal ordinances and licenses, refuse collection companies operating in the region and national, county and other reports and studies. Some of the data, particularly price information, will become dated quickly given the nature of the market and industry.

The study has five sections. The first section identifies the questions the study will ask in its attempt to determine whether a system is needed to implement organized collection in the region. The second section describes how refuse collection services are currently delivered in the region. The third section evaluates the need for organized collection. The fourth section identifies the liabilities and disadvantages of organized collection. The final section provides the reader with the study's findings and conclusions. The appendix contains a listing of all known refuse collection companies operating in the region.

INTRODUCTION

In 1984, the state legislature amended the Waste Management Act (WMA) to require the Metropolitan Council to conduct a study on the way refuse is collected in the Metropolitan Area. Specifically, the Council is to "study the need for a system to implement organized collection of residential, commercial and industrial solid waste in the Metropolitan Area."

Organized collection refers to the manner in which refuse is collected from the waste generator. Organized collection means a solid waste collection system wherein overlap of collection service areas and types of collection services is prevented or controlled. The organizing body may be public or private, and may exert its control by directly providing the collection service or contracting for collection services. Organized collection does not mean that refuse collection is mandatory or that the county or city will direct where the waste will be delivered or that a public agency will necessarily perform the collection service.

The different methods to organize refuse collection are contract, franchise, municipal or other private arrangement. The contract method is where a municipality contracts with one service provider to collect refuse in a specific area and the city pays the contractor for the service. The franchise method is where the city permits one service provider to collect refuse in a specific area and establishes the price but the service provider retains responsibility for collection of the service fee. Municipal collection is where the city provides the service with public employees. Private arrangements include neighborhood groups contracting with a refuse collector for the service or several refuse collectors forming a new company in order to organize their collection routes.

Currently few areas or municipalities in the region have organized collection of residential solid waste. Fewer still have organized collection of commercial and industrial wastes. As a rule, most waste generators arrange directly with a waste hauler for refuse collection services. Questions have been raised about this type of arrangement for refuse collection and whether improvements can be made to the collection system with implementation of organized collection.

To determine the need for a system to implement organized collection in the Metropolitan Area, this study will ask four questions. First, can organized collection improve productivity and reduce collection costs? This study will evaluate the costs of refuse collection under several different market arrangements. And if there are cost savings to the household or business with an organized collection system, the study will attempt to identify where those cost savings are achieved.

Second, can organized collection reduce environmental impacts in the neighborhood and improve public safety? This study will evaluate to what extent organized collection reduces air pollution, fuel consumption, wear and tear on city streets and county and state roads, litter complaints, rodent harborages and vehicle accidents involving refuse collection trucks.

Third, can organized collection facilitate implementation of the Council's Solid Waste Management Development Guide/Policy Plan? This study will explore what organized collection can do to reach the objectives for abatement programs and obtain information about waste generation reduction or recovery.

Fourth, can organized collection integrate or enhance existing county and local authorities for waste management? The study will evaluate whether organized collection can replace or complement waste designation. Waste designation is the same as flow control.

These issues will be discussed to better understand what organized collection can and cannot do for improving waste management in the region. They will also help to determine whether there is a need for a systematic process to organize refuse collection services in the region. The report will begin with an evaluation of the existing collection system. This evaluation will serve as the basis for comparison with organized collection systems and with the findings of other national and local studies that have evaluated refuse collection systems and costs. The study will also discuss the liabilities and disadvantages associated with organized collection.

The final chapter contains the conclusions regarding organized collection of refuse. The appendix contains a comprehensive list of the refuse collection companies licensed by municipalities in the region.

DESCRIPTION OF THE EXISTING COLLECTION SYSTEM

INTRODUCTION

The refuse collection industry in the Twin Cities Metropolitan Area is quite unlike the industry as it exists in most other major metropolitan areas. Most metropolitan areas have fewer, generally larger refuse collection firms servicing the region, or rely extensively upon municipal collection.

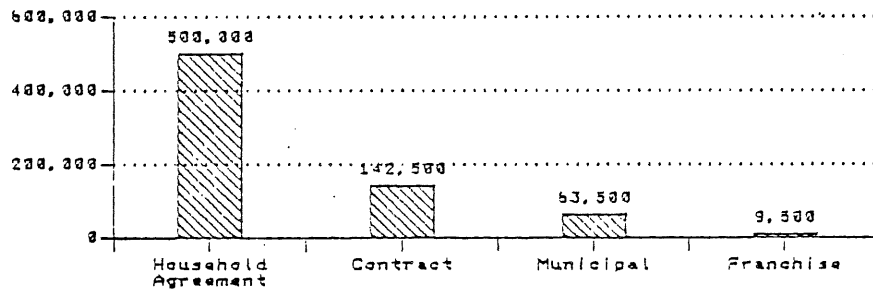
In regards to residential refuse collection, the Metropolitan Area uses three different methods or structures for ensuring refuse is collected. The predominant method that is used is where each household by itself arranges for refuse collection services. The household verbal arrangement system serves approximately 500,000 households, or 69 percent of the region (see Figures 1 and 2). The role of the municipality is limited and typically requires a household to remove wastes at least once a week from the property. Some municipalities have mandatory collection which means that the household must hire a collection firm to provide the service. Enforcement occurs on an as needed basis.

FIGURE 1

Figure 1

MARKET STRUCTURE OF REFUSE COLLECTION: RESIDENTIAL SERVICE

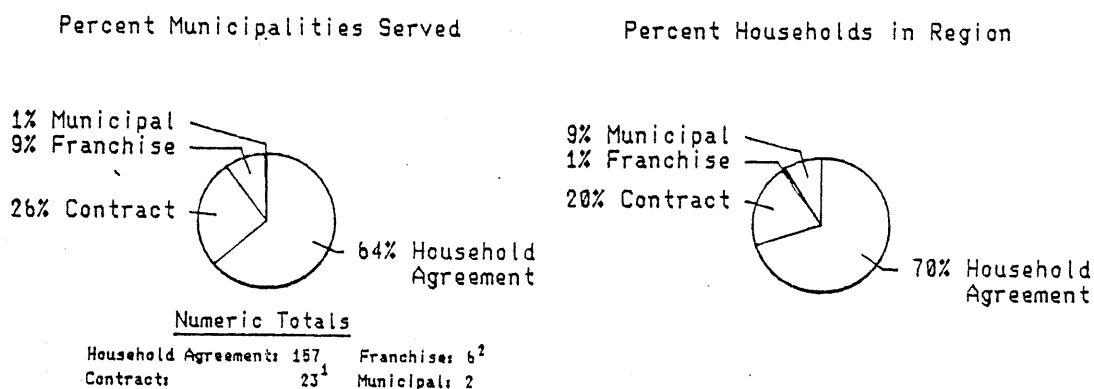
Number of Households Served
total households in region: 721,500¹



¹ April 1, 1984 Provisional Household Estimates. Metropolitan Council of the Twin Cities Area

FIGURE 2

MARKET STRUCTURE OF REFUSE COLLECTION: RESIDENTIAL SERVICE



¹ Two municipalities contract for commercial refuse collection.

² Four municipalities franchise for commercial refuse collection.

The second largest method for provision of refuse collection services is where a city contracts or franchises with one company for collection services. There are 23 cities that contract for refuse collection services with a private firm and six cities that franchise or license one collector. The only difference between contract and franchise collection is the method of billing for the services. Under a contract the city is responsible for billing whereas the waste hauler is responsible for billing under the franchise arrangement. Of the municipalities that have contracts, 21 are competitively bid and two are negotiated. Of the cities with franchises, one is competitively bid, and five are negotiated. Cities that have contract collection serve about 145,000 or 20 percent of all the households in the region. Cities with franchises serve about 9,000 or one percent of the households.

The method which serves the least number of households, 62,000 or nine percent of the region's households, is for the city to provide for refuse collection services itself. Only two municipalities in the region currently provide for municipal collection of refuse, the cities of Minneapolis and Farmington. Minneapolis provides collection services to half of the city or about 62,000 households and Farmington provides collection services to about 1,500 households.

In regards to commercial and industrial refuse collection, waste generators typically arrange for collection service on their own with a waste hauler. Four of the municipalities that have franchise arrangements for residential collection also franchise for commercial refuse collection. Two municipalities that have contracts for collection also provide for commercial refuse collection in the contract. All of these municipalities are relatively small, consequently, the commercial refuse collection system is less organized than residential collection.

Less is known about the manner in which industrial wastes are collected than for residential and commercial collection. Because no city provides for industrial collection, it appears that industrial waste generators rely completely on arrangements between themselves and waste haulers for refuse collection.

REGULATORY REQUIREMENTS

Most cities license refuse collectors operating within their jurisdiction; however, towns are less likely to license collectors. The purpose of licensing is to ensure that collectors operating within the city are reputable business operators and carry the appropriate personal injury, accident and property damage insurance. Based upon information received from municipalities, Table 1 highlights the number of refuse collection companies that operate within a given municipality and their license fees and insurance requirements. Where information was available, the table indicates the number of collection firms collecting from the residential and commercial sectors.

Refuse collection companies must comply with other transportation regulations. Generally, these focus upon the vehicles operated by the company and include requirements on the size, weight and safe operations. By far most waste haulers complain about the weight restrictions in the springtime. They are often subject to fines because it is frequently impossible to operate a packer and comply with the weight restrictions. Transfer stations would reduce total vehicle mileage and may permit collectors to use smaller trucks and remain competitive. Currently, many haulers use very large packer trucks because they are more efficient if they must travel a great distance to the landfill.

PROFILE OF THE REFUSE COLLECTION INDUSTRY

In the Twin Cities the industry can be characterized as very decentralized, with concentration of companies at the small end of the spectrum. Information obtained from listings of municipal licenses indicates there are at least 225 refuse collection firms in the region. A listing of all known refuse collection companies operating in the region is included in the appendix. Most of these collectors have less than four refuse collection vehicles. Figures 3 and 4 provide a breakdown of company size by number of collection vehicles. Although the breakdown is imperfect because the Council was not able to obtain information from all of the collection companies, it provides a good perspective of the make up of the industry. Several firms are very large and can be characterized by the considerable investment of capital in equipment such as packer trucks, debris boxes, roll-offs or other containers.

The data shows that companies with more than 40 trucks make up two percent of the total number of firms in the refuse collection business. Though the international firms collect residential, commercial and industrial wastes, other large local firms compete with these companies for collection of waste from the commercial and industrial sectors.

Table 1
SELECTED MUNICIPAL AND TOWNSHIP LICENSING REQUIREMENTS FOR REFUSE COLLECTORS¹

Municipality	No. of Haulers Licensed			Licensing Fees		Proposed Rates	Equipment List	Disposal Location	Manner of Disposal	Collection Schedule	Auto Insurance (\$ x 1000)			Performance Bond
	R	C	Total	Base	Per Truck						Personal	Accident	Property	
Afton			1	25										
Apple Valley	6	3	9	30	20		X	X	X	X	100	30		
Arden Hills			8	50		X	X	X	X					
Birchwood			1	6										
Bloomington				28	12	X	X			X	100	300	50	1000
Brooklyn Center	8	14	22	25	15		X				100	300	50	
Brooklyn Park	11	11	22			X	X	X	X	X	100	300	25	
Carver														
Chanassen			8	25	15	X	X	X	X	X	100	300	25	1000
Chaska					50		X	X	X	X	50	100	25	
Circle Pines			2		25		X				100	300		
Cologne														
Coon Rapids				25	15		X	X	X		50	100	10	3000
Cottage Grove	5	2	7	54			X	X	X		100	300	100	
Crystal			22	27.50	16.50		X	X	X	X	100	300	50	
Champlin		10	14			X	X							
Eagan														
East Bethel			7	25							100	300		1000
Eden Prairie	9	2	11	30	15	X	X	X	X	X	100	300	25	
Edina	5	9	14	50	30	X	X	X	X	X	100	300	50	
Falcon Heights			12	25	15		X			X	50	100	25	1000
Forest Lake			2	25		X	X	X	X	X	100	300	50	2000
Fridley	8		17	60	15	X	X	X	X	X	100	300	50	
Golden Valley			20			X	X	X	X	X	100	300	50	
Hastings			1	10			X	X	X	X	100	300		
Hilltop														
Hugo														
Inver Grove Hgts.			16	25	3		X	X	X		100	300		
Lake Elmo			5	25						X	100	300		1000
Lakeland			2	25							100	300		3000
Lakeville			9	35			X	X	X	X	100	300	25	
Lauderdale			8	65	25		X	X	X	X	100	300	25	1000
Lexington			7	50			X	X	X	X	100	300	50	3000
Lino Lakes														
Little Canada			4	25			X	X	X	X	100	300		3000
Maple Grove			24			X	X	X	X	X	100	300		
Maplewood				60			X	X	X	X	100	300	50	3000
Mendota Heights			10	25	15						100	300		
Minnetonka	12	12	24	33	16	X	X	X	X	X	100	300	50	1000
Minnetrista			3	30	5	X	X	X	X	X	100	300		

Table 1 (cont.)
 SELECTED MUNICIPAL AND TOWNSHIP LICENSING REQUIREMENTS FOR REFUSE COLLECTORS¹

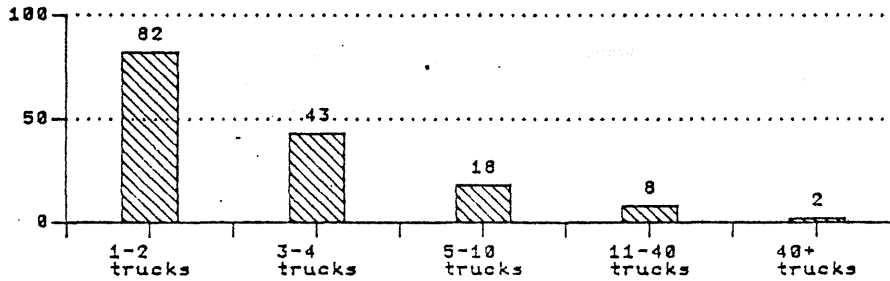
Municipality	No. of Haulers Licensed			Licensing Fees			Proposed Rates	Equipment List	Disposal Location	Manner of Disposal	Collection Schedule	Auto Insurance (\$ x 1000)			Performance Bond
	R	C	Total	Base	Per Truck	Personal						Accident	Property		
Mound			5	100			X	X	X	X	X	100	300	25	1000
Mounds View			5	50				X	X	X	X	250	500	50	1000
New Brighton			13	25				X	X	X	X	100	300		
New Hope			7	32	12.50		X	X				250	500	100	
Newport			8		25							100	300		
North St. Paul			10	50				X	X	X	X	100	300	100	3000
Oakdale			12	50				X	X	X	X	100	300	50	1000
Orono			6	30			X	X	X	X	X	100	300	50	1000
Plymouth	12	5	17	50	15			X	X	X	X	100	300		1000
Prior Lake															
Ramsey			4	25	15			X				100	300	50	
Richfield			15	118	29		X	X	X	X	X	100	300	25	1000
Rockford			7												
Rogers															
Rosemount				25				X	X	X	X	100	300		
Roseville			34	100				X	X	X	X	50		10	
St. Anthony			4	100				X	X	X	X	100	300		
St. Francis			3		50			X	X	X	X	100	300	50	
St. Paul			72	118.50			X	X				100	300	50	
St. Paul Park			5	25								100	300	50	
Savage			8	100	25		X	X	X	X	X	100	300		
Shoreview			11	50			X	X	X	X	X	100	300		
South St. Paul			14	50	5			X	X	X	X	25	50	5	100
Spring Lake Park			6	25	10							100	300		
Spring Park			5	25	10		X	X			X	100	300	25	1000
Vadnais Heights			10		40			X	X	X		100		25	3000
Victoria															
Waconia			2	100								100	300	50	
Watertown															
West St. Paul	12	13	25		50		X	X				100	300	50	
Woodbury			14	12			X	X	X	X	X	50	300	50	

1. Includes only those items specifically stated in licensing documents for residential, commercial and industrial haulers. (Please note that information on some communities has not yet been received.)

2. R includes firms servicing both residential and commercial collections.

FIGURE 3

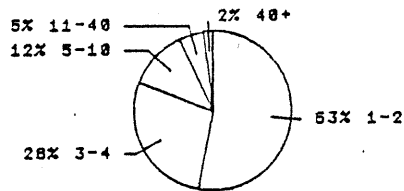
SIZE OF METROPOLITAN RESIDENTIAL, COMMERCIAL AND INDUSTRIAL
REFUSE COLLECTION COMPANIES¹
BY NUMBER OF COLLECTION VEHICLES



¹ 154 responses out of 195 haulers contacted. (total number of regional haulers is approximately 215.) Please note that various different collection vehicles are used with a wide range of capacities. Also many of the smaller firms work on a part time basis.

FIGURE 4

PERCENT METROPOLITAN RESIDENTIAL, COMMERCIAL AND INDUSTRIAL
REFUSE COLLECTION COMPANIES¹
BY NUMBER OF COLLECTION VEHICLES



¹ 154 responses out of 195 haulers contacted. (total number of regional haulers is approximately 215.) Please note that various different collection vehicles are used with a wide range of capacities. Also many of the smaller firms work on a part time basis.

It should be noted that in recent years there has been an increase in the number of local companies that have been acquired by the international companies, especially those local firms that have a significant percentage of their business collecting commercial wastes.

About 79 percent of the companies have four trucks or less and their business appears to be concentrated in the residential collection business. However, many of these firms do collect from commercial waste generators. The small firms appear to compete effectively in this market only if the commercial stops are near their other accounts and are not significant waste generators. Specialized equipment is needed to handle wastes from large commercial waste generators.

SERVICE LEVELS AND GEOGRAPHIC AREAS

There does not appear to be any difference in the type or levels of services offered by most of the refuse collection firms under either of the three methods for the provision of collection services. In general, residential refuse collection occurs once a week. For commercial and industrial waste generators, refuse is picked up on a more frequent schedule or as needed.

The collection of large, bulky items such as white goods, furniture, etc. will vary depending upon the market structure. For example, in Minneapolis the contract specifies that everything a homeowner puts out for pick up will be collected, even large, bulky items. Usually, under the household arrangement, households are limited to two or three 30-gallon cans. Bulky items cost extra, although leaves and other yard wastes are usually collected provided it is properly packaged for collection. Many cities with contracts generally provide for spring and fall clean up days to manage leaves, brush and bulky items.

Some cities may require special types of pickup services for senior citizens. These arrangements are often specified in the contract where a municipality contracts for the collection services. It is not unheard of that collectors operating under the household agreement market arrangement will provide cost differentials to senior citizens.

A significant percentage of large household goods are handled through other collection service providers such as Goodwill, Salvation Army or American Council for the Blind. In essence these organizations provide for recycling and capture of significant quantities of white goods, textiles, furniture, shoes and a myriad of household items.

A number of the smaller refuse collectors focus upon particular waste streams. It is difficult to quantify but it appears that some haulers work on a part-time basis and collect, possibly salvage, and dispose of demolition wastes, construction materials and other items. In our conversations with the collectors, the Council found that some collectors who handle residential wastes are part-time too. These collectors work primarily in the evenings or Saturdays in addition to their regular job. A small number of collectors are primarily in other business such

as landscaping, and collect refuse on the side. It is difficult to quantify the percentage of collectors who operate in the refuse collection business on a part-time basis.

Most collection companies operating under the household contract arrangement try to keep their business within a certain geographic area, for example the Midway area of St. Paul, or North St. Paul, Maplewood and parts of Roseville. It is to a collectors advantage to keep travel time at a minimum for efficiency. In some cases there may be five to 10 companies operating in a particular neighborhood. As can be seen in Table 1, some municipalities have up to 12 different companies operating in the city collecting residential refuse. A similar situation exists for collection of commercial wastes.

Most haulers under any of the service arrangements provide good service to their customers or at least satisfy the expectations of their customers for refuse removal (out of sight, out of mind). Local surveys indicate that most people are satisfied with refuse collection services. So do national studies which show that everyone is satisfied with refuse collection a tribute to the industry.

EVALUATION OF NEED FOR ORGANIZED COLLECTION

CAN ORGANIZED COLLECTION IMPROVE PRODUCTIVITY AND REDUCE COLLECTION COSTS?

Collectors use a variety of ways to establish a price for waste disposal. The costs of refuse collection and disposal may depend on the type of material; its location in relation to the landfill and on the collector's route; the size of the collection crew; frequency of pick-up; the type and size of container the refuse is in; the need for any special collection equipment; and whether the pick up is curb-side, alley or walk-up, and the pricing of competitors.

Prices for commercial and industrial waste collection vary. Based on information taken from license applications from the City of St. Paul, commercial rates vary from \$23 per month for weekly pick-up from a one cubic yard container to \$220 per month for a 40 cubic yard container. Table 2 identifies the range of prices for collection of commercial wastes within the City of St. Paul.

Table 2
COMMERCIAL REFUSE COLLECTION CHARGES IN THE CITY OF ST. PAUL, 1985*
MONTHLY CHARGES FOR WEEKLY PICK UP

<u>Cubic Yard Capacity of Containers</u>	<u>Rate Range</u>	
	<u>Low</u>	<u>High</u>
0.5	\$ 30.00	
1.0	23.00	- 37.00
1.5	22.50	- 40.00
2.0	27.50	- 46.00
3.0	32.00	- 42.00
4.0	40.00	- 50.00
6.0	60.00	- 65.00
8.0	75.00	
10.0	100.00	
15.0	125.00	- 150.00
20.0	140.00	- 170.00
25.0	150.00	
30.0	170.00	- 200.00
40.0	190.00	- 220.00

*Source: Licensing applications for refuse haulers
in the city of St. Paul, Minn. 1985.

For residential waste generators, the price for collection services depends upon many factors including the market structure for delivery of services, the type of service (alley, curb or walk-in) and level of

service (bulky items, recycling service). Table 3 shows the differences in costs to the household as a consequence of the different market structures, that is, household verbal agreements, franchise, contract or municipal. For those households where the municipality contracts for waste collection, total costs to the household (TCHS) averages \$6.03 per month. TCHS with a franchise arrangement averages \$7.03 per month. Where an individual household arranges with a waste hauler for refuse collection, the TCHS averages \$8.21 per month. Under the municipal collection arrangement in Minneapolis, the TCHS averages \$7.02 per month whereas the TCHS for municipal collection in Farmington is \$8.67 per month. These costs are averages and do not reflect differences in the type of services provided for or whether the service is curb-side, alley or walk-in.

It should be understood that all households will pay for refuse collection when the city contracts for refuse collection. Under the system where each household arranges for refuse collection services, only those households desiring the service will pay and oftentimes two or more households will double up on one account. Some haulers estimate that about 10 percent of the households in the St. Paul area do this.

Table 3
MONTHLY SINGLE-FAMILY DWELLING
RESIDENTIAL REFUSE COLLECTION CHARGES¹

<u>Market Structure</u>	<u>Mean Monthly Charge</u>	<u>Mean Monthly Seniors/Disabled Charge</u>
Household agreement ²	\$8.21	\$5.57
Franchise ²	7.03	4.44
Contract ^{3,4}	6.03	3.64
Municipal:		
Farmington ²	8.67	N/A
Minneapolis ⁴	7.02	N/A

¹Mean monthly base rate for weekly collection of a 60-gallon refuse contain (or the equivalent) curbside.

²Not including walk-up service, bulky items, extra collection. The majority do not use transfer stations.

³Approximately half include bulky items, spring clean up. Only Minneapolis includes walk-up service. The majority do not use transfer stations.

⁴Minneapolis includes walk-up service, bulky items, extra collection, but not commercial or industrial wastes.

Why is it that refuse collection is more expensive when the household arranges for collection services than when the municipality contracts for it? National studies completed by the Center For Government Studies of the Graduate School of Business at Columbia University have shown that prices paid by households for contract or franchise collection where it was mandatory to use the designated private collector are lower than those prices paid by households who use a private firm which is not under contract to the city or which does not have an exclusive franchise. The studies noted that the difference in price can be attributed to economies of scale and economies of contiguity (for example, the ability to service all households along a given route, thereby reducing travel time between stops) achieved by firms under contract and exclusive franchise as well as lower billing costs associated with firms under contract. The study was based upon a survey of 2,060 cities with a combined population of 52 million people.

A recent study completed for Carver County by John and Michele Genereux described the refuse collection industry in the county. Although statistical tests were not completed on comparing the costs of providing refuse collection services among the municipalities within the county, Table 4 shows that monthly costs to the household are about \$1.50 to 3.20 per month less where organized collection exists. For example, households in the cities of Mayer, Hamburg and New Germany pay \$5.73 per month for refuse collection as opposed to households in the cities of Chanhassen, Chaska, Carver, Victoria, Cologne and Waconia, which do not have organized collection, pay \$7.80 to 9.50 per month. All the waste in Carver County is disposed of at the Louisville landfill.

Table 4
CARVER COUNTY RESIDENTIAL REFUSE COLLECTION CHARGES
TO HOUSEHOLDS*

<u>Community</u>	<u>Number of Haulers</u>	<u>Median Monthly Residential Rate</u>
Carver	2	8.00
Chanhassen	7	7.00 - 9.50
Chaska	5	8.00 - 9.50
Cologne	5	7.80 - 9.50
Mayer/Hamburg/New Germany	1	5.73
Norwood	1	6.60
Victoria	3	7.80 - 9.50
Waconia	2	7.80 - 8.00
Watertown	1	6.30 - 8.00
Young America	1	6.30

*Source: A description of the private waste hauling system in Carver County. For the county of Carver. John P. and M. Michele Genereux. Feb. 26, 1985.

The elimination of overlapped collection routes provides for increased efficiency for collection of wastes. It allows a collector to pick up refuse from more households within the same amount of time. The city of St. Paul, when it considered organized collection of refuse, estimated that a collector could do at least 50 more pickups in an eight-hour day, an increase of 20 percent. Waste collectors in Minneapolis noted similar increases in efficiency when collection services were organized.

Additional efficiencies could be achieved with the establishment of transfer stations in the region. Even if collection routes were organized, all haulers in St. Paul for example, must still travel at least 30 miles to the landfill. Each collector spends at least one hour and 20 minutes on the average delivering waste to the landfill. A transfer station would permit a hauler to collect from more households if less time is spent traveling to and from the landfill. Similarly, labor costs are reduced because more households can be serviced within the same amount of time by one person.

Transfer stations significantly reduce operating and maintenance costs of refuse collection. However, they do increase the capital costs of solid waste management. These costs should be considered in view of the reduced mileage and travel time spent by refuse trucks going to the landfill. Currently, there are few transfer stations in use in the region. The travel distance to the landfill is an important factor in the costs of solid waste management.

All the municipalities in the region that have some form of organized collection system with a contract are listed in Table 5. Costs per household range from \$3.88 for Wayzata to \$8.50 for St. Bonifacius. There does not appear to be any substantial difference in the type or level of service provided to Wayzata or St. Bonifacius. Other factors, such as the distance from the cities to the landfill, the one contractor might have bid the job at a loss, may play a role in the difference. Some of the differences in costs among the cities with contract collection are attributable to different levels of service (curbside or alley pickup versus walk-up); collection of bulky items; distance to the landfill; recycling programs; and profit percentages. Administration and monitoring costs amount to about five percent of the total cost of the contract according to the study by Ecodata, Inc. It is unclear whether cities recover their costs for billing expenses. Some contracts specify the company to provide an on-call supervisor for handling complaints.

Altogether, cities that have organized refuse collection have service costs about one-fourth to one-third less than those relying on individual households to arrange for collection services. The cost for refuse collection to households in contract cities is consistently less expensive than for households that make their own arrangements for refuse collection. It appears these cost differences can be accounted for by the market structure of the collection services, that is, organized versus unorganized. Other unknown factors may play a role in the cost

Table 5

METROPOLITAN AREA MUNICIPALITIES WITH CONTRACTED RESIDENTIAL REFUSE COLLECTION: APRIL 1985

Municipality	Estimated ¹ Housing Units Served	Density Housing Units Per Acre	Monthly Charge	Senior/ Disabled Charge	Term of Contract	Maximum ² Pickup Capacity (Gallons)	Bulky ² Items Charge	Spring ² Clean-up Included	Abatement Programs
Anoka	4,436	3.38	\$ 7.00		yr.	80	Yes	No	No
Bayport	752	2.50	6.00	\$ 4.00	2 yrs.	None	No	No	No
Blaine	10,552	3.26	6.62	4.90	3 yrs.	None	No	No	Yes
Columbia Heights	7,772	7.04	5.75	1.50	2 yrs.	75	Yes	No	No
Deephaven	1,300	1.28	6.33		2 yrs.	64	Yes	No	No
Excelsior	1,316	6.41	5.53	4.30	2 yrs.	60	Yes	Yes	Yes ³
Hamburg	186	3.87	5.73		yr.				
Hopkins	7,614	9.26	4.50		5 yrs.	None	No	No	Yes
Mayer	145	2.92	5.73		yr.				
Minneapolis	62,000	12.87	5.18		5 yrs.	None	No	Yes	Yes ³
Minnetonka Beach	211	1.44	Taxes		yr.	None	No	Yes	No
New Germany	146	4.34	5.73		yr.				
Oak Park Heights	1,164	5.61	6.75		6 yrs.	None	No	No	No
Osseo	1,042	5.23	7.00		2 yrs.	60	Yes	No	No
Robbinsdale	5,846	7.04	5.61		5 yrs.	None	No	No	Yes
St. Bonifacius	347	2.34	8.50		yr.	90	Yes	No	No
St. Louis Park	19,012	6.76	5.90		3 yrs.	None	No	Yes	Yes ³
Shakopee	3,703	3.42	5.25	3.40	2 yrs.	None	No	No	Yes ³
Stillwater	4,503	3.40	7.60	6.45	13 yrs.	None	No	Yes	
Tonka Bay	552	2.28	4.69	2.35	3 yrs.	60	Yes	No	No
Wayzata	1,716	1.53	3.88		3 yrs.	90	Yes	Yes	No
White Bear Lake	7,642	3.08	7.15	2.15	3 yrs.	None	No	No	No
Young America	443	3.29	6.30		3 yrs.	90	Yes	Yes	No

1. April 1, 1984 Housing Unit Estimates. Metropolitan Council.

2. Items specifically stated in contracts may not reflect actual practice.

3. Program agreements with firms or organizations other than the contracted residential refuse hauler.

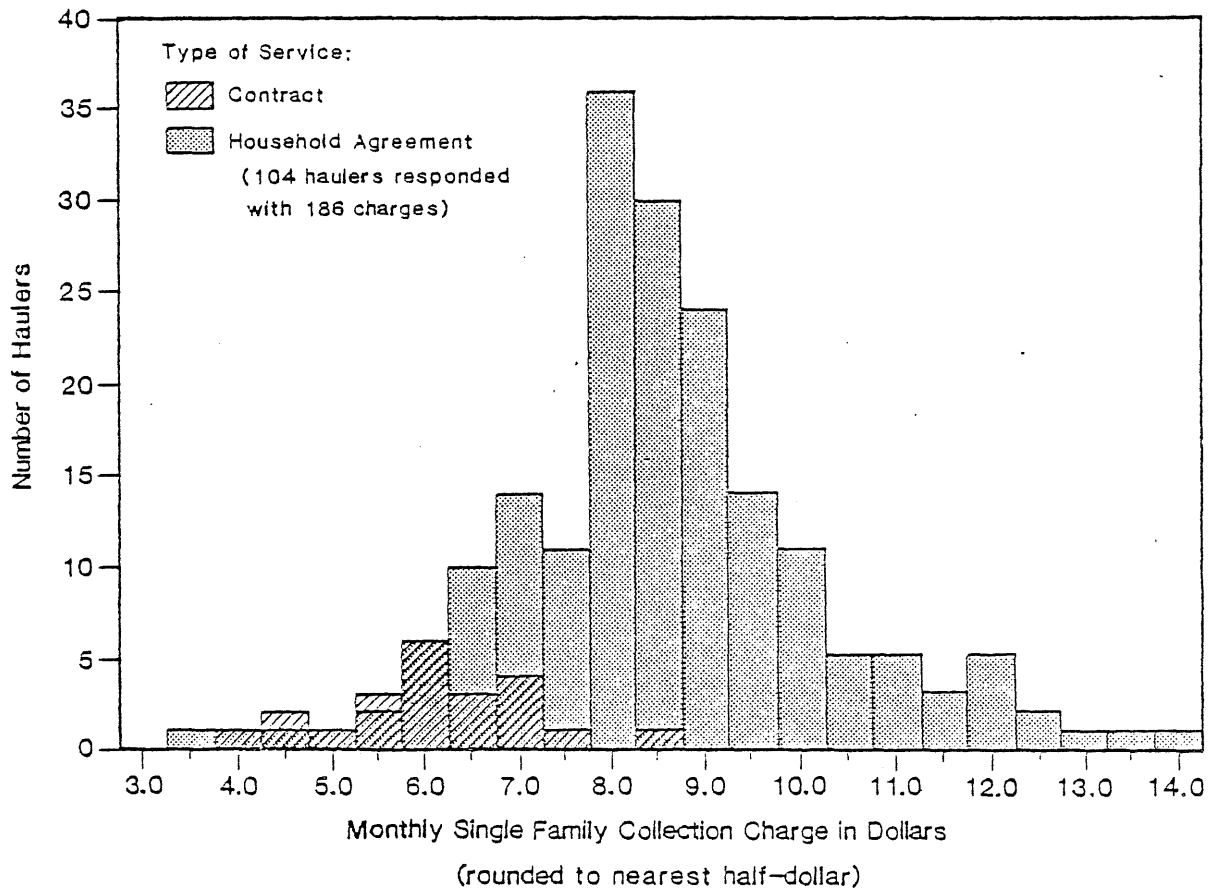
differences. Figure 5 highlights the differences in cost to the household per month for refuse collection when there are one or more haulers servicing a municipality. The increased costs in the household agreement system which averages \$8.21 per month are due to the extra costs associated with the non-exclusivity of collection in a given area.

Municipalities or townships with franchise collections are listed in Table 6. The costs to the household per month under a franchise arrangement range from a low of \$4.32 for Jordan to a high of \$8.75 for Afton. The average cost per month for all the franchise arrangements is \$7.03. All but one of the franchise agreements are negotiated between the waste hauler and the city.

There is little information available to document whether organized collection of commercial and industrial refuse could result in cost savings to the waste generator. Based upon the available data from residential refuse collection, it is reasonable to infer that some of the diseconomies associated with each commercial waste generator arranging for refuse collection exist as it does for the residential sector. Presumably, some cost efficiencies could be achieved if service to commercial waste generators could be provided for in conjunction with organized collection of residential refuse. Additional study is needed to document whether a reduction in costs is realistic. Furthermore, the practicality of an organized collection system for commercial waste generators depends on several factors including the type of waste requiring disposal, frequency of service, proper collection equipment and suitable pricing arrangements. Appropriate commercial establishments could be folded into an organized residential collection route.

Refuse collection services are in many ways similar to a utility's function and services such as water, sewer, or electricity. The demand for refuse collection services, as for most utilities, is inelastic, that is people have a need for the service but do not demand more service if the price goes down. If demand is inelastic, economic theory says that tax increases will pass through to the consumer of the service or goods. Households in the region have experienced increases in their bills as a direct result of the surcharge on tipping fees at the landfill. Most increases were about 50 cents per household per month or \$6 annually. This is approximately the increase that could be expected as a consequence of the surcharge if it were all passed directly back to the consumer based upon the amount of waste generated by a typical household in one year. At least one contract between a municipality and hauler, Hastings, was recently renegotiated as a direct result of the surcharge on disposal fees according to a city official. Columbia Heights provided a clause in its contract for complete reimbursement of additional landfill fees approved after 1985.

Figure 5.
FREQUENCY OF RESIDENTIAL REFUSE COLLECTION CHARGES
 (MAY 1985)



Source: Metropolitan Council survey, May 1985.

Table 6
 METROPOLITAN AREA MUNICIPALITIES WITH FRANCHISED RESIDENTIAL REFUSE COLLECTION: APRIL 1985

<u>Municipality</u>	<u>Estimated¹ Housing Units Served</u>	<u>Density Housing Units Per Acre</u>	<u>Monthly Charge</u>	<u>Senior/ Disabled Charge</u>	<u>Term of Agreement</u>	<u>Type of Agreement³</u>	<u>Maximum² Pickup Capacity (Gallons)</u>	<u>Bulky² Items Charge</u>	<u>Spring² Clean-up Included</u>	<u>Abatement Programs</u>
Afton	822	1.74	\$ 8.75		1 yr.	Neg.	90	Yes	No	No
Birchwood	353	3.26	7.16		1 yr.	Neg.	90	Yes	No	No
Centerville	298	2.43	6.30	\$ 5.30	5 yrs.	Neg.	None	No	Yes	No
Hastings	4,592	3.34	8.50		1 yr.	Neg.	90	Yes	No	No
Jordan	1,001	2.50	4.32		2 yrs.	C.B.	None	No	Yes	Yes
White Bear	2,342	2.44	7.15	3.57	5 yrs.	Neg.	None	Yes	No	No

1. April 1, 1984 Housing Unit Estimates. Metropolitan Council.
2. Items specifically stated in agreements may not reflect actual practice.
3. Negotiation or competitive bidding.

CAN ORGANIZED COLLECTION REDUCE ENVIRONMENTAL IMPACTS AND IMPROVE PUBLIC SAFETY?

Organized collection does reduce nuisance impacts associated with several refuse collectors picking up waste on the same block. Organized collection reduces wear and tear on roads and improves air quality because fuel consumption is reduced. Organized collection improves public safety because fewer miles are traveled by garbage trucks thereby decreasing the potential for accidents.

The expected life of any street or alley surface is related to the traffic which is carried by the street or alley. The roadway surface is particularly affected by heavy wheel loads. The effect on a roadway of one refuse truck is equivalent to 1,500 automobiles. This figure has been documented by the Research Section of the Minnesota Department of Transportation (Mn/DOT) and is currently used by Mn/DOT in street and highway design.

In its organized collection efforts, St. Paul estimated to what degree the life of a street can be extended if refuse collection were organized. The city assumed that if under the current system, where each household arranges for collection, traffic volume on a given street is 500 cars per day and five refuse trucks per week, the equivalent traffic on the street amounts to 11,000 cars per week. Under an organized collection system with only one refuse truck per week, the equivalent traffic on the street is 5,000 cars per week. The comparison shows that the effect on the roadway by traffic may be substantially reduced.

Realistically, all streets might not last substantially longer under an organized collection system because roadway life is dependent upon many other factors than traffic. However, traffic does have a significant effect upon roadway life. These additional roadway costs are external costs passed on to the city as a consequence of each household arranging for refuse collection.

The reduced mileage that refuse trucks travel can reduce the potential number of accidents involving garbage trucks. Reducing the number of miles traveled by garbage trucks reduces traffic congestion and may reduce the number of accidents.

Emissions of air pollutants would be reduced because garbage trucks would reduce total mileage. The precise reduction in pollutants as a result of moving to an organized collection system is difficult to predict because there are both gasoline and diesel powered collection vehicles, and it is difficult to estimate the reduction in traffic congestion and miles traveled by garbage trucks that would be achieved by organized collection. The emission rates of pollutants vary according to the speed of the vehicle with more emissions at lower speeds. Emissions of importance include hydrocarbons, carbon monoxide and nitrogen oxides. Heavy duty diesel trucks also emit particulates,

sulfur oxides, aldehydes and organic acids. Of particular concern are particulate emissions from diesel engines because they contain polynuclear aromatic hydrocarbons (PAH) which are known carcinogens.

Organized collection is one of several methods that could improve neighborhood aesthetics. It could eliminate the unsightliness of containers set out for collection sometimes every day of the week on some blocks. Organized collection could discourage illegal dumping and stockpiling of unwanted and unsightly items in backyards because the costs of removal are generally extra where a household arranges for collection with a waste hauler. Reducing litter, dumping and stockpiling could contribute to public health and safety.

CAN ORGANIZED COLLECTION FACILITATE IMPLEMENTATION OF THE COUNCIL'S SOLID WASTE GUIDE CHAPTER?

This section of the report will evaluate to what extent organized collection can facilitate attainment of the objectives for waste management contained in the Council's solid waste policy plan. Three main areas of concern are the objectives for recycling, management of household hazardous wastes and improved data collection and management.

Organized collection of mixed municipal solid waste will not necessarily increase participation in recycling activities or the amounts of materials recycled. The hauler providing collection services for recyclables, if operating under the system where each household arranges for collection services, is at a competitive disadvantage because the revenues from recyclables may not cover the additional collection costs. This is one reason why few refuse haulers in the Metropolitan Area provide for comprehensive recyclables collection. If a hauler does provide for recyclables collection, it is probably for a limited number of materials, that which can be collected in racks attached to the packer truck.

In some communities in the Metropolitan Area where franchises or contracts are provided for by the municipality, some haulers are providing for recyclables collection or separate collection of yard waste to reduce their cost at the landfill. A municipality can more easily provide monetary or other incentives to the hauler, household or business to participate in source separation activities if collection is organized.

Under the system where each household arranges for collection service, haulers have the opportunity to assess the household's fee based upon the volume of refuse collected. As land disposal fees rise and become a greater percentage of total cost of solid waste management, one would expect differences in monthly rates attributable to the amount of refuse generated. This provides direct feedback to the household or waste generation as opposed to most existing contract arrangements where all households pay the same monthly fee regardless of the volume of waste generated. However, a variable rate could be established under a contract arrangement if so desired by the municipality.

In regards to data collection and management, a municipality with organized collection, depending upon how it is implemented, more easily can facilitate the development of a comprehensive data collection and management system for solid waste. Organized collection could facilitate collection of information about the quantities of waste generated, recycled or processed in municipalities by population or households, or businesses. This information could be used by the Council and counties to target incentives for abatement programs and focus the direction of the Metropolitan Abatement Fund grant and loan program administered by the Council.

CAN ORGANIZED COLLECTION INTEGRATE OR ENHANCE EXISTING COUNTY AND LOCAL AUTHORITIES FOR WASTE MANAGEMENT?

Currently, municipalities have the authority for provision of waste collection services. Municipalities have the authority to implement resource recovery facilities by virtue of its authority over collection of waste. Counties, on the other hand, have responsibility for overall waste management within the county but may not have the authority for requiring collection services. Consequently, in the past, development of resource recovery facilities by the counties is made more tentative because of their lack of authority to ensure a waste flow to the facility.

Currently, state law provides counties with the authority for waste designation. This authority enables the county to direct the flow of refuse to a designated resource recovery facility. The provisions enabling county designation were adopted in 1980.

The general issue of need for designation (flow control) has been debated by the legislature for the past 10 years. When the Legislative Commission on Waste Management was created in 1980, it was charged in part with studying alternative methods of insuring adequate waste supplies for resource recovery facilities. The Commission's report, completed in 1982, concluded that the feasibility of resource recovery facilities is dependent upon waste supply, the soundness of the technology and markets for the recovered product. The Commission found that the waste stream must be assured in some manner to assure financing and to permit efficient operation. Generally waste is assured by requiring delivery to a facility, but the Commission recognized that under rare circumstances, such as the lack of any other disposal alternative, explicit waste assurance might not be needed.

The system of refuse collection where each household and business independently arranges for waste collection service makes the development of resource recovery facilities more complicated because an individual hauler cannot guarantee delivery of waste to a resource recovery facility. From day-to-day or month-to-month, the waste generator's decision on which hauler to use can change. Though the waste is still there and must be collected, there is no assurance that the new waste hauler will deliver the waste to the same facility the previous collector used.

In other parts of the country, several resource recovery facilities rely on long-term contracts with municipalities for their waste supply. In some cases the municipal workers collect the waste and in others, the city contracts with private haulers for the service. In these cases organized collection merely substitutes municipal designation for county designation. Because few Twin Cities communities provide collection service, this approach is not available in our region. There is only one municipality in the region that generates enough waste by itself to construct even a medium-sized resource recovery facility, that is a facility that could manage about 500 tons per day.

Currently, none of the Metropolitan Area communities that contract for service specify where waste is to be delivered for disposal; that choice is left to the hauler. Specification of a disposal site, however, could be incorporated as part of the service agreements. This is one way in which organized collection could potentially be a strong complement to waste designation. If successfully negotiated, contracts between resource recovery facilities and municipalities could provide for delivery of adequate waste supplies. In a parallel vein, haulers operating under collection service agreements would have an enhanced capability to contract with recovery facilities for delivery of waste. In either case, the effort and complexity required to enforce waste designation could be substantially lessened. The degree of this effect would be directly proportional to the length of the contracts.

LIABILITIES AND DISADVANTAGES OF ORGANIZED COLLECTION

There are four potential liabilities or disadvantages to organized collection of refuse. Organized collection reduces an individual's choice of garbage collectors, requires additional municipal involvement, broaches anti-trust issues and could potentially adversely affect existing refuse collection companies.

Households that currently arrange with a hauler for refuse removal would no longer be able to select the hauler of their choice. This runs counter to the nationwide trend of permitting individuals more choice in the type and level of services desired. However, a survey by the Minnesota Center for Social Research completed Mar. 29, 1985, showed broad-based support for municipal control, with 77 percent of those respondents who now select their garbage hauler willing to let the city decide, although some agree only if it reduces their cost.

There was a small minority, about 11 percent of the population, or about 20 percent of the respondents who selected their garbage hauler, who felt strongly that they wanted to retain choice. The study suggested that this group be studied further to identify their concerns.

Organized collection will require municipalities with unorganized refuse collection to become more involved in refuse collection issues. Because there is a great deal of satisfaction among households and businesses about the manner in which refuse is handled, it may be difficult to explain why additional government involvement is necessary. Municipalities will have to overcome the concern, "If it ain't broke, why fix it?" Although the cost differentials to the households of the different market structures is not great, the sum of the costs to all the households in the city over a period of a year's time can be significant. For example, if St. Paul went to an organized collection system, it could expect an annual savings of at least \$1 million based upon 64,986 single-family housing units and a \$1.50 differential in cost per household per month.

Municipalities will incur costs associated with administration, billing and monitoring performance of the contract. Billing can be done in conjunction with other municipal billings such as property tax statements or utility bills. National studies show that billing expenses are much less if handled by the municipality rather than the waste hauler. Administration and monitoring costs amount to about five percent of the total cost of the contract according to the study by Ecodata, Inc.

How organized collection is implemented in the region may be affected by anti-trust law. This matter requires additional study.

Implementation of organized collection by municipalities has the potential to adversely impact some refuse collection companies. An increase in productivity means that fewer people are needed to perform the same

function. Consequently, fewer collection crews would be needed to collect refuse under an organized collection system. Whether this means a reduction in collection companies depends upon how organized collection is implemented. The businesses of some waste haulers, particularly those operating part-time or collecting waste as a job on the side, may be adversely affected.

The implementation of the waste management system envisioned by the Council's solid waste policy plan may work to offset any negative impacts upon the collection industry as a result of organized collection. The provision of collection services for yard waste, recyclables and household hazardous wastes may compensate for the reduction in the labor force if organized collection were implemented by a significant number of cities in the region. Also, there is an opportunity for new business ventures into management of the yard waste compost sites or recyclables processing facilities. The expansion or development of new industries as a result of increased recycling activities could also increase the demand for labor.

FINDINGS AND CONCLUSIONS

1. Organized collection may reduce the costs of residential refuse collection by increasing collection efficiencies. Additional study is needed to determine if organized collection may benefit commercial and industrial waste generators.
2. Organized collection reduces adverse environmental impacts when more than one hauler services a given area or provides the same type of collection service.
3. Organized collection does not inherently increase participation in recycling or other abatement programs. It can be implemented in ways that would help to achieve the abatement objectives of the Solid Waste Management Guide/Policy Plan.
4. Organized collection cannot substitute for waste designation by the county, but can complement it.
5. Municipalities and towns have adequate authority to organize collection of residential refuse.
6. Organized collection of residential refuse may be a net benefit to solid waste management because it may reduce costs and environmental impacts; help implement abatement programs; and improve information about waste generation, composition and abatement.
7. There is no need for a regional system for implementation of organized collection. However, individual communities should consider the potential benefits of organized collection.

BIBLIOGRAPHY

Annual Report, Sanitation Division 1983. Minneapolis, Minn.

Taking the Waste Out of Minnesota's Refuse. Citizens League, Minneapolis, Minn. Aug. 1975.

Keeping the Waste Out of Waste: A Proposal to Minimize the Risks by Decentralizing the Solid Waste Disposal System. Citizens League. Minneapolis, Minn. May 1981.

Comparative Study of Municipal Services Delivery, Refuse Collection. ed. Barbara Stevens. Ecodata, Inc. New York N.Y. 1984.

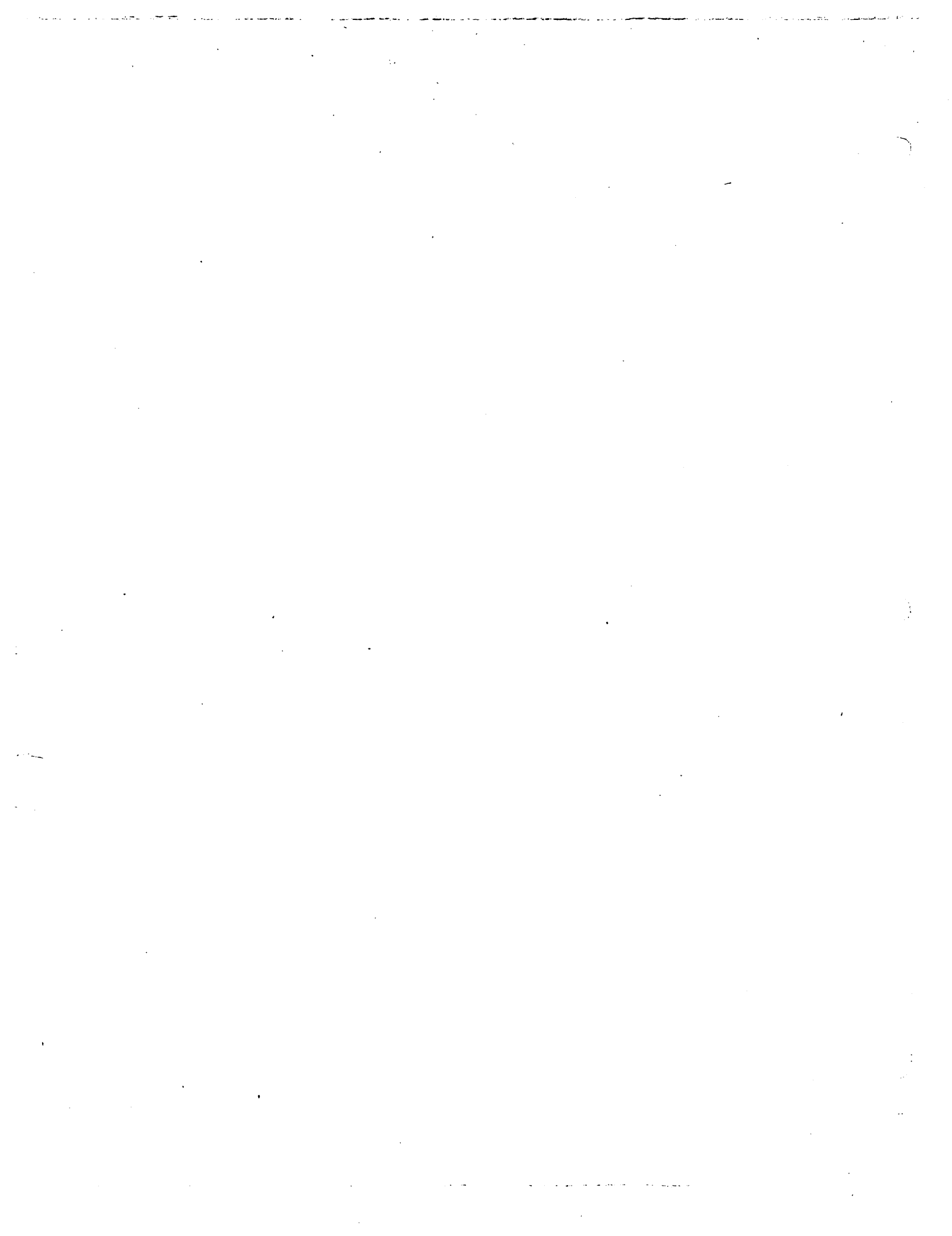
John P. and M. Michele Genereux. A Description of the Private Waste Hauling System in Carver County, Minnesota and Preferred Landfill Abatement Options for Private Haulers: Results of Interviews with Waste Haulers Conducted in Feb. 1985. Carver County, Minn. 1985.

Proposed Residential Solid Waste Collection Plan for St. Paul, Minn. Citizens' Solid Waste Committee and Dept. of Public Works, St. Paul, Minn. 1979.

E.S. Savas and Barbara Stevens. Evaluating the Organization of Service Delivery: Solid Waste Collection and Disposal. Center for Government Studies, Columbia University. New York, N.Y. 1976.

Barbara Stevens. "Scale, Market Structure and the Cost of Refuse Collection." Review of Economics and Statistics. Aug. 1978. 438-448.

Dennis Young. How Shall We Collect the Garbage? The Urban Institute. Washington, D.C. 1972.



APPENDIX
REFUSE COLLECTION COMPANIES OPERATING IN THE REGION

A & A Rubbish Removal
28 - 30th Av. S.
Minneapolis, MN 55406

American Systems, Inc.
84 W. Water St.
St. Paul, MN 55107

Bateman's Rubbish Removal
2239 Matterhorn La.
St. Paul, MN 55119

AA Rubbish Service, Inc.
1300 Winslow Av.
West St. Paul, MN 55118

Ray Anderson & Sons Cos. Inc.
930 Duluth St.
St. Paul, MN 55106

Bautch Disposal Service
10264 Xylite St. NE.
Minneapolis, MN 55434

A & B Trucking
187 James Av. N.
Minneapolis, MN 55405

Anderson's Hauling
6925 Humbolt Av. N.
Brooklyn Center, MN 55429

Beckers Sanitation
18681 Yakima
Anoka, MN 55303

Aace Rubbish Removal
520 Sunny Acres La.
Burnsville, MN 55337

Anderson Rubbish
918 Scheffer
St. Paul, MN 55102

Beermann Services
6900 Dixie Av. E.
Inver Grove Heights, MN 55075

Aagard Sanitation
3308 - 10th Av. S.
Minneapolis, MN 55407

Andy's Disposal Service
781 Englewood Av.
St. Paul, MN 55104

Bellaire Sanitation Service
8678 N. 75 St.
Stillwater, MN 55082

Ace Solid Waste Management, Inc.
3118 NW. 162 La.
Anoka, MN 55303

Arrow Rubbish Service
1700 E. 84th St.
Minneapolis, MN 55420

Bergstrom Trucking Service
5860 - 73 Av. N.
Brooklyn Park, MN 55429

Action Disposal Systems, Inc.
4300 E. 65th St.
Inver Grove Heights, MN 55075

Art Willman & Son Trucking
62 - 26th Av. N.
Minneapolis, MN 55411

Ken Berquist & Son
1232 Juliet Av.
St. Paul, MN 55105

Adams Disposal
P. O. Box 7342
Minneapolis, MN 55407

Baldy Sanitation
5906 Henry St.
Maple Plain, MN 55355

Big Garbanzo
15238 Central Av. NE.
Ham Lake, MN 55303

Admiral Waste Management
8275 Tamarack Trail
Eden Prairie, MN 55344

Barnes Sanitary Service
1917 Emerson Av. N.
Minneapolis, MN 55403

Bill's Sanitation
1570 Waterloo
South St. Paul, MN 55075

Al's All Season
114 Russell Av. N.
Minneapolis, MN 55411

Bateman's Rubbish, Inc.
520 White Bear Av. N.
White Bear, MN 55119

Blakowiak & Sons
1195 Sunnyfield Rd. N.
Mound, MN 55364

Block Sanitization
6741 - 79 Av. N.
Brooklyn Park, MN 55446

Jimmie Cashill, Inc.
688 S. Victoria St.
St. Paul, MN 55102

Dana's ECO Services
3313 Valley View Dr.
Burnsville, MN 55337

Box Inc.
6010 Concord Blvd.
Inver Grove Heights, MN 55075

Chaska Sanitization
1239 Valley St.
Chaska, MN 55318

Dan's Disposal
309 NW. 202 La.
Cedar, MN 55011

Brennan Rubbish Service
2145 University Av. W.
St. Paul, MN 55114

City Clean-Up
1456 Perron Rd.
St. Paul, MN 55120

Dave's Roll-Off Contracting
Service
3801 Lovell Rd.
New Brighton, MN 55112

Brooklyn Disposal
7358 NW. 191 La.
Anoka, MN 55303

City Clean-Up
2841 Burnside Av.
Eagan, MN 55121

Dave's Sanitization
4072 Hamel Rd.
Hamel, MN 55340

Buckingham Disposal
12585 Rhode Island Av. S.
Savage, MN 55375

Cleanway Sanitization
Box 220
Long Lake, MN 55355

Denny's Roll Off Service
5816 W. 70 St.
Minneapolis, MN 55433

Capital City Disposal
3270 Neal Av. N.
Stillwater, MN 55082

Johnnie Coolidge
783 Fuller Av.
St. Paul, MN 55104

Dependable Services
105 Clover La.
Delano, MN 55329

Carey Rubbish Service
7987 Afton Rd.
St. Paul, MN 55125

Corrow Sanitization
15520 Lawndale La.
Dayton, MN 55327

O & O Hauling
6474 - 12 Av. S.
Lino Lakes, MN 55014

Ken Carlson Disposal Service
P. O. Box 326
Isanti, MN 55040

Countrywide Sanitization
4 Inver Dr.
Circle Pines, MN 55104

O & O Hauling
1234 Farrington
St. Paul, MN 55117

H. H. Carpenter
4443 Snelling Av.
St. Paul, MN 55112

Countrywide Sanitization
Box 117
Montrose, MN 55763

Dick Clemmer Sanitization Serv.
21338 Dodd Blvd.
Lakeville, MN 55044

Casanova Brothers Trucking
515 Ohio
St. Paul, MN 55107

Crosstown Sanitization, Inc.
10110 - 38 Av. N.
Plymouth, MN 55441

Dirty Jim's Rubbish Removal
761 Iowa Av. W.
St. Paul, MN 55117

Disposal Systems, Inc.
915 N. Albert
St. Paul, MN 55104

Expert Disposal, Inc.
13200 Pilot Knob Rd.
Apple Valley, MN 55124

Gunderson Rubbish
1086 - 2nd Av.
Newport, MN 55055

Do All Service
12863 Keller Av. N.
Hugo, MN 55038

Forest Lake Sanitation
8247 - 178 La.
Forest Lake, MN 55025

Gustafson Sanitary Service
2741 - 12 Av. S.
Minneapolis, MN 55407

Dugan Sanitation Service
4070 Cavell Av. N.
New Hope, MN 55428

Fragrance Solid Waste, Inc.
99 - 99th La. NW.
Coon Rapids, MN 55433

William Guy Sanitation Service
Box 23, Route 1
Stacy, MN 55079

Eagle Sanitation
P. O. Box 128
Newport, MN 55055

Franck's Sanitation
131 Casper St.
Norwood, MN 55368

Lloyd Hall
4355 Fisher Lane
White Bear Lake, MN 55110

Eagle Sanitation
4122 Woodlane Dr.
Woodbury, MN 55125

Gallagher's Service, Inc.
1691 - 91 Av. NE.
Minneapolis, MN 55434

Hastings Sanitation
1617 Ashland
Hastings, MN 55033

East Tonka Sanitation
8100 Odean Av. NE.
Elk River, MN 55330

Gene's Disposal Service
6808 N. 117 St.
White Bear Lake, MN 55110

Haul-A-Way Systems
400 Whitall
St. Paul, MN 55100

Eden Prairie Trashtronics
7298 Prairie View Dr.
Eden Prairie, MN 55344

Gopher Disposal
P. O. Box 6
Newport, MN 55055

Highland Park Sanitation Serv
1801 Century Av.
Newport, MN 55055

Ed's Trucking
333 E. Lawson Av.
St. Paul, MN 55101

Gordy's Roll Off
402 N. Main St.
Stillwater, MN 55082

Hilger Transfer
8550 Zachary La.
Maple Grove, MN 55369

Eisinger Sanitation
15843 S. 45 St.
Afton, MN 55001

Gordy Rubbish Removal
637 - 4th Av. S.
South St. Paul, MN 55075

Hillcrest Sanitation
6748 Military Rd.
Woodbury, MN 55125

Elk River Sanitation
14889 NE. 81 St.
Elk River, MN 55330

W. D. Gray Trucking
1036 Central Av. W.
St. Paul, MN 55104

Hollie's Rubbish Service, Inc
2109 Lowry Av. N.
Minneapolis, MN 55411

Hollie's Rubbish Service, Inc. 5533 Logen Av. N. Minneapolis, MN 55430	Junker Sanitation 417 Martha Stillwater, MN 55082	Kubash & Sons Sanitation, RR Winsted, MN 55395
Joe Horrigan 321 E. Arlington Av. St. Paul, MN 55101	Ben Karas Trucking 515 Century Av. Newport, MN 55055	Lake Sanitation 1201 N. Birch Lake Blvd. White Bear Lake, MN 55110
Humphrey's Rubbish 970 Central Av. W. St. Paul, MN 55104	H. P. Kelley Hauling Service 3930 - 3 Av. S. Minneapolis, MN 55409	Lakers Disposal 3275 E. 260 St. Webster, MN 55088
Jacobson Sanitary, Inc. 7501 Portland Av. Richfield, MN 55423	Klean-Up 10010 Trenton La. Osseo, MN 55369	Lakeville Sanitary, Inc. 10200 W. 199 Way, Box 336 Lakeville, MN 55044
James Solid Waste Disposal, Inc. 1700 Oliver Av. N. Minneapolis, MN 55411	Klein Sanitation 10690 - 100 Av. Osseo, MN 55369	G. D. LaPlant Sanitation, Inc. P. O. Box 334 Buffalo, MN 55313
James Solid Waste Disposal, Inc. 2021 W. Broadway Minneapolis, MN 55400	Knutson Rubbish Service, Inc. 14345 Biscayne Av. Rosemount, MN 55068	Larry's Quality Sanitation 17210 Driscoll Anoka, MN 55303
Janish Disposal 14854 Central Av. NE. Anoka, MN 55303	Kowski Rubbish Removal Serv. 1560 Oakdale Av. West St. Paul, MN 55113	Larson Hauling 13940 N. St. Croix Tr. Stillwater, MN 55082
Jim's Rubbish Removal 761 W. Iowa Av. St. Paul, MN 55117	Krause Rubbish Removal Service 1620 W. 7 St. St. Paul, MN 55102	L & N Disposal 1319 NE. Benjamin Minneapolis, MN 55413
Johnny's Rubbish, Inc. 641 St. Anthony St. Paul, MN 55104	Kieth Kruppenny & Sons 1214 Hall Av. West St. Paul, MN 55113	L & N Disposal 3417 - 85 Av. N. Minneapolis, MN 55443
Johnson Sanitation 125 Bunker Lake Blvd. NW. Anoka, MN 55303	Krupenny & Sons Disposal Serv. 1330 Galvin Av. West St. Paul, MN 55113	Letourneau Trucking P. O. Box 224 Minneapolis, MN 55440

Logan's Hauling
1320 Marshall Av.
St. Paul, MN 55104

Mickey's City Wide Service
1280 S. Point Douglas Rd.
St. Paul, MN 55119

North Hennepin Recycling
and Transfer
8550 Zachary La.
Osseo, MN 55369

Ji Logan Hauling
1331 Dayton Av.
St. Paul, MN 55104

Midwest Refuse
904 University Av.
St. Paul, MN 55104

Ben Oehrlein & Sons &
Daughter, Inc.
9091 Concord Blvd.
Inver Grove Heights, MN 55075

Loren's Rubbish Removal
3946 Washington Av. N.
Minneapolis, MN 55412

Minneapolis Refuse Inc.
4649 Bloomington Av.
Minneapolis, MN 55407

Ken Oehrlein Sanitation Service
1800 Century Av.
Newport, MN 55055

Steve Manthei Disposal Service
2624 - 14 Av. S.
Minneapolis, MN 55407

M & M Sanitation
Rush City, MN 55069

Ost Sanitation & Landscaping
280 Vincent Av. N.
Minneapolis, MN 55405

Mark's Sanitation
308 - 3rd St.
Carver, MN 55315

Mobile Home Sanitation
2463 Lake George Dr.
Cedar, MN 55011

Oxford's Disposal Service
2305 E. Linwood Av.
St. Paul, MN 55119

Maroney's Service, Inc.
9200 Lansing Av. N.
St. Water, MN 55082

Mudek Sanitary Hauling
1900 Kolff St.
Newport, MN 55055

Pastorek Rubbish
6300 Hwy. 101
Maple Grove, MN 55369

Marv's Disposal
18233 Elmcrest Av. N.
Forest Lake, MN 55025

Mudek Trucking, Inc.
1520 Ames Av.
St. Paul, MN 55106

Paul and Andy's Disposal
729 - 109 Av. NW.
Coon Rapids, MN 55433

Marv's Disposal
1598 Hollywood Ct.
St. Paul, MN 55108

Francis J. Nash
3208 - 41 Av. S.
Minneapolis, MN 55406

Peterson Brothers Sanitation
18605 Lake George Blvd.
Cedar, MN 55011

Mel's Trucking Service
127 W. Spruce St.
St. Paul, MN 55075

Nistler Rubbish Removal
21203 Horseshoe Trail
Hamel, MN 55340

Pete's Rubbish Hauling
6360 N. 190 St.
Forest Lake, MN 55025

Mendota Heights Rubbish Serv.
Route 1, Box 120
Farmington, MN 55024

Nitti Disposal, Inc.
6639 E. Concord Blvd.
Inver Grove Heights, MN 55075

Piekert's Sanitation
RR #2, Box 139
Monticello, MN 55362

Metro Haul-A-Way Systems, Inc.
8168 W. 125 St.
Savage, MN 55378

North End Sanitation
1127 Albemarle
St. Paul, MN 55117

Poor Richard's, Inc.
400 Whitall
St. Paul, MN 55101

Pretzels Sanitation
15323 Ransay Blvd. NW.
Anoka, MN 55303

Ray's Trucking Service
4413 Crawford Rd.
Minnetonka, MN 55343

Saver's Rubbish Removal
1307 - 6 Av. S.
South St. Paul, MN 55076

Prior Lake Sanitation
P. O. Box 536
Prior Lake, MN 55372

Red Arrow Waste Disposal
44 E. Acker
St. Paul, MN 56117

Scherer Sanitation
P. O. Box 272
Delano, MN 55329

Property Refuse Removal Co.
6490 Excelsior Blvd.
St. Louis Park, MN 55426

Redepinning Sanitary Service
2076 County Rd. 90
Maple Plain, MN 55359

D. Shoebel & Son Disposal
Service, Inc.
3621 - 85 Av. N.
Minneapolis, MN 55429

Quality Waste Control, Inc.
1901 W. 144 St.
Burnsville, MN 55337

Reid Sanitation Service, Inc.
780 Elrene Court
Eagan, MN 55121

Lenny Saloka
4843 - 263 St.
Wyoming, MN 55092

R & M Sanitation
853 S. Point Douglas Rd.
St. Paul, MN 55119

J. J. Remackel & Sons
1032 Jessamine Av. E.
St. Paul, MN 55106

Solid Waste Service, Inc.
12461 Boone Av. S.
Savage, MN 55378

R & W Sanitation, Inc.
3470 Galpin Blvd.
Channahon, MN 55317

Remackel Trucking
1268 Leland Rd.
Maplewood, MN 55109

Space Center Transport, Inc.
1145 Homer St.
St. Paul, MN 55116

Randolph, Inc.
3824 Thomas Av. S.
Minneapolis, MN 55410

Richie's Rubbish Service, Inc.
19417 Baugh St. NW.
Elk River, MN 55330

Stromme Sanitation Service
14331 Lake Dr.
Forest Lake, MN 55026

Randy's Sanitation
RR #3, Box 342
Delano, MN 55328

Roadway Rubbish Service
2400 Dodd Rd.
Mendota Heights, MN 55150

Stromme Sanitation Service
Route 2, Box 422-S
Hudson, WI 54016

Rapid Way Disposal
685 - 123 Av. NW.
Coon Rapids, MN 55433

Robbinsdale Transfer Company
5232 Hanson Court
Crystal, MN 55429

Suburban Sanitation
570 S. Orono Orchard Rd.
Orono, MN 55323

Rauschnot Rubbish Removal
9035 E. Concord Blvd.
Inver Grove Heights, MN 55076

Ron's Sanitation Service
813 Mary St.
Maplewood, MN 55119

Sunrise Sanitation
Box 307, 464 - 2 St.
Excelsior, MN 55331

Ray's Rubbish Service
3941 - 14 Av. S.
Minneapolis, MN 55407

Shakopee Services
730 - 3rd Av. W.
Shakopee, MN 55379

Superior Truck Disposal Serv.
Route 3, Box 341
Delano, MN 55328

T. & L Sanitation Service
8201 Logan Av. N.
Brooklyn Park, MN 55443

Twin City Refuse and
Recycling Transfer Station
318 W. Water
St. Paul, MN 55118

Waste Management, Inc.
10050 NE. Naples St.
Blaine, MN 55434

T. is Sanitation
824 - 4th St.
St. Paul Park, MN 55071

Van's Rubbish Service
1215 Lealand Rd.
St. Paul, MN 55109

Waste Management, Inc.
12248 Pennsylvania Av. S.
Savage, MN 55378

Tennis Sanitation
1026 Dayton Av.
St. Paul Park, MN 55071

George Vasko Rubbish Removal
1591 Hoyt Av. E.
St. Paul, MN 55106

Waste Technology
410 - 11 Av. S.
Hopkins, MN 55341

Town and Country Disposal Serv.
4875 Dodd Rd.
Eagan, MN 55123

Ernest A. Vierkant Disposal
6045 Xerxes Av. S.
Minneapolis, MN 55410

Weber's Hauling
424 - 3rd Av. NE.
Osseo, MN 55369

Town and Country Disposal Serv.
Box 137
Delano, MN 55328

Viking Disposal & Building
Service, Inc.
2800 W. 109 St.
Minneapolis, MN 55431

Weller's Disposal Service
4020 Harriet Av.
Minneapolis, MN 55409

T & R Sanitation
637
St. Francis, MN 55070

Village Sanitation, Inc.
13125 Lone Oak Dr.
Minnetonka, MN 55343

Westonka Sanitation
P. O. Box 94
Navarre, MN 55392

Trash Gordon
4555 Ering Dr.
Eagan, MN 55123

Village Sanitation, Inc.
3186 W. 130 St.
Louisville, MN 55379

Westonka Sanitation
3146 Islandview Dr.
Mound, MN 55364

Triangle Rubbish Service
1881 Lexington Av. S.
Mendota Heights, MN 55118

Waconia Sanitation
P. O. Box 196
Waconia, MN 55387

Wildwood Sanitation
Box 176
Newport, MN 55055

Troje's Sanitation
8678 N. 75 St.
Stillwater, MN 55082

Waconia Sanitation
11585 Hwy. 5
Cologne, MN 55322

Wiley's Removal
492 W. County Rd. B-2
Roseville, MN 55113

Troje's Sanitation
P. O. Box 609
Willernie, MN 55090

Walz Brothers Sanitation
14033 Territorial Rd.
Maple Grove, MN 55369

Will & Steve's Sanitation Se
23955 NE. Fillmore
Bethel, MN 55005

Troje's Trash Pick-Up Service
6150 Military Rd., P. O. Box 40
Newport, MN 55055

Waste Control
95 Ivy Av. W.
West St. Paul, MN 55117

William Pick-Up Service, Inc
11751 Kumquat
Coon Rapids, MN 55433

Willie's Dumpster Service
7800 E. Buch Lake Rd.
Bloomington, MN 55420

Roadway Rubbish Service
803 Hazel Court
St. Paul, MN 55120

William & Son Trucking
62 - 26 Av. N.
Minneapolis, MN 55411

A & E Rubbish Removal
18610 Excelsior Blvd
Minnetonka, Mn 55345

H. Winnick Company
343 NW. 4th St.
Forest Lake, MN 55025

Blake & Son, Inc.
3461 Upper 143rd Street
Rosemount, Mn 55068

Elvine Disposal
15200 Northern Blvd.
Anoka 55303

Woodlake Sanitary Service
9813 Flying Cloud Dr.
Eden Prairie, MN 55344

Kutter's Rubbish Removal
4649 Bloomington Avenue S
Minneapolis Mn 55407

Woodlake Sanitary Service
4000 Hamel Rd.
Hamel, MN 55340

SAS Hauling
4900 31st Avenue S
Minneapolis 55417

Woodlake Sanitary Service
6651 Renoys
New Brighton, MN 55112

Suburban Sanitation Inc.
P O Box 188
Wayzata 55391

Wisky Sanitation
1685 Cheri Lane
Newport, MN 55065

Waste Conversion
6630 N Cortlawn Circle
Golden Valley 55426

Wydo's General Hauling
1010 S. Plymouth Rd.
Minnetonka, MN 55343

Browning-Ferris, Inc.
9813 Flying Cloud Dr.
Eden Prairie, Mn 55344

Wynne's Rubbish Removal
756 Hyacinth Av. E.
St. Paul, MN 55106

Young's Rubbish Service
12323 May Av. N.
Stillwater, MN 55082

Gene's Sanitation Service
12620 Kelley Av.
Chaska, MN 55313