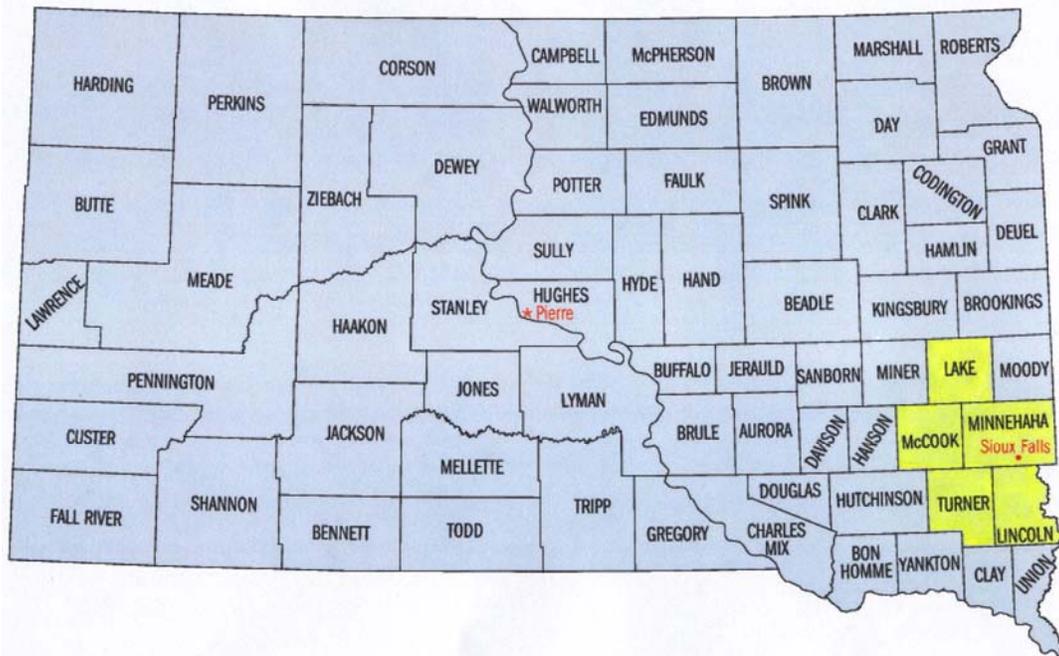


6.0 WASTE DIVERSION

For this Section of the Regional Solid Waste Master Plan, R. W. Beck, Inc. (Beck), carried out the following tasks:

- Assessment of Regional Opportunities to Share Diversion Facilities and Equipment.
- Materials Recovery Processing and Reuse Evaluation.
- Evaluation of the Waste Reduction, Reuse, and Recycling Public Education and Information Program.

Through meetings with City staff, the Solid Waste Planning Board, the local haulers, and local recyclable materials processors, Beck has characterized the current programs and offers recommendations for improving waste diversion in the Sioux Empire Region (Region). This Region is made up of five counties: Lake, McCook, Minnehaha, Turner, and Lincoln. Communities within these counties sign an annual Solid Waste Disposal Agreement with the City of Sioux Falls to use the Sioux Falls Regional Sanitary Landfill (SFRSL).



6.1 ASSESSMENT OF REGIONAL OPPORTUNITIES TO SHARE DIVERSION FACILITIES AND EQUIPMENT

The City of Sioux Falls and the City of Brookings entered into an agreement in March of 1997 “for the purpose of providing for joint ownership and administration of solid waste management equipment.” Together the two communities applied for a grant to partially fund a tub grinder and a trommel screen, to be used at both landfills. The remaining funding was provided by each city: Sioux Falls contributed 80 percent and Brookings contributed 20 percent. The City of Sioux Falls also jointly owns, with the City of Brookings, the tractor used to pull the tub grinder and trommel screen.

The tub grinder is used to chip brush and other tree debris and the trommel screen is used to screen the material to remove undesirable items. The City leases the trommel screen to other municipalities for \$20 per hour. The cities of Watertown, Aberdeen, and Huron have leased the screen in the past. The tub grinder is not leased because of its high maintenance.

In addition to access to the SFRSL and compost site, the City will also make available to communities within the five-county Region access to their new Household Hazardous Materials (HHM) collection facility. The building is scheduled to be constructed this year and is anticipated to be operational in 2004.

Another diversion activity at the SFRSL is the collection of tires and appliances. These items are banned from the landfill, but are accepted for a fee and placed into separate piles on the landfill property. The City contracts with a local tire recycler and an appliance processor to remove these two waste streams throughout the year.

Recommendations

The City should continue to make the municipalities in the region aware of the opportunity to use the above mentioned equipment and the HHM facility. Also, if other municipalities are interested, they could possibly contract with the same vendors for the proper disposal of tires and appliances. Language could be added to the Solid Waste Disposal Agreement that is signed each year by the municipalities and the City, that references these sharing opportunities.

6.2 MATERIALS RECOVERY PROCESSING AND REUSE EVALUATION

The State of South Dakota set a goal to reduce the waste stream disposed in landfills by 50 percent by July 1, 2001. The base year for establishing the amount of materials in the waste stream is the calendar year 1990. The State estimates that the waste stream has been reduced by approximately 37 percent. There are no penalties for not meeting this goal.

Table 6-1 shows the amount of MSW disposed at the Landfill since 1995 and the percent increase or decrease from the previous year.

TABLE 6-1

ANNUAL MSW TONNAGE DISPOSED AT THE SIOUX FALLS REGIONAL LANDFILL

Year	1995	1996	1997	1998	1999	2000	2001
Tonnage	139,297	125,504	128,266	132,686	137,717	140,582	155,563
Percent increase or decrease from previous year	n/a	-11.0%	2.2%	3.4%	3.8%	2.1%	10.7%

The increase in tonnage over the years can be attributed to any number of variables such as an increase in population, an increase in MSW generation per capita, or an increase in the customer base using the SFRSL.

In the 1998 Sioux Empire Region Comprehensive Solid Waste Source Reduction and Recycling Plan, it states that since 1992, the Region has been eliminating yard waste, waste oil, tires, appliances, and lead acid batteries, as well as post-consumer recyclables (i.e., office paper, OCC, plastics, metal containers).

6.2.1 Characterization of Existing Recycling Program

The City of Sioux Falls has an open collection system for municipal solid waste (MSW) and recycling. Haulers must apply annually for a permit. Currently there are 27 licensed haulers in the City. The number of licenses issued by the City was 24, but the Ordinance was revised in 2003 and now there is no limit to the number of haulers licensed.

All haulers collect both MSW and recyclable materials, and most haulers provide residential collection of yard waste materials. Per the City’s Ordinance, garbage and yard waste must be collected at least once per week and recyclables must be collected at least once per month (garbage must be collected at least three times per week from the business districts). MSW containers must be kept at the rear of the premises accessible to the garbage collector and yard waste containers must be kept in an inconspicuous place except when placed for collection (no cans are allowed at the curb). Recycling containers must be “placed at a location clearly visible, other than curbside”. Per City staff input, this has been interpreted by the haulers and customers as placing the container between the house and the sidewalk, but not on the street side of the sidewalk.



The haulers set their own collection schedules – some collect recyclables weekly, bi-weekly, or monthly. Some haulers may collect certain items on certain weeks (e.g., collection of plastic and metals the first full week of the month and newspaper and cardboard the second full week of the month).

Per the City’s Ordinance definitions, “residential recyclables means separation at the source of the following materials into separate recycling containers for collection:

1. Office paper other than junk mail
2. Corrugated Cardboard
3. Plastic and metal containers
4. Newspaper”.

Multi-family dwelling recycling is addressed in Section 18-23 of the City’s Ordinance. The ordinance states “every owner of an apartment shall do the following to facilitate recycling in each such building:

1. Provide adequate recycling containers for recyclable material. Containers shall be stored on the premises in a screened location that is convenient for the deposit and collection of recyclables.
2. Provide for the separation of all residential recyclables generated by or accruing to such establishment.
3. Distribute written information to the building tenants at the time of leasing and as least annually thereafter regarding the established recycling program.
4. Post a copy of the recycling information in a conspicuous place available to all residents.
5. Provide a copy of the recycling information that is annually provided to the apartment tenants by filing the same before January 1 of each year with the city public works department.”

The recyclable materials collected from residents’ homes are delivered to one of two materials recovery facilities (MRFs) in Sioux Falls: Millennium Recycling and Advanced Recycling. These facilities process residential and commercial recyclables and market the materials to various end-users throughout the United States and Canada.



Millennium Recycling has a drop-off site located inside their facility that is open during business hours for residents of the City and surrounding communities to drop off recyclable materials. They also offer redemption opportunities for residents to receive revenue for their aluminum cans. They do charge a fee of one dollar per load to drop off recyclable materials, but the fee is waived if five pounds or more of aluminum cans are redeemed. Items accepted for drop-off at Millennium include cardboard, newspaper (including inserts), magazines, office paper, junk mail, phone books, soft cover books, aluminum and tin food cans, and plastics numbered 1 through 7.

Advanced Recycling allows residents to drop off recyclable materials at no charge. They accept newspaper (including inserts), office paper, junk mail, cardboard, aluminum and tin cans, and plastic bottles numbered 1 and 2. Advanced pays for aluminum cans in quantities of twenty-five pounds or more.

The City also has a drop-off area at the SFRSL for residents and businesses to use free of charge. Items accepted at SFRSL include cardboard, newspaper (including inserts), aluminum and tin cans, and plastic bottles.



The estimated annual quantity of recyclable materials processed in the Sioux Falls area is 23,281 tons¹. Of that total, approximately 12,143 tons come from residents. This calculates to approximately 30 pounds of recyclables per household per month, or 7.5 pounds per household per week. The national average is 9.8 pounds per week², or approximately 30 percent more than the City's current per household recycling rate.

The City has a variable rate pricing system for MSW, which in effect, encourages recycling. Per the City Ordinance, "All licensed garbage haulers shall file, as a part of their application for a business license, a general statement of their use rate structures and billing systems consistent with the City's comprehensive plan of solid waste reduction and recycling program which shall include the following elements:

¹ Source: 2002 Tonnages reported to the City by the two largest MRFs.

² Source: U.S. Environmental Protection Agency report "Municipal Solid Waste in the United States: 2000 Facts and Figures."

1. A rate to reward people who reduce their level of solid waste collection service based either upon volume or weight.
2. A rate to provide customers with adequate options and incentives to reduce their weekly level of solid waste collection service and the amount of solid waste collected as a result of their participation in waste reduction and recycling programs.
3. A rate that includes the combined cost of solid waste, using the above elements, and recycling collection services.”

From the haulers’ License and Permit Renewal Applications, the average and range of monthly solid waste collection fees, *including recycling*, is depicted in Table 6-2.

TABLE 6-2

**MSW AND RECYCLING COLLECTION FEES
City of Sioux Falls, South Dakota**

Service Level	Average	Range
1-can	\$10.56	\$10.50 - \$14.00
2-cans	\$12.37	\$12.25 - \$16.50
3-cans	\$16.55	\$13.00 - \$19.00
4-cans	\$17.25	\$17.00 - \$17.50
Extra can or bag	\$1.23	\$.50 - \$2.00

Table 6-3 depicts the average monthly collection fees for Dakota County, Minnesota (just south of the Twin Cities), which also has an open hauling system. Compared to monthly rates in Dakota County, the rates in Sioux Falls are approximately 20 percent lower for the one- and two-can service level. The City’s three can rate is similar in price to Dakota County’s 90-gallon rate. Note that Dakota County uses cart sizes rather than number of cans.

TABLE 6-3

**MSW AND RECYCLING COLLECTION FEES
Dakota County, Minnesota**

Container Size	Average Monthly Rate
30 gallons	\$12.56
60 gallons	\$15.12
90 gallons	\$16.87

Note: This does not account for differences of house-side vs. curbside collection and the difference in disposal costs.

Recently, Beck completed a Recycling Program Analysis for Washington County, Minnesota, located east of St. Paul. When analyzing variable rate pricing, the data showed that the cities with the highest increment between the small and medium MSW container size collection fees had the highest recovery rate of recyclable materials. Table 6-4 shows the monthly fees and the percent difference in price

between container sizes for various communities in the Minneapolis-St. Paul area, as well as their recovery rates per household. Sioux Falls and Dakota County, Minnesota, were added for comparison. When comparing fees, it is assumed the size of the containers used in Sioux Falls are comparable to the 30-, 60-, and 90-gallon sizes used in automated systems elsewhere.

TABLE 6-4

**AVERAGE MONTHLY MSW AND RECYCLING COLLECTION FEES,
THE PERCENT DIFFERENCE BETWEEN MSW CONTAINER SIZES, AND
ANNUAL RECOVERY AMOUNTS**

Community	SMALL (at 30 gallon)	<i>Percent Difference in Price Between Small & Medium</i>	MEDIUM (at 60 gallon)	<i>Percent Difference in Price Between Medium & Large</i>	LARGE (at 90 gallon)	2001 Per Household Recovery in Pounds
Oak Park Heights	\$10.20	12.0%	\$11.42	14.3%	\$13.05	278
Woodbury	\$12.34	14.1%	\$14.08	12.2%	\$15.80	580
Oakdale	\$13.57	14.7%	\$15.56	13.6%	\$17.68	396
Stillwater	\$12.25	15.5%	\$14.15	13.9%	\$16.12	564
Sioux Falls	\$10.56	17.1%	\$12.37	33.8%	\$16.55	390
Afton	\$10.98	19.9%	\$13.17	16.6%	\$15.36	1,037
Dakota County	\$12.56	20.4%	\$15.12	11.6%	\$16.87	420 ¹

¹ 2000 data.

The percent difference between collection fees for the various container levels in Sioux Falls appears to be at a level that promotes a comparable quantity of recyclable materials being set out for recovery.

Per the City's Garbage and Trash Ordinance, (Chapter 18), the following materials are excluded from the solid waste deposited at the Sioux Falls Landfill:

1. Office Paper
2. Corrugated cardboard (OCC)
3. Plastic containers #1 and #2
4. Metal containers
5. Automobile bodies or other bulky articles
6. Trees and tree limbs, unless they are cut to less than 8 feet in length
7. Oils, gasoline, and other petroleum products*

8. Hazardous materials*
9. Yard waste*
10. Lead acid batteries*
11. Waste tires*
12. White good appliances*
13. Regulated medical waste*
14. Radioactive materials*

The items with an asterisk indicate materials banned from all landfills by the State of South Dakota.

City staff conducts random load inspections at the SFRSL (approximately 6 per week). The staff look for banned items such as appliances, tires, used motor oil, yard waste, and hazardous waste. If a small amount of post-consumer recyclables (i.e., office paper, OCC, plastics, metal containers) are found in a resident's garbage, there is no penalty, but if a hauler attempts to dispose of source-separated recyclables that are mixed in with a truckload of MSW, the City may issue a fine. The Ordinance states that if excluded materials are discovered during the inspection, the director of the department may refuse the entire load and charge the person attempting to deposit the materials the cost of the inspection.

6.2.2 Regional Recycling Programs

As part of this study, Beck surveyed the Solid Waste Planning Board members to better understand the regional recycling efforts. Each community that uses the SFRSL has signed an agreement with the City that states they will implement volume-based collection rates to promote solid waste reduction and recycling, and they will provide recycling opportunities for their residents. Table 6-5 lists the five counties that use the SFRSL and describes their current recycling program. Information for individual cities within the counties was provided by the "Solid Waste Reduction and Recycling Plan 2003 Update Worksheets" that were completed by each local government and returned to the City.

TABLE 6-5
REGIONAL RECYCLING ACTIVITIES

Municipality	Program Description
<p>Lake County</p>  	<p>The County currently has three licensed haulers that operate outside of the City of Madison. The County does not report designating a budget for recycling or waste diversion activities.</p> <p>In the City of Madison, municipal crews collect residential recyclables at the curb. The City requires residents to place recyclables into 3 clear plastic bags, separated as follows:</p> <ol style="list-style-type: none"> 1. Newspaper. 2. Other paper including office paper and computer paper. 3. Tin, steel and aluminum cans, #1 and #2 plastic bottles. <p>Cardboard is collected loose. The materials are taken to the City-owned MRF where they are sorted and baled. (The MRF was built in 1997, funded in part by a State grant.) Residents may also drop off recyclables at the MRF. Other items accepted for drop off include: glass, magazines, catalogs, and phone books. The City accepts recyclables from all of Lake County.</p> <p>Five part-time, developmentally disabled staff are used to sort the materials. The City's garbage and recycling collection staff come to the MRF at the end of their routes each day to bale the materials. The City crushes the glass and uses it in various public works projects such as road base, utility trenches, and swimming pool filters.</p>
<p>Lincoln County</p>	<p>The County licenses haulers. Haulers provide curbside recycling service in the cities of Lennox, Canton, and Beresford City. Some haulers also provide drop-off recycling services.</p>
<p>McCook County</p>	<p>The County licenses recycling haulers and currently there are two licensed in McCook County and both provide curbside recycling service. The following cities have curbside recycling service: Bridgewater, Salem, and Canistota. The County does not report designating a budget for recycling or waste diversion activities.</p>

TABLE 6-5
REGIONAL RECYCLING ACTIVITIES

Municipality	Program Description
Minnehaha County	The County currently licenses ten haulers. The haulers are required to provide recycling opportunities for the unincorporated areas of the County. The following cities have curbside recycling service: Hartford, Humboldt, Garretson, Valley Springs, and Crooks. The materials collected are the same as those collected in Sioux Falls and are processed in Sioux Falls. The County does not report designating a budget for recycling or waste diversion activities.
Turner County	The County currently has six licensed haulers. Haulers provide curbside and/or drop-off recycling services. The following cities have curbside recycling service: Viborg, Chancellor, Parker, and Monroe. The County does not report designating a budget for recycling or waste diversion activities, but does provide a site and equipment for an annual collection of tires and appliances.

6.2.3 Recommendations for the City of Sioux Falls Recycling Program

- Create an ad-hoc committee made up of City staff and representatives from most of the licensed Sioux Falls haulers, to discuss these recommendations, discuss the feasibility of making changes to the current program, and implement changes. The Solid Waste Planning Board (made up of regional representatives) offers an opportunity for solid waste management policy, but the ad-hoc committee would provide an opportunity to implement specific program changes. Representation from most of the hauling community is critical to formulating and developing support for program change.
- Consider standardizing the recycling program to ensure consistency in the following areas:
 - Bin type - the City may want to consider purchasing recycling bins for all residents, so all haulers are using the same type of collection container. Bin prices vary depending on size and quantity, but \$5.00 - \$7.00 per bin is an average cost.
 - Material type - require haulers collect the same types of materials, (i.e., all haulers must collect the same types of recyclables, and they must all collect yard waste and bulk items).
 - Collection schedule - to make collection of recyclables consistent, require that all haulers collect recyclables on the same schedule such as: all materials, every other week, same day as garbage collection. This would allow the City to create more detailed education pieces that would be relevant to all residents, regardless which hauler they use. However, it is likely the haulers will be impacted differently by such a request.



- Enforce the landfill ban by conducting more frequent and consistent load inspections, and consider charging a fee above and beyond the current tip fee when a hauler violates the ban by transporting loads of materials to the landfill containing large amounts of recyclable materials. Section 18-21 of the City Ordinance states, “Residential recyclables collected shall not be deposited at the sanitary landfill. The separation of glass, paper products, and other recyclable materials shall be on a voluntary basis.” Section 18-32 lists the fourteen materials that “shall be excluded from the solid wastes deposited at the landfill site”. It appears that residents may choose not to recycle, but once recyclable materials have been set out and collected by the haulers, those materials cannot be deposited at the landfill. The Ordinance language seems to suggest that no recyclable materials should be deposited at the landfill whether they are commingled with MSW or collected separately. The City’s intent needs to be clarified with revisions to the Ordinance.
- Consider mandating that commercially generated cardboard (OCC) be recycled. The City could decide if ALL commercial cardboard should be recycled, or target businesses that meet City-defined criteria. In a recent benchmarking study conducted by Beck, it was noted that the City of Austin, Texas, mandates that certain businesses, depending on size, must provide on-site recycling service³. Also, the Bluestem Solid Waste Agency in Cedar Rapids, Iowa, retained Beck to help implement a cardboard ban at their landfills. Bluestem held focus groups and included the haulers in the process of implementing the ban. A 6-month transition period provided time to educate the waste generators. After 6 months, fines were issued to violators. This approach was successful by reducing the quantity of OCC being landfilled and increasing the quality of OCC being recycled.
- Consider an ordinance that requires the separation of Construction and Demolition (C&D) debris at construction sites. C&D debris includes bricks, concrete, lumber, paving materials, electrical materials, plumbing fixtures, vinyl siding, etc. These materials are considered inert and could be disposed in the City’s C&D landfill, instead of with the MSW. By separating

³ Commercial and multi-family buildings must provide on-site recycling service per the City Ordinance. The following must provide recycling service: 1) a business with 100 or more employees; 2) a building housing businesses with an aggregate of at least 100 employees if the building owner or manager provides a single garbage collection service; and 3) a multi-family complex with 100 or more units. Said businesses must provide recycling of at least two recyclable materials outlined in another Ordinance, and multi-family complexes must provide recycling for at least four items. Recycling service must be provided at least twice per month. Recycling information and instructions must be provided to employees and tenants. A recycling plan must be filed with the Department of Solid Waste Services and a quarterly volume report must be submitted to the Department.

C&D debris, construction companies could pay substantially less per ton to landfill separated loads of C&D as opposed to the per ton fees to dispose of MSW.

- To increase waste diversion, the City could promote the reuse and recycling of C&D materials. The quantities of C&D material generated is likely to increase at a rate greater than MSW, thus addressing this component of the solid waste stream is critical to promoting diversion. In order for these items to be reusable, contractors must remove them intact (windows, doors, fixtures, etc.) or in large pieces (lumber, drywall, etc.). Some communities have reuse stores or non-profit agencies that will accept used building materials. In Moorhead, Minnesota, Clay County staff separate reusable C&D materials at their landfill and make them available to their residents at no charge. More information is available on their website at:

<http://www.co.clay.mn.us/Depts/PlanEnvi/SWResRec.htm>

The City may want to research local options for recycling C&D materials such as lumber, asphalt, concrete, roofing material, and wallboard. More information on reducing C&D debris is available from the U.S. Environmental Protection Agency at:

<http://www.epa.gov/epaoswer/non-hw/debris/index.htm>

Also included is a document titled “Building Savings: Strategies for Waste Reduction of Construction and Demolition Debris from Buildings” available at:

<http://www.ilsr.org/recycling/buildingdebris.pdf>

- As part of the hauler licensing/renewal requirements, require that the haulers submit a monthly or quarterly recycling tonnage report that lists the tonnages by material type and customer type (residential and commercial). The City should develop a standard form for the haulers to complete. The form would make it easy for City staff to tally the tonnages and make it easy for the haulers to complete. Currently, the only recycling tonnages the City receives are from the two processors in Sioux Falls. One processor reports just residential quantities, the other reports a combination of commercial and residential tonnage. By requiring hauler tonnage reports, the City could better monitor residential and commercial recycling and track its recycling/diversion rate.
- Require the haulers add separate line items on their collection bills indicating what the fee is for recycling collection and yard waste collection. This would increase the visibility as related to these services.
- Strengthen efforts to increase recycling at multi-unit dwellings. Some suggested recommendations include:
 - Develop an education campaign targeted specifically to multi-family dwellers. Send a brochure or distribute door hangers to each apartment resident in the City encouraging recycling and informing them what items are recyclable and where they can drop-off recyclable materials within the City. Provide extra brochures or door hangers to apartment managers to distribute to new tenants. Apply for a grant or use Enterprise Funds to purchase small bins or 5-gallon buckets for each apartment, or sturdy nylon bags with

handles (like Burnsville has) to give to apartment building managers to distribute to their tenants (for those buildings that have collection bins for recyclables).

- Work with several willing haulers to conduct a pilot study of various size apartment buildings, to learn what type of containers work best, how to overcome space issues, the importance of signage to prevent contamination, frequency of collection, etc. If possible, require that the haulers collect tonnage data to determine approximately how many pounds per HH is being collected from the multi-family dwellings that are participating in the pilot. Another recommendation for consideration is to have the City conduct (or hire a firm to conduct) a waste sort of the apartment buildings participating in the pilot before and after the pilot to determine the effect that recycling had on their waste streams.
- After completion of a pilot study and evaluation of results, recommend that the City revise its apartment recycling ordinance to be more specific as to how many items, at a minimum, should be recycled at multi-family dwellings, such as “at least ONP, aluminum and tin cans, and plastic bottles”.
- Consider partnering with the private sector to organize an annual or semi-annual electronics collection event. The City could go out for bids for pricing to have a company collect, transport, and recycle computers, monitors, televisions, and other electronic items. Appendix D includes a contact list of companies that offer recycling services and a list of references of municipalities that have held electronics collection events in the past. The City should also contact the local processors of recyclables and inquire of their interest in offering this service. In 2000, the North Dakota Solid Waste Management Association received a grant from the U.S. Environmental Protection Agency (EPA) for the collection and recycling of electronics. The following link describes the events: <http://www.ndswma.org/grants.htm>. The City may want to approach the South Dakota Solid Waste Management Association to see if there is interest in providing collection events throughout the state.

To determine if other recyclable materials should be added to the City’s recycling program, the City should consider conducting a waste characterization study to determine the types and quantities of recyclable materials that are being disposed along with the MSW. For planning purposes, we have included waste characterization information. Beck was retained by the Solid Waste Management Coordinating Board and Minnesota Pollution Control Agency to conduct a waste characterization study in 1999. Figure 6-1 and Table 6-6 on the following pages depict the composition of the waste stream in Greater Minnesota. This waste stream is likely to be similar to the City of Sioux Falls and the region.

FIGURE 6-1
GREATER MINNESOTA WASTE COMPOSITION RESULTS

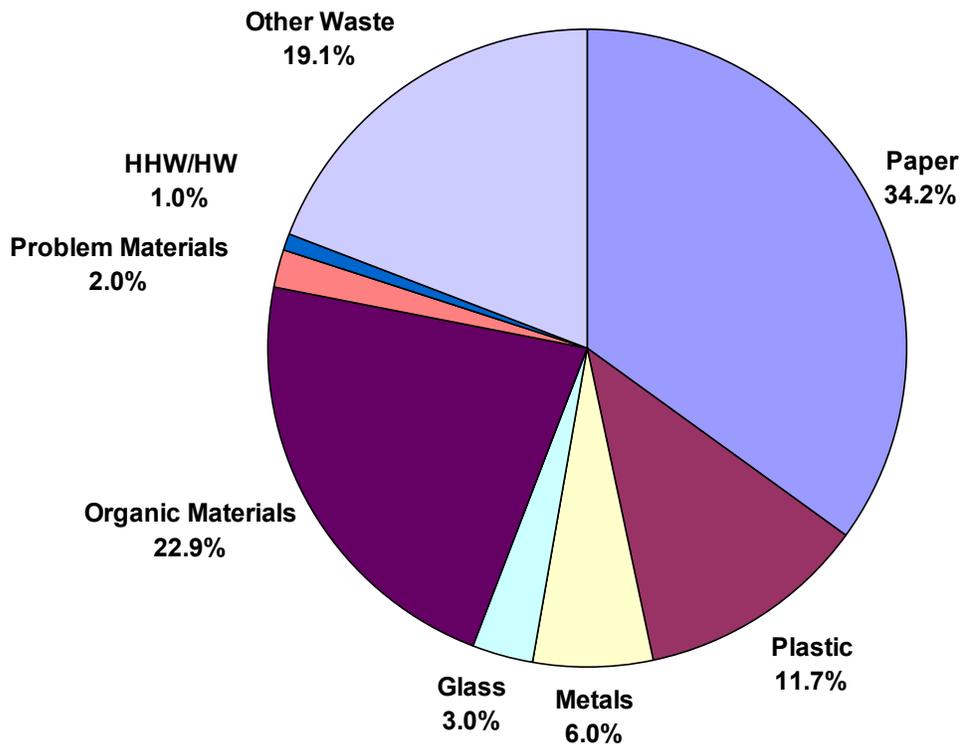


TABLE 6-6

GREATER MINNESOTA AGGREGATE COMPOSITION SUMMARY (BY WEIGHT)

Material Categories	Mean	Material Categories	Mean
PAPER		ORGANIC MATERIALS	
Newsprint (ONP)	4.3%	Yard Waste - Grass and Leaves	1.7%
High Grade Office	3.1%	Yard Waste - woody material	0.1%
Magazines/Catalogs	2.7%	Food Waste	14.5%
Uncoated OCC - recyclable	4.6%	Wood Pallets	0.4%
Uncoated OCC - nonrecyclable	0.5%	Treated Wood	1.6%
Coated OCC	0.3%	Untreated Wood	1.1%
Boxboard	2.8%	Diapers	2.7%
Mixed Paper - recyclable	5.3%	Other Organic Material	0.9%
Mixed Paper - nonrecyclable	10.8%	<i>Subtotal Organic Materials</i>	22.9%
<i>Subtotal Paper</i>	34.2%	PROBLEM MATERIALS	
PLASTIC		Televisions	<0.1%
PET Bottles/Jars - clear	0.5%	Computer Monitors	<0.1%
PET Bottles/Jars - colored	0.4%	Computer Equipment/Peripherals	<0.1%
Other PET	<0.1%	Electric and Electronic Products	1.9%
HDPE Bottles - natural	0.3%	Batteries	0.1%
HDPE Bottles - colored	0.3%	Other	<0.1%
PVC	0.1%	<i>Subtotal Problem Materials</i>	2.0%
Polystyrene	0.9%	HHW/HW	
Film - transport packaging	0.2%	Latex Paint	<0.1%
Other Film	4.4%	Oil Paint	0.1%
Other Containers	0.5%	Unused Pesti/Fungi/Herbi-cides	<0.1%
Other non-containers	4.2%	Unused Cleaners and Solvents	<0.1%
<i>Subtotal Plastic</i>	11.7%	Compressed Fuel Containers	0.0%
METALS		Automotive - Antifreeze	<0.1%
Aluminum Bev. Containers	0.9%	Automotive - Used oil filters	0.1%
Other Aluminum	0.5%	Other	0.6%
Ferrous Containers	1.3%	<i>Subtotal HHW/HW</i>	1.0%
Other Ferrous	3.3%	OTHER WASTE	
Other Non-Ferrous	0.1%	Textiles	3.4%
<i>Subtotal Metals</i>	6.0%	Carpet	1.5%
GLASS		Sharps and Infectious Waste	<0.1%
Clear Containers	1.6%	Rubber	0.7%
Green Containers	0.4%	Construction and Demo. Debris	3.2%
Brown Containers	0.5%	Household Bulky Items	2.9%
Other Glass	0.5%	Empty HHW/HW Containers	0.7%
<i>Subtotal Glass</i>	3.0%	Miscellaneous	6.7%
		<i>Subtotal Other Waste</i>	19.1%
GRAND TOTAL			100%

Note:

The total/subtotal may not equal the sum of the material categories due to rounding.

The percentage of paper (other than newspaper, office paper, and non-recyclable paper) that could potentially be recycled totaled 15.7 percent. The amount of glass in the waste stream totaled 3 percent. Therefore, additional diversion opportunities exist.

The City may want to discuss with the haulers and Millennium Recycling and Advanced Recycling the possibility of adding residential mixed paper (magazines, household office paper and mail, and/or boxboard) to the list of recyclable materials collected from residents by the haulers. Also, discuss with the local haulers and processors the feasibility of adding clear and brown glass to the recycling program, as a way to increase diversion.

Anchor Glass in Shakopee, Minnesota (just southwest of Minneapolis), is a large end user of recycled glass in the region. Minnkota Recycling in Fargo, North Dakota, transports clear and brown glass to Anchor. The green glass collected in Fargo's recycling program is crushed and used by a local manufacturer of sandblast material and sandpaper products. Per a telephone conversation with Anchor Glass, market prices as of May 12, 2003, were \$50.00 per ton for clear, \$35.00 per ton for amber, and \$15.00 per ton for green glass, delivered. Another option for glass is crushing it and using it as part of the aggregate mix for roadbed construction. The Minnesota Department of Transportation, in conjunction with the Minnesota Office of Environmental Assistance (MOEA), published the "Reclaimed Glass Information Kit" in March of 2001. This document provides information on reclaiming glass, provides case studies of Minnesota counties that have successfully used glass in aggregate mix, and provides references and resources. The kit may be downloaded from the MOEA's website at:

<http://www.moea.state.mn.us/lc/purchasing/glassaggregate.cfm#toolkit>

The City should consider contacting the City of Madison, SD to discuss their uses of crushed glass and investigate the feasibility of Sioux Falls using crushed glass similarly in City public works projects such as road base or as a filter medium. If the haulers and/or processors do not want to handle glass, the City could provide drop-off sites for residents to dispose of glass bottles and jars. The City may be eligible to receive funding for a glass crusher and screener through the State of South Dakota's Department of Environment & Natural Resources. Their funding requirements are outlined further in this section under "Funding and In-kind Support for Public Education and Information Efforts". In the past, the State has awarded grants to fund capital costs related to solid waste and recycling projects.

6.2.4 Characterization of Existing Yard Waste Collection and Composting Programs

In 1995, the State of South Dakota banned yard waste from all landfills in the state.

City of Sioux Falls

The City operates a 5-acre compost site at the SFRSL. Lawn waste is accepted for \$5.50 per ton, \$5.00 per pickup truck, \$2.50 per car, and \$.50 per bag (grass and leaves only). Most licensed haulers provide yard waste collection to residents. Per City Ordinance, haulers must collect yard waste from residents at a minimum of once per week.

At a hauler meeting held on March 27, 2003, most haulers stated they have an additional charge beyond their MSW base fee for residential yard waste collection. On the Hauler License and Renewal Applications, most haulers provided MSW collection rates only, so it is not clear what is charged for yard

waste collection. Three haulers did give rates for yard waste collection: \$1.00 per bag, \$1.50 per bag, and one stated it depends on the quantity.

The annual quantities of yard waste materials collected in recent years, as reported by the City, are shown in Table 6-7. The increase in tonnage may be attributed to several variables including more participation by residents, or it may be directly related to the weather, (i.e., if more precipitation was received in the last few years, that could have contributed to more yard waste collected).

TABLE 6-7
ANNUAL YARD WASTE AMOUNTS BROUGHT TO THE
SIOUX FALLS COMPOST SITE

Year	1997	1998	1999	2000	2001
Tonnage	2,473	3,292	3,842	4,559	5,054
Percent Increase From Previous Year	2%	33%	17%	19%	11%

The City actively composts the yard waste during the spring, summer, and fall months. The finished compost is given away to residents free of charge (residents must load it themselves at the Landfill compost site) and the City Parks Department is allowed two dump trucks per year. The City does not sell the compost, and is able to get rid of it all through the giveaway program.



The City has created public education pieces in the past to educate residents about yard waste disposal options. On the City's website, on the Landfill/Recycling page, there is a Yard Waste section with three links:

- “A Guide to Recycling,” which offers yard waste information such as:
 - Why Bag Your Grass Clippings?
 - How to Recycle Grass Clippings?
 - Mulching Tips.
- “The Essentials of Composting,” which explains the composting process and gives directions for making a compost bin.
- “The Benefits of Reusing Yard Wastes.”

In April 1991, the City published a tri-fold brochure titled “Cut it High – Let it Lie” which encouraged residents to leave grass clippings on their lawn. An undated brochure titled “A Homeowners Guide to Recycling” is very thorough. It has most of the same information that is currently on the website such as how to recycle grass clippings, mulching tips, how to build a compost bin, and the benefits of reusing yard wastes. The flyer that the City sent out in utility bills in the spring of 2003 did not address yard waste.

Recommendations

- Include yard waste disposal information on all solid waste and recycling public education pieces.
- Conduct a survey of customers to assess who sets out yard waste for collection and other related data.
- The City may want to consider selling finished compost for a fee. Or perhaps offer one load for free to residents, and charge a per load or per cubic yard fee for additional amounts.
- Per discussions with State Department of Agriculture staff, whether the City sells or gives away finished compost, it must obtain a Commercial Fertilizer Distribution License from the Department of Agriculture, per South Dakota Statute Title 38 - Agriculture and Horticulture, Chapter 19 – Commercial Fertilizer. The license is biennial and the fee is \$25. In addition to the license fee, the City would be required to pay an inspection fee of ten cents per ton for each ton of compost distributed during the previous calendar year. A guaranteed analysis of the finished compost is required to determine total nitrogen (N), available phosphoric acid (P₂O₅), and soluble potash (K₂O). A label for the compost is required regardless if it is distributed in containers or in bulk. The City must make the labels (or photocopies of the label) available upon request for customers. The label must contain the following information:
 1. Net weight.
 2. Brand and grade.
 3. Guaranteed analysis.
 4. The source or sources from which the nitrogen phosphorus and potassium are derived (specialty fertilizers only).
 5. Name and address of licensee or registrant.

If the finished product is adulterated or misbranded, there may be consequences, as either act may be considered a misdemeanor.

6.2.5 Regional Yard Waste Programs

Turner County

- Cities in the County deposit yard waste at rubble sites. (Rubble sites are inert landfills that accept yard waste, concrete, wood, etc. Yard waste must be composted, C&D materials can be buried, and brush can be burned.)

City of Madison

- Per City Ordinance, yard waste is collected by the City on a subscription basis. Collection is every Wednesday from April through November. Yard waste containers must be approved by the City. Residents pay an annual subscription fee plus a per bag fee which is collected through the purchase of the bags.
- Yard waste is taken to the City's restricted use site (old landfill) where it is composted and used as cover for the C&D materials.



Lake County

- See City of Madison.

McCook County

- The County does not have a management plan for yard waste. The City of Salem has a restricted use site for the disposal of yard waste for Salem residents.

Minnehaha County

- No yard waste program.

6.2.6 Characterization of Existing Community Reuse Programs

On the City of Sioux Falls' website, under Tips for Recycling, waste reduction ideas are listed as well as organizations that take used clothing.

Recommendations

The City should post addresses and phone numbers on the website of the organizations that accept reuse items. Also, expand the website to include information on disposing of bulk materials such as furniture and "problem" materials such as computers, electronics, and cellular phones (many national companies have take-back programs). Investigate the feasibility of creating a reuse website, such as the City of Fargo's "Freebee" website or the "Twin Cities Free Market" website:

<http://www.cityoffargo.com/solidwaste/freebee/default.asp>

<http://www.twincitiesfreemarket.org/resources.cfm>

6.3 EVALUATION OF THE WASTE REDUCTION, REUSE, AND RECYCLING PUBLIC EDUCATION AND INFORMATION PROGRAM

Beck staff met with City staff on March 6, 2003, to discuss current waste diversion programs. Beck staff then attended a Solid Waste Planning Board meeting in Sioux Falls on March 12, 2003. The Board is made up of representatives from each of the five counties that have agreements with the City of Sioux Falls to use the Sioux Falls Regional Landfill. During the meeting, the Board provided feedback and background information on current diversion activities in the five-county Region. Each Board member was given a written survey with questions regarding their local waste diversion activities. A copy of the survey is included in Appendix D.

On March 27, 2003, Beck staff met with local haulers to discuss recycling-related issues. A written survey was given to all haulers in attendance. Those not in attendance were mailed a survey. A copy of the hauler survey is attached in Appendix D. On May 28, 2003, Beck staff observed residential recycling collection in Sioux Falls, met with City staff, toured Millennium Recycling, Inc., in Sioux Falls, and toured the City of Madison's recycling center and restricted use site.

6.3.1 Current Public Education Program and Marketing Strategies

The City of Sioux Falls has published many brochures on the topics of waste reduction, reuse, and recycling. Some of the titles include:

- Sioux Empire Guide to Recycling.
- 2002 Make Sioux Falls Glitter.
- Pick up Your Litter.
- Home Healthcare Needle Disposal Program.
- Household Hazardous Material 2002 collection notices.

- Cut it High – Let it Lie (Yard Waste).
- A Homeowners Guide to Recycling (Yard Waste).
- In the Spring of 2003, the City included a flyer in the utility bills that outlined how to prepare trash and recyclables for collection.

The Public Works Department has a “Landfill/Recycling” webpage. The page has four links: Recycling, Landfill, Special Wastes, and Yard Wastes.

The Recycling page offers the following four pages of information:

- Vendor List. Provides the names of local businesses that accept recyclable materials.
- Tips for Recycling. Lists the items that are banned from the Sioux Falls Landfill and describes how to prepare these items for recycling and explains which materials to discard. This page also offers a few waste reduction ideas.
- Household Hazardous Waste Program. Describes the City’s annual Household Hazardous Materials (HHM) collection day.
- Projects N.I.C.E. (Neighborhood Improvement Complaint Easement) and K.E.E.P. (Keep Environmental Enhancement Permanent). Explains these neighborhood cleanup programs.

The Yard Waste page offers the following three pages of information:

- “A Guide to Recycling” offers yard waste information such as:
 - Why Bag Your Grass Clippings?
 - How to Recycle Grass Clippings.
 - Mulching Tips.
- “The Essentials of Composting” explains the composting process and gives directions for making a compost bin.
- “The Benefits of Reusing Yard Wastes” explains the benefits of composting and mulching.

Other public education programs in the five-county Region include:

- The City of Madison – The City publishes solid waste and recycling reminders in the local paper, includes information in utility bills, makes presentations to schools and scout groups, and organizes an annual Earth Day event.
- Lake County – The Solid Waste Advisory Board published public education ads and pamphlets several years ago. The Board has since disbanded, but the pamphlets are still distributed to new customers by the City of Madison.
- McCook County – The County does not provide any recycling public education information.

- Minnehaha County – The County does not provide any recycling public education information.
- Turner County – The County does not provide any recycling public education information. The haulers send information to their customers.
- Lincoln County did not respond to the Solid Waste Planning Board Waste Diversion, Recycling, and Reuse Survey, distributed by R. W. Beck.
- Millennium Recycling, Inc., the largest materials recovery facility in Sioux Falls, has a web page that provides recycling information for businesses and residents. Millennium also has a public drop-off/redemption center located inside their facility.

6.3.2 Funding and In-kind Support for Public Education and Information Efforts

The State of South Dakota's Department of Environment and Natural Resources provides grants, loans, or a combination of grants and loans for solid waste disposal, recycling, and waste tire projects. Last year the legislature approved \$750,000 for this fund. The program is funded through a \$1.00 per ton surcharge at all landfills and a \$.25 per tire or a maximum of \$1.00 per vehicle, paid during vehicle registration. To apply for a loan and/or grant, the applicant must complete an application as well as submit a 3-year business plan.

To be eligible for funding consideration an application must:

1. Clearly show how the project will advance the state's solid waste management hierarchy.
 - Volume reduction at the source.
 - Recycling and reuse.
 - Use for energy production.
 - Disposal in landfill or combustion for volume reduction.
2. Show potential cost savings, public health, or environmental benefits in solid waste management, waste tire management, or waste tire processing for energy production.
3. Develop a detailed workplan, time schedule, budget, and provisions for a final report.

In the past, the grants have typically been awarded to fund capital costs related to solid waste and recycling projects.

In 2003 the City budgeted \$44,450 for Landfill Printing and Advertising. This money is allocated for television and radio advertising, waste reduction education, information on Landfill bans, HHM information, public service announcements, and Earth Day promotions. This equates to approximately \$.67 per household for public education, using the 2000 Census Data household count of 66,778.

As a reference, Dakota County, Minnesota, budgets approximately \$150,000 for public education, which equals approximately \$1.10 per household (135,846 households). Anoka County, Minnesota, budgets approximately \$139,200 or \$1.31 per household (106,428 households). These counties were used as a reference because they both have open hauling systems.

Recommendations

- Update the Comprehensive Solid Waste Source Reduction and Recycling Plan (Plan). The State requires local governments to update this Plan every 5 years. The Sioux Empire Regional Plan was last updated in December of 1998. The City and regional municipalities should follow their own Waste Reduction “Recommended Actions” outlined in the Plan:
 - Pursue grants for the purpose of expanding and enhancing waste reduction and reuse programs in the Region.
 - Promote waste reduction activities through educational materials. Investigate grant opportunities for funding the development, printing, and circulation of regional public education materials such as PSAs, a business recycling guide, C&D recycling education, etc.
 - Develop a group of resource persons from communities in the Region who will promote and help implement waste reduction programs.
 - Work to develop and implement a waste exchange program for the Region’s industry and businesses.

As mentioned earlier in the Recycling Recommendations:

- Standardize the method of residential recyclables collection by requiring all haulers to collect recyclables in the same manner (i.e., recyclables should be placed in an 18-gallon bin, and materials should be in paper bags, not plastic bags). Standardized educational materials should be developed to educate residents on how to prepare items for recycling, regardless which hauler collects their materials.
- Consider purchasing 18-gallon recycling bins, or some agreed upon alternative, for all City residents. This would help standardize the program, and give the City a more uniform “look.” (Currently, some haulers allow residents to use their own bin, box, can, or container for recycling.) Also the distribution of bins would serve as an opportunity to distribute recycling literature.
- Require the haulers add separate line items on their collection bills indicating what the fees are for recycling collection and yard waste collection. This would ensure the residents realize that recycling is a separate component of their MSW collection service. The City should also revise their annual license fee application form by asking for these costs to be itemized instead of combined with MSW collection fees.
- Hire a staff person or redefine an existing City position to dedicate to recycling program management. If possible, research grant opportunities to pay for part or all of this person’s salary. Also, consider hiring a college intern to help with recycling-related tasks. Develop a plan to educate school children through school presentations.

- Enforce proper recycling setouts, to reduce contamination and amount of unacceptable materials. Work with haulers to educate the residents by leaving reminder tags. Repeat offenders should be reported to the City. The City should add language to the annual hauler license applications defining their role and the haulers' role regarding improper recycling setouts.
- When feasible, the City should identify disposal options for other materials such as tires, appliances, scrap metal, electronics, etc. in their printed materials. This information should also be added to the City's website.
- Ensure that the language in the public education pieces is consistent with the language in the Ordinance.
- When designing public education brochures and information pieces, consider using a consistent "look" in all pieces (i.e., use the same font, colors, logo, mascot, etc.). Residents will eventually recognize these as waste reduction and recycling information pieces and will hopefully save them and reference them when needed.
- Update and re-publish the Business Recycling Guide that was developed in the mid-1990s as part of the Region's Comprehensive Solid Waste Source Reduction and Recycling Plan. Form a committee to oversee the design and content of the guide and develop a distribution plan. Follow-up with businesses to gauge the effectiveness of the guide.
- The City should increase the public education budget and expand its efforts to increase the visibility of the recycling and waste diversion programs. It is recommended that at least \$1.00 per household per year be budgeted for public education.
- To further promote recycling and waste diversion activities, the City should consider expanding its public education efforts. Provided below is a discussion on public education initiatives that may provide the City with ideas for increasing awareness.

Public Education Initiatives

The City has created an awareness about solid waste management issues, such as waste reduction, recycling, composting, and anti-littering, and played a significant role in reducing the amount of waste annually disposed of in the Sioux Falls Landfill.

To further enhance the performance and cost effectiveness of the City's outreach programs, the City may want to develop public education initiatives. Fortune 500 companies throughout the United States have begun to realize that many programs are developed and implemented without *measurable goals, identification of specific target audiences, strategies to meet the goals, and monitoring mechanisms*. In response, program managers are often required to develop plans which include these components, before a recommended program is even considered. The City may want to apply this process to education/outreach initiatives and solid waste programs that either have been or will be implemented. Provided below are recommendations to help the City increase waste reduction and recycling awareness.

- **Target Community Recycling Efforts.** The City has successfully promoted recycling and these efforts have contributed to a portion of the residents participating in recycling. However, if the City is going to increase these participation rates, the City will need to:
 - Document participation rates.
 - Determine areas with low participation rates.
 - Target individual neighborhoods or communities.
 - Determine why residents within these neighborhoods or communities do or do not recycle.
 - Develop specific strategies for increasing recycling within these neighborhoods or communities.

To accomplish this, the City could use the following process:

1. Identify up to two neighborhoods or communities per year to conduct a targeted and comprehensive recycling campaign.
 2. Once identified, conduct focus groups within the neighborhood or community or conduct a survey to identify individual recycling habits and concerns.
 3. Establish a solid waste steering committee or even just one individual that can serve as the district liaison with the neighborhood or community.
 4. Make school presentations and educator workshops a priority in that neighborhood or community.
 5. Make waste reduction efforts and development of recycling programs for businesses a priority in that neighborhood or community.
 6. Work with government officials to establish recycling and programs at government offices.
 7. Develop an outreach campaign specific to that neighborhood or community.
 8. Work with local haulers to be able to benchmark changes in recycling.
 9. Have a special promotional recycling event within that neighborhood or community.
 10. Recognize the neighborhood or community at the end of the year for implementation of recycling programs and increasing recycling.
 11. Highlight the success of this neighborhood or community on a Regional basis.
- **Focus on Annual Outreach Campaigns.** Currently, the City is conducting numerous outreach campaigns for yard waste management, waste reduction, household hazardous waste, recycling, and littering. To increase the effectiveness of each campaign, the City may want to limit its outreach campaigns to one or two per year. For each of these campaigns, the City could use the

continual improvement process to develop a yearlong campaign that includes specific timelines. Additionally, the City could promote that particular campaign to all waste generators. For example, if the campaign is going to be about waste reduction, then the business, residential, and education community outreach efforts should all address waste reduction.

Marketing studies have reported that a message needs to be seen at least seven times to have any impact, and at least 20 times to change a consumer habit. For many of these campaigns, such as “Buy Recycled,” the City is trying to change a consumer habit, and just one or two exposures will not accomplish this goal. After the intense campaign, the City could continue to reinforce the campaign through periodic exposures to the issue.

- **Re-Establish the Business Recycling Program.** To increase recycling in the business community, the City may want to work with other regional business and recycling organizations to implement a business waste reduction program during the planning period that could include:
 1. Targeting businesses by the type of waste they generate.
 2. Designing specific workshops for specific generator types.
 3. Following up with workshop attendees.

Each of these is discussed in detail below:

A. Target Businesses by the Type of Waste They Generate

Industries within the same Standard Industrial Code (SIC) classification exhibit similarities in the composition of their disposed waste stream. For example, businesses in SIC Code 25 (Furniture and Fixtures) generate large quantities of wood by-products, whereas businesses in SIC Code 27 (Publishing and Printing) generate large quantities of paper by-products. By targeting business outreach efforts to just one or two SIC codes per year, the County will be able to:

- Identify key decision-makers.
- Coordinate face-to-face meetings with key decision-makers.
- Design educational and promotional materials that are specific to that particular business category and waste stream.
- Determine motivators and barriers to waste reduction that are specific to that particular business category and waste stream.
- Focus research on material markets to just one or two waste streams.
- Facilitate alliances among similar waste generators.
- Conduct timely follow-up.

The City could work with businesses to develop a business outreach plan. This plan could include information such as:

- Names of key decision-makers within the targeted firms.
- A schedule for the first round of meetings.
- Identification of materials these businesses currently dispose that could be recycled.
- Case studies from similar businesses that have successfully implemented a recycling program.
- List of trade publications and conferences, including trade shows, with exhibit information that target similar businesses.
- Meeting dates and contact names for trade associations that serve these types of businesses.

B. Design Specific Workshops for Specific Generator Types

As with the business program, workshops can be designed to target specific generator types. For example, the City could design a workshop just for printers (SIC code 27) rather than all businesses. By narrowing the intended audience, the workshop could include both environmental and non-environmental information that may be of interest to printers, such as new printing digital technologies, scanning equipment, soy-based ink products, recycled-content paper stocks, etc. By making the topics specific to their business rather than generic waste reduction information, interest in the workshop will most likely increase.

C. Follow-up with Workshop Attendees

The measure of success for a business workshop is not only the number of firms attending, but also the changes in behavior that result from the information provided. To facilitate the successful implementation of diversion programs after workshops, follow up is often conducted at least once with each of the attendees.

When conducting follow-up with workshop attendees, the City may:

- Provide additional information on how to institute a waste reduction program for that particular type of business.
- Distribute a list of local companies that would accept their recyclable materials.
- Identify opportunities for the attendee to purchase recycled-content products.

Table 6-8 provides a summary of the Waste Diversion recommendations.

TABLE 6-8
SUMMARY OF WASTE DIVERSION RECOMMENDATIONS

Recycling	Yard Waste	Reuse	Public Information/Education
Create an ad-hoc committee to develop recommendations	Require haulers to list yard waste fees on license applications	Expand current website to identify locations accepting items; include options for problem materials such as computers, electronics, cell phones, etc.	Update the Comprehensive Solid Waste Source Reduction and Recycling Plan.
Standardize bin type, material type, and collection schedule	Include yard waste information on all public education pieces	Consider developing a reuse website	Pursue grants for education funding.
Enforce landfill ban by conducting more frequent and consistent load inspections and charging additional fees above and beyond current tip fee for loads in violation of Ordinance	Via Ordinance, require all haulers to collect yard waste, and list collection fee on their bills as a separate line item		Standardize education materials.
Mandate recycling of commercially generated OCC	Conduct a survey of customers to assess yard waste collection participation		Retain staff person with some recycling responsibilities.
Consider mandating the separation of C&D material for either reuse and/or recycling	Consider selling finished compost		Enforce recycling setouts.
Request tonnage reports from haulers	Obtain a license from the State to distribute finishes compost		Ensure language in public education pieces is consistent with that in Ordinance.
Request that haulers itemize customer bills showing diversion fees.			Publish a Business Recycling Guide
Consider a waste composition study and the feasibility of adding mixed paper, glass, and/or other items to program			Develop Public Education Initiatives
Consider adding glass to the recycling program either via curbside collection or through a drop-off program			