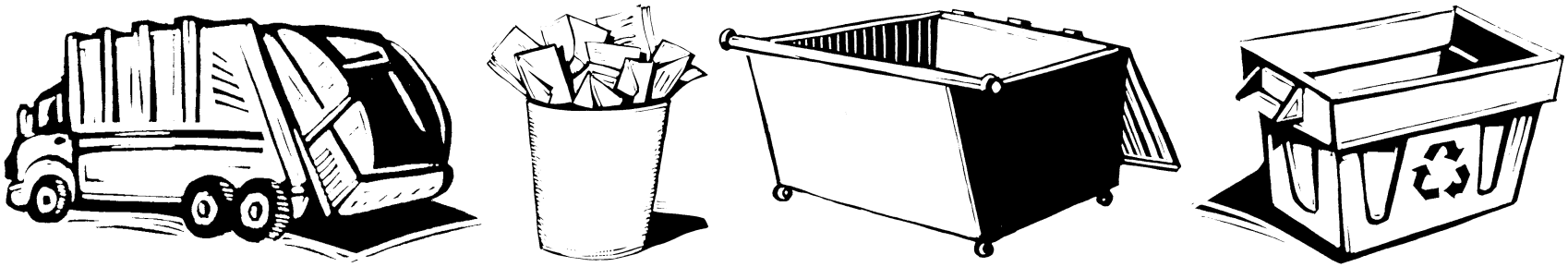
Solid Waste Management Plan
2006 – 2026



City of Powder Springs

Draft December 8, 2006

Planning Framework

Purpose

The 1990 Georgia Comprehensive Solid Waste Management Act established the requirement for solid waste planning by local governments. The act has established integral links between solid waste planning, reporting and permitting. In order to remain eligible for state solid waste grants, loans, and facility permits, local governments are required to update and maintain their Solid Waste Management Plan.

The Act sets out two statewide goals which must be met in each local or multi-jurisdictional plan. These are as follows:

1. Ensure adequate capacity of solid waste collection and disposal for the ten-year period following the adoption of the plan.
2. Achieve a 25% per capita reduction in the amount of solid waste disposed over the base year of 1992.

Elements of the Plan

The Solid Waste Management Plan is organized into seven elements consistent with Georgia Department of Community Affairs (DCA) standards for Solid Waste Management Planning.

Waste Stream Analysis

The Waste Stream Analysis includes an inventory of waste stream generators, and an analysis of waste content. Estimates of total waste composition are provided based on national averages. The analysis of the local waste stream is compared to the city's population and employment in order to calculate per-capita disposal rates. Finally, projected population and employment increases are used to derive future solid waste management capacity needs.

Collection

The Collection Element includes an inventory and description of the city's collection programs such as curbside pickup, yard clippings, or recycling. The public and private entities contracted to collect solid waste are

identified. An assessment of the adequacy of collection programs for the city's current and future population is included. Management authority and contracts for all groups providing waste collection services are examined. The Collection element also includes a contingency strategy for interim collection of solid waste in the event of an interruption of service from the primary provider.

Waste Reduction

The waste reduction element begins with an inventory of the waste recycling programs available within the City of Powder Springs. Composting programs and yard clipping pickup services are also outlined. Finally, the Waste Reduction Element contains an assessment of the city's efforts toward meeting the statewide goal of a 25% reduction in waste over 1992 generation rates.

Disposal

The Disposal Element contains a detailed inventory and description of current disposal programs. The report examines each landfill type along with its ownership, location, and capacity. Contracts and assurances of remaining capacity for the ten year planning horizon are required within the Disposal Element. Like the Collection Element, the Disposal Element is required to include a contingency strategy for solid waste disposal in the event of an interruption of service from the primary provider.

Land Limitations Analysis

The Solid Waste Management Plan includes an analysis of the limitations for site selection of solid waste management facilities such as landfills, transfer stations, incinerators, recycling centers, and composting facilities. Environmental limiting factors such as water supply watersheds, groundwater recharge areas, wetlands, river corridors, and protected mountains are included in the Land Limitation Analysis criteria. In addition to identifying areas unsuitable for solid waste facilities, the Land Limitations Analysis Element examines a decision making process for the selection of new facilities.

Education and Public Involvement

The Education and Public Involvement Element includes an inventory of public education programs regarding solid waste such as advertising campaigns encouraging recycling efforts. This element also includes an

assessment of the adequacy of current education and public involvement programs in targeting specific waste generators and waste streams.

Implementation Strategy

The final section of the plan is the Implementation Strategy, which brings together many of the preceding elements of the plan. Implementation actions have been crafted according to the needs and goals statements identified in the assessment portion of each plan element. An implementation schedule is provided for relevant current programs and planned future programs.

Planning Process

A three-stage planning process is carried out for each of the five core elements of Collection, Waste Reduction, Disposal, Land Limitations Analysis, and Education and Public Involvement.

Inventory and Assessment

The Inventory and Assessment stage of the planning process takes stock of current programs and resources for managing solid waste. After enumerating current programs and conditions, an assessment of adequacy is made for serving the needs of the community.

Needs and Goals

After current conditions have been outlined and analyzed, needs and goals are formulated in order to meet the current and future needs of the City of Powder Springs. Likewise needs and goals are formulated to address the city's efforts at meeting statewide waste reduction goals.

Implementation Measures

In the final stage of the planning process, implementation measures are crafted in order to meet the needs and goals formulated for each element.

Planning Area

The Solid Waste Management Plan is intended to comprehensively integrate solid waste planning at the local, multi-jurisdictional, and regional levels. The increasing trend of solid waste hauling across local jurisdictions and between states has lead to the need for holistic, intergovernmental planning for waste management needs. For example, according to the Georgia Department of Community Affairs (DCA), solid waste imports from neighboring states have increased from 2% of Georgia's total Municipal Solid Waste (MSW) in 1998 to 10.6% in 2003. Under the 1990 Georgia Comprehensive Solid Waste Management Act, any request for permitting or public financing of solid waste handling facilities must be consistent with solid waste management plans for all affected local governments. The City of Powder Springs currently contracts solid waste disposal services from Cobb County. Thus, coordination of solid waste planning must be carried out between the City of Powder Springs and Cobb County.

While solid waste disposal services are contracted through Cobb County, the primary jurisdiction of the planning area is the City of Powder Springs. Currently, the city's sanitation department does serve a number of residences outside of the City of Powder Springs. However, customers residing outside of the City of Powder Springs have the choice of opting out of service provided by the city. The city's primary obligation for waste collection is toward residents of Powder Springs. The greater sanitation service area is identical to the city's sewer and water service area. (See Water and Sewer Service Area Map, p. 64, Powder Springs Comprehensive Plan Technical Data Appendix) Areas within the Powder Springs water, sewer, and sanitation service area are considered in the city's long range annexation plan. The city's Comprehensive Plan also includes a policy supporting the annexation of utility service areas. Likewise, population projections provided in the Powder Springs Comprehensive Plan and Solid Waste Management Plan include growth stemming from anticipated annexations.

Currently, 12.7% of the customers served by City of Powder Springs Sanitation department reside outside of the city limits. In order to reconcile this additional service area with the city's growth forecasts, an additional 12.7% was added to the population projections included in the city's 2006 Comprehensive Plan Update.

The city's first solid waste management plan was conducted in 1993. The following chapter serves as the required ten year update to the city's existing solid waste management plan.

The City of Powder Springs lies in the southwest portion of Cobb County, Georgia, and encompasses 4,581 acres of land. The City of Powder Springs lies at a relatively low point in Cobb County with an elevation range of approximately 900-1,000 feet above sea level. The population of Powder Springs was 12,481 with 4,004 households as of the 2000 Census. The City of Powder Springs is primarily a residential "bedroom community" housing workers who commute to larger employment centers throughout the Atlanta Metro Area. Because residents typically commute out of the city for employment, the city's population decreases during the daytime. According to the Census Bureau, Powder Springs' daytime or "functional" population was 8,993 as of the year 2000. The majority of the employment located in Powder Springs is geared toward serving the residential base of the city. For example, retail, accommodation, and foodservice employment represent 69.3% of the city's total jobs. Some transportation and warehousing activity associated with the city's railroad infrastructure is located in Powder Springs.

Waste Stream Analysis

The waste stream refers to the total flow of solid waste from homes, businesses, institutions and manufacturing plants that must be recycled, burned, or disposed of in landfills. Both the residential waste stream and the recyclable waste stream are included in this term. Waste stream analysis is complicated by the mix of private and public service providers. Waste generated by industrial and commercial sectors is rarely handled by public solid waste programs. Furthermore, many local governments find it cost efficient to contract out residential collection and disposal services from private providers. In order to comprehensively regulate the waste stream, it may be necessary for local governments to control permitting of industrial and commercial waste hauling activities. If residential waste collection is outsourced to private firms, contract agreements can serve as a crucial control over the waste stream. For example, specific performance measures and standards may be set forth by the local government to be followed by the waste service provider. (GA DCA, *Solid Waste Annual Report: 2004*)

Types of Waste

The total waste stream generated within the City of Powder Springs includes several different components. Refuse can be categorized by the use from which it was generated. These distinctions are important because waste type affects the means of disposal required. For example, municipal solid waste (MSW) is typically disposed of in a different type of landfill than construction and demolition debris (C&D). Furthermore, the

growth of different sectors can influence future waste disposal needs. Residential population growth will lead to different disposal needs than industrial employment growth. However, there is some overlap between MSW and C&D wastes, since residents may dispose of debris from small renovation projects through their regular trash pickup. Likewise, construction crews generate a certain amount of consumer waste that is not associated with the actual building process, such as packaging materials and food containers. While Georgia had 44 active C&D landfills as of 1998, there are also numerous MSW landfills that accept C&D waste. (EPA, 1998; GA DCA, 2004) Because C&D waste is typically disposed of through private hauling contractors, the primary focus of this study is MSW.

Municipal Solid Waste

Municipal solid waste (MSW) is made up of items commonly discarded from residential and commercial uses. The United States Environmental Protection Agency estimates that residential waste (including waste from apartment houses) makes up 55 to 65 percent of total MSW, and that schools and commercial locations (including hospitals and businesses) account for the remaining 35 to 45 percent of MSW. (MSW Generation, Recycling, and Disposal in the US: 2003) MSW does not contain industrial, hazardous, or construction waste. Household waste remains an area of concern, since the weight of garbage disposed per person has been steadily rising. In Georgia, the per capita amount of MSW has increased from 5.56 lbs/person/day in 1993 to 7.52 lbs/person/day in 2004. (GA DCA, *Solid Waste Annual Report: 2004*)

Construction and Demolition Debris

Construction and demolition (C&D) debris represents another type of waste that is generated within the City of Powder Springs. While the City of Powder Springs' collection programs do not accept C&D debris, it is important to understand the composition of waste generated through construction and demolition activities. C&D debris is produced when new structures are constructed and when existing structures are renovated or demolished. Structures may include residential and non-residential buildings as well as public works projects, such as streets, highways, and bridges. While some states include land clearing debris such as trees, stumps, earth, and rock cleared from construction sites, this analysis specifically excludes such materials. Typically, 43 percent of C&D waste is generated by residential sources and the remaining 57 percent is generated by non-residential sources. (EPA, *Characterization of Building-Related Construction and Demolition Debris in the United States:* 1998) Building Demolitions account for approximately 48 percent of the C&D waste stream; building

renovations account for an additional 44 percent; and construction activities generate the remaining 8 percent of C&D waste. The actual proportion of C&D waste generated will vary by the amount of construction and demolition occurring in the local community. For example, older urban areas typically generate far more demolition and renovation debris than emerging communities with significant amounts of new construction.

Inventory of Waste Generators

Residential

The City of Powder Springs had a population of 12,481 as of the 2000 Census, with 4,004 households. The Census Bureau estimates that the city's population in 2004 had reached 14,300. Given the average household size in Powder Springs (3.06), the estimated number of households in 2004 is 4,673. As of April 2005, the Powder Springs Sanitation Department served 5,083 households, with 663 residing outside of the city limits. Population projections generated for the Powder Springs Comprehensive Plan forecast continued growth, with the city's population reaching 23,856 by the year 2025.

Commercial

Commercial uses consist primarily of retail and foodservice/accommodations businesses serving the local community. Retail activity accounts for the largest employment category in Powder Springs with 458 jobs (39.2% of Total Employment Base) as of the 1997 Economic Census. Foodservice and Accommodations employment represents the second largest employment category in Powder Springs with 351 jobs (30.1%). However, the majority of businesses within the City of Powder Springs are served by private waste collection services.

Industrial

The city requires that industrial waste generators utilize private collection services. Currently, Powder Springs has very little if any heavy industrial activities operating within the city. Light Industrial activities such as manufacturing and warehousing represent only a small portion of the total employment in Powder Springs. Neither manufacturing nor wholesale employment totals are large enough to be disclosed by the Economic Census. Some major manufacturers located in Powder Springs are included in the following list. (Georgiafacts.net - Georgia Manufacturers Directory, 2006) Several of the manufacturers located in Powder Springs are involved in metal and wood fabrication.

- Leeman Architectural Work – Counters & Displays – 200 Employees
- Alco Manufacturing – Sheet Metal, Pipe, and Pipe Fittings – 70 Employees
- Custom Architectural Designs – Metal Fabrications – 40 Employees
- Shady Vent Aluminum Products – Awnings, Carports, Siding, and Storm Windows – 39 Employees
- Georgia Window Company – Wood Window and Door Units – 31 Employees

Municipal Solid Waste Characterization

Tables 1 and 2 provide data on the materials generated in the municipal waste stream for the years 1980, 1990, 1995, and 2000 through 2003. The materials are measured in thousands of tons (Table 1) and as a percent of total waste generated (Table 2). The majority (35.2%) of waste generated in the United States comes from paper and paperboard products. "Other wastes," which include food scraps, yard trimmings, and other miscellaneous inorganic wastes make up approximately 25% of materials generated in the municipal waste stream, and plastic products make up the third largest category of waste generated at 11.3%.

Table 1 - Materials Generated in the U.S. Municipal Waste Stream, 1980-2003 (Thousands of tons)

Materials	1980	1990	1995	2000	2001	2002	2003
Paper and Paperboard	55,160	72,730	81,670	87,740	82,660	84,200	83,100
Glass	15,130	13,100	12,830	12,620	12,580	12,830	12,470
Metals	15,510	16,550	15,860	18,190	18,280	18,400	18,820
Plastics	6,830	17,130	18,900	24,670	25,270	26,320	26,650
Rubber and Leather	4,200	5,790	6,030	6,530	6,670	6,660	6,820
Textiles	2,530	5,810	7,400	9,430	9,810	10,260	10,590
Wood	7,010	12,210	12,780	12,940	13,180	13,410	13,630
Other*	2,520	3,190	3,650	4,190	4,280	4,280	4,320
Total Materials in Products	108,890	146,510	159,120	176,310	172,730	176,360	176,400
Other Wastes							
Food Scraps	Neg.	Neg.	570	680	730	740	750
Yard Trimmings	Neg.	4,200	9,030	15,770	15,820	16,000	16,100
Miscellaneous Inorganic Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Total Other Wastes	Neg.	4,200	9,600	16,450	16,550	16,740	16,850
Total MSW Generated - Weight	14,520	33,240	55,750	68,880	69,310	70,500	72,270

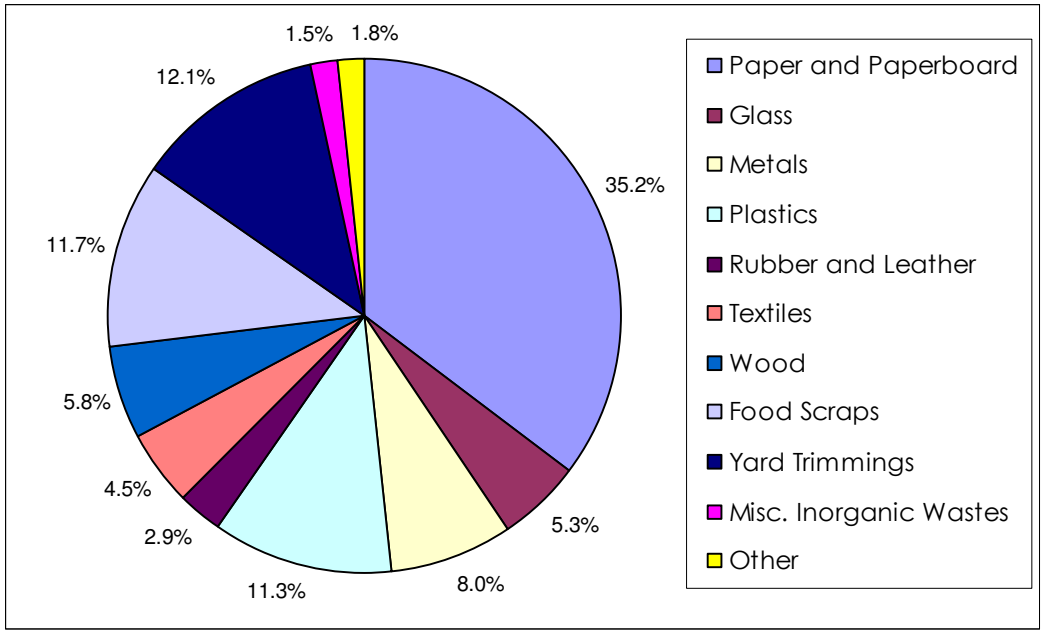
Source: EPA (Franklin Associates, Ltd.) 2003

Table 2 - Percent of Total U.S. Municipal Waste Stream Generation, 1980-2003

Materials	1980	1990	1995	2000	2001	2002	2003
Paper and Paperboard	36.4%	35.4%	38.2%	37.5%	35.7%	35.8%	35.2%
Glass	10.0%	6.4%	6.0%	5.4%	5.4%	5.4%	5.3%
Metals	10.2%	8.1%	7.4%	7.8%	7.9%	7.8%	8.0%
Plastics	4.5%	8.3%	8.8%	10.5%	10.9%	11.2%	11.3%
Rubber and Leather	2.8%	2.8%	2.8%	2.8%	2.9%	2.8%	2.9%
Textiles	1.7%	2.8%	3.5%	4.0%	4.2%	4.4%	4.5%
Wood	4.5%	6.0%	6.0%	5.5%	5.7%	5.7%	5.8%
Other*	1.7%	1.6%	1.7%	1.8%	1.9%	1.8%	1.8%
Total Materials in Products	71.8%	71.4%	74.5%	75.3%	74.7%	74.9%	74.7%
Other Wastes							
Food Scraps	8.6%	10.1%	10.2%	11.3%	11.7%	11.6%	11.7%
Yard Trimmings	18.1%	17.1%	13.9%	11.8%	12.1%	12.0%	12.1%
Miscellaneous Inorganic Wastes	1.5%	1.4%	1.5%	1.5%	1.5%	1.5%	1.5%
Total Other Wastes	28.2%	28.6%	25.5%	24.7%	25.3%	25.1%	25.3%
Total MSW Generated - Weight	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: EPA (Franklin Associates, Ltd.) 2003

Figure 1 - Characterization of Municipal Solid Waste Generation in U.S., 2003



Source: EPA (Franklin Associates, Ltd.) 2003

Construction & Demolition Debris Characterization

While the Powder Springs Department of Public Works does not collect Construction and Demolition Debris, a characterization of the C&D waste stream provides a full understanding of wastes generated within the city. The sources of C&D waste range from homebuilders and homeowners to general commercial developers, remodeling contractors, roofing contractors, highway and street contractors, site grading contractors, and excavation specialists. Table 3 contains a summary of estimated building-related C&D debris generated by contractor activity and building type. The majority of C&D debris is generated by non-residential construction and demolition activity (57%). Typically, demolition generates a far greater amount of C&D debris (48%) than construction activities (8%). While renovations also account for a large proportion of the total C&D waste stream (44%), these activities frequently include a demolition component.

Table 3 - Summary of Estimated Building-Related C&D Debris Generation

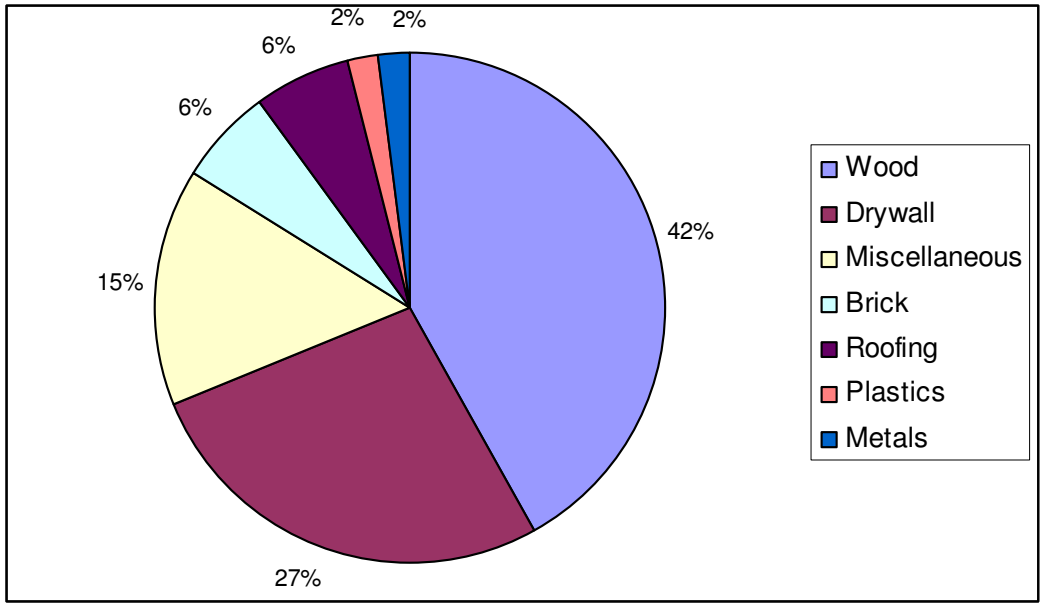
Source	Residential		Nonresidential		Total	
	Tons (1,000s)	%	Tons (1,000s)	%	Tons (1,000s)	%
Construction	6,560	11%	4,270	6%	10,830	8%
Renovation	31,900	55%	28,000	36%	59,900	44%
Demolition	19,700	34%	45,100	58%	64,800	48%
Totals	58,160	100%	77,370	100%	135,530	100%
Percent of C&D Total	43%		57%		100%	

Source: EPA, 1996

The composition of construction and demolition (C&D) debris can vary substantially depending on the source activity. For example, demolition debris typically contains a great deal more concrete than the debris from construction sites. Furthermore, estimates of C&D waste composition have also varied substantially by building type and location throughout the US. Several studies of C&D waste composition have been compiled by the US Environmental Protection Agency (EPA) for comparison.

Figure 2 provides a sample composition of residential new construction debris based an average assessment of four site locations conducted by the National Association of Homebuilders (NAHB). (EPA, 1998) According to the NAHB study, wood (42%) and drywall (27%) were the two largest components of residential new construction debris.

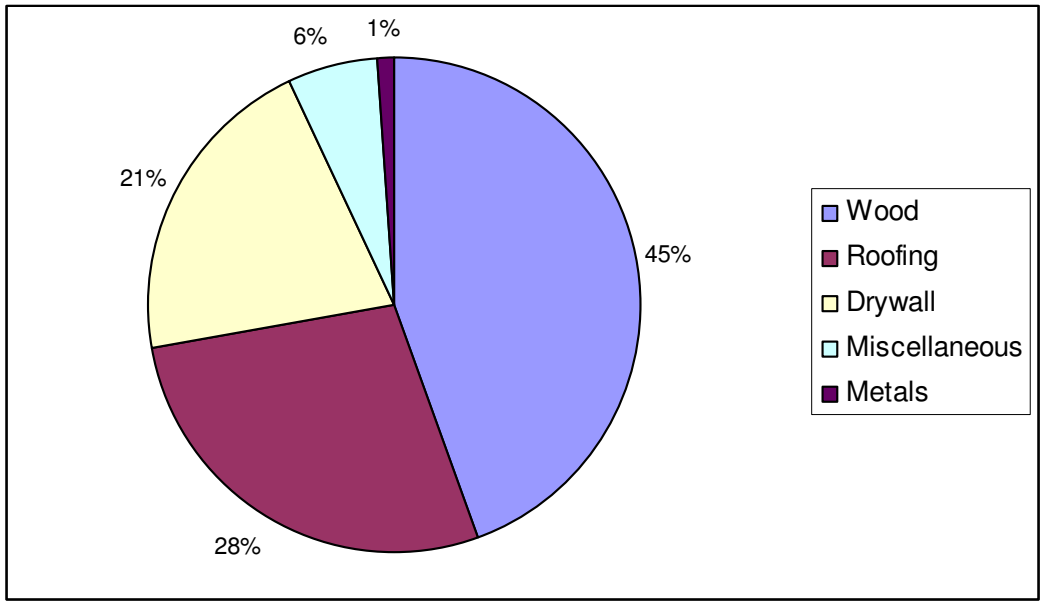
Figure 2 – Sample Composition of C&D Debris from Residential New Construction



Source: EPA, 1998; Study Conducted by NAHB Research Center

Figure 3 provides a sample composition of residential renovation debris based on an average assessment of two sites conducted by the Metropolitan Service District in Portland Oregon (METRO). The largest components of residential renovation debris found in the Oregon study were wood (45%), roofing (28%), and drywall (21%). However the renovation projects sampled in the Oregon study did not include projects such as driveway replacement, which would generate a substantial quantity of concrete. Therefore, the extent and type of renovation activity have a large impact on the composition of waste generated.

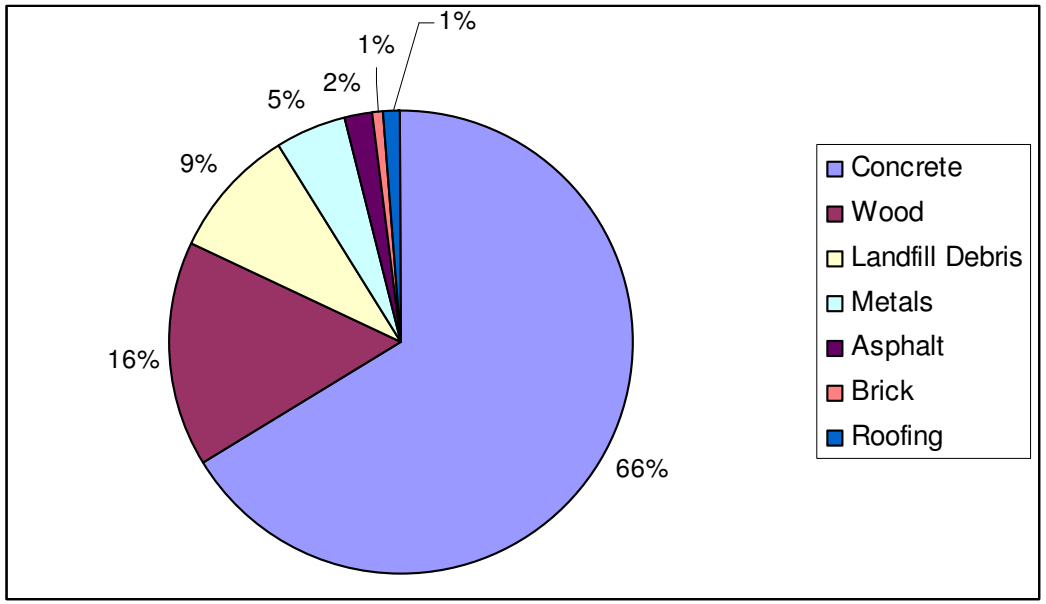
Figure 3 – Sample Composition of C&D Debris from Residential Renovation



Source: EPA, 1998; Study Conducted by METRO Portland, Oregon

Figure 4 provides a sample composition of C&D debris from an assessment of 19 nonresidential demolition projects in the Pacific Northwest. By far the largest category of debris in the R.W. Rhine study was concrete (66%). In contrast to new construction and renovation activities, wood made up only 16% of the demolition debris studied.

Figure 4 – Sample Composition of C&D Debris from Nonresidential Demolition



Source: EPA, 1998; Study Conducted by R.W. Rhine Inc.

Waste Generation Rates

Local waste generation rates can be estimated based on the amount of refuse disposed at landfills. Many waste disposal facilities charge tipping fees based on the weight of refuse dumped. Hence, waste collected in Powder Springs is weighed when it is deposited at the Cobb County solid waste transfer station. In 2005, Powder Springs sanitation services collected an average of 116 tons of waste per week from its customers in and around the city. Seasonal variation in waste collection volume also exists within the city. The Christmas buying season normally leads to a spike in the volume of waste generated. Likewise, the biannual "Reside with Pride" program of large item pickup often results in a doubling of waste collected (200-250 tons/week). The sanitation department serves 5,083 households, with an estimated 15,554 residents. According to these figures, the average waste collected within the Powder Springs waste service area was 2.1 lbs/person/day. However, these estimates do not take into account waste generated through commercial activities within the city. Likewise, there is currently no way of calculating the average mass of yard clippings collected within the city,

because yard wastes are not weighed upon disposal. In order to formulate a more accurate assessment of total waste generated in Powder Springs, national and state average generation rates have been utilized.

According to the US Environmental Protection Agency, the national rate of MSW generation in 2003 was 4.5 lbs/person/day. This figure is consistent with waste generation levels from the 1990s and early 2000s. The nation's recycling rate was slightly more than one lbs/person/day, which is relatively unchanged from the 2000 levels. The total amount of discarded waste (less recycled goods) was equivalent to approximately 3 lbs/person/day of total waste. However, the climate and levels of activity within regions have a significant impact on the variability of MSW generation.

Table 4 provides a listing of Georgia's rates of waste disposal and population growth from the years 1994 through 2004. In contrast to national averages, per capita MSW disposal within the State of Georgia has increased from 5.6 lbs/person/day in 1994 to 6.5 lbs/person/day in 2004. (GA DCA, 2004) Imported MSW has risen from .11 lbs/person/day in 1994 to 1.02 lbs/person/day in 2004. When local and imported sources are summed, the total per capita rate of MSW waste disposal has risen from 5.66 lbs/person/day in 1994 to 7.52 lbs/person/day in 2004.

One of the most significant trends in solid waste management in Georgia has been the growth of waste imported from surrounding states. Because of relatively low tipping fees for Georgia's landfills, it has become increasingly profitable to haul refuse into the state for disposal. Imported waste in Georgia has increased over eightfold between 1998 and 2004. (GA DCA, 2004) Waste imports rose from 1,197,686 tons in FY 2003 to 1,646,164 tons in FY 2004, representing the largest single-year increase ever recorded in Georgia. Virtually all of the waste imported into Georgia is municipal solid waste (99%). Waste disposed from out-of-state sources accounted for 13.5% of the MSW stream and 10.4% of the total waste stream in the State of Georgia in the year 2004. This trend is important, because imported waste is factored into the state's per-capita waste generation rate. In order to achieve the state goals of 25% total waste reduction over the year 1992, no more than 5.33 lbs/person/day must enter Georgia's landfills, regardless of source.

Table 4 - Georgia Waste Disposal FY 1994-2004

Fiscal Year	Total Waste Landfilled (Millions of Tons)	Total Waste Landfilled (lbs/person/ day)	Total Waste Disposed in MSW Landfills (Tons)	Out of State Waste (Tons)	Total MSW (lbs/person/ day)	GA MSW (lbs/person/ day)
1994	8.58	6.73	7,222,291	138,946	5.66	5.55
1995	9.54	7.3	7,684,271	149,481	5.88	5.77
1996	9.78	7.31	7,222,499	160,000	5.4	5.28
1997	9.86	7.2	7,925,222	172,150	5.79	5.66
1998	10.75	7.68	9,026,078	193,819	6.44	6.31
1999	11.43	7.98	9,382,622	453,875	6.55	6.24
2000	12.71	8.69	9,724,736	511,472	6.65	6.3
2001	13.36	8.94	10,678,980	893,651	7.15	6.55
2002	13.04	8.52	10,233,692	950,779	6.68	6.05
2003	14.25	9.14	11,135,473	1,197,686	7.14	6.38
2004	15.77	9.95	11,916,124	1,633,182	7.52	6.5

Does not include MSW incinerated or composted.
Source: GA DCA, 2004;

While the city's Public Works Department does not collect construction and demolition debris, C&D waste generation rates are included in order to provide a complete picture of all wastes generated within Powder Springs. According to the Environmental Protection Agency, the national rate of construction and demolition (C&D) debris generation was 2.8 lbs/person/day in 1996. However, the Georgia Department of Community Affairs estimates a slightly lower rate of 2.43 lbs/person/day C&D waste generation in the State of Georgia. Although C&D waste is rarely imported into the state, the per-capita disposal rate has more than doubled from 1.07 in 1994 to 2.43 in 2004. Much of this increase can be attributed to the rapid expansion of the state's population and housing stock. Using the Georgia DCA estimates for statewide C&D waste generation, the City of Powder Springs will generate 18.4 tons of construction and demolition waste per day in 2006.

C&D waste generation can also be estimated for specific contracting activities based on building square footage. Residential construction is estimated to generate 4.38 lbs of debris for each square foot of building space. (EPA, 1998) Non-residential construction yields approximately 3.89 lbs of debris per square foot of

building space. As previously noted, demolition activities generate a substantially greater amount of C&D waste. Residential demolition activities typically generate 115 lbs per square foot of building space; whereas nonresidential demolition typically generates 155 lbs per square foot of building space. Building permit activity within the City of Powder Springs provides another view of construction activity and C&D waste generation. Table 5 lists building permits for construction and renovation within the City of Powder Springs between 2001 and 2005. The City of Powder Springs issued an average of 159 building permits for new residential construction each year between 2001 and 2005. According to the city's building inspector, there have only been a handful of demolitions within Powder Springs over the same time period. While square footage figures for construction in the city are unavailable, given the national average size of new homes (2,100 sq.ft.), an estimated 732 tons of residential construction C&D waste will be generated in Powder Springs in 2006.

Table 5 – Building Permits 2001-2005, City of Powder Springs

Year	Residential	Commercial	Industrial	Renovation
2001	117	4	3	61
2002	238	4	0	77
2003	170	4	4	94
2004	135	6	5	87
2005	136	12	3	95

Waste Generation Projections

Projected waste generation for the City of Powder Springs is provided in Table 6. Three MSW generation rates are provided for comparison purposes. First, the statewide MSW generation rate reduction goals are provided. Next, an extrapolation of historic MSW generation rate trends is provided. If current trends continue, the rate of MSW generation will increase from 6.5 lbs/person/day in 2004 to 7.8 lbs/person/day in 2016. For the purposes of this analysis, the 2004 MSW generation rate of 6.50 lbs/person/day has been applied as a constant rate to future population growth projected for the City of Powder Springs. Despite statewide waste reduction goals, it is not feasible to assume a decrease in per capita waste generation given the historic increases that have occurred over the previous decade.

Population projections generated in the Powder Springs Comprehensive Plan were increased by a factor of 1.127 in order to compensate for the additional households served which are outside of the city limits.

Table 6 – Municipal Solid Waste Generation Projections 2006-2016

Year	Population	MSW Generation Rate Goal (lbs/person/day)	MSW Generation Rate Trend (lbs/person/day)	Constant MSW Generation Rate (lbs/person/day)	Waste Generated by Constant Rate (Tons/Day)
2006	17,055	6.50	6.77	6.5	55.4
2007	17,685	6.39	6.87	6.5	57.5
2008	18,313	6.29	6.98	6.5	59.5
2009	18,941	6.18	7.08	6.5	61.6
2010	19,569	6.07	7.18	6.5	63.6
2011	20,197	5.97	7.28	6.5	65.6
2012	20,361	5.86	7.39	6.5	66.2
2013	20,525	5.76	7.49	6.5	66.7
2014	20,689	5.65	7.59	6.5	67.2
2015	20,853	5.54	7.69	6.5	67.8
2016	21,017	5.44	7.80	6.5	68.3
2017	21,181	5.33	7.90	6.5	68.8

Sources: Robert and Company, GA DCA MSW Generation Rates

Assessment

Waste characterization studies conducted by the National Environmental Protection Agency and the Georgia Department of Community Affairs (DCA) provide a detailed portrait of the composition of municipal solid waste (MSW). However, there is considerable variation among national and local waste composition studies. Likewise there is considerable disparity among the limited studies of construction and demolition debris (C&D) that have been conducted across the nation. Increased reporting and analysis of the local MSW stream is necessary in order to form an adequate picture of the waste generated within Powder Springs. The city should continue its regular reporting of MSW to the DCA and assess methods of increased waste accounting. The largest gap in solid waste management planning in the city involves the activities of private waste haulers. The

city currently maintains little or no oversight of private waste management activities for both the commercial MSW and C&D waste streams. In the future, the city should consider issuing permits for solid waste haulers operating within the city. Through the permitting process, the city could require more regular reporting of waste collected within Powder Springs.

Collection

Collection represents the first stage of the waste management process. Levels of service and the type of collection provided vary substantially based upon the demographic and economic profile of communities. For example, some affluent communities provide trash collection twice weekly, while some rural communities provide only dumpster locations for self-deposit. Levels of service affect such things as frequency of collection, type of truck utilized, and container requirements. Containers must be functional for both the type of wastes they must hold and the collection vehicles employed. On the residential side, wheeled carts may be required by some communities in order to facilitate trash disposal on trucks equipped with mechanical arms. Many commercial operations are served by dumpsters that are mechanically lifted into large compactor trucks. Cities without mechanical lifting equipment often prohibit the use of containers such as cardboard boxes, or 55 gallon drums because of the difficulty of lifting and the chance of worker injury. Many municipalities limit can size to 30-35 gallons or to a maximum specified weight. (EPA, *Decision Makers Guide to Solid Waste Management:* 1995) If plastic bags alone are accepted, many communities regulate the minimum thickness of the bag material. Some communities require that residents purchase metered bags or stickers in order to administer variable fees based on disposal volume.

Collection vehicles also have a wide variability based on the needs of the community being served. Frequently staffing costs for collection crews represent one of the largest costs associated with solid waste management. Automatic and semiautomatic collection systems are being used with increasing frequency in single-family neighborhoods in order to reduce costs. Compactor trucks are loaded either on the side, back, or front of the vehicle. Front loading compactors are often used with automatic loading mechanisms and dumpsters. (EPA, 1995) Compactor truck capacities range from 10 to 45 cubic yards.

Management Authority

The Powder Springs Public Works Department conducts MSW collection for the vast majority of residential customers within the City of Powder Springs. The city's solid waste management ordinance prohibits residential customers from contracting collection from private firms. However, since the city has now discontinued dumpster pickup service, multifamily housing complexes are referred to private haulers. The Powder Springs Sanitation Department conducts commercial MSW collection only for small volume customers. Businesses generating more waste than three 90 gallon carts per week are required to utilize private collection firms.

Collection Container Requirements

Plastic wheeled carts, provided by the city, are required for solid waste collection. Each cart has a total volume capacity of 90 gallons. It is the responsibility of the resident to contact the public works department to obtain a wheeled cart. Residents are provided with one cart when service is initiated with a $50 deposit. One additional cart can be purchased by residents for a $25 deposit and an additional $3 per month in pickup fee. (A detailed fee structure is provided in the Financing section of this report.) Service provisions limit the number of carts that will be collected for each residence. Two carts can be collected for each single-family residence and three for each commercial establishment. Commercial activities requiring more than the allotted three 90 gallon containers are required to utilize private waste disposal services.

Yard clippings are required to be placed in biodegradable paper lawn bags. With regular subscription service, city sanitation engineers will pick up as many as six bags at no extra charge. While regular trash pickup days vary by location throughout the city, yard trimmings are picked up on Mondays. Customers within the Powder Springs City Limits are also eligible for tree limb pickup service. The city's sanitation department will pick up piles of wood 3' high, 3' wide, and 3' long free of charge. Pickup of larger wood cuttings requires a special work order and a $100 fee.

Collection Method

Collection operations conducted by the Powder Springs Sanitation Department include three active rear loading compactor trucks and one standby truck. The Sanitation Department has recently retired their front

loading truck and discontinued dumpster service pickup. Each sanitation route is now staffed by three-man crews.

Curbside service is designated as the standard method of collection. However, back and side yard service is available for handicapped and elderly residents who may have difficulty bringing carts to the curb. Seniors must be at least 70 years of age in order to be eligible for back yard service.

Frequency of Collection

Collection is conducted once per week throughout the city. In the event that the designated pickup day falls on a holiday, collection will be performed on the following business day. Trash pickup days are designated for different portions of the city based on collection routes. Yard clipping pickup is carried out on Mondays throughout the city.

Large Items and Electronic Waste

Large Items such as refrigerators, stoves, washing machines, and furniture can be collected by appointment only. Additional fees ranging from $10-20 are charged for pickup of large items. Residents are required to bring such items to the front curb no sooner than 24 hours prior to the pickup appointment time. Residents are also required to ensure that locks or doors of refrigerators or containers are removed. Twice per year, the Powder Springs Public Works Department sponsors the "Reside with Pride" program for disposal of large items. During these specially allotted times, residents can dispose of large items without paying the applicable extra charges.

Special Handling Items

Special management items such as used batteries, electronics, and household hazardous waste are not accepted by the Powder Springs Sanitation Department. Such items are referred to Cobb County waste management services for disposal. Cobb County sponsors an annual electronics recycling day event that allows residents to dispose of most obsolete electronics items free of charge. Items accepted include the following:

- Computer monitors / CPUs / Laptops

- Microwave Ovens
- Stereos / CD Players / Record Players
- Toasters
- Copiers / Printers / Fax Machines / Scanners
- VCRs / DVD Players
- Camcorders
- Telephones / Cell Phones
- Networking equipment / Modems
- Cameras
- CB Radios
- Circuit Boards / Electronic Panels
- Typewriters
- Battery Packs
- Keyboards
- Projectors
- Televisions ($10 Charge)

Regulations Prohibiting Unlawful Disposal

The city currently has regulations prohibiting illegal dumping, littering, and the burning of C&D debris. Yard trimmings can only be burned on private property within a safely constructed wire mesh enclosure. Littering is also discouraged through the public education and cleanup efforts of the Keep Powder Springs Beautiful program. The City of Powder Springs maintains a code enforcement officer tasked with environmental code enforcement. Citations and fines are regularly issued for violation of the city's illegal dumping and littering ordinances. Periodically, the city's public works department conducts cleanup operations for sites of illegal dumping and littering with the use of inmate/prison labor.

Contingency Strategy for Collection in the Event of an Emergency

The Powder Springs Public Works department has developed a contingency strategy for the collection of waste in the event of a disruption in existing collection systems. The agency has contacted several private haulers and received verbal assurance of service availability. A point of contact with each private hauler has been

established along with an estimated time to implement. According to each private hauler, contingency private operations could be implemented within 1-2 days. Private haulers listed in this contingency strategy are as follows:

1. Wade Disposal
   28 Parker Road
   Dallas, GA 30132
   Contact: Anthony Callahan

2. AAA Hauls it All
   1803 Witt Drive
   Austell, GA 30168
   Contact: William Bostic, Owner

3. Waste Enterprise
   2699 Cochran Ind. Blvd.
   Douglasville, GA 30134
   Contact: Ted Habets, Branch Manager

Assessment

Waste collection services are currently adequate to serve the needs of customers in single-family residential neighborhoods in the City of Powder Springs and its surrounding urban service area. The public works department provides timely, efficient service for these customers that includes collection of both MSW and yard trimmings. However, the city no longer provides collection for some multi-family complexes and large commercial users since the discontinuation of dumpster pickup services in 2005. In order to ensure quality service for these customers, the city's public works department should consider pursuing service contracts with private providers. Alternately, the city could regulate private collection activities through permitting requirements. The city will also need to periodically assess the need for additional equipment and staff as the population of Powder Springs grows. Currently there is a large amount of new housing that has been permitted for construction within the city. As these new housing units are occupied, the public works department will

need to expand their infrastructure and capacity in order to meet the future demands of a growing city. Collection routes will also need to be adjusted in order to accommodate new development underway.

Waste Reduction

Waste reduction is a broad term that refers to the use of preventative waste management methods, including source reduction, recycling, and composting. These methods of waste minimization are intended to decrease the quantity of waste taken to and discarded in disposal facilities and landfills. Waste minimization positively impacts the environment on many levels and decreases levels of air and water pollution.

Source Reduction Programs

Source reduction is a waste prevention technique intended to minimize the quantity of waste and reduce the amount of toxicity in the waste stream through various methods of design, manufacture, and reduced toxicity levels generated in garbage. The United States Environmental Protection Agency (EPA) defines source reduction as the design, manufacture, purchase, or use of materials to reduce their quantity or toxicity before they reach the waste stream. It is recognized in national policy and by the EPA as the highest priority method for addressing solid waste issues.

The National Recycling Coalition's (NRC) definition of source reduction includes encouraging the conservation of materials and limiting waste creation by reducing the amount of waste at the source. To accomplish this task, the NRC includes in its definition of source reduction the redesigning of products or packaging so that less material is used; making voluntary or imposed behavioral changes in the use of materials; or increasing durability or re-usability of materials.

Educational, regulatory, and economic incentive programs are the primary mechanisms through which the city will be able to achieve source reduction of waste materials. Residential, commercial, and industrial sectors can all strive toward achieving source reduction goals through a variety of techniques. For instance, fairly straightforward reduction strategies can influence daily decisions regarding the purchase of products aimed at source reduction, such as purchasing items in reusable/refillable containers, using washable rather than disposable items, and purchasing concentrated goods that use smaller containers and require less packaging.

Regulatory programs typically involve banning or restricting the use of products that create an unnecessary burden for waste disposal. Programs designed in order that participants pay by the quantity of waste that they generate is an example of the financial incentives used occasionally in achieving reduced waste production.

Residential Source Reduction Programs

The City of Powder Springs does not currently have any measurable programs in place for source reduction and reuse with the residential sector of the city. There are a number of methods that the local government can use to encourage residents to take steps toward source reduction. The USEPA recommends encouraging residential source reduction through campaigning efforts, through the provision of economic incentives, an educational/technical assistance program, and an investment in source reduction tools for residential use.

Residential economic incentives include programs like garbage collection-pricing based on per-unit or per-container fees. Requiring residents to pay for the amount of waste that they generate (pay-per-container system) will encourage residents to thoughtfully consider their purchases, product packaging and reuse, as well as their recycling and composting habits.

Educating residents about appropriate yard management is one way to reduce the amount of waste generated at home. Instead of collecting yard trimmings for disposal, these materials can be managed on residential premises. For example, residents could be encouraged to compost their yard waste or utilize mulching lawnmowers as a means of reducing disposal. A campaign by the local government for source reduction from residents is a straightforward and effective method for promoting the reduction of waste. Residential sector source reduction has the potential to greatly affect the amount of waste generated and to make a positive difference in the city's quantity of waste.

Programs with simple implementation schemes are preferable to ensure that the community will have the resources to follow through with its residential source reduction efforts. For example, precycling refers to making intelligent purchasing decisions and reducing waste from the start. Packaging materials account for 30 percent of the nation's trash, and choosing products that are in reusable containers or are reusable themselves is one method of precycling (Ohio DNR). Advertisements in grocery stores are another method of promoting precycling.

Commercial Source Reduction Programs

In addition to the broader category of programs applicable to residential source reduction, measures more specific to the commercial sector can be encouraged. The USEPA compares guidelines for business source reduction programs to those that are coordinated for recycling. By providing the appropriate tools to individuals in an organization, businesses can benefit from production efficiency, decreased costs and a smaller waste stream.

To assist commercial businesses in adopting source reduction programs, the USEPA recommends technical support and education programs that inform businesses and employees of the advantages and potential economic benefits that go along with implementing source reduction programs. The commercial sector may also choose to reward these programs or may attempt to implement source reduction programs through public/private partnerships.

Strategies specific to commercial businesses for source reduction include reducing the amount of materials that the businesses use for packaging, reusing packaging, assessing whether packaging is necessary at all, and sending and buying items in bulk. In addition to source reduction through packaging changes, businesses can also reduce the amount of waste generated by minimizing paper use through methods such as double-sided copying, the use of electronic mail, the reuse of paper into scratch pads and circulating only one copy of printed materials. Business owners may also encourage or provide incentives to customers to reuse store packaging, and can sell items in reusable containers.

The EPA recommends the following strategies for source reduction in commercial businesses:

- Copy double sided.
- Use electronic mail.
- Circulate only one copy of printed material.
- Establish central document and file areas.
- Reuse paper by making it into scratch pads.
- Reuse and return corrugated boxes.
- Purchase cooperatively; order supplies in bulk with other businesses.
- Establish a materials exchange among other surrounding businesses.
- Sell items in reusable containers.

- Provide items in bulk and encourage shoppers to buy in bulk.
- Provide shoppers with incentives to reuse store packaging.

Industrial Source Reduction Programs

Currently, the City of Powder Springs' industrial source reduction programs are limited to the reuse of shipping pallets. There are a wide variety of source reduction strategies that the local government can encourage its industries to implement. Many of the business strategies provided above, including the reduction and reuse of packing materials, are applicable to industries in Powder Springs as well. Additionally, industries may formulate plans and implement strategies for making more fundamental changes to their manufacturing processes and product design.

Redesigning manufacturing processes and rethinking product design are at the forefront of industrial source reduction. Changes in these two areas may eliminate the generation of waste materials, which decreases disposal costs, and will likely produce other cost savings in storage space. Reducing product weight, if possible, leads to other cost savings in reduced packaging and shipping expenses. Other strategies for industrial sector source reduction include the manufacture of products with longer lifespan, and with the possibility of their reuse and easy repair in mind.

Waste Recycling Programs

While complex to coordinate, recycling programs are responsible for the diversion of a large quantity of municipal solid waste. Effectively designed and well-run recycling programs are both environmentally and economically efficient for communities. The USEPA defines recycling as the process by which materials otherwise destined for disposal are collected, processed, and remanufactured or reused. Recycling is a highly effective way to manage municipal waste.

In 1992, the City of Powder Springs implemented a voluntary recycling program as the detrimental effects of waste on the environment became more apparent. A voluntary residential curbside pickup program was implemented for a time that effectively cost the city approximately $36,000 annually. The service has been discontinued and no similar method for recycling has since been implemented. However, drop off locations

are provided within Powder Springs where residents can deposit materials for recycling by the Cobb County Solid Waste program. While recycling programs are not able to pay for themselves with the sale of recovered materials, the city should consider implementing another program for curbside recycling in order to increase citizen participation in recycling.

Commercial and industrial waste is responsible for over half of the waste in the waste stream. This underscores the strong need for a more stringent commercial/industrial recycling program. The amount of waste in the city could be significantly reduced with the implementation of mandatory commercial/industrial recycling programs. The city should encourage this sector to recycle by implementing campaigns that educate the businesses and industries about the benefits and availability of recycling opportunities, by offering technical assistance to businesses interested, but unknowledgeable in how to conduct a recycling program, and finally by enacting ordinances that mandate commercial recycling of certain materials, such as paperboard, paper, glass and cans.

There are a variety of options available that communities may choose from in implementing recycling collection and processing programs. Among these methods are recycling drop-off centers where citizens are encouraged to deliver their own materials, curbside collection, source separation, mixed-waste collection in which recyclables are removed from unsorted waste at a later time, or a combination of the above methods.

A number of factors, including local conditions and available resources must be taken into account upon deciding the most appropriate method for recycling collection. Because Powder Springs no longer has a recycling program, the city cooperates with Cobb County and encourages its residents to utilize the county's recycling services.

The garbage collected by the City of Powder Springs is disposed of at the Cobb County composting plant, where biodegradable materials are removed and composted. These biodegradable materials make up approximately 60 percent of the city's trash volume. The city, however, does not provide a recycling program for other recyclables, such as aluminum cans, newspaper, or glass.

Collection

The City of Powder Springs currently provides no curbside recycling collection. However, there are locations provided for deposit of recyclable materials. Recycling bins for various materials are provided at both Powder Springs Elementary School and Tapp Middle School. Likewise, the city encourages residents to use the Cobb County recycling facilities through information links provided on the Powder Springs website. The city previously had a contract with a private hauler to perform weekly curbside collection of recyclable materials, which included collection of newspapers, glass, aluminum, and bi-metal cans and plastic beverage containers. During FY 1992, 330 tons of recyclable materials were removed from the waste stream through this program. (Powder Springs Solid Waste Management Plan, 1994)

Items Recycled

As previously cited, the residents of Powder Springs are encouraged to use Cobb County's recycling facilities through drop off locations provided at local schools or at the county facility on County Services Parkway. Disposal sites are available for the following items; however, these items are not necessarily recycled at this time: aluminum cans, aluminum scrap, steel and other metals, glass, plastic containers, used motor oil, antifreeze, refrigerators and Freon containing appliances, carpet padding, cell phones, construction debris, landscape debris and tires. A more detailed description of these items and specifics about their recycling and disposal options follow.

Aluminum cans, paper products, steel and other metals, glass containers, plastic containers, carpet padding and cell phones are accepted for recycling at the county's drop-off facility for no charge. There are additional cell phone and cell phone battery drop-off sites at various locations in the county. Items such as aluminum scrap and tires are accepted for recycling at the transfer station for a charge. Used motor oil, antifreeze and freon-containing appliances are also accepted at the transfer station, but are not recycled.

Although some items are not currently accepted by Cobb County for recycling, some debris is accepted at the county's Vegetative Waste Disposal Site on County Services Parkway. Landscape debris, such as bricks, concrete, and pressure treated lumber are not recycled, but are accepted at the Vegetative Waste Disposal site. Construction debris is accepted at the county's Transfer Station on County Services Parkway, but is also not recycled. The county does not have a buy-back collection program for recycled items at this time.

Composting

Composting is an easy, inexpensive method for further reducing the volume of the solid waste stream. As a natural way to recycle organic materials, composting is considered a technique for source reduction when it is employed through grasscycling and backyard composting. Grasscycling simply refers to the use of lawnmowers without collection bags or the on-site composting of collected grass clippings. The composting process produces usable compost, which resembles rich topsoil, and also produces carbon dioxide and water as by-products. These forms of composting divert waste from the municipal waste stream entirely and preclude the involvement of city services, transportation, or management.

Yard waste, including leaves, grass clippings, brush, and small limbs may be composted by homeowners at their residences, or it may be picked up by the City of Powder Springs, which provides a weekly service for yard waste pick-up, independent of garbage pick-up. Neighborhoods within the city may also choose to implement a community composting program.

All garbage collected in Powder Springs is disposed of at the Cobb County co-composting facility. According to the EPA, co-composting is included in the broader "composting" term, and refers to the composting of two or more feedstocks with different characteristics, such as the co-composting of biosolids in liquid/dewatered form with yard trimmings and leaves. The bio-conversion facility, located on County Services Parkway, uses advanced technology to process up to 300 tons of waste daily into Bio-Blend, a soil-like compost product. According to Cobb County, this translates into a 60 percent reduction in household materials that are deposited in landfills, which saves a significant amount of landfill space.

Bio-Blend is produced at the Cobb County facility through a process of mixing residential waste with treated sewage sludge under controlled temperature and humidity conditions. The Bio-Blend that is generated is made available free to its residents for private use, and serves a number of functions. Similar to the benefits of other compost-generated by-products, Bio-Blend improves soil structure, inhibits rain runoff and soil erosion, reduces irrigation requirements, stimulates natural soil microbiology, and builds soil humus.

The compost is available to residents at no cost and can be picked up at the Bio-Blend Pick-Up Location at the Cheatham Landfill at specified times. The Bio-Blend product may be purchased for commercial uses with a scheduled appointment for pick-up.

Assessment

The city's current efforts at source reduction are not adequate to meet the state's waste reduction goals. While the use of the Cobb County solid waste transfer station allows for the separation of large quantities of biodegradable materials, the city must take additional steps to reduce the amount of recyclable materials from entering the waste stream. First, the city should reconsider the implementation of a direct curbside recycling collection program. The reason sited for the discontinuation of the city's previous recycling program was the weak market for recycled materials. While the city's recycling program was able to divert substantial amounts of recyclable materials from the MSW stream, they found that only a small proportion of the funding for the program could be recovered through sale of recycled materials. It must be recognized that recycling programs are not self-sustaining and will require continued funding for operating expenses. The city could assess the need for a recycling program by measuring their customers' use of county recycling facilities. For example, surveys could be distributed with trash pickup bills in order to evaluate the demand for increased recycling programs. Another means of significantly reducing the amount of recyclable waste is through mandatory recycling of industrial, commercial, and construction wastes. Next, in lieu of a direct recycling program, the city could take steps to facilitate recycling through county facilities. Collection stations could be set up throughout the city that could be delivered to the Cobb County Recycling Center. An aggressive campaign to encourage recycling could also be instituted throughout the city and surround solid waste service area.

Waste Disposal

Except for the portion of the city's waste that is recycled, the majority of waste generated in Powder Springs is currently disposed in landfills located outside of the city limits. There are no waste disposal, pre-treatment, or processing facilities located within the immediate vicinity of Powder Springs, other than a few home or neighborhood composting facilities. All waste is exported out of the city for disposal. No waste is imported into the planning area for disposal.

Solid Waste Transfer Stations

Before waste is disposed in landfills or combustion facilities, solid waste transfer stations are frequently utilized as local centers of waste sorting and distribution. Transfer stations have several advantages that allow for increased flexibility and efficiency in waste handling, distribution, and disposal. First, solid waste transfer stations allow for wastes to be sorted for disposal in different kinds of facilities. By facilitating the sorting of waste, transfer stations allow for the recovery of recyclable and compostable materials. For example, the Cobb County Solid Waste Transfer Station allows materials to be processed and sent to the Cobb Biomass Composting Facility. This facility achieves a 60 percent recovery of materials destined for landfills. (Cobb County Website, 2006) Solid waste transfer stations can also reduce the cost of collection for municipal governments. When landfills are locate over 10-15 miles from the collection jurisdiction, the use of a nearby transfer station can save the sanitation agency substantial costs associated with traveling to more distant facilities, such as fuel and vehicle maintenance. (EPA, 1995) Finally, the use of a solid waste transfer station allows for greater flexibility in selecting the final disposal sites for waste. The authority handling solid waste can divert waste to various disposal facilities depending on costs and regulatory requirements.

There are also several potential disadvantages associated with operating or utilizing solid waste transfer stations. Transfer stations are costly to implement and require a large scale of operation for viability. Typically the largest barrier to implementation of a solid waste transfer system is public opposition to facility site location, particularly in urbanized areas with established residential populations. It is often very difficult to obtain permitting for new solid waste transfer facilities due to public opposition. Likewise, in Cobb County, there is continuing public opposition to the operation of the county's existing solid waste transfer station and composting facilities. This opposition threatens the continued viability of waste disposal programs throughout the county.

Landfills

Landfills form the primary means by which the bulk of solid waste is disposed. In addition to receiving MSW directly from collection programs, landfills are also the disposal mechanism for residues produced through the incineration of wastes. Sanitary landfills provide an environmentally sound means of disposing waste that cannot be reduced, recycled, processed, or composted. Minimum national standards for landfill construction have been established by the federal government's Resource Conservation and Recovery Act (RCRA) Subtitle

D in order to minimize pollution seeping from waste and emissions generated by decomposition. (EPA, 1995) Furthermore, landfill site requirements have been established by the RCRA in order to minimize environmental and social impacts of waste disposal facilities.

Modern MSW landfills include numerous design provisions intended to limit the spillover effects of waste disposal. In contrast to the simple land disposal practiced in previous decades, modern landfills are required to include a system of impermeable liners made of clay and/or synthetic membranes used to reduce or prevent contaminant flow to groundwater. This system of liners is vital in controlling liquids, known as "leachate," that have percolated through or emerged from solid waste containing toxins. Leachate collection systems include pipes lining low portions of the landfill liner designed to collect liquids emerging from the waste. Monitoring wells are also required for areas surrounding the landfill in order to ensure that leachate does not seep laterally or down into the surrounding groundwater. Landfill gasses, such as methane derived from decomposition, must also be controlled in order to maintain safety and environmental quality. Like monitoring wells, methane probes must also be placed in the soil surrounding the landfill in order to detect any gasses migrating from the landfill. Methane recovery systems can be installed in order to harness gas emissions from landfills for energy use.

Waste Disposal Facilities

Solid waste collected in Powder Springs is currently disposed of at the Cobb County Solid Waste Transfer Station located on County Service Parkway in Marietta. The solid waste transfer station manages over 15,000 transactions annually involving haulers operated by both municipal and private waste collection systems. The facility processes over 90,000 tons of solid waste annually. The Cobb County solid waste transfer station accepts waste from a variety of sources including municipal governments, private hauling contractors, and the general public. Tipping fees are $7 for the first 400 pounds of waste materials deposited at the transfer station and $35 for each additional ton.

Wastes gathered and processed at the Cobb County Solid Waste Transfer Station are eventually shipped to the Pine Bluff Landfill, located in Cherokee County. The Cobb County contracts service at this landfill through the Waste Management private disposal service.

Yard trimmings collected in Powder Springs are transported to the BLD Inert Landfill located in Dallas, Georgia for disposal. The BLD Inert landfill charges a flat rate of $65 per truck for deposit of yard trimming wastes.

Disposal Capacity

The Georgia minimum planning standards and procedures for solid waste management require that local governments secure at least 10 years of disposal capacity. The plan is required to document that disposal capacity exists for the 10 year span of the document. This guarantee of disposal capacity must include both the current rate of waste generation and also projected waste disposal needs resulting from population and employment growth. (See Page 17)

Assessment

Currently, the Cobb County solid waste transfer facility adequately serves the needs of Powder Springs residents. Likewise, the Pine Bluff landfill that receives this waste has been calculated to have almost 40 years of remaining capacity. However, political pressure to close down certain waste management facilities such as the Cobb County composting facility does threaten the future viability of current disposal practices. For yard trimmings, the BLD inert landfill in Dallas, Georgia also adequately serves the needs of the community's organic waste.

Land Limitations Analysis

Georgia's minimum planning standards for solid waste management include the requirement for an analysis of limitations to the site selection of new solid waste handling and disposal facilities. These requirements are intended to guide the future site location of new facilities within the planning jurisdiction and provide a legal framework for permitting such operations. Furthermore, the land limitations analysis is intended to prevent the placement of solid waste handling and disposal facilities in unsuitable locations, such as environmentally sensitive areas. Because the city currently does not have a sanitary landfill and does not desire one within the city limits, much of this element is not applicable to Powder Springs.

Environmental Limitations

Department of Natural Resources (DNR) regulations place limitations on landfill and solid waste handling activities within designated areas. The majority of the information required for the Land Limitations Analysis is provided within the Natural and Cultural Resources chapter of the Powder Springs Comprehensive Plan. (Community Assessment Data Appendix pp 44-57)

Water Supply Watersheds

DNR rules require that any new solid waste landfills located within water supply watersheds must have synthetic liners and leachate collection systems. The City of Powder Springs lies within the Sweetwater Creek water supply watershed. (See Powder Springs Comprehensive Plan Technical Data Appendix, Figure 2, Page 45) This watershed drains into the water supply intake point for the City of East Point.

Groundwater Recharge Areas

DNR rules require that new solid waste landfills located within significant groundwater recharge areas have synthetic liners and leachate collection systems. There are no significant groundwater recharge areas located in or in the vicinity of Powder Springs.

Wetlands

DNR rules prohibit the location of solid waste landfills within wetland areas. There are several wetland areas within the City of Powder Springs. (See Powder Springs Comprehensive Plan Technical Data Appendix, Figure 3, Page 47) Major wetland systems in the western portion of the city are primarily associated with Powder Springs Creek, while many of the wetland systems in the eastern portion of the city are associated with Noses Creek.

Protected River Corridors

DNR rules prohibit the development of new solid waste landfills within protected river corridors. There are no protected river corridors within the City of Powder Springs.

Protected Mountains

DNR rules prohibit the development of new solid waste landfills within areas designated as protected mountains. There are no protected mountains within the City of Powder Springs.

Airport Safety Zones

DNR rules require that new solid waste landfills not be located within 10,000 feet of any public use or private use airport runway end used by turbojet aircraft, or within 5,000 feet of any public use or private use airport runway end used by only piston type aircraft. These regulations are intended limit dangers posed to aircraft by birds which are frequently attracted to landfills. There are no such airport safety zones within the City of Powder Springs.

Fault Areas

DNR rules prohibit new landfill units and expansion facilities within 200 feet of a fault that has had displacement in the Holocene Epoch unless the owner or operator demonstrates to EPD that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the landfill unit and will be protective of human health and the environment. There are no fault zones located within the City of Powder Springs. The nearest major fault zone is the Brevard Fault Zone running along the Chattahoochee corridor in Eastern Cobb County.

Seismic Impact Zones

DNR rules prohibit the development of new landfill units and expansion in seismic impact zones unless the owner or operator demonstrates to EPD that all containment structures, including liners, leachate collection systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth material for the site. There are no seismic impact zones within the City of Powder Springs.

Unstable Areas

DNR rules require owners or operators of new landfill units, existing landfill units, and expansion facilities located in unstable areas to demonstrate that engineering measures have been incorporated in the landfill unit's design to ensure that the integrity of the structural components of the landfill unit will not be disrupted. A map

of topography and steep slopes located within the City of Powder Springs is provided on page 49 of the Powder Springs Comprehensive Plan Technical Data Appendix. (Figure 4)

Zoning Regulations

Landfills are permitted within the city's HI (Heavy Industrial) District with special use approval and with requirements for compliance with the city's waste handling and disposal zoning regulations (Powder Springs Zoning Ordinance, Section 3-49). Currently there are only five parcels zoned for Heavy Industrial use within the City of Powder Springs ranging in size from 3-11 acres. Because of the small size of these parcels and the presence of existing development, there is very little possibility for new landfill uses within the city.

The city's zoning ordinance contains numerous provisions regulating the location and operation of waste handling and disposal facilities. A synopsis of these regulations is provided in the following section:

Recycling Collection Location

Recycling collection locations are defined as locations containing metal or heavy-duty plastic containers, bins, or dumpsters designed for short-term holding of pre-bagged recyclable items such as tin, aluminum, glass, and paper for scheduled minimum monthly pick up with no on-premise sorting. Collection of perishable or food items is prohibited under the recycling collection center designation.

- Recycling centers limited to 280 total square feet in size
- Visual screening and regular maintenance required for clean, neat, safe, and sanitary condition
- Recycling centers located within building setbacks unless otherwise approved by Planning Commission due to topography, safety, internal traffic flow, site distance, or other site-related circumstances not created by property owner

Materials Recovery Centers

- Materials recovery facilities allowed only within HI industrial districts, subject to special use approval
- Minimum setbacks of 1,000 feet from any residential use
- Activities required to be conducted in a fully enclosed building with no outside storage of materials

Landfills, Composting Facilities, and Recycling Centers

- Facilities allowed only in areas incapable of development without landfill operations
- Disposal of hazardous wastes as defined by federal and state laws prohibited
- Garbage disposal prohibited within 2,000 yards of a public highway, residence, or gathering place, unless approved by the Mayor and City Council
- Approval of Truck routes and entrances into facility required by Traffic Engineer
- Sanitary landfill must be accessible without traveling over residential streets
- Sanitary landfills required to maintain a crawler type tractor weighing at least 18,000 pounds, equipped with either a straight blade bulldozer, and angle blade bulldozer, a scraper of eight cubic yards or larger, a front end loader, a bull clan, or other similar attachments.
- Landfills required to maintain enclosed fencing of at least 6 feet height with openings not more than those in 2 inch mesh wire or similar fencing materials
- Sanitary landfills required to have operator in attendance at all times when in use and erect barricade when closed to the public
- Changes in the normal drainage of the property must be accommodated by storm sewers as necessary to properly care for drainage
- Landfill operators required to pack and cover daily all materials placed that day with at least 6 inches of earth in such a manner as to prevent fires and meet any and all other requirements of the city's fire code
- Completed landfills required to be covered with at least 2 feet of earth
- Burning of any kind of refuse prohibited
- On-site construction and demolition debris disposal allowed if materials are buried under at least 2 feet of earth before occupancy of the structure
- Construction and demolition debris not allowed within 20 feet of any structure, drainage easement, or drain field

Landfill Siting Application Requirements

While the chances for approval of a sanitary landfill within the Powder Springs are remote, the city's zoning ordinance does outline several steps necessary for approval. First, landfills, composting facilities, and recycling centers are only permitted within the HI (Heavy Industrial) District with special variance provided by the Mayor and City Council. A special use public hearing is required before a variance can be permitted for a fill of

specific natural land depression; and further provided that such fill shall not include garbage or other materials subject to decomposition. Written approval of the Health Department is required before any landfill facility can commence operations. Furthermore, all necessary state and federal permits are required before landfills can be permitted within the city. Permitting procedures also require compliance with state and federal regulations such as DNR administrative rules requiring a hydrological assessment.

Assessment

Site selection requirements for new solid waste handling and disposal facilities within the City of Powder Springs are currently adequate to ensure that land use conflicts do not arise. Site application requirements also provide a legal mechanism by which citizens and applicants can receive due process.

Education and Public Involvement

The Powder Springs Public Works Department carries out several programs designed to educate the public and solicit involvement on solid waste management issues. First, the city's website contains pages dedicated to the Powder Springs Public Works Department and its sanitation services. This resource provides information on the department's operations and services as well as frequently asked questions regarding collection services and waste management regulations. The city website also includes contact information for the public works department including the department's phone number and general e-mail address. For less computer-savvy residents, information on garbage collection rates and policies are regularly published in the Powder Springs Messenger. The annual "Reside with Pride" program of beautification and large item pickup is also advertised in the Powder Springs Messenger. Next, pamphlets informing the public about solid waste management issues are distributed both at City Hall and at the Public Works Department Headquarters. The majority of these pamphlets are designed to prevent contamination of water supplies through proper disposal of hazardous wastes such as automotive fluids. Pamphlets encouraging home composting and recycling are also available in order to educate the public on source reduction programs available.

Regular public outreach efforts are also conducted by the Powder Springs Public Works Department in order to further solicit input from the public and raise awareness regarding solid waste management issues. The public works and sanitation department set up an information booth at the annual Powder Springs "State of the City" open house held at the Ford Center. Sanitation officers also conduct presentations on solid waste and

recycling issues to classes at the local middle school. Finally, the city sponsors the Keep Powder Springs Beautiful committee in order to maintain and enhance the cleanliness and beauty of the city through community awareness and involvement.

The city has complied with the minimum requirements for comprehensive solid waste management planning as specified in DCA's administrative rules. In order to solicit input for the Powder Springs Solid Waste Management Plan, public involvement has been coordinated with the city's comprehensive plan update. Presentations introducing and providing updates regarding the solid waste management plan have been delivered at comprehensive plan meetings and workshops.

Assessment

The Powder Springs Public Works Department does an excellent job of conducting public outreach regarding solid waste management services. Through various means of public communication and participation, the department is able to engage the public and provide useful information regarding solid waste issues. However, the department should conduct a more aggressive campaign to encourage recycling and inform the public about source reduction opportunities, given the city's reliance on county recycling programs.

Needs and Goals

The five core elements of the solid waste management plan include (1) Collection, (2) Waste Reduction, (3) Disposal, (4) Land Limitations Analysis, and (5) Education and Public Involvement. In each of these sections, an inventory and analysis of existing conditions has been formulated. After examining the existing Solid Waste Management conditions and practices, it is necessary to formulate Needs and Goals in order to adapt services to the changing requirements of the city.

Collection

- Continue to provide efficient, timely collection service for citizens of Powder Springs and residents located in the unincorporated water/sewer/solid waste service area.

- Ensure the efficient collection of solid waste and yard clippings in such a manner that allows for recoverable wastes to be removed from the waste stream.

- Maintain adequate future capacity for solid waste collection; taking into account anticipated increases in population and employment within the city

- Periodically evaluate collection procedures in order to ensure quality service and cost effective service delivery

- Consider requiring city issued permits for private waste hauling firms operating within the City of Powder Springs in order to facilitate solid waste management planning across both public and private sectors

Waste Reduction

- Reduce the amount of solid waste generated by the city that is ultimately disposed at landfills in order to preserve the natural environment and meet the state waste reduction goals

- Encourage citizens to participate in county recycling programs and drop off such items at designated sites

Disposal

- Ensure that solid waste handling and disposal facilities meet all applicable local, state, and federal requirements

- Ensure that adequate landfill capacity exists to meet the municipal solid waste and yard trimming disposal needs for at least ten years following the completion of the solid waste management plan

- Obtain contracted guarantees for disposal of solid wastes meeting the needs of current and future residents of the City of Powder Springs

Land Limitations

- Ensure that solid waste handling and disposal facilities are located in areas appropriate for such uses and in compliance with city, state, and federal site selection requirements
- Ensure that solid waste handling and disposal facilities are not located in areas of established residential populations or significant environmental limitations
- Ensure that a well defined legal procedure exists for managing possible site applications for new solid waste handling and disposal facilities

Education and Public Involvement

- Educate citizens on opportunities for recycling and composting within Powder Springs and Cobb County
- Continue to conduct public outreach in order to gain input on solid waste management services and planning efforts

Financing

Financing Options for Solid Waste Programs

Financing structure of solid waste management programs can have an important effect on both the level of service provided and waste reduction efforts. There are three principal alternatives for funding solid waste services: (1) property tax revenues, (2) flat fees, and (3) variable-rate fees. (EPA, 1995)

The traditional means of funding solid waste collection is through property taxes, especially in communities where collection is performed by city sanitation departments. The principal advantage of such a system is its simplicity in implementation. By including garbage collection costs in with municipal property taxes, the need for separate billing is eliminated. Since costs are combined with property taxes, there may be less incentive for users to illegally dump items in order to avoid user fees for disposal. Property tax funding can be considered a progressive form of funding, since owners of valuable properties will pay more in taxes than residents in modest

homes. However, general funding through property tax revenues does little to encourage waste reduction. Furthermore, many communities have imposed limitations on property tax increases that may hinder the ability of waste collection agencies to accommodate increased costs. Funding of waste collection through property taxes may lead to pressure for the municipal government to serve taxpayers in large residential complexes that are often force to utilized private waste collection services.

Under flat fee systems, residents pay a fixed monthly fee for waste collection to the municipal government or private hauler. Flat fee systems have the advantage of relatively easy implementation, since all users pay the same base amount. Fees can also be easily adjusted in order to compensate for cost increases or capital expenditures. However, flat fee systems offer little incentive for users to reduce the amount of waste generated.

Variable rate financing systems utilize a "pay as you throw" system of funding, whereby residents are charged according to the amount of waste disposed. Under this system, there is a direct economic incentive for waste reduction, allowing users to choose their level of service. Users are encouraged to utilize recycling programs and compost yard clippings on site. However, charges for extra service may encourage some residents to illegally dump items that would otherwise be expensive to dispose of. Enforcement mechanisms may be required to prevent illegal dumping and the placement of trash in neighboring collection receptacles. It can also be difficult to implement variable rate systems, because individual billing is required. Some communities utilize special bags or stickers that are designed to directly bear the costs of disposal to customers.

Powder Springs Waste Management Financing Structure and Rates

The City of Powder Springs utilizes a hybrid rate structure that includes both flat fee and variable-rate financing. Customers are charged a flat rate for service with additional fees for garbage above the allotted monthly container. A detailed listing of current rates is provided below.

Containers

Initial Deposit	$50
Additional Container	$25

Monthly Garbage Service

Inside City	$15
Senior Citizens	$7.50
Outside City	$19
Additional Carts	$3
Additional Bags	$4 for 1st bag and $1 for each additional bag

Yard Waste

1-6 Bags	Included in monthly subscription fee
7-12	$7.50
13-20	$10
21-30	$15
31-40	$20
41-50	$30
50 max/week	$40

Limb Service

Piles 3'x3'x3'	Included in monthly subscription fee
Piles large than 3'x3'x3'	$100

Miscellaneous Bulk Trash Charges

Sofas	$20
Refrigerators/Stoves	$15
Washers/Dryers	$15
Dishwashers	$15
Recliners	$15
Mattresses	$15
Box Springs	$10
Hot Water Heaters	$10
Grills	$10
TVs	$10
Chairs (Upholstered)	$10
Other	$7.50 minimum

Implementation Program

Plan Element and Implementation Activity	2007	2008	2009	2010	2011	Responsible Party	Cost ($) (If applicable and known	Possible Funding Source(s)
Waste Stream Element								
Continue annual reporting to Georgia Department of Community Affairs	X	X	X	X	X	Public Works	Included in staff duties	User Fees
Conduct a survey through solid waste billing to assess the level of participation in county recycling			X			Public Works	Included in staff duties	User Fees
Collection Element								
Continue to provide weekly collection services to residential households in Powder Springs	X	X	X	X	X	Public Works	Included in staff duties	User Fees
Continue weekly collection of yard trimmings	X	X	X	X	X	Public Works	Included in staff duties	User Fees
Consider city contracting of private collection firms to serve apartment complexes and large commercial waste generators			X			Public Works	Included in staff duties	User Fees
Implement four-truck collection system with one standby truck	X					Public Works	Included in staff duties	User Fees
Purchase additional collection vehicles based on city annexation and population expansion		X				Public Works	180,000	User Fees
Hire additional collection staff based on city annexation and population expansion		X				Public Works	75,000	User Fees
Develop a contingency plan for waste collection	X					Public Works	Included in staff duties	User Fees
Waste Reduction Element								
Conduct aggressive campaign to encourage citizens to utilize Cobb County recycling collection facilities			X			Public Works	Included in staff duties	User Fees
Consider implementing recycling program in order to achieve waste reduction goals				X		Public Works	Included in staff duties	User Fees
Consider mandatory recycling programs for commercial, industrial, and construction debris waste generators				X		Public Works	Included in staff duties	User Fees
Consider and if necessary implement local recycling collection centers				X		Public Works	Included in staff duties	User Fees

Plan Element and Implementation Activity	2007	2008	2009	2010	2011	Responsible Party	Cost ($) (If applicable and known	Possible Funding Source(s)
Consider incentives to reduce waste such as pay-as-you-throw billing systems and increased collection rates				X		Public Works	Included in staff duties	User Fees
Disposal Element								
Adopt and maintain an agreement or contract County waste disposal facilities to ensure 10 years of disposal capacity	X					Mayor and Council	Included in council duties	General Fund
Obtain a contract or agreement for disposal of yard trimmings in order to ensure 10 years of disposal capacity	X					Public Works	Included in staff duties	User Fees
Land Limitations Element								
Continue to require that any and all proposed solid waste handling and disposal facilities meet local, state, and national requirements for site location	X	X	X	X	X	Public Works	Included in staff duties	User Fees
Education and Public Involvement								
Continue engaging the public in solid waste management issues	X	X	X	X	X	Public Works	Included in staff duties	User Fees
Continue public education and information campaign to encourage conservation and source reduction	X	X	X	X	X	Public Works	Included in staff duties	User Fees