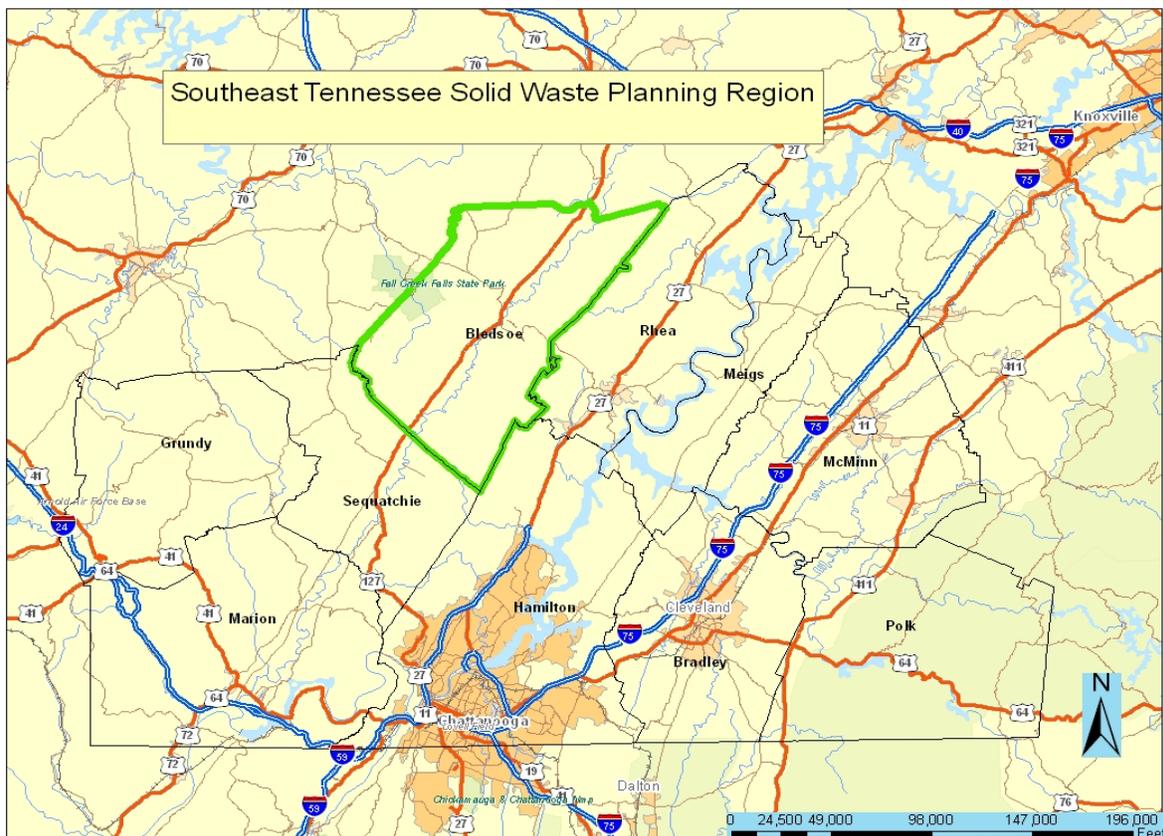


SOUTHEAST TENNESSEE MUNICIPAL SOLID WASTE REGION

BLED SOE COUNTY

SOLID WASTE NEEDS ASSESSMENT



JUNE 2012

INTRODUCTION

The Solid Waste Management Act of 1991 (SWMA) was written to avert extreme financial hardships that could have occurred if small local governments were suddenly required to upgrade landfills to meet Resource Conservation and Recovery Act (Subtitle D) regulations. Rules were promulgated by the Tennessee Department of Environment & Conservation to implement Subtitle D included provisions requiring landfill operators to line facilities with impermeable clay and synthetic materials; install leachate collection systems and monitoring wells; and provide thirty years of post-closure care. These were, at the time, extremely expensive changes in the development and operation of disposal facilities, and there was fear in the legislature that some counties would not have a disposal option.

In order to ensure that local governments were protected from high costs and lack of disposal capacity, the SWMA promoted regional landfills, an attempt to guide small counties into alliances with other counties. Theoretically, small counties would form a regional board that would then settle on a disposal site, and each local government would share in the cost of operation. The law even has a provision that would allow local governments to require all entities within their respective jurisdictions to dispose of their waste at the regional landfill. The premise behind the latter concept proved to be unconstitutional (see *Carbone vs Clarkstown*, U.S. Supreme Court, May 1994). While acknowledging that the flow control provision existed, no county in the State was willing to pledge public funds to facilities that may not receive enough waste to garner the tipping fees needed to meet costs.

During the same period in the early 1990s, the Tennessee Valley Authority was exploring ways to integrate solid waste into fuel supply systems at power plants that had the existing technology to properly combust waste material. One of these plants was located in Kingston, and local officials became interested in combining their respective waste streams, closing most of their landfills, and hauling everything to a waste-to-energy facility.

Engineers working with TVA had prepared studies for other power plants and suggested the Watts Bar site as an alternative because two moth-balled fossil fuel plants are located there. The engineers recommended installing a companion boiler system that would utilize existing infrastructure and reduce the haul distance for all southeast Tennessee counties. Other infrastructure planned for the site included a materials recovery facility (MRF), which would have diverted enough material to meet the SWMA waste reduction goal. This situation was the catalyst for the formation of the Southeast Tennessee Municipal Solid Waste Planning Region,

which included all of the counties within the Southeast Tennessee Development District¹. Without the flow control provision, commitments from all counties and cities were vital in bringing this project to fruition.

After the completion of studies funded by TVA, the utility lost interest in the project. No official reason was ever conveyed, but the decision was probably based on the fact that any emissions from the proposed plant would have a potential impact on the Cherokee National Forest and the Smokey Mountain National Park. TVA's involvement in the project was crucial because the utility had existing infrastructure and would have bought the steam produced by the plant. Tipping fees would have been a reasonable \$35 per ton, including MRF operations. Without TVA, the Board could not finance a stand-alone facility because tipping fees would have reached \$100 or more, far above existing landfill disposal costs.

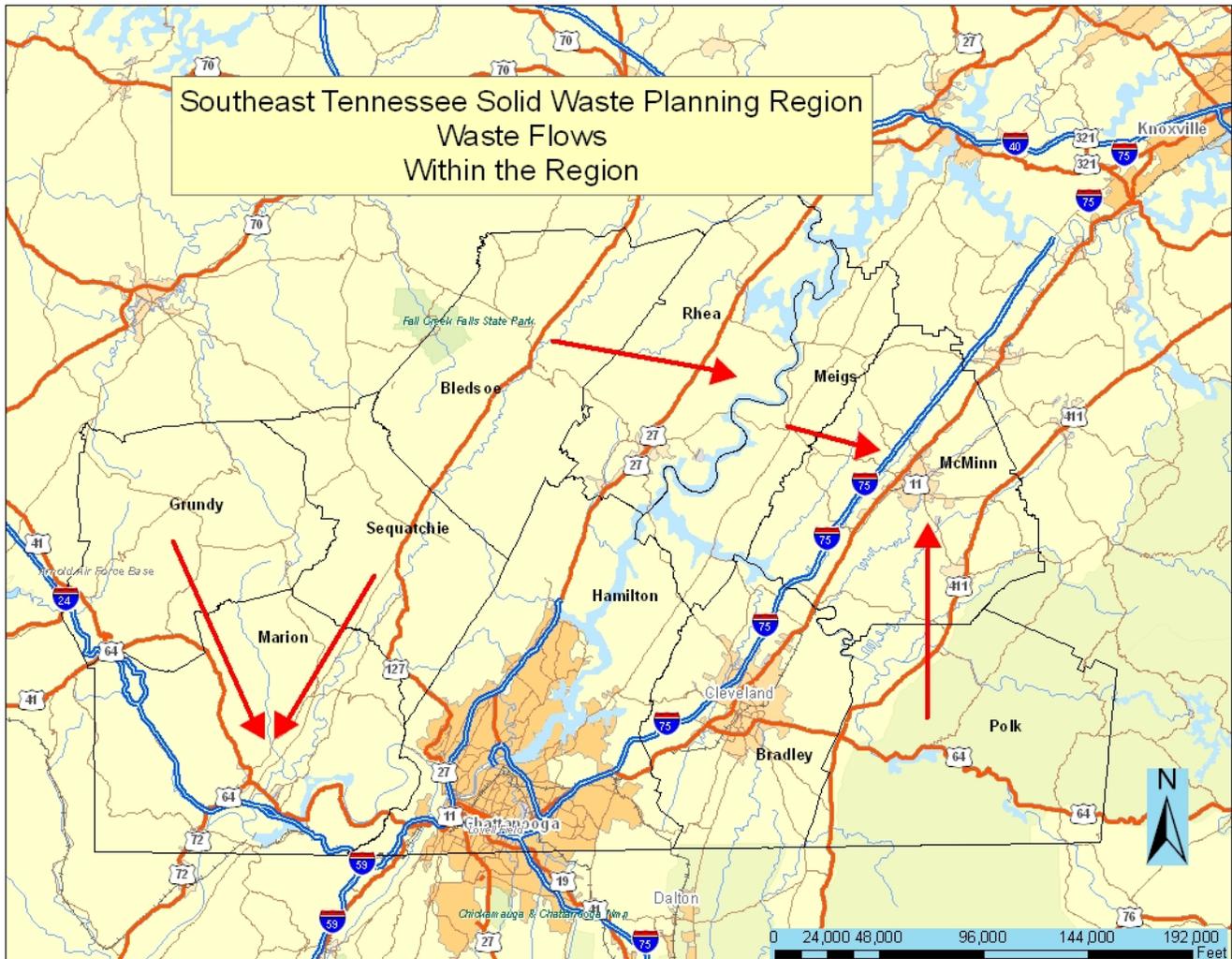
The failure to implement the waste-to-energy project did not deter the Board from remaining a regional planning entity. Board members were comfortable with the situation and wished to remain together in the event that other regional opportunities arose.

Saving landfill space was a primary goal of the SWMA. Many experts believed early on that the cost per ton of garbage would be in the \$40 - \$90/ton range at Class I facilities. Consequently, recycling, waste diversion, and saving landfill space became paramount goals. High tipping fees failed to materialize, however, as competition and economies of scale drove down development costs. Subsequently, many cities and counties found themselves with expensive recycling and waste diversion programs. Studies by several jurisdictions showed costs of \$280+ to recycle a ton of waste material versus \$25-\$28 dollars to simply dump it in the landfill. It is no surprise that many cities dropped their recycling programs (they weren't required by law to have one in any case) and shifted most of the burden to county governments, which were required to meet SWMA goals. There was no crises, no shortage of landfill space, and most of the landfill operators were marketing their space to any and all, inside of Tennessee or out, in the region or not. The more waste coming into the landfill, the more money is made for the operators. Few landfill operators were (or are) working diligently to save space; they are generally selling as much space as possible for the best price.

In Southeast Tennessee there are six (6) operating Class I Landfills. SANTEK Environmental, Inc. operates two of these facilities for Bradley and Rhea Counties respectively. SANTEK can generally landfill all of the waste that it can attract to either landfill, some of it from Georgia. In return, the counties get reduced or no disposal costs, income from disposal operations, and

¹ The Southeast Tenn. Municipal Solid Waste Planning Board is composed of Bledsoe, Bradley, Grundy, Hamilton, Marion, McMinn, Meigs, Polk, Rhea, and Sequatchie Counties.

assistance with programs, including the State's Household Hazardous Waste collection events.



Meadow Branch, a private landfill located in McMinn County, provides disposal for several counties in East Tennessee, including several outside of the region. McMinn County receives a host fee for Meadow Branch, and operates its own landfill, which also accepts waste from outside the region.

Marion County's landfill is operated by an Authority. Like the other landfills, waste is accepted from any source. In the past, landfill operators have received waste from Dade County, Georgia, Jackson County, Alabama, and both Hamilton and Franklin Counties in Tennessee. The landfill routinely accepts all of Grundy and Sequatchie County's waste.

Chattanooga operates the sixth landfill in the region. It is a facility that originally belonged to Hamilton County, but when the city's Summitt Landfill was closing, the city and county came to an agreement that allowed Chattanooga to own and operate the landfill. This landfill could accept waste from other areas, but there are currently no customers. A large proportion of the

Chattanooga/Hamilton County waste stream, over 200,000 tons annually, goes to an Allied Waste landfill located in northern Alabama.

The original solid waste assessment for the entire region advocated sub-regions composed of natural “waste sheds.” In reality, these sub-regions have occurred, essentially as predicted, based on the economics of waste generation, hauling distance, etc. As the previous map indicates, these sub-regions consist of county groupings as follows: Bledsoe-Rhea; Meigs-McMinn-Polk; Bradley County; Hamilton County; and Marion-Grundy-Sequatchie.

The following is a detailed description of Bledsoe County’s waste collection, diversion, and disposal system and how these programs function in relation to other parts of the Region. Every attempt has been made to provide an objective assessment of the County’s infrastructure and program needs based on the legal requirements of the SWMA.

SECTION 1: DEMOGRAPHIC INFORMATION

Provide a table and chart showing the region's population for the last ten (10) years with a projection for the next five (5) years. Provide a breakdown by sub-table and sub-chart, or some similar method to detail all county and municipality populations. Discuss projected trends and how it will affect solid waste infrastructure needs over the next five (5) years.

Over the last decade, Bledsoe County's population has increased at a relatively high rate compared to previous years. From 1950 until the 1970s, the county population actually decreased by 10.7%. Thereafter it rebounded and has increased ever since.

Table 1.1 Historic Population

Year	Population
1950	8,561
1960	7,811
1970	7,643
1980	9,478
1990	9,669
2000	12,367

Source: U.S. Census Bureau

The difference between previous time periods and the present is the availability of employment opportunities that support additional households. Although the county does not have the industrial, commercial, or institutional resources to support additional population growth, there are adequate highways that are free from congestion and provide linkages to the urban areas of Dayton (Rhea County) and Chattanooga where employment is available. As the following table indicates, more than 52% of Bledsoe County's workforce traveled outside the county for employment opportunities. Twenty-five percent spend 45 minutes or more in travel time to work.

Table 1.2 Bledsoe Workforce

Total Workers	4,830
Worked in State	4,747
Worked in County	2,295
Worked Outside County	2,452

Source: 2010 U.S. Census

The total number of owner occupied houses has decreased from 3,957 to 3,725, a difference of 232 houses.

Table 1.3 Population Projections

		Population		
	Year	Total County	Pikeville	Non-municipal
1	2010	12,876	1,608	11,268
2	2011	12,927	1,591	11,336
3	2012	12,978	1,574	11,404
4	2013	13,029	1,557	11,472
5	2014	13,080	1,540	11,540
6	2015	13,131	1,523	11,608
7	2016	13,182	1,506	11,676
8	2017	13,233	1,489	11,744
9	2018	13,284	1,472	11,812

Sources: Historic statistics are derived from U.S. Census Bureau data. Projections are derived from a least squares model of population growth.

Population projections have explicit and implied assumptions. Only in special circumstances (e.g. military base closures) do planners assume that populations will decrease although, as is apparent from previous census years, the Bledsoe County population did decrease in the twenty-year period from 1950 through 1970. Previous population losses were primarily due to the fact that the county is not located on major transportation corridors and there are a limited number of industries that choose to locate in an area that does not have direct access to four-lane highways, rail, and/or barge facilities. Consequently, people moved away to find employment, and young people, just out of high school, found it necessary to relocate for the same reason.

Currently, the U.S. economy is in a recession. Should this economic downturn become severe, Bledsoe County’s economy would suffer greater stresses than urban areas that have a more diverse employment base. This situation could be exacerbated (or even the result of) high fuel costs, which is having a pronounced negative impact on the large number of commuters that comprise the Bledsoe County workforce.

Over the past several years, many retired people have found that southeast Tennessee is a great retirement area. Those who moved from northern states to Florida have become increasingly concerned about high insurance rates associated with Florida’s location in the tropical storm belt, and they miss the change of seasons. This area is ideal because the climate is temperate, taxes are low, and people moving into the area can get much more for their housing dollar. All southeast Tennessee counties have benefited from the so called “half-

back” immigrants: People who move from northern, snow-belt states to Florida and then move half way back.

Problems in the housing market are likely to change this trend significantly. People who own homes are finding it difficult to sell because there are so many houses on the market. As the South Florida Sun-Sentinel reported on April 3, 2008, *“Florida foreclosure activity grew by more than 63 percent in February from the previous month, giving it the nation's third-highest state foreclosure rate with one foreclosure filing for every 382 households”*. With this many homes on the market, anyone wishing to sell and move to a different locality will probably be unable to do so. The foreclosure rate has continued to increase, and the market has not reached the bottom. Until then, a large proportion of “half-backs” will not be financially able to relocate, and there is little likelihood that this particular population will impact growth in the region.

SECTION 2: ECONOMIC PROFILE

Provide a table and chart showing the region's economic profile for all county and municipalities for the last ten (10) years with a projection for the next five (5) years. This can be accomplished by using the following economic indicators.

Bledsoe County's economy is heavily dependent on surrounding areas since a majority of the workforce is employed outside the county. Between 2002 and 2004, a large manufacturer (Dura Metal Products) that was located in Pikeville relocated operations offshore, idling more than 200 workers. Since then, nothing has replaced the loss and unemployment has remained relatively high compared to the State average of about 5 percent.

Table 2.1 Economic Profile

Year	Total	Employment	Unemployed		Per Capita Income	Retail Sales (\$1,000's)	Total Bank Deposits (millions \$)
			Total	Percent			
1997	4,056	3,833	223	5.5%	15,844	30,850	62
1998	4,109	3,931	173	4.2%	16,966	31,179	65
1999	3,950	3,810	140	3.5%	17,644	33,787	70
2000	5,144	4,932	212	4.1%	17,746	34,696	73
2001	4,965	4,719	246	5.0%	18,670	33,449	77
2002	5,089	4,791	298	5.9%	19,041	33,561	82
2003	4,994	4,616	378	7.6%	19,636	35,739	86
2004	4,765	4,404	361	7.6%	20,827	34,865	88
2005	4,630	4,266	364	7.9%	21,481	35,887	91
2006	4,800	4,490	310	6.5%	21,744	36,925	105
2007	5,120	4,724	396	7.7%	22,515	37,303	101
2008	5,205	4,787	418	8.0%	23,162	37,886	103
2009	5,291	4,850	441	8.3%	23,808	38,469	108
2010	5,376	4,912	464	8.6%	24,455	39,053	112
2011	5,462	4,975	486	8.9%	25,101	39,636	116
2012	5,547	5,038	509	9.2%	25,747	40,220	120
2013	5,632	5,101	531	9.4%	\$26,232	40,658	123
2014	5,717	5,164	553	9.7%	26,716	41,096	126
2015	5,802	5,227	575	9.9%	27,201	41,533	129
2016	5,887	5,290	597	10.1%	27,686	41,971	132
2017	5,972	5,353	619	10.4%	28,170	42,409	135
2018	6,057	5,416	641	10.6%	28,655	42,846	138

Sources: Historic employment data, U. S. Dept. of Labor; Per capita income data, U.S. Bureau of Economic Analysis; Retail data, Tenn. Dept. of Revenue; Bank deposits, FDIC.

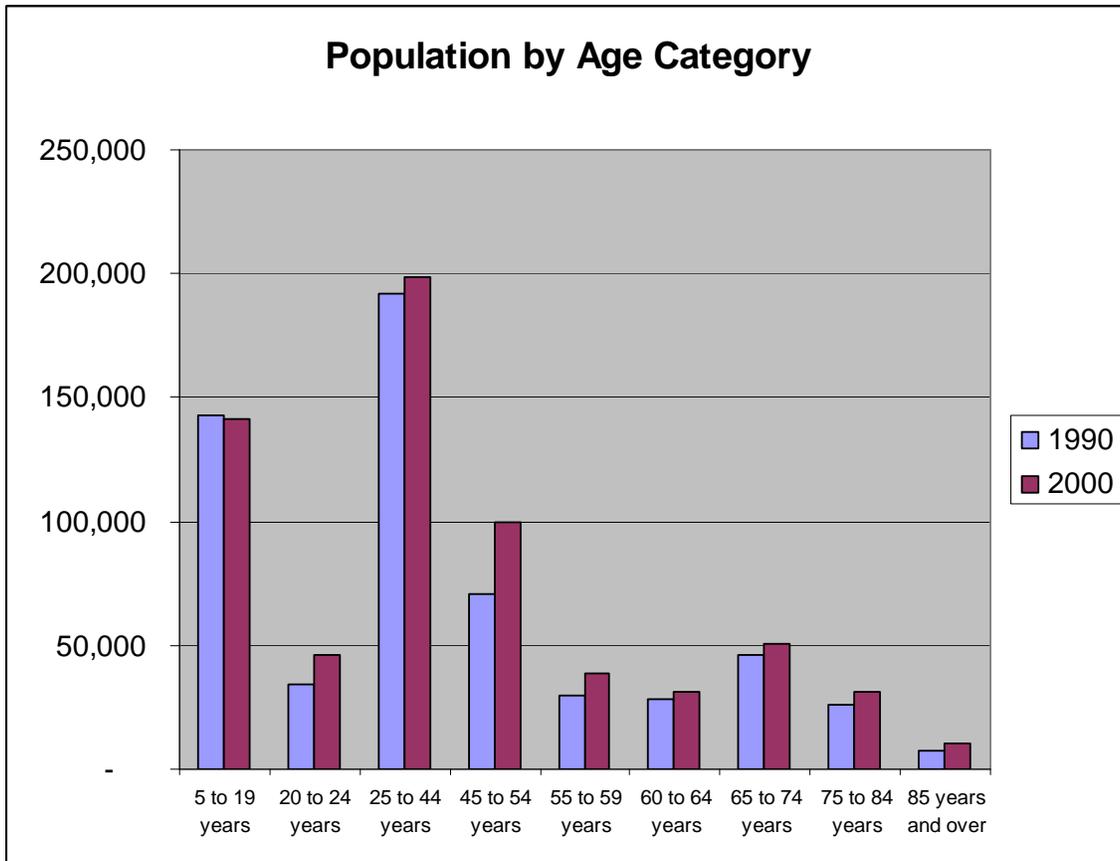
All state and local area dollar estimates are in current dollars (not adjusted for inflation).

Projections: SETDD staff.

Projections of employment from 2013 to 2018 assume a "business as usual" situation. In that case, the unemployment rate is likely to continue an upward trend if the available workforce expands. Much of this expansion will depend on the number of retirement-aged workers who

opt to continue working rather than retire to a fixed income that may not support their families. One of the biggest issues facing potential retirees is health care: Can they afford to pay premiums on health insurance if they do not have assistance through an employer? In many cases, the answer is no, and the worker remains on the job simply to obtain necessary health coverage. As the following chart indicates, the retirement-aged population will be significant as the 45-54 age group moves from the year 2000 to 2010. Should this age group choose to retire, the unemployment rate may moderate, all other things being equal.

Figure 2.1



Source: U.S. Census Bureau, 2008.

Future prospects for industrial development are somewhat better due to Volkswagen AG locating a manufacturing facility in Chattanooga. The City of Pikeville has space in its industrial park for any company that is looking for a location to provide parts and services to the Volkswagen plant. Prospects for such a location are relatively good, and the City of Pikeville and Bledsoe County are currently working on economic development recruiting projects that will expand the employment base of Bledsoe County.

As the following table indicates, the total number of jobs has not rebounded from the high experienced in 2002. New jobs are generally in the service industry, which does not provide

the level of pay or the benefits that manufacturing employees are accustomed to. This may change, but projections are based on the previous performance of the local economy.

Table 2.2 Employment by Occupation

Employees	2007	2006	2005	2004	2003	2002
Utilities	1	1	1	1	1	0
Construction	95	107	83	80	74	81
Manufacturing (31-33)	152	131	127	117	191	390
Wholesale Trade	25	10	0	0	0	0
Retail Trade (44 & 45)	142	150	133	162	157	171
Transportation and Warehousing (48 & 49)	17	18	15	22	16	15
Information	68			72		
Finance and Insurance	58	60	54	55	52	46
Real Estate and Rental and Leasing	31	31	27	27	27	13
Professional, Scientific & Technical Svc	20	18	18	26	25	18
Admin., Support, Waste Mgmt, Remediation	1	1	1	1	1	1
Education Services	361	349	349	340	321	316
Health Care and Social Assistance	250	252	245	253	232	226
Accommodation and Food Services	65	47	57	52	63	66
Other Services (except Public Admin.)	18	15	23	17	17	
Public Administration	121	117	104	115	120	117
Total:	1,425	1,307	1,237	1,340	1,297	1,460

Source: U.S. Dept. of Labor

Using the Bureau of Labor Statistics inflation calculator, the following table provides a realistic assessment of actual per capita income growth over the last decade from 1997 through 2008. This amounts to only \$854 or 5 percent growth rate rather than the 32 percent (\$7,318) apparent growth reported in the previous table.

Table 2.3 Per Capita Income

2002	16,988
2003	17,128
2004	17,696
2005	17,653
2006	17,311
2007	17,428
2008	17,560
2009	16,465
2010	15,370

Bledsoe County residents have not fared as well as other non-metropolitan areas in the State. As the following table indicates, incomes range from a high of 15 percent to a low of 11.5 percent lower than the combined non-metro areas in the State. These are significant differences that illustrate the extent of the disadvantages that must be overcome in providing services to a population that has a lower capacity for funding non-vital services than the majority of other non-metropolitan areas.

Table 2.4 Per Capita Income Comparison

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Tennessee	22,676	23,989	24,898	26,095	26,833	27,435	28,257	29,539	30,827	32,177
Bledsoe	15,844	16,966	17,644	17,749	18,706	19,094	19,728	20,717	21,560	22,511
Tennessee Nonmetropolitan Portion	18,521	19,265	19,961	20,886	21,385	21,868	22,833	23,639	24,649	25,421
Difference, Bledsoe/Nonmetro.	2,677	2,299	2,317	3,137	2,679	2,774	3,105	2,922	3,089	2,911
Percent Difference	14.45%	11.93%	11.61%	15.02%	12.53%	12.69%	13.60%	12.36%	12.53%	11.45%

The primary economic problems on the horizon are disruptions in the home mortgage markets and energy supplies. As previously discussed, the home mortgage problems will likely curtail near-term investment in new homes, especially by retirees moving into the region. More problematic (and at a basic level, related) is the increasing cost of energy. It is becoming more apparent that liquid fuels production is not keeping pace with world-wide demand.

SECTION 3: SOLID WASTE STREAM

Elaborate on the entire region’s solid waste stream. Compare today’s waste stream with anticipated waste stream over the next five (5) years. How will the total waste stream be handled in the next five (5) years? Include in this discussion how problem wastes like waste tires, used oil, latex paint, electronics and other problem wastes are currently handled and are projected to be handled in the next five (5) years. What other waste types generated in this region require special attention? Discuss disposal options and management of these waste streams as well as how these waste streams will be handled in the future. Include in this discussion how commercial or industrial wastes are managed. Also provide an analysis noting source and amounts of any wastes entering or leaving out of the region.

Several waste characterization studies conducted in various parts of the country may be used to estimate waste stream components in the southeast Tennessee region. There are no known contemporary studies that were performed in Tennessee but studies from other states should provide a reasonable source for extrapolating waste generation attributes to local populations. The following table provides a comparison of some studies in relatively comparable states as well as the nationwide EPA estimate.

Table 3.1

Waste Characterization Studies

Material	Georgia 2004	Iowa 2005	Ohio 2005	EPA 2006
Paper	38.7	33	41	33.9
Plastics	15.8	14.9	16	11.7
Metals	5.3	4.7	4	7.6
Glass	3.7	1.7	5	5.3
Yard Waste		1.6	9	12.9
Food Waste		10.6	15	12.4
Wood		8		5.5
C & D	5.9	5.5		
Durable		5.1		
Textiles & Leathers		4.9	6	7.3
Diapers		2.4	4	
Rubber		0.5		
HHMS		0.4		
Other		6.8		3.3
Organics	27.2			
Inorganic	3.4			
Total:	100	100.1	100	99.9

As is obvious from the table, different states use different definitions for the material types. From observation of the Bledsoe County waste stream, the Iowa percentages appear to be more representative because they mirror a predominately rural landscape. The Environmental Protection Agency’s numbers are generally accepted for most areas in the U.S., but they tend to be heavily weighted toward large metropolitan areas because that is where most of the

population lives and where most of the waste is produced. As the following table illustrates, Iowa and Tennessee have a similar urban/rural mix, which is considerably different from U.S., Georgia, and Ohio percentages.

Table 3.2

Population Comparison

	Georgia	Iowa	Ohio	Tennessee	United States
Total:	8,186,453	2,926,324	11,353,140	5,689,283	281,421,906
Urban:	5,864,163	1,787,432	8,782,329	3,620,018	222,360,539
Rural	2,322,290	1,138,892	2,570,811	2,069,265	59,061,367
Urban Percent	72%	61%	77%	64%	79%
Rural Percent	28%	39%	23%	36%	21%

U.S. Census Bureau
Census 2000

Using composite percentages based on random observation of the waste stream, the following chart provides a rough illustration of waste volumes by type of material. Waste generation does not necessarily mean that these materials enter the waste collection system. In rural counties like Bledsoe, much of the wood waste, construction and demolition (C & D), and food wastes are disposed of on private property. Very little change is expected in waste stream composition over the next five (5) years.

Figure 3.3

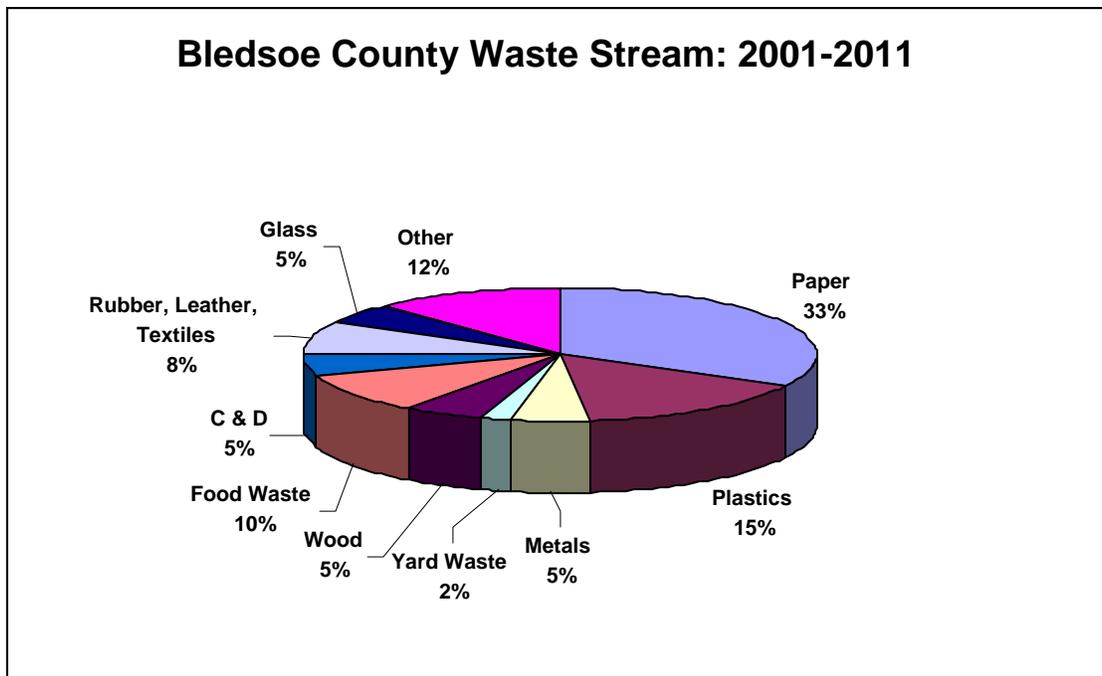


Table 3.4

Jurisdiction/ Sector	Collection	Disposal Options	Current Problem Waste Handling	Future Problem Waste Handling	Other Problem Waste
Bledsoe County	Three county convenience centers. Available to all residents, including those within the Town of Pikeville.	All waste collected at convenience centers is taken to the Rhea County Class I landfill near Dayton, TN.	Waste Tires: Mac Tire, Inc. contract Automotive Fluids: Pikeville Quick Lube Used Oil: Convenience Centers, Universal Environmental Services Latex Paint: Same as auto fluids Electronics: None	Waste Tires: Continue contracting. Continue contract Continue contract Assistance from RMCET to collect and market	HHW collected at mobile collection event.
Town of Pikeville	Curbside collection provided by the Town to all residents through a contract with Cumberland Waste Disposal	Cumberland Waste Disposal	Provided by Bledsoe County	Provided by Bledsoe County	Provided by Bledsoe County
Business	Contracts with private haulers and self-service by business/industry.		In-house programs and contractors	In-house programs and contractors.	Commercial generation of hazardous waste is regulated by TDEC.

Currently, there are no programs available to handle electronics.

SECTION 4: REGIONAL COLLECTION SYSTEMS

Describe in detail the waste collection system of the region and every county and municipality. Provide a narrative of the life cycle of solid waste from the moment it becomes waste (loses value) until it ceases to be a waste by becoming a useful product, residual landfill material or an emission to air or water. Label all major steps in this cycle noting all locations where wastes are collected, stored or processed along with the name of operators and transporters for these sites.

Bledsoe County has three convenience centers strategically located to maximize access to all residents (see attached map). The centers are located as follows:

State Highway 101 – State Forest - Cumberland Plateau Region

State Highway 30 – Summer City - Walden's Ridge Region

U. S. Highway 127 – Lee Station (Old Landfill) – Sequatchie Valley Region

The Summer City Convenience Center is open 8:00 am- 4 pm Monday through Saturday (and 12:00 pm-4pm on Sunday) and the other two Convenience centers are open from 7:30 a.m. to 4:30 p.m., Monday, Wednesday, Friday, and Saturday. All of the centers collect paper and metals for recycling, and the central facility located on U.S. 127 serves as the tire collection facility. The Highway 101 and Highway 127 facilities have vertical balers for cardboard.

One private contractor operates a waste collection business that covers a large part of the county, and the Town of Pikeville contracts with Cumberland Waste Disposal for residential collection within Town limits. In addition, the Southeastern Tennessee State Regional Correctional Facility hauls institutional waste to the Rhea County Landfill.

The minimum number of convenience centers required is calculated using the formula that determines a reasonable number by land area rather than population. This method was chosen because population densities are low and the county is relatively large. With a current population of about 12,876, the minimum required number of centers would be only one (1) using the TDEC formula of dividing the population by 12,000. This would not adequately serve the rural population so the following method was deemed more appropriate.

Table 4.1

Minimum Collection Required

	Total Sq. Miles	Service Provided	Difference	Required Centers	Existing Centers
Bledsoe	407				
Pikeville		2.42	404.58	2.25	3

The above formula subtracts the area where municipal service is provided and the resulting figure is divided by 180 square miles (TDEC formula) to arrive at a reasonable waste-shed area. This area includes State forest areas that are not populated and could be deducted from the total square miles of potential service area. Although the formula suggests that two centers are adequate, three centers were constructed to serve separate sections of the county, which is divided by the Sequatchie Valley into three distinct topographic areas.

Geology/Topography

Over millions of years, the Sequatchie River has carved a deep valley in the Cumberland Plateau that stretches from Cumberland County to Alabama. The valley is several miles wide but narrows enough for a visitor to observe vertical cliffs to the east (Walden's Ridge) and west (Cumberland Plateau proper) of the valley floor. These escarpments range from 1,000 to 1,800 feet. Scenery in and around the valley is some of the most spectacular in the State, but transportation routes up and down the escarpment are difficult.

The Tennessee Department of Transportation attempted to widen Highway 30 across Walden's Ridge because it is one of the few east/west routes in the region. Unstable geological formations underlying the Bledsoe side of the mountain forced TDOT to suspend construction and eventually abandon the project. This would have provided a much needed access route to one of the primary employment centers in the City of Dayton and given industry an accessible corridor to the county. As it is, Bledsoe County remains one of the few counties in the state that does not have four-lane highways, a railroad, barge service or airport facilities.

All of the waste collected at Bledsoe's convenience centers is hauled to Rhea County. From the Highway 101 convenience center, waste must be hauled down the Cumberland Escarpment, across the Sequatchie Valley, up the Walden's Ridge escarpment, and down the other side. The total distance is about 37 miles.

An evaluation of alternative systems included a transfer station centrally located in Pikeville. Hauling waste from the Highway 101 and Lee Station convenience centers and consolidating them at a facility in Pikeville would net a savings of about 27 miles one-way. It would not be feasible to haul the Summer City convenience center material back to Pikeville, since that

center is just a little over 18 miles from the landfill. If each of the convenience centers has one pull per week for 52 weeks that translates to 27 miles X 2 for the round trip X 52 weeks for an annual savings of 2,808 miles.

A roll-off truck generally gets about 8 miles per gallon of diesel fuel, so the county would save about 351 gallons of fuel annually. Additional maintenance costs are not included, but those costs are some fraction of the amount that would be spent whether the mileage was incurred or not. At \$3.85 per gallon for the diesel fuel (approximate current cost), the transfer station would save the county about \$1,351.35.

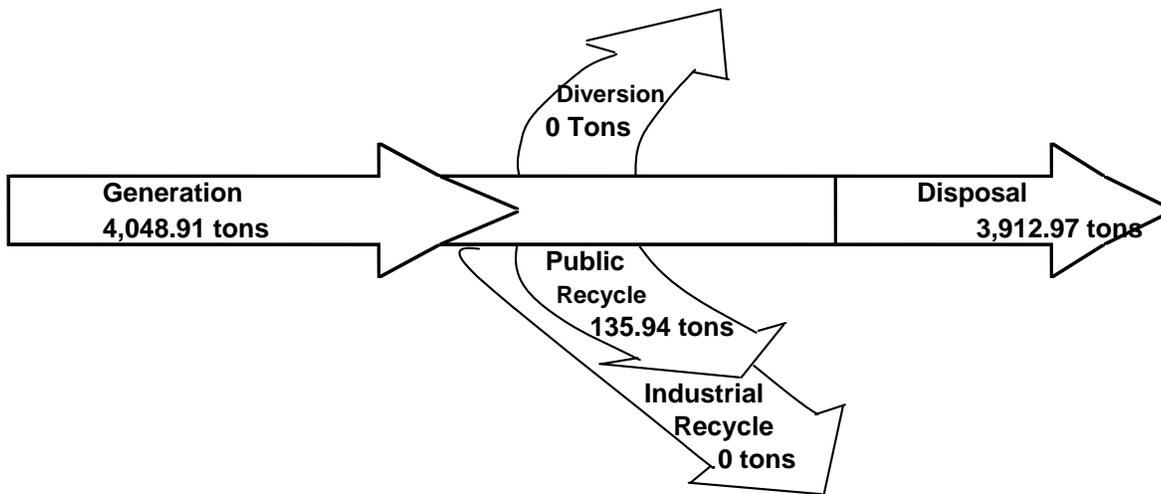
Transfer station construction and operation costs were taken from Shaw Environmental, Inc. workshop materials prepared for the Iowa Department of Natural Resources in June 2005 (attached). The total construction cost for a new facility without a scale, scale house or loading equipment, and without contingency costs amounts to \$426,206. Add in a \$250,000 front-end loader and the price goes to \$676,206. Assuming that the county can borrow these funds using a Rural Development 80/20 loan/grant package at 5.5%, the original amount would be \$540,965 with monthly payments of \$3,071.54 over 30 years. This does not include operation costs and construction cost increases above 2012 estimates.

There are no municipal or industrial customers with waste volumes sufficient to offset the high cost of transfer station construction and operation through tipping fees. From this brief analysis, it is obvious that savings from the construction of a transfer station would only be about 51 percent of the debt service cost. It is therefore apparent that a transfer station is cost-prohibitive and that the current convenience center system is the only viable option for the immediate future.

Regional solid Waste Flow and Life-Cycle

The following chart represents data collected for the 2011 Annual Report for the Southeast Tennessee region. As is apparent, there are no data available on waste reduction or diversion because it is very difficult to document waste diversion in a rural county. Most of the yard waste is disposed on site by burning (a permitted option) or hauled to a remote location. All wood waste from sawmills and other commercial operations is generally used for livestock bedding and/or as a soil additive. In an urban county, this data would likely be captured and counted toward waste reduction/re-use efforts, but most of the local commercial operations are small, family-owned businesses, and collecting sufficient information to make an estimate of waste volumes is extremely difficult.

Table 4.2 Waste Generation



SECTION 5: WASTE REDUCTION

The Solid Waste Management Act of 1991 states that all regions must reduce the amount of waste going into Class I landfills by 25%. Amendments to the Act allow for consideration of economic growth, and a “qualitative” method in which the reduction rate is compared on a yearly basis with the amount of Class I disposal. Provide a table showing reduction rate by each goal calculation methodology. Discuss how the region made the goal by each methodology or why they did not. If the Region did not meet the 25% waste reduction goal, what steps or infrastructure improvements should be taken to attain the goal and to sustain this goal into the future.

Table 5.1

County	Waste Reduction Goal Calculation Method - 2011		
	Compared to Base Year	Population Ratio	Qualitative-Real Time
Bledsoe County	-61.7%	-61.7%	3%
25% Waste Reduction Goal Achieved	Yes	Yes	No

The base year per capita waste generation rate was 0.81 tons as indicated in a May 26, 1994 letter from Paul Evan Davis (TDEC) to Jack Marcellis, past chairman of the Southeast Tennessee Municipal Solid Waste Region. With a 2010 population of 12,876, Bledsoe County’s waste generation rate was 0.31 tons per person annually (4,049 tons/12,876). That amounts to a 62% reduction in per capita waste from the base year figure.

According to the 1995 Annual Progress Report, Bledsoe County had population of approximately 9,890 and produced about 3,782 tons of waste, for a waste reduction rate of about 53%. This was at a time when all of the county’s waste was disposed of at the Bledsoe-Sequatchie County landfill, which did not have scales until 1995. The obvious conclusion to be derived from these large waste reduction numbers is that original waste generation figures were artificially high because they were based on estimates of volume, not verifiable scales data. Recycling and other waste reduction numbers do not support a reduction of this magnitude.

Without industrial recycling, Bledsoe County only achieves a 3.4% reduction in “real time” waste in 2011. The nominal waste generation has increased by 781 tons, excluding industrial recycling that was not part of the original waste stream. This extra tonnage, which we will allocate to the additional population, works out to be only about 0.20 tons per person annually. It is apparent from this exercise that the amount of waste produced per capita is very small compared to most areas of the country.

Waste volumes are low enough to infer that publicly operated waste collection facilities are only receiving a portion of the waste produced by the population. The county has more collection facilities than are required by the SWMA, and there are few roadside dumping areas.

So, the explanation for the anomaly in the waste stream volumes must be one or more of the following:

1. The local population generates less than national, state, and regional averages.
2. Alternate disposal opportunities (e.g. burn barrels) are widespread.
3. Waste is hauled out of the county, and the origin is attributed to another county.

Observations of local practices indicate that the second explanation is the most likely. Despite having more collection facilities than required by the Solid Waste Management Act, there are areas that do not have easy access to disposal facilities.

There are seasonal differences in the population due to the influx of migrant agricultural workers during the growing season. Convenience center workers state that waste volumes increase during this time, often requiring workers to haul extra loads of waste each week to the landfill. Theoretically, these volumes should increase the per capita waste since most of these workers are only in Bledsoe County for 3-4 months of the year. One can assume, therefore, that the per capita waste generation figure is even lower than existing data seem to indicate.

SECTION 6: COLLECTION AND DISPOSAL CAPACITY

A. Provide a chart indicating current collection and disposal capacity by facility site and the maximum capacity the current infrastructure can handle at maximum through put. Provide this for both Class I and Class III/IV disposal and recycled materials. Identify and discuss any potential shortfalls in materials management capacity whether these are at the collection or processor level.

There are no operating landfills in Bledsoe County.

Table 6.1: Regional Landfills

Site Name(s)	Annual Tons Bledsoe County	Permit Number	Current Capacity	Maximum Capacity	Projected Life of Facility
Rhea County Landfill	3,913	SNL72-0269	Capacity not determined	Capacity not determined	20 years
Total:	3,913				

Note: Capacity limits have not been explored. Landfills are capable of handling all local waste plus large volumes of waste hauled from other counties.

All waste, collected at Bledsoe County convenience centers, is hauled to the regional landfill in Rhea County. There are no Class III/IV landfills within a reasonable haul distance of Bledsoe County waste collection facilities.

B. Provide a chart or other graphical representation showing public and private collection service provider area coverage within the county and municipalities. Include provider's name, area of service, population served by provider, frequency of collection, yearly tons collected, and the type of service provided.

Table 6.2: Regional Collection Systems

Provider of Service	Service Area	Population Total Under This Service	Frequency of Service (Weekly, Bi-weekly, on call, etc.)	Annual Tonnage Capacity	Type Service (Curbside, Convenience Center, Green Box)
Bledsoe County	County-wide drop-off	11,268	As Needed	4,000	Convenience Center
Jacks Garbage Service	Unincorporated Area	Not Available	Weekly	Not Available	Curbside
Town of Pikeville	Town Limits	1,608	Weekly	1,140	Curbside

SECTION 7: FINANCIAL NEEDS

Complete the chart below and discuss unmet financial needs to maintain current level of service. Provide a cost summary for current year expenditures and projected increased costs for unmet needs.

The Town of Pikeville contracts with Cumberland Waste Disposal for waste collection, but no recycling or waste reduction services are provided. All of those services are supported by Bledsoe County.

Table 7.1 Expenditures

Description	Present Need	Unmet Needs	Total Needs	Explanation
EXPENDITURES	(\$/year)			
Salary and Benefits		\$ 50,000	\$ 50,000	\$50,000 salary/benefits for solid waste director
Transportation/Hauling		1,000	1,000	Expect higher fuel costs
Collection and Disposal Systems	30,555		30,555	
Equipment		62,504	62,504	\$27,504 in annual payments for a new roll-off truck plus \$25,000 in new roll-off containers, and \$10,000 for paint containers.
Sites			-	
Convenience Center	191,293	-	191,293	
Transfer Station	-	-	-	
Recycling Center	-	-	-	
MRF	-	-	-	
Landfills	12,864	-	12,864	
Site	-	-	-	
Operation	-	-	-	
Closure	-	-	-	
Post Closure Care		-	-	
Administration (supplies, communication costs, etc.)		15,000	15,000	Website construction, monitoring cameras, and additional lighting at convenience centers
Education			-	
Public		5,000	5,000	Ed. Materials and website maintenance
Continuing Ed.	-	-	-	
Capital Projects		25,000	25,000	Convenience Center Upgrade
Total:	\$ 234,712	\$ 158,504	\$ 393,216	

As the previous table indicates, one of the primary unmet needs is a solid waste director to handle the day-to-day operations of the county system. The county also needs additional containers to handle recycling, including paint containers, and a new roll-off truck to handle the continuous work-load of hauling waste to the landfill and recycling to end users.

Table 7.2 Revenues

REVENUE	Last Fiscal Year Budget	Unmet Need	Total
Host Agreement Fee	-	-	-
Tipping Fees	-	-	-
Property Taxes	221,358	133,504	354,862
Sales Taxes			-
Surcharges	-	-	-
Disposal Fees	-	-	-
Collection Charges	-	-	-
Industrial or Commercial Charges	-	-	-
Residential Charges	-	-	-
Convenience Center Charges	-	-	-
Transfer Station Charges	-	-	-
Sale of Methane Gas	-	-	-
Other Sources (Grants, Bonds, Interest, Sales, etc.)	69,537	25,000	94,537
Transfer from Fund Balance			-
Total:	\$ 290,895	\$ 158,504	449,399

Additional funding for website development is needed because this is a primary medium for disseminating information about the waste collection and recycling program. Funding is also needed for manpower and printed materials to augment those already in circulation.

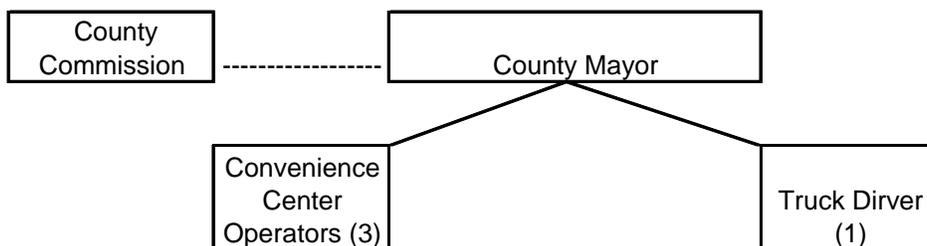
SECTION 8: ORGANIZATION, STAFFING AND FACILITIES

Provide organizational charts of each county and municipality's solid waste program and staff arrangement. Identify needed positions, facilities, and equipment that a fully integrated solid waste system would have to provide at a full level of service. Provide a scale county level map indicating location of all facilities including convenience centers, transfer stations, recycling centers, waste tire drop-off sites, used oil collection sites, paint recycling centers, all landfills, etc. Identify any short comings in service and note what might be needed to fill this need.

Solid Waste Staffing

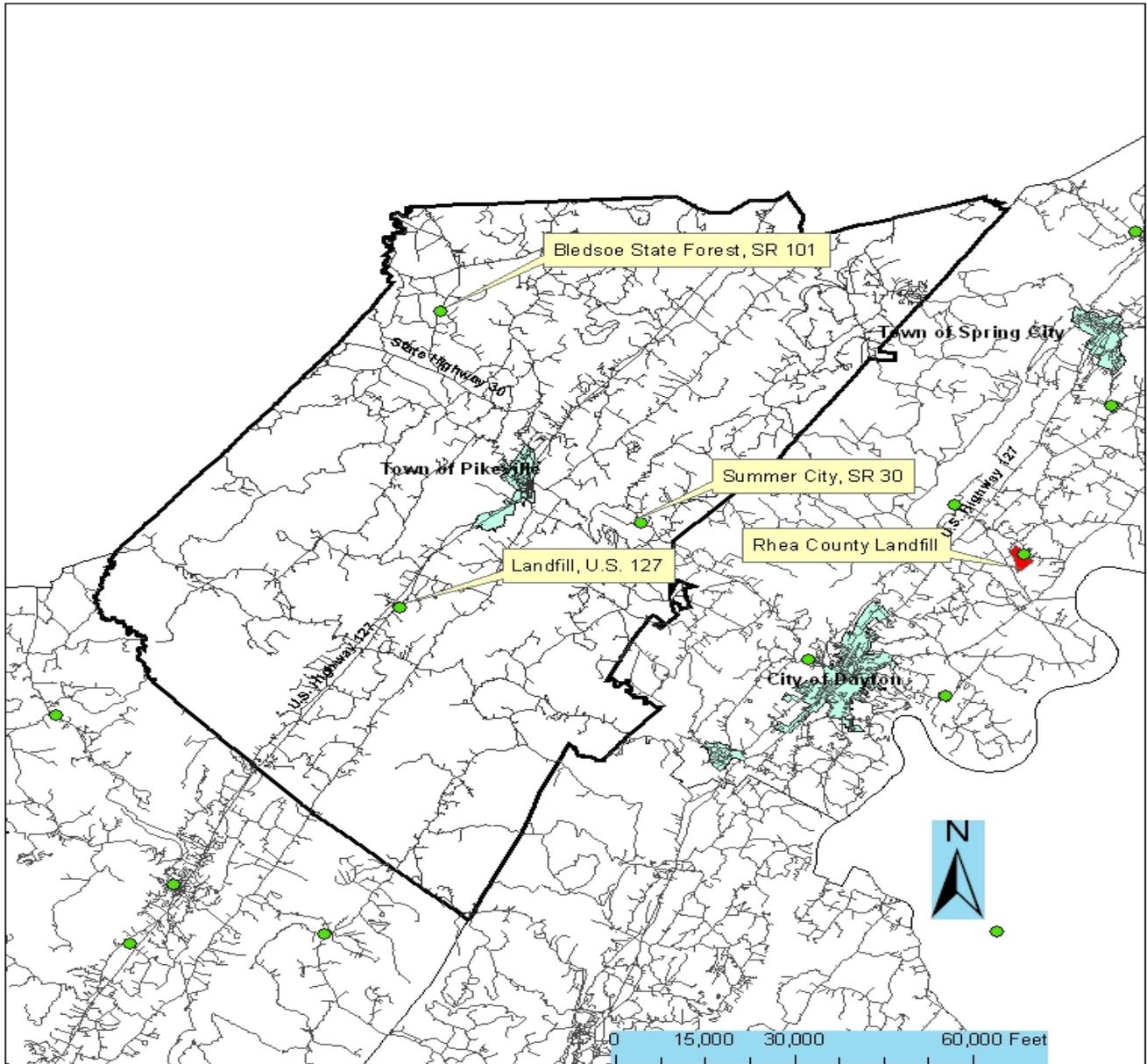
Pikeville is the only municipality in Bledsoe County, and it does not have a full-time waste collection system. The Town contracts with Cumberland Waste Disposal for all residential waste collection and disposal. Town workers collect some brush, but there is no recycling program, composting operation, or other diversion activity.

The organization chart for Bledsoe County's waste collection and disposal system is as follows:



Like many small counties, Bledsoe provides a full service waste collection program, including recycling, as efficiently as possible. Funding for new positions is in short supply, but the county would benefit from having a full-time director to handle solid waste. Currently, the County Mayor is in charge of waste collection and recycling operations. It is a very lean operation due to the lack of revenue to fund extensive operations.

BLEDSON COUNTY SOLID WASTE FACILITIES



The county's convenience centers provide a full range of service. Each is equipped with a 4 yd³ compactor feeding into a 40 yd³ receiving container; a 40 yd³ open top roll-off container for bulky items; a 40 yd³ container for metals; two 30 yd³ containers for paper; an oil collection container; and barrels for paint collection. The primary center is located near the old landfill site, which was closed because Resource Conservation and Recovery Act, "Subtitle D" regulations were deemed to be too expensive for small counties.



Lee Station (Landfill), Highway 127 Convenience Center

This center (pictured above) handles all of the used tires, which are hand loaded into a semi trailer by the attendant. In addition to his waste handling job, the attendant also collects and bales cardboard, including the cardboard collected at the Summer City center pictured below. The attendant is standing in front of the baler in the photo above.



Summer City, Highway 30 Convenience Center

As is apparent from the photo, the Summer City Center is relatively small. In order to increase waste handling and recycling operations, the County is in the process of planning an expansion at this site. The center will be extended about 100 feet east (from the back of the building).

The Bledsoe Forest Convenience Center also bales cardboard and collects a full range of recyclable materials. All three centers collect newspaper, cardboard, metals, used oil, and paint.



Bledsoe Forest, Highway 101 Convenience Center

SECTION 9: REVENUE

Identify all current revenue sources by county and municipality that are used for materials and solid waste management. Project future revenue needs from these categories and discuss how this need will be met in the future.

Most of the revenue for solid waste operations is transferred from the county's general fund (see Table 7.2 Revenues) to the Solid Waste fund. The county also receives an annual waste tire grant, an occasional recycling grant, and another annual grant from the Department of Transportation for litter control and education. Like most rural counties, there are no waste collection fees levied at convenience centers.

Tax revenues are not expected to increase substantially over the next five years. Current year sales state-wide have decreased enough to have a substantial negative impact on the state budget. This situation shows no signs of reversing in the five year planning period.

The county's last audit indicates that the solid waste budget was \$234,712 and the majority of those funds were taken from property taxes, which totaled \$221,358 in the county budget (does not include the school budget). At this time, there are no plans to increase property taxes, and no plans to institute fees at convenience centers.

SECTION 10: EDUCATION

Describe current attitudes of the region and its citizens towards recycling, waste diversion, and waste disposal in general. Where recycling is provided, discuss participation within the region. Indicate current and on going education measures to curb apathy or negative attitude towards waste reduction. Are additional measures needed to change citizen's behaviors? If so, what specific behaviors need to be targeted and by what means?

Over the last 15 years, waste disposal in Bledsoe County has been transformed from unattended, burned-out green boxes surrounded by blowing litter to clean, well-maintained convenience centers. Illegal garbage dumps were common as was roadside litter. Today, roadside litter is still a constant problem, but the illegal dumps have diminished to the point that they are rarely noticed. This transformation is a cultural shift that is probably the result of concerted efforts to influence the behavior of school-age children who have now become adults.

Unfortunately, we do not have studies to determine how this change in behavior came about. It is perhaps as likely that "Information Age" technology has exposed large numbers of residents to more environmental messages. Even though there is wide-spread support for the county's recycling program, more could be done to improve the knowledge base of the local population.

Current programs are as follows:

Business Education: Visiting businesses emphasizing the importance of recycling paper, cardboard, and metals. Litter bags with litter message are provided

Media: Promote problems with litter on highways & county roads.

Public Education: Citizens will be invited to special events during roadside pickup day. All participants will receive free "Do Not Litter" T-shirts. Share with the community the importance of litter control and how it affects the county. Encourage work with community groups in scheduling roadside litter pickup days.

Student Education: The County will conduct a contest that promotes a litter free school. The contest winner will receive awards for their efforts. Encourage elementary students to write essays and prepare posters regarding litter control. Display essays and posters at elementary schools and at the county courthouse. A committee will go to each school to educate the faculty, students, custodians, and cafeteria staff concerning the importance of not littering, recycling and other facets of litter control.

Government Education: Prepare an impressive anti-litter display with brochures and pictures showing areas with litter and areas without litter. This display will be visible at the county courthouse and will be used at county events.

The county publishes a large advertisement in the local newspaper each week, but more interest may be garnered through a prominent posting on a county website. This is likely to be more effective with younger audiences because most of their information comes from web-based sources.

SECTION 11: PLANNING

Discuss this region's plan for managing their solid waste management system for the next five (5) years. Identify any deficiencies and suggest recommendations to eliminate deficiencies and provide sustainability of the system for the next five (5) years. Show how the region's plan supports the Statewide Solid Waste Management Plan.

There are sufficient waste disposal facilities, and they are well maintained. Waste disposal capacity is available from either of three permitted disposal facilities. The recycling program is operated in an efficient manner, but all of the collection facilities are located more than five miles from the primary waste generation point, which is the Town of Pikeville. In order to increase collections, at least one recycling center should be located within the Town.

One problem likely to occur in the future is associated with the maintenance of existing facilities and equipment with lower revenues. The loss of sales and property taxes is highly likely, and there are no mechanisms available to Tennessee counties that would ameliorate these conditions.

The second problem is high fuel prices: studies should be undertaken in the near future to devise the most cost-effective methods for the collection and transport of waste materials and recycling. As energy costs increase, the Town of Pikeville will probably grow as residents move closer to jobs, commercial establishments, and other amenities. There will be increased pressure on the Town to provide additional services while the cost of these services will require the Town to carefully prioritize needs as they relate to statutory requirements.

The third problem is educating the public about waste reduction, recycling, litter control, and other waste issues. With a relatively high illiteracy rate, the county cannot rely on the written word for educational purposes. More internet-related advertising should be incorporated into the education program. In addition, radio and television advertisements should be provided while maintaining an educational presence in the K-12 schools.

Recommendations

Education

Recommendation: Much of today's information is disseminated through the internet. Consequently, it is imperative that the county develop and maintain a website that provides all of the basic details of county programs and services, including solid waste and recycling.

Action Item: Request assistance from the County Technical Advisory Service and the Southeast Tennessee Development District in developing and maintaining a website.

Facilities and Programs

Recommendation 1: The Summer City Convenience Center is in need of additional space. Current plans are to increase the size of the center, which will allow more room for trucks to maneuver and provide more space for recycling equipment.

Action Item 1: Private citizens will cut trees in the expansion area for firewood

Action Item 2: County will contract for stump removal, paving, and fence extension.

Funding Source: General Fund

Recommendation 2: All convenience centers need waste paint collection containers. Currently, the county uses oil drums. Universal Environmental, Inc. takes paint collected at all convenience centers in exchange for used oil.

Action Item: Apply for grant funds to purchase waste paint collection containers.

Funding Source: Solid Waste Management Fund

Recommendation 3: Encourage and coordinate the development of a recycling program in Pikeville staffed by Town employees to construct a drop-off center.

Action Item: Meetings between county and municipal officials.

Funding Source: Appalachian Regional Commission/USDA Rural Development,
Rural Utilities Service

Conclusion

In general, Bledsoe County has all of the facilities and programs in place to meet statutory requirements. Some improvements are possible, but the county has made a good faith effort to provide its residents with recycling options using the most cost-effective methods available.

Opportunities that should be explored may include joint ventures with the State prison and the Town of Pikeville. Sharing haul expenses for waste and recycling may result in more efficient operations than the existing system.