Southeast Tennessee Municipal Solid Waste Planning Region

McMinn County

Tennessee Department of Environment and Conservation
Division of Solid Waste Management

Solid Waste Needs Assessment

Prepared
By
Southeast Tennessee Development District

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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 includes all of the counties within the Southeast Tennessee Development District: Bledsoe, Bradley, Grundy, Hamilton, Marion, McMinn, Meigs, Polk, Rhea, and Sequatchie. Without the flow control provision, commitments from all counties and cities were vital in bringing this project to fruition.

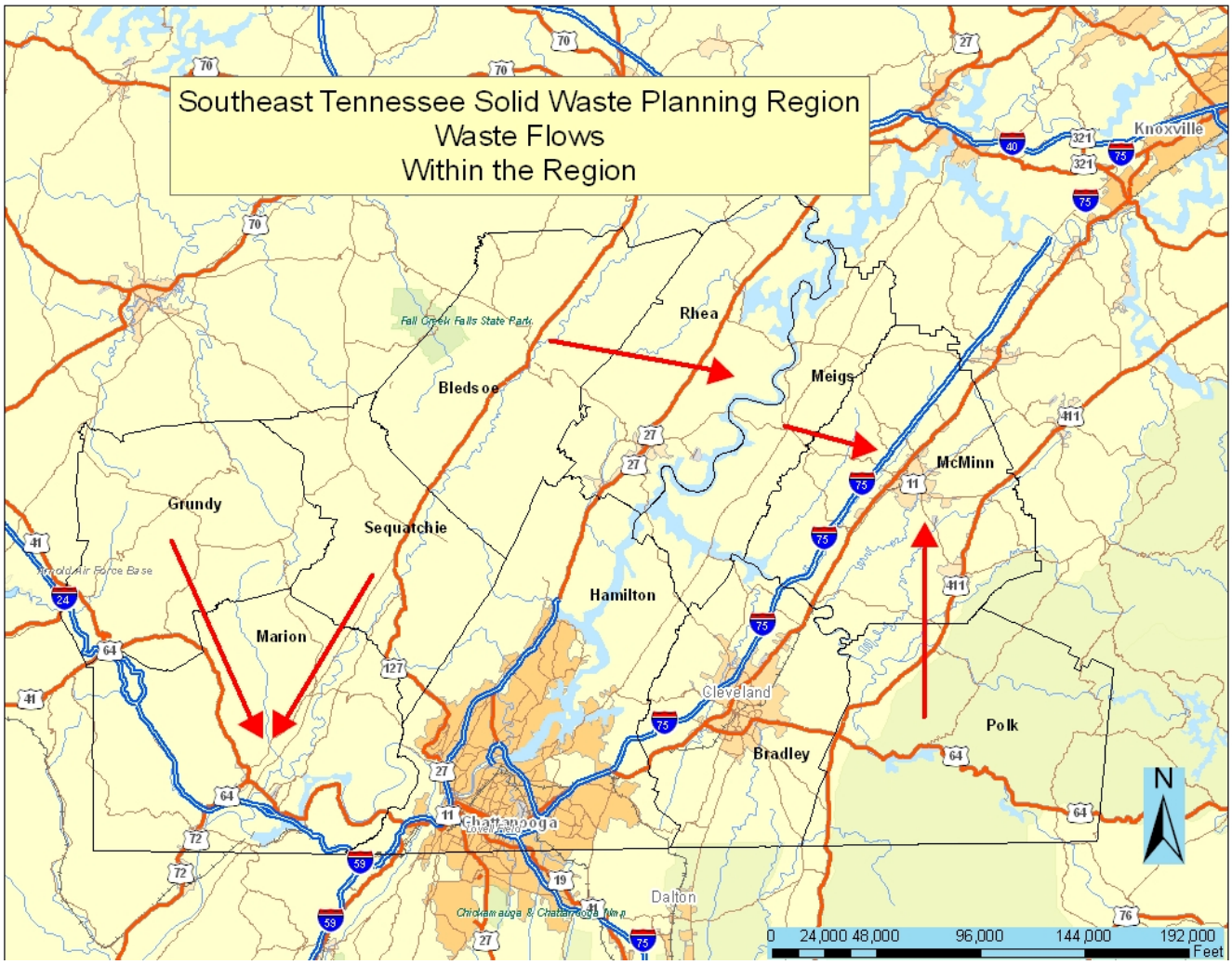
After the completion of studies funded by TVA, the utility lost interest in the project. No official reason was ever conveyed, but the decision was probably based on the fact that any

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. In return, the counties get reduced or no disposal costs, income from disposal operations, and assistance with programs, including the State's Household Hazardous Waste collection events. There are considerable benefits to all parties in this relationship, especially to the county taxpayers.



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 following is a detailed description of McMinn 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.

As the following table indicates, McMinn County's population grew slowly up until the 1970s when there was a spurt of growth, probably associated with the completion of Interstate 75, which runs north/south through the center of the county. McMinn's economy was originally based on agriculture and was therefore predisposed to low-density development with little in-migration.

Table 1.1 Historic Population

Year	Population	Increase	% Change
1950	32,024	N/A	N/A
1960	33,662	1,638	4.9%
1970	35,462	1,800	5.1%
1980	41,878	6,416	15.3%
1990	42,383	505	1.2%
2000	49,015	6,632	13.5%
2008	52,000	2,985	5.7%

Source: U.S. Census Bureau

So far in this decade, the population has grown by 2,985 or 5.7%. The 2008 American Community Survey conducted by the Census Bureau estimates the McMinn County population at 52,000 while the projection (Table 1.3) indicates a 2008 population of 52,913, a difference of 913 persons or about 1.8% if the total population. For this analysis, projection figures will be used under the assumption that the county should plan for the maximum possible volume of waste that must be handled.

Over the past three decades, economic development has occurred, which changed the population dynamics considerably. The availability of manufacturing jobs and easy access to major metropolitan areas resulted in accelerated development. Low-cost property in rural areas along with good roads and cheap fuel allowed residents to disperse throughout the county. Development seemed to level off in the early 1990s but rebounded significantly with the booming economy of the late 1990s.

Table 1.2 Historical Municipal Population

Year	Athens	Calhoun	Englewood	Etowah	Niota	Total
1960	12,103	n/a	1,574	3,223	679	17,579
1970	11,790	624	1,878	3,736	629	18,657
1980	12,080	590	1,840	3,898	765	19,173
1990	12,054	552	1,611	3,815	745	18,777
2000	13,220	496	1,590	3,663	781	19,750
Total Change	1,117	(128)	16	440	102	2,171
% Change 1960-2000	8%	-26%	1%	12%	13%	11%

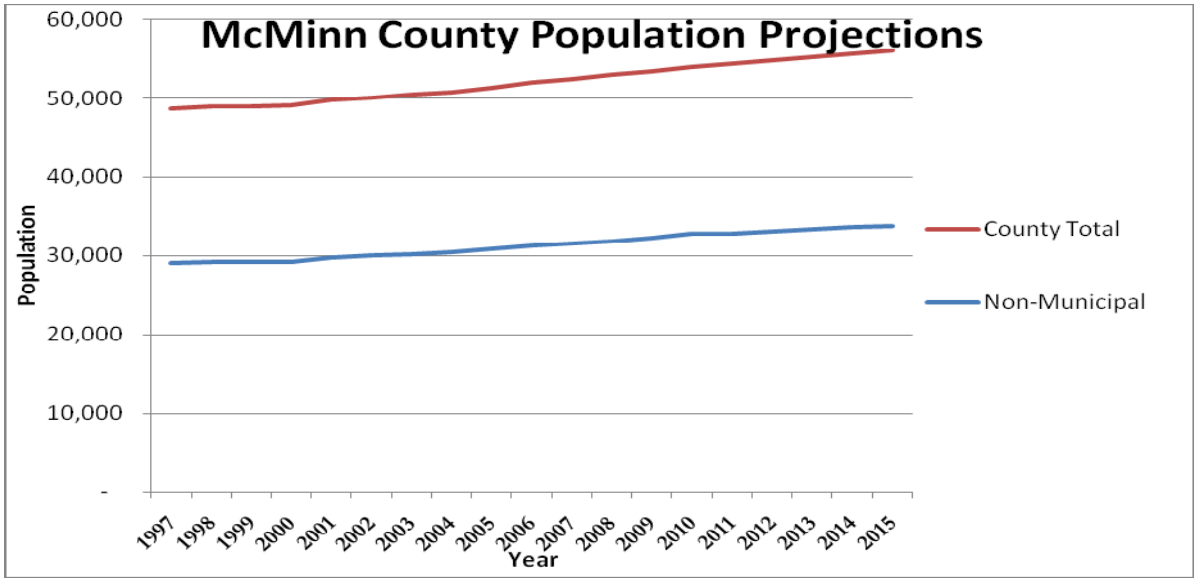
While the municipal population grew by 2,171 or 11% from 1960-2000, the county population grew by 15,353 or about 31%. This diffuse development pattern requires increased resources for waste collection and makes recycling more difficult.

Table 1.3 Population Projections

Year	McMinn	Athens	Calhoun	Englewood	Etowah	Niota	Non-Municipal
1997	48,721	13,211	490	1,585	3,644	771	29,020
1998	48,888	13,216	494	1,589	3,649	776	29,164
1999	48,902	13,219	495	1,588	3,650	779	29,171
2000	49,015	13,220	496	1,590	3,663	781	29,265
2001	49,760	13,435	498	1,592	3,666	782	29,787
2002	50,104	13,528	501	1,628	3,669	786	29,992
2003	50,463	13,625	505	1,640	3,672	789	30,232
2004	50,783	13,711	508	1,650	3,679	790	30,444
2005	51,336	13,798	510	1,658	3,715	792	30,863
2006	52,013	14,044	511	1,664	3,720	794	31,280
2007	52,460	14,164	512	1,679	3,732	799	31,574
2008	52,913	14,287	513	1,680	3,744	801	31,888
2009	53,410	14,421	514	1,687	3,752	805	32,231
2010	53,914	14,310	515	1,693	3,755	811	32,830
2011	54,305	14,662	518	1,699	3,795	819	32,812
2012	54,721	14,775	520	1,721	3,829	825	33,051
2013	55,159	14,893	522	1,733	3,842	833	33,336
2014	55,621	15,018	524	1,752	3,888	841	33,598
2015	56,094	15,204	528	1,772	3,906	847	33,837

Sources: Historic statistics are derived from U.S. Census Bureau data. Projections are derived from a step-down method using Tenn. Dept. of Health estimates.

McMinn County's population has been growing at a steady pace over the last decade. This growth was primarily due to the vibrant economic activity that has occurred in and around the Cities of Athens and Etowah. After the last biennial census, Athens/McMinn County was deemed large enough to become a Micropolitan Statistical Area. This Census Bureau designation is a precursor to status as a Metropolitan Statistical Area, which would bring additional federal funding opportunities.



Currently, the U.S. economy is still dealing with recessionary trends. Should this economic downturn continue, McMinn County's economy will suffer stresses, but it is in a much stronger position than surrounding counties that have less industrial capacity. The industrial base that makes up a significant portion of the local economy is geographically compact, which means that the local workforce can still afford transportation costs to and from work, even with high fuel prices,

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.

Population growth will likely increase the amount of residential waste produced in the county, but that will depend on growth in the economy to maintain the capacity to purchase goods. A downturn in the economy can and will negate additional waste generation, which is partly driven by the commercial and industrial sectors.

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.

McMinn County has been identified by the U.S. Department of Commerce, Economic Development Administration as a county that was severely impacted by trade related problems. This is the result of plant closures associated with the import and/or export of automotive supplies.

Table 2.1 Economic Profile

Year	Total	Employment	Unemployed		Per Capita Income	Retail Sales ($1,000's)	Total Bank Deposits (millions $)
			Total	Percent			
2000	23,724	22,633	1,092	4.6%	20,846	444,907	574
2001	23,393	21,768	1,625	6.9%	21,427	452,766	610
2002	23,479	21,685	1,794	7.6%	21,792	471,082	618
2003	23,951	22,155	1,796	7.5%	22,877	498,801	670
2004	23,737	22,162	1,575	6.6%	23,777	535,922	690
2005	24,075	22,606	1,469	6.1%	24,844	574,665	728
2006	24,786	23,376	1,410	5.7%	25,713	602,350	760
2007	24,585	23,152	1,423	5.8%	26,761	614,277	517
2008	24,007	21,985	2,132	8.9%	26,675	601,065	625
2009	23,398	20,133	3,265	14.0%	27,951	602,000	630
2010	24,573	21,300	3,273	13.3%	28,770	602,825	640
2011	24,747	21,425	3,322	13.4%	29,588	603,200	665
2012	24,920	21,700	3,220	12.9%	30,407	604,325	675
2013	25,093	21,900	3,193	12.7%	31,226	606,000	690
2014	25,267	22,100	3,167	12.5%	32,045	606,500	705
2015	25,440	22,500	2,940	11.6%	32,864	607,000	725

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 of employment from 2007 to 2012 assume a linear progression that follows a slight upward trend. All things being equal, the unemployment numbers should follow national trends. Current economic activity is somewhat anemic due to residual effects of the recent economic recession.

As the following table indicates, manufacturing accounts for more than a third of the jobs in the county.

Annual Industry Distribution of Jobs and Avg. Wage in 2008 (NAICS)	Establishments	Jobs	Pct Dist. in County	Annual Average Wage Per Job	Rank in U.S.
Total Covered Employment and Wages	865	16,897	100.0%	$35,888	765
Private	827	14,890	88.1%	$36,239	677
Agri., forestry, hunting	7	**D**	**D**	**D**	N/A
Mining	2	**D**	**D**	**D**	N/A
Construction	60	613	3.6%	$44,353	587
Manufacturing	82	5,657	33.5%	$50,420	495
Wholesale trade	44	450	2.7%	$37,580	1,519
Retail trade	172	2,226	13.2%	$22,167	1,109
Transportation, warehousing	36	74	0.4%	$45,854	486
Utilities	6	181	1.1%	$46,141	1,162
Information	11	126	0.7%	$32,352	1,596
Finance and Insurance	60	534	3.2%	$39,514	1,161
Real Estate, rental, leasing	32	124	0.7%	$22,469	1,499
Professional, technical services	54	**D**	**D**	**D**	N/A
Mgmt. of companies, enterprises	2	**D**	**D**	**D**	N/A
Administrative, waste services	31	521	3.1%	$20,936	1,567
Educational services	7	1,092	6.5%	$33,529	734
Health care, social assistance	81	**D**	**D**	**D**	N/A
Arts, entertainment, recreation	12	127	0.8%	$13,086	1,591
Accommodation and food services	84	1,188	7.0%	$11,422	1,296
Other services, exc. public admin.	65	240	1.4%	$20,752	1,640
Public administration	17	514	3.0%	$28,601	2,253

Source: US Bureau of Labor Statistics (BLS)
D = Not shown to avoid disclosure of confidential information.
N/A = This item is not available.
Note: Average wage may not match published numbers due to rounding.

To provide a point of perspective for the preceding table, there are 3,077 counties in the U.S. (including parishes in Louisiana and boroughs in Alaska). Manufacturing is obviously the mainstay of the economy, providing a majority of the jobs and the highest wages. A rank of 495 for manufacturing means that the county has more capacity than 84% of all other counties. The downside to this is the fact that a large proportion of the manufacturing capacity is devoted to automotive products, and that sector has exhibited considerable volatility over the last decade as exemplified by the closure of the Waupaca Foundry in Etowah, a plant that manufactured brake drums for the auto industry.

2007 Employment			Tennessee	McMinn County	County Rank
Total Employment All Industries			2,745,397	17,955	24
	Natural Resources and Mining		0.4%	0.3%	70
	Construction		4.9%	7.8%	27
	Manufacturing		13.8%	33.1%	16
	Trade, Transportation and Utilities		22.1%	29.2%	27
	Information		1.8%	5.9%	30
	Financial Activities		5.2%	10.0%	23
	Professional and Business Services		11.8%	11.3%	24
	Education and Health Services		12.4%	19.7%	28
	Leisure and Hospitality		10.1%	14.8%	24
	Other Services		2.6%	5.5%	29
	Government		14.9%	31.1%	20
		Federal	1.8%	1.1%	36
		State	3.3 %	2.5%	43
		Local	9.9%	27.5%	19

Source: Tennessee Advisory Commission on Intergovernmental Relations, 04/10.

Within Tennessee, McMinn County ranks sixteenth in manufacturing capacity. Although there are larger industrial concentrations in the more populous metropolitan areas, McMinn County and its municipalities have plenty of expansion potential with few environmental problem areas; direct access to a major interstate system; access to port facilities on the Hiwassee River; and major rail lines, CSX and Norfolk-Southern, that run north/south through the county. In addition, the county is located exactly halfway between the Chattanooga and Knoxville metropolitan areas. All of these factors point to continued industrial expansion and a concomitant increase in population.

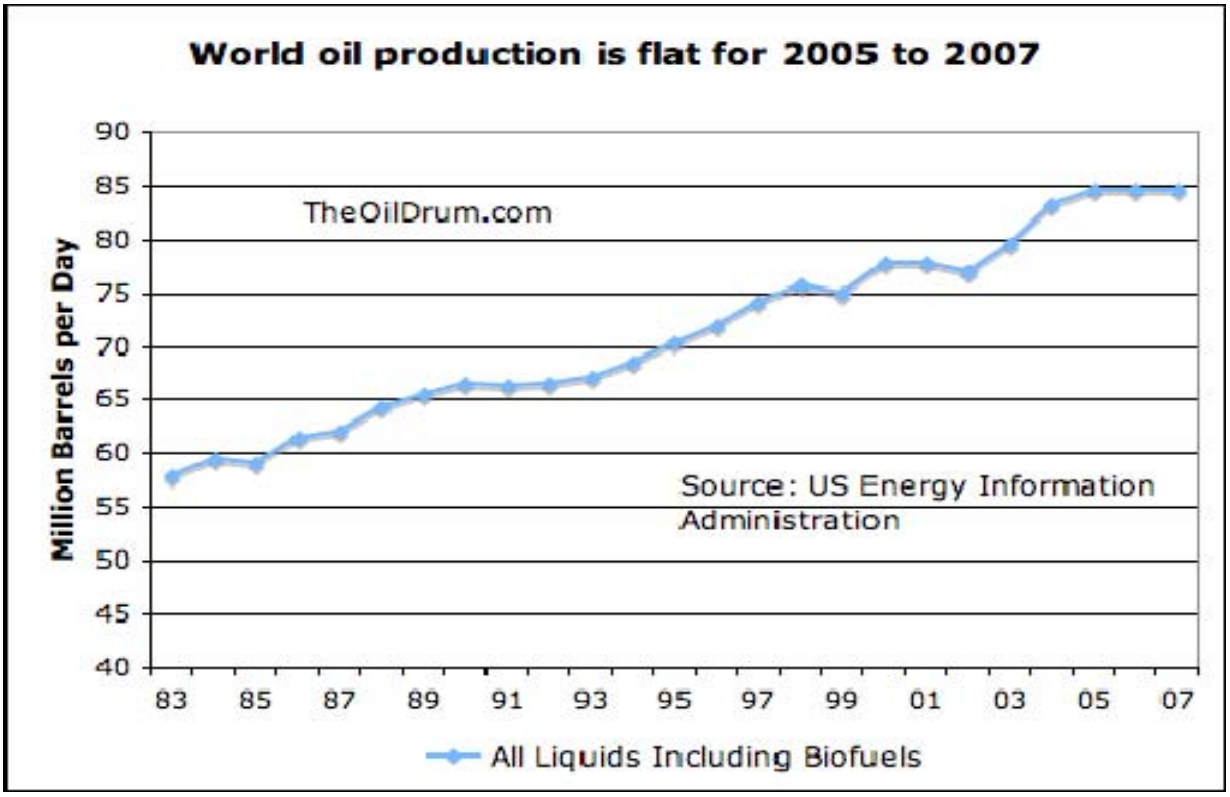
The primary economic problems on the horizon are disruptions in the home mortgage markets and energy supplies. As previously discussed, the home mortgage problems will likely curtail near-term investment in new homes, especially by retirees moving into the region. More problematic (and at a basic level,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

Oil depletion is the primary culprit as some of the largest oil fields in the world begin to decline. Statistics published by the International Energy Agency (IEA), the Energy Information Agency (US), and the BP Statistical Abstract indicate that crude oil production has not increased above

mid-2005 levels. This reflects decline rates in several oil provinces such as the North Sea oil fields (UK and Norway) which are experiencing a 15-18% loss in production annually. Greater declines – more than 30% annually - are occurring at Cantarell in Mexico, which is the second largest oil field in the world and a primary source of supply for the U.S. Even OPEC, previously the final arbiter of world oil prices, has lost production capacity in the last few years.

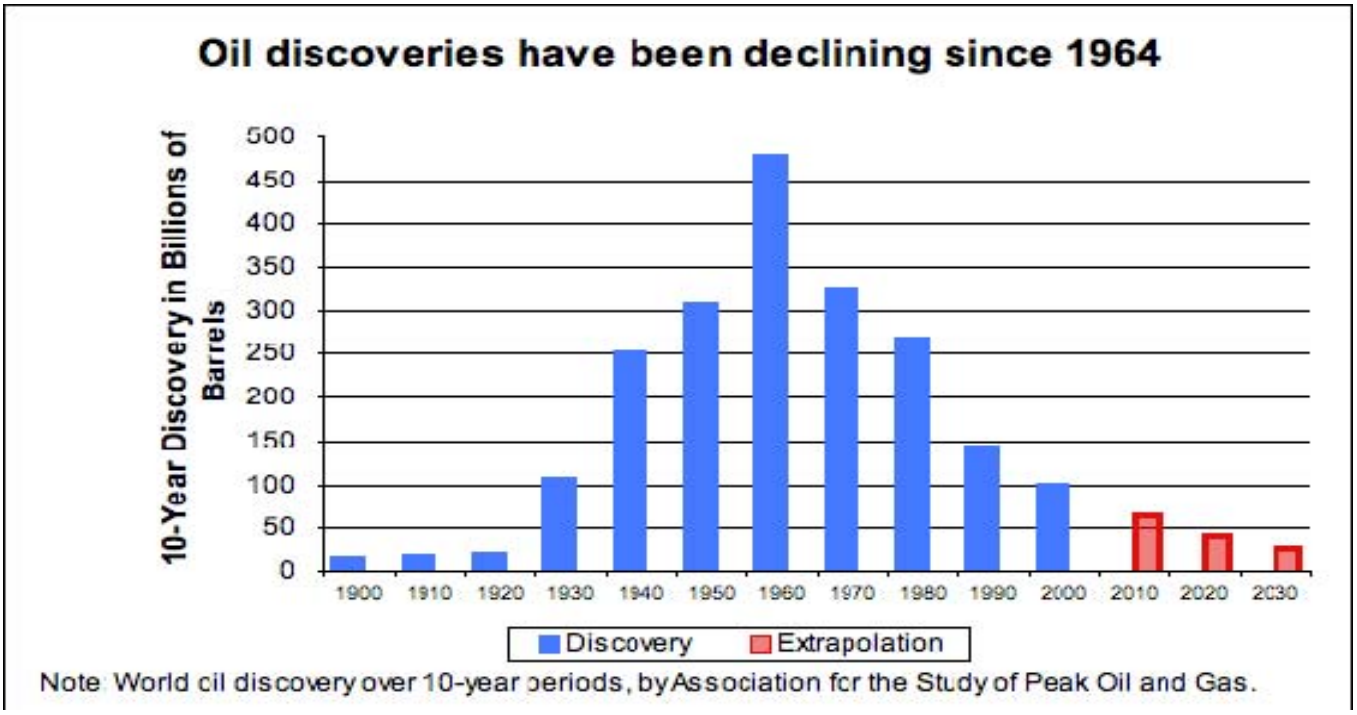
The IEA "World Economic Outlook" warns of an oil supply crunch between now and 2015 due to increasing demand from China and India; a sharp decline in production from existing oil fields; and a lack of new production. Fatih Birol, IEA Chief Economist, states that there is a shortfall of 12.5 million barrels per day, about 15% of the global oil demand (Real Politik, 06/08).

Figure 2.2



As the previous graph illustrates, the current production is at a plateau, which may become permanent. No large oil fields have been discovered since the 1970's, and promising geological structures are in areas that present significant difficulties for recovery. For example, Chevron Oil's last major attempt at adding reserves – the "Jack" well – is located 27,000 feet below the surface of the Gulf of Mexico. Bringing oil to production at such depths has never been attempted and will require new technology to deal with extreme pressures and heat. This project will also require investments in the billions of dollars. The basic message that projects like this convey is that the cheap oil has been found; from now on we have to contend with much higher energy costs.

Figure 2.3



With probable limitations on future fuel supplies, the economy will not regain significant momentum until alternative energy resources are available. For planning purposes, however, it would be prudent to assume a moderate increase in the amount of waste produced in the county, based on existing economic activity. According to the preceding analysis, it is unlikely that the economy can produce large increases in the waste stream, but a reduction in economic activity can also affect the volumes of waste that get reused: Any marginal recycling programs will probably loose viability. That material would again become waste and act to counter reductions associated with economic distress.

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 McMinn County waste stream, the Iowa percentages appear to be more representative because they more closely mirror McMinn County urban/rural population percentages: 33.9% rural and 66.1% urban. 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. and Ohio percentages. Georgia's percentage is within 6 points of Tennessee's, but Iowa's percentage is within about 5 points.

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%

Source: U.S Census 2000

Using composite percentages based on random observation of the waste stream, Figure 3.1 provides a rough illustration of waste volumes by type of material. This probably does not

reflect the impact of Class II facilities (Table 3.3) operated by Bowater, Inc., a large paper manufacturing plant located in Calhoun, which is just across the Hiwassee River from Charleston and draws a significant portion of its workforce from Bradley County.

Table 3.3 Class II Landfills

IDL540000067	BOWATER SOUTHERN PAPER LANDFILL
IDL540000079	BOWATER NEWSPRINT LANDFILL

Very little change is expected in waste stream composition over the next five (5) years unless one of the Class II facilities closes, and that waste goes to a public landfill in the region. This could (and has) happened without the knowledge of county officials, so spikes sometimes occur in Class I waste. Class II materials have never been quantified, and there is no requirement for industries to disclose that information. Consequently, there could be huge variations in the waste stream of a county that has a significant industrial base, and that increase could, within a short period of time, nullify all waste reduction efforts.

Figure 3.1

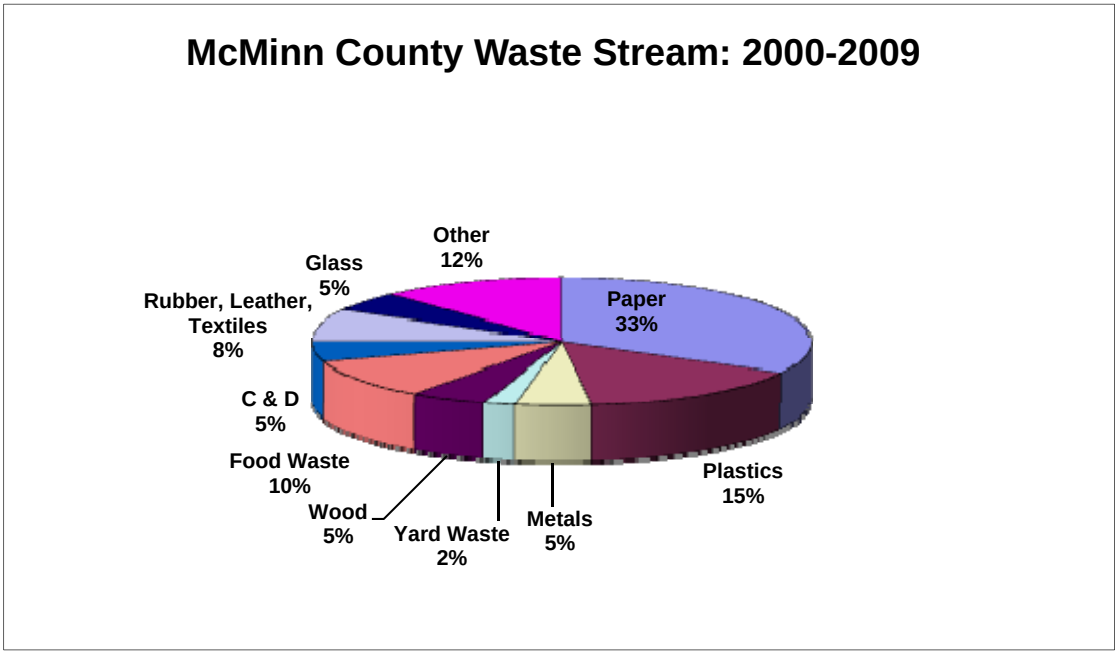


Table 3.3

Jurisdiction/ Sector	Collection	Disposal Options	Current Problem Waste Handling	Future Problem Waste Handling	Other Problem Waste
McMinn County	One county convenience center. Available to all residents, including those within municipal areas.	The county convenience center is located at the Class I facility.	**Waste Tires**: MTR, Inc. **Automotive Fluids**: **Used Oil:** Convenience Center **Latex Paint**: None **Electronics**: None	**Waste Tires**: Continue contracting. Request assistance from RMCET to collect and market	HHW collected at mobile collection event.
Athens	Curbside collection provided to all city residents.	Waste is hauled to the McMinn County Class I landfill and the Meadow Branch landfill	Electronics and cooking oil	N/A	N/A
Municipalities of Calhoun, Englewood, Etowah, and Niota	Curbside collection provided to all residents with current jurisdictions	McMinn County Landfill and the Meadow Branch Landfill	N/A	N/A	N/A
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.

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.

McMinn County has one convenience center strategically located to maximize access to all residents (see attached map). The center is located at the McMinn County Landfill, and is open Monday through Friday, 7:30 a.m. to 6:00 p.m., Saturday from 8:00 a.m. to 6:00 p.m, and Sunday 1:00 pm to 6:00 pm. One other recycling center is located in the City of Athens (see Attachment II for details).

Private contractors operate waste collection services that cover a large part of the county. The county contracts with these haulers to assure service to all areas of the county. However, individual households must pay for the service.

The minimum number of convenience centers required is calculated using the formula that determines a reasonable number by land area rather than population. With a current non-municipal population of about 53,000, the minimum required number of centers would be four (4) using the TDEC formula of dividing the population by 12,000. However, much of this population is served by local haulers.

Table 4.1 – Required Waste Collection System: Convenience Center

	Total Square Miles	Collection Service Provided/Not Populated	Difference	Required Centers	Existing Centers
McMinn	327				
Athens		13.54			
Calhoun		1.02			
Englewood		1.70			
Etowah		2.77			
Niota		2.01			
Public Lands/Water		2.00			
Timber/Fed. Government		10.00			
Total:	**327**	**33.04**	**293.96**	**1.63**	**1**

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. Forest areas used exclusively for silviculture, parks, and other public lands that are not populated were deducted from the total square miles of potential service area. Using this formula, McMinn County does not meet requirements, but it does have a higher level of service for county residents, although the cost of this service is borne by the individual homeowner.

Regional Solid Waste Flow and Life-Cycle

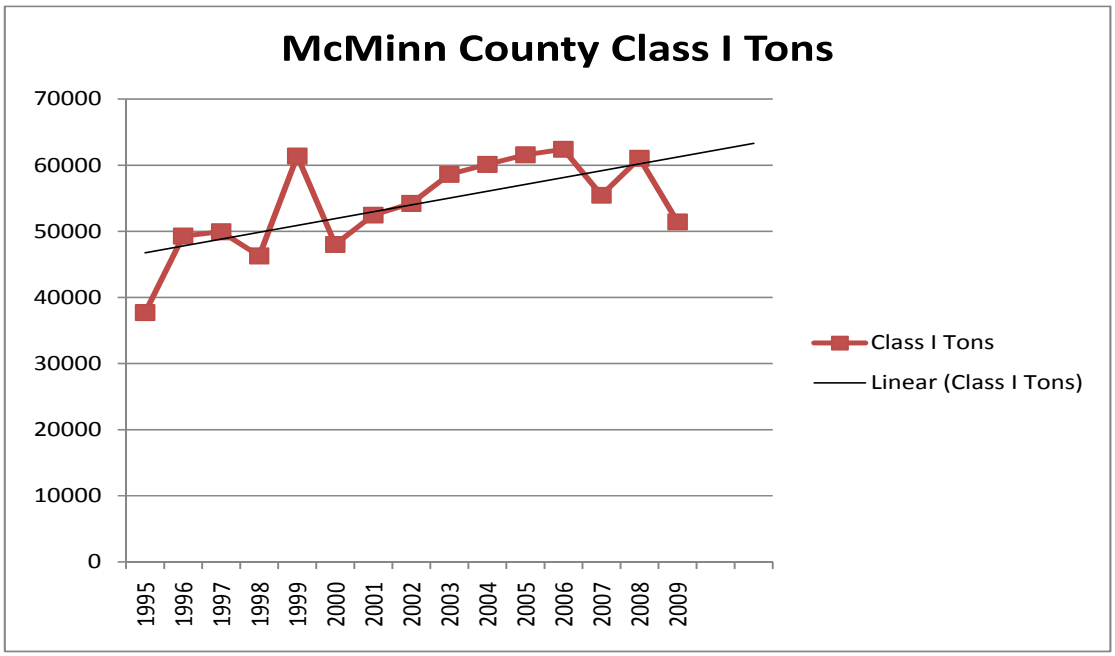
The following chart represents data collected for the 2009 Annual Report for the Southeast Tennessee region. It includes waste disposal at all Class I facilities.

Table 4.2 - Waste Generation 2009

Category	Tons
Total Waste	70,213
Residential Recycling	5,470
Industrial Recycling	36
Household Hazardous Waste	6.4

Class III/IV	13,289
Class I	51,419

McMinn County's Class I disposal followed an upward path over the decade of the first decade of the century. As is apparent from the following chart, there were major fluctuations in the volumes of waste recorded for McMinn County, notably in 1999. Significant reductions occurred in the 2007-2009 period. The latter period is definitely due to major job losses, manufacturing closures, and other economic reductions associated with the economic downturn.



Source: Southeast Tenn. Municipal Solid Waste Planning Region Annual Reports, 1995-2009.

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 met 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.

McMinn County's recycling program is located at the landfill convenience center along with all other waste reduction activities. These include waste tire collection and demolition waste diversion.

Landfill Recycling Center Hours:
7:30am - 6:00pm Mon-Fri
8:00am - 6:00pm Sat
1:00am - 6:00pm Sun
Closed Holidays

Products Accepted at the recycling center:

- Cardboard
- Mixed Paper/Newsprint
- Plastics
- Scrap Metals*
- Used Oil
- Aluminum Cans
- Lead Acid Batteries

The following table generated by the Re-Trac™ program indicates that the county increased the amount of per capita waste but shows a substantial "real time" reduction. This contradiction can only be resolved by the assumption that more waste existed (or came into existence) than was accounted for in previous studies. Unfortunately, we cannot go back to the base year and determine what the actual quantities were, so meeting that goal may be impossibility if the original numbers were inaccurate.

Table 5.1

MSW % Reduction Compared to Base Year	MSW % Reduction Population Ratio	MSW % Reduction Using Pop Economic Ratio	MSW % Reduction Real Time Comparison
-16.3	-16.3	-38.5	26.8
-16.3	**-16.3**	**-38.5**	**26.8**

According to a May 26, 1994 letter to the Southeast Tennessee Municipal Solid Waste Planning Board, the base year per capita waste generation rate was 0.91 tons. Assuming a 2009 population of 53,410, McMinn County's waste generation rate was 1.32 tons per person annually (70,213 tons/53,410). That amounts to a 31% increase in per capita waste from the base year figure.

Most of the waste reduction gains have come from the inclusion of Class III/IV waste and industrial, in-house programs. As long as these programs remain permissible methods of waste reduction, the county will be able to meet the "real time" reduction goal.

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.*

Table 6.1: Regional Landfills

Site Name(s)	Annual Tons McMinn County	Permit Number	Current Capacity	Maximum Capacity	Projected Life of Facility
McMinn County Landfill	55,000	SNL 54--0003	350 tpd	1,000 tpd	10
McMinn Co. Class III/IV	20,000	DML 54-0098	200 tpd	1,000 tpd	20
Meadow Branch Landfill	85,000	SNL 54-0174	N/A	N/A	N/A
Total:	160,000				

N/A = Not available due to private ownership/operation.

Note: Capacity limits are estimates. Landfills are capable of handling all local waste plus large volumes of waste hauled from other counties. Projected life estimates are based on current disposal volumes, which can change considerably in short time periods.

All waste collected at the McMinn County convenience center is deposited in the regional landfill, which is on the same site. Some municipal waste is hauled to the Meadow Branch Landfill, a privately owned facility near Athens. The Class III/IV landfill is adjacent to the McMinn County Class I facility. Adequate capacity exists for the next ten year period assuming waste volumes remain within current peak parameters. Both Class I facilities accept large volumes of waste from outside the region and, at times, outside the state. As a result, landfill life could be impacted by importation decisions. However, there is little doubt that there is sufficient space for all of McMinn County's waste for at least ten (10) years.

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)
McMinn County	County-wide drop-off	53,410	As Needed	Not Limited*	Convenience Center
City of Athens	City Limits	14,421	Weekly	9,200	Curbside
Town of Calhoun	City Limits	514	Weekly	350	Curbside
Town of Englewood	City Limits	1,687	Weekly	1,200	Curbside
City of Etowah	City Limits	3,752	Weekly	2,500	Curbside
City of Niota	City Limits	805	Weekly	520	Curbside
Private Hauler Under Franchise with County	Unincorporated Area	Not Available	Weekly	Not Available	Curbside

***Essentially unlimited because the convenience center is at the landfill.

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.

McMinn County receives income from the operators of the Meadow Branch landfill, which helps fund solid waste operations. In order to balance the cost of operation with income from the State Tire Grant, the county charges an additional fee for tire disposal. Funding is available from landfill tipping fees to operate the county's facilities, but additional funds are needed for maintenance. As explained on the county's website:

Local taxes help subsidize the maintenance and upkeep of portions of the landfill that have been previously used and are now closed. These taxes are also set aside for the eventual maintenance of the active portion of the landfill when it is closed at the end of its expected twenty five year useful life.

Table 7.1 Expenditures and Revenues

ANNUAL EXPENDITURE & REVENUE NEEDS

EXPENDITURES				
Description	**Current Need**	**Unmet Needs**	**Total**	**Explanation**
Salary and Benefits	$ 441,851	$ -	$ 441,851	
Transportation/Hauling	-	-	-	
Collection & Disposal Systems	1,231,511	-	1,231,511	
Equipment			-	
Convenience Centers	-		-	
Transfer Station	-	-	-	
Recycling Center	-	-	-	
Landfill Post-Closure	87,923	-	87,923	
Landfill Disposal Fees	-	-	-	
Administration	-		-	
Education	-		-	
Capital Projects	-	-	-	
Trustee's Commission		-	-	
Operating Expenses				
Total:	1,761,285	-	1,761,285	
REVENUE				
Property Taxes	190,000	-	190,000	
Sales Taxes		-	-	
Surcharges		-	-	
Disposal Fees	935,343	-	935,343	
Collection Charges	-		-	
Industrial or Commercial Charges	-	-	-	
Convenience Center Charges	-	-	-	
Transfer Station Charges	-	-	-	
Other: Waste Tire Grant	26,860		26,860	
Other: Investment Earnings	45,937		45,937	
Other: Miscellaneous	1,945		1,945	
Total:	1,200,085	-	1,200,085	

Source: McMinn County Audit, FY 2008-2009

No unmet needs were identified. Since McMinn County is one of the few local governments in the State that operates with no debt, the county is obviously capable of providing funds to any

and all solid waste programs from recycling to disposal. The convenience center is located at the landfill (see Attachment I), so there are minimal hauling costs. Collection throughout the county is accomplished through a contract between the county and all local waste collection companies to assure service to over 90 percent of county residents. This is a subscription service paid for by the individual households and does not impact the county's budget in any way.

All waste services fall under the landfill, and there are no separate cost or revenue categories for recycling or waste reduction in either the audit or the county budget.

SECTION 8: ORGANIZATION, STAFFING AND FACILITIES

Provide organizational charts of each county and municipality's solid waste program and staff arrangement. Indentify 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

The McMinn County's waste collection and disposal system is organized as follows:

Landfill Manager: 10 Equipment Operators
1 Administrative person
2 Part-time workers

The attached maps provide a view of solid waste facilities located in McMinn County. In general, there are enough facilities available to handle all Class I, recycling, and waste reduction activities. Used oil collection points are somewhat concentrated within the City of Athens. Additional collection points on the north and south ends of the county are probably not absolutely necessary, but more centers in peripheral areas would likely capture more used oil.

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.

Revenue for solid waste operations is derived from tipping fees at the county landfill (see Table 7.2 Revenues). The county also receives an annual waste tire grant, and an annual grant from the Department of Transportation for litter control and education.

The county's budget for fiscal year 2008-2009 indicates expected expenditures of $1,761,285 and revenues of $1,200,085. Due to the inclusion of capital assets and depreciation in the budget process, it is very difficult for the layman (non-accountant) to determine the actual fiscal needs of the county. However, there appear to be sufficient assets to provide for all solid waste operations.

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?

As the Keep McMinn Beautiful website (www.ktnb.org/affiliates/mcminn.htm) states:

Keep McMinn Beautiful's organization is volunteer-based, led by a 30-member board of directors serving three-year terms on a rotating basis. The board of directors is appointed by the mayors of each of the municipalities within McMinn County and by the McMinn County Executive. KMB funding comes from TN Department of Transportation Litter Grant Program, the City of Athens, and private donations.

This is the primary solid waste education group in the county. KMB works closely with the City of Athens and the County with special events, volunteer recruitment, and other activities.

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.

Waste disposal facilities have sufficient space to handle all of the county's waste for more than ten years. There are at least two facilities that currently handle McMinn County waste and both are well maintained. No improvements are necessary. The recycling program is operated in an efficient manner, there is a concerted effort to collect household hazardous waste, and there are ample methods available to divert materials from the Class I facility.

No programs exist to deal with paint and electronics. Actions need to be taken to develop programs and find end-users for these materials.

Problems with waste reduction strategies could arise in the future if Class III/IV landfills are no longer accepted as diversion alternatives. Should this occur, McMinn County would no longer meet the waste reduction goal. Consequently, plans should be in place to mitigate this possibility.

Recommendations

Education

Recommendation 1: Include more specific information on the County's website to stress waste reduction, recycling, and available options for diversion.

Action Item: Update website

Recommendation 2: Advertise locations and hours of operation for recycling centers

Action Item: Increase signage, newspaper ads, and on-line resources

Facilities and Programs

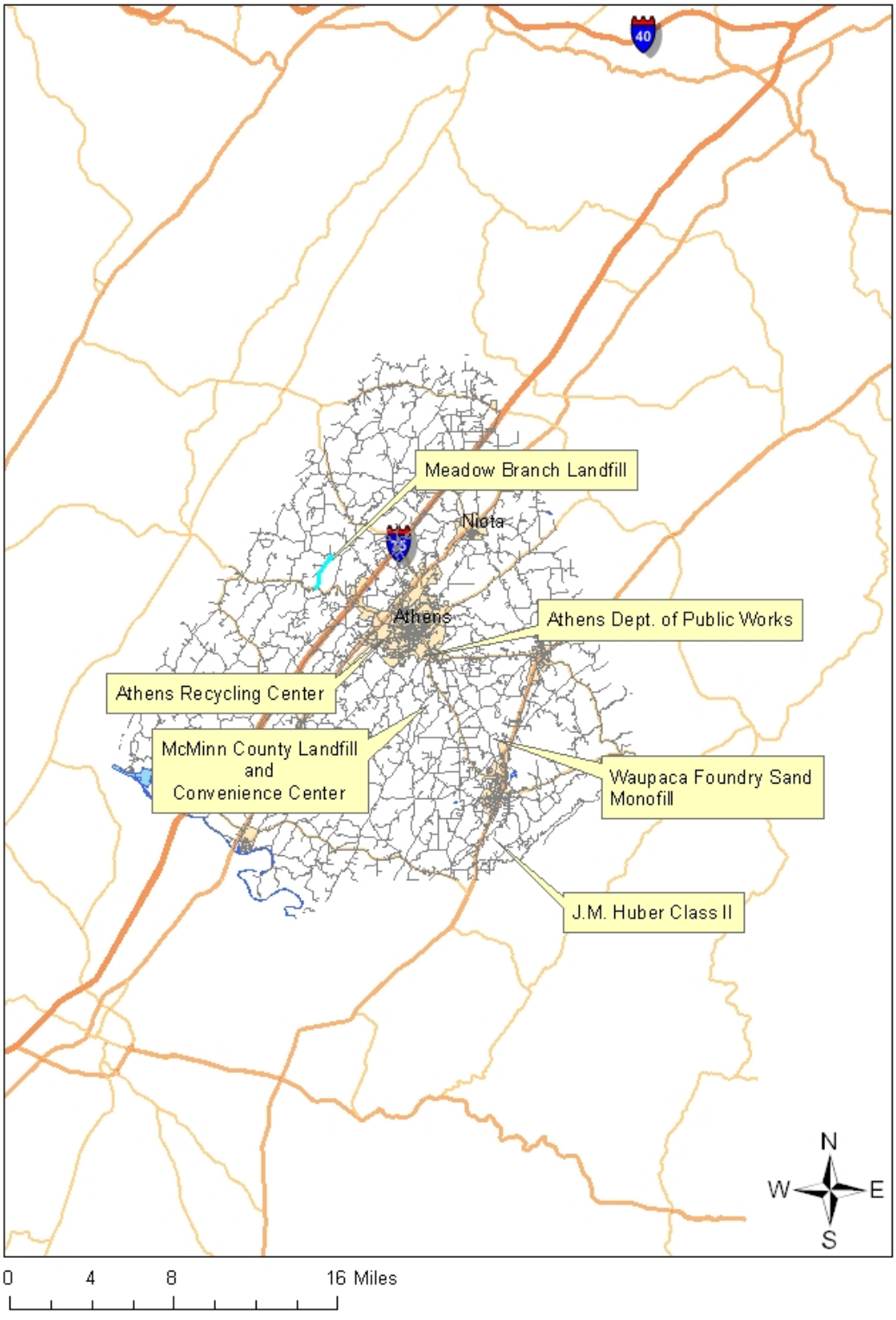
Recommendation 1: Establish school-based recycling programs

Action Item 1: Enlist help of teachers/student organizations
2: Request grant funds from the Solid Waste Management Fund

Recommendation 2: County and cities jointly establish a paper recycling program for all government offices.

Action Item 1: Develop a Memo of Understanding with municipalities to assist with the implementation of the project.
Action Item 2: Purchase low-cost collection bins for all government offices that will participate in the program.
Action Item 3: Allocate labor and transportation resources for the program.

McMinn County Facilities



ATTACHMENT I

McMinn County Landfill

Attachment II

City of Athens
Public Works
Director
Sanitation
Streets
Fleet Maintenance
Animal Control
Administration
GIS
Contact Us

Fast Links
Leaf Line
Holiday Schedule
Street Closing
Snow Attack
Pride Car
Mulch
Brush Pick-up
Large Item Pick-up

PLASTICS RECYCLING

Beginning Friday, December 19, 2008, the Athens Recycling Center will begin accepting Types #1-7 plastic containers for recycling. Plastic shopping bags will also be accepted and recycled.

A rear-load garbage truck will be placed at the Recycling Center for the collection of plastics. Please place your recyclables in the rear of this truck.

Please make certain that each plastic item is rinsed free of any food or liquids. This will ensure a "clean" load of plastic. The vendor will not accept loads of plastic that contain garbage, debris of food solids mixed in with the plastic.

ELECTRONICS RECYCLING

Beginning in January of 2008, boxes were placed at the Athens Recycling Center for the drop off of electronic devices to be recycled.

Acceptable items include: computer equipment such as CPU's, monitors, keyboards, mice, printers, scanners, laptops, modems, hard drives, speakers, power cords, cables, copiers and fax machines.

According to "Recycling Solutions," as many as 500 million computers could be disposed of in landfills. If this comes to pass, more than 1.2 billion pounds of lead, 2 million pounds of cadmium and 400,000 pounds of mercury may be dumped into the waste stream, and potentially our water supply.

CARDBOARD RECYCLING

In an effort to reduce the amount of cardboard being deposited in the McMinn County Landfill

by Athens residents, the Public Works Department instituted a new program designed to accomplish this goal.

Dumpsters, modified for the purpose of accepting cardboard only, have been placed at the five Athens City Schools: City Park, Ingleside, North City, Westside and the Athens Junior High School. These dumpsters are open for use by residents of Athens.

Cardboard recycling in Athens has nearly doubled since this program was implemented. Keep up the good work, Athens!

According to "Recycling Solutions," Americans throw away enough wood and paper every year to heat five million homes for two years. By recycling one ton of cardboard, we can save approximately 9 cubic yards of landfill space.

STEEL & TIN CAN RECYCLING

A container has been placed at the Recycling Center for the collection of steel and tin cans. Please place your discarded cans in the container provided.

Please make certain that each can is rinsed free of any food or liquid, and that labels are removed. This will ensure a "clean" load of material for recycling. The vendor will not accept loads of tin and steel that have garbage, debris or food solids mixed in with the recyclables.

COOKING OIL RECYCLING

Beginning in September 2008, the Athens Recycling Center began accepting used cooking oil for recycling.

A container has been placed at the Recycling Center for the collection of used cooking oil. Please place your used cooking oil in the container provided. Please make sure that used cooking oil is as free of food remnants as possible.

By accepting used cooking oil, the City of Athens will strive to reduce the amount of pollutants in our local waterways. Cooking oil can make its way into a stream or river following a storm event, during which storm water can transport cooking oil and many other pollutants into local water bodies. By initiating this program, the City of Athens hopes to help educate residents while making a difference in the community.

GLASS RECYCLING

The Athens Recycling Center is proud to offer glass recycling services.

Containers have been placed at the Recycling Center for the collection of glass. Please note that the boxes are marked for different colors of glass. There is a separate collection box for clear glass, brown glass and glass of other colors.

*Please use care when placing your glass into these boxes. We strive to avoid injuries, and are advising Recycling Center patrons that flying shards of broken glass from bottles tossed into the collection boxes can be hazardous.

As a reminder, the Recycle Center continues to receive the following items: newsprint, paper, cardboard, aluminum cans, automotive batteries, motor oil and electronics.