

**DEEP EAST TEXAS COUNCIL OF GOVERNMENTS  
REGION SOLID WASTE MANAGEMENT PLAN**

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**EXECUTIVE SUMMARY**  
**Regional Solid Waste Management Plan Amendment**  
**Deep East Texas Council of Governments**

The Deep East Texas Council of Governments (DETCOG) Regional Solid Waste Management Plan was completed in 1992 by Everett Griffith Jr, and Associates, Inc. (EGA.) A new state solid waste management plan, *Solid Waste Management in Texas - Strategic Plan 2001-2005 (SFR-40)*, was published in December 2000. In order to ensure conformance with the most current state solid waste management plan, the TCEQ required that DETCOG's 1992 plan be amended. DETCOG retained EGA to amend the plan.

**AMENDMENT PROCEDURE**

1. **Information Collection:** Before drafting of the plan amendment began, questionnaires were sent to all cities, counties, landfills, and collection services, using DETCOG's database. Responses to those questionnaires oftentimes provided contact information for other participants in solid waste activities, who were subsequently sent a questionnaire. Responses to the questionnaires were limited. The most responsive entities were those entities who directly and actively served on the SWAC. The goal of the information collection phase was to receive at least 75 percent response before proceeding with writing of the amendment. Approximately 75percent of the entities responded, but many left multiple answers blank. Sufficient information was provided to prove beneficial in determining problems areas, waste generation estimates, priorities, and waste characterization.
2. **Draft Amendment:** The information collected above was evaluated and incorporated into the draft. The draft amendment followed the format of the 1992 plan, while conforming, where applicable, to the state plan with respect direction and priorities. This draft underwent the required review, hearings, and approval process and was submitted to TCEQ for staff review.
3. **Final Amendment:** Upon receipt of TCEQ staff comments, it was noted that the format of the draft update made review of the amendment for compliance with regulations difficult. Consequently, the amendment was re-formatted to facilitate TCEQ staff review, while incorporating additionally noted requirements, recommendations, and needed clarification.

**PLAN OVERVIEW**

**Growth:**

The region is expected to continue to experience, as in the past, a gradual but positive growth rate.

**Waste Generation:**

The estimated waste generation rate for the region is 7.16 lbs/capita/day, which is less than the average of 10.1 lb/person/day stated in the *Texas Strategic Plan*. The calculated per capita landfill disposal rate for the region is 4.65 lbs/person/day, as compared to the statewide estimation of 6.46 lbs per/person/day. It is assumed that the region's recycling rate is consistent with the state average of 35 percent. The estimated recycling rate of 2.5 lbs/capita/day for the region is also less than the 4.3 lbs/person/day stated in the *Texas Strategic Plan*. The discrepancy between the regional and state-wide estimates is attributed to the predominantly rural nature of the region, resulting in actual lower waste production and potential improper disposal of solid wastes.

**Imports/Exports:**

Most of the solid waste exports are to the east and west. Imports are predominantly from the Golden Triangle area south of the region. It is estimate that the region imports about 7.5 times more than it exports.

**Problem Areas:**

The most apparent problem is that of collection services in the more rural settings. It appears that the high cost of transporting the wastes and the dispersed collection routes result in cost-prohibitive rates and increased illegal dumping within the region. Identified solutions to the problems are more stringent enforcement and increasing the number of citizen collection stations or transfer stations.

**Landfill Closure Dates:**

The earliest projected landfill closure for the region is 2033, based upon reports to the TCEQ. Because of the impossibility of determining how much of which counties contribute to each landfill and the subsequent application of growth rates, no attempt was made to more accurately project a closure date for each landfill. It is generally recognized by DETCOG as well as the individual landfills that the closure dates will be sooner than reported in their annual reports, but well beyond ten years. Because of the assumed moderate, positive growth rates, the actual closure dates should not be much sooner than projected in their annual reports. It should also be noted that the landfill operators closely monitor their projected closure dates. Based upon recent permit amendment requests and considerations of feasibility studies, the operators are responding appropriately, in a timely fashion.

**Goals:**

The goals and strategies of the DETCOG listed in the amendment have been modified to correspond with those of the State of Texas.

**Funding Priorities:**

DETCOG's prioritized list for allocating grants for projects is:

- 1 Local Enforcement
- 2 Source Reduction and Recycling
- 3 Citizen's Collection Stations and "Small" Registered Transfer Stations
- 4 Technical Studies
- 5 Educational and Training Projects
- 6 Community Clean-up Events
- 7 Local Solid Waste Management Plans
- 8 Household Hazardous Waste Management

DETCOG is currently working on a funding plan for the next two years. Until that plan is completed, the specific fund allocations will not be available. The fund allocation to categories will reflect the priorities of the amended Regional Solid Waste Management Plan, with the plan's goals and strategies in mind.

**Short Range Action Plan:**

To achieve goal listed by the state plan and repeated in the regional plan the following short range (next five years) goals are identified:

1. Encourage the establishment of comprehensive composting and recycling programs.
1. Encourage the establishment and provide support for public education programs on all aspects of solid waste reduction and reuse.
2. Encourage and support the regional landfill concept.
3. Encourage and support the transfer and handling of solid waste in needed areas that are not in close proximity to regional landfills.
4. Establish siting criteria for solid waste facilities.
5. Establish a regional information center on solid waste issues.
6. Provide information relating to financial and technical assistance to local governments.
7. Continue the DETCOG SWAC as a functioning committee.
8. Review all permit applications for solid waste facilities in the region.

## DEEP EAST TEXAS COUNCIL OF GOVERNMENTS REGION SOLID WASTE MANAGEMENT PLAN

- A. REGIONAL ANALYSIS** - The Deep East Texas Council of Governments is comprised of the following twelve counties: Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity and Tyler. The region covers 10,545 square miles of the Deep East Texas area.
- 1. POPULATION AND GROWTH PATTERNS** - The following sections provide a brief description of population within the DETCOG region.
- a. COUNTY POPULATIONS** - Table 1 lists the twelve counties of the DETCOG region with populations for the years 1960, 1970, 1980, 1990, and 2000. Additionally, the last four columns show the growth rates for the various time intervals as indicated.

The Year 2000 census data indicates that every county in the Deep East Texas Council of Governments had a positive growth rate over the decade from 1990 to 2000. The entire DETCOG region had an average growth rate of about 16.50% for the decade. In terms of percentage population growth, the Deep East Texas region ranked tenth out of the 24 council of government regions in the State of Texas.

There was a wide variation in growth rates for the individual counties in the region. The highest growth rate of 35.88% occurred in San Jacinto County. The smallest growth rate of 8.13% occurred in Nacogdoches County. This is a marked increase over the previous decade when the overall growth rate of the region averaged only 9.33% and three of the individual counties actually experienced a net decrease in population.

As noted above, the average rate of growth for the DETCOG region was 16.50%. Four counties displayed overall growth rates that exceeded the average DETCOG rate. These were Polk (34.04%), San Jacinto (35.88%), Trinity (20.39%), and Tyler (25.38%). These counties are all clustered together in the south-central portion of the region. Relatively speaking, it appears that San Jacinto County has maintained the largest and most consistent rate of growth for the past forty years, with its population almost doubling over the last twenty years and nearly quadrupling since 1960. For the last three decades both Polk and San Jacinto Counties have displayed growth rates that were at least twice as large as the average DETCOG rate. The growth rates for Angelina, Jasper, and Shelby Counties were just slightly below the average DETCOG rate.

Figures 1 and 2 portray the growth rates of the counties grouped by Year 2000 populations. Figure 1 displays census data for the six most populous counties in the DETCOG area. The population gap between the top two counties is notable, with Angelina County having over 20,000 more people than Nacogdoches County. In turn, the gap between second ranked Nacogdoches County and third ranked Polk County is in excess of 18,000 people. Figure 1 shows that Polk County was ranked sixth in 1970, but has grown to be the third most populous county since then, surpassing Jasper, Shelby, and Houston Counties in the interim.

Figure 2 graphically displays the historical census data for the six less populous counties of the DETCOG region. The exceptional population growth of San Jacinto County is readily apparent, having grown from the twelfth place position in 1970 to seventh by 2000, outpacing Tyler, Newton, Trinity, Sabine, and San Augustine in that time frame. The population increase for San Augustine County generally offsets the population that it lost over the decade from 1980 to 1990. At the present time San Augustine is the least populated county



in the DETCOG area.

**<<INSERT Table 1>>**

**<<INSERT FIGURE 1>>**

**<<INSERT FIGURE 2>>**

Angelina has approximately 22.52% of the total DETCOG population and Nacogdoches has approximately 16.64%. Each of these counties is basically able to operate a solid waste facility effectively with the waste load from their county populations. The next largest counties are Jasper and Polk, with 10.01% and 11.56% of the population, respectively. These counties should cooperate with other counties to build a base of 20% of the population. The pie charts also show a trend in population growth such that the population of DETCOG is centered along an axis running north and south on U. S. Highway 59. The highest growth rates have occurred nearest this axis.

- b. CITY POPULATIONS** - Table 2 shows historical populations for the various communities of the DETCOG region sorted by Year 2000 populations. Where possible, Year 2000 Census data was utilized for individual communities. In order to provide a more complete view of actual conditions, some additional communities that were not listed in the Census records but were referenced in the *2002-2003 Texas Almanac* were also included in Table 2.

The table is self-explanatory. The Cities of Nacogdoches and Lufkin have the largest populations in the region. According to the Year 2000 Census numbers, the City of Lufkin has a slightly larger population than the City of Nacogdoches. However, the City of Nacogdoches disputes the accuracy of the Census and has requested that the population projections adopted by the Texas Water Development Board in their State Water Plan be included in their stead. Those numbers indicate that Nacogdoches has the larger population.

Generally speaking, most of the cities have displayed positive growth rates. In fact, the cities of Diboll, Hudson, Newton, Onalaska, Coldspring, and Point Blank displayed population increases in excess of 20%. However, the cities of Nacogdoches, Woodville, Corrigan, Deweyville, Tenaha, Garrison, Zavalla, Appleby, Chireno, Kennard, Huxley, Latexo, Chester, Broaddus, and Seven Oaks have shown net population decreases.

These changes generally match the trends described above. It should be noted that the most significant growth in the DETCOG region occurring along the Highway 59 corridor. By way of comparison, it should be noted that the Counties of Houston, Newton, Sabine, San Augustine, San Jacinto, Shelby, Trinity, and Tyler each individually had Year 2000 populations of less than 26,000 people. The Cities of Lufkin and Nacogdoches both have Year 2000 populations in excess of 29,000 people.

- c. POPULATION-UNINCORPORATED AREAS** - Table 3 demonstrates the changes of "rural" versus "urban" population in the DETCOG region. For purposes of the table, the populations listed for the communities in Table 2 are assumed to be urban. The "rural" population is the difference between the total County population and the "urban" population. Angelina and Nacogdoches Counties are the only "Urban" Counties--that is, they are the only counties which have more than fifty percent of their population inside cities. The next mostly urban counties are Houston (42.68%), Jasper (40.25%), and Sabine (40.04%).

As compared to the 1990 populations, the general trend in the DETCOG region appears to be toward more urbanization. Please note that the listing of communities in Table 2 contains several entities that were omitted from the previous *DETCOG Solid Waste Management Plan* and some of the urban growth might be attributed to this addition, especially in the less populous counties. However, unlike the previous study period, all of the DETCOG area Counties have shown a positive growth rate in terms of population for the last decade. Table 2 clearly shows that the majority of the communities in the area have sustained positive growth.

The two largest cities in the DETCOG area are Lufkin and Nacogdoches. The Census data indicates that the population of Lufkin increased by 2,503 people or approximately 8.29%, while the population of the City of Nacogdoches declined by about 958 people or 3.10%. This indicates a net urban increase for the Lufkin-Nacogdoches area. In addition, it should

also be noted that the Census data for the City of Nacogdoches has also been challenged.

**<<INSERT Table 2, page 1>>**

**<<INSERT Table 2, page 2>>**



**<<INSERT Table 3,page 1>>**

**<<INSERT Table 3,page 2>>**

If only the most populous communities are addressed, the general population growth is positive. As indicated on Table 2, approximately 27 communities had populations in excess of 1,000 people in the Year 2000. Out of those 27 communities, only six showed a decrease in population, with the highest rate being -8.38% for Woodville. However, 19 of those 27 communities showed positive growth, with the highest occurring in Onalaska (61.26%) and Hudson (59.73%), and the lowest occurring in Grapeland (0.07%). Two of the communities had insufficient data for 1990 to determine growth. In terms of total population, these same communities had a total population of 119,801 people in the Year 1990 and a population of 128,224 people in the Year 2000 (minus the population of Milam and Camden, for which no population data was available for 1990). This is a net increase of 8,423 people, or 7.03% population growth.

- d. **POPULATION PROJECTIONS** - The population projections utilized herein are based on data obtained from *Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2000-2040*, dated December 2001. That document contains projections of the population of Texas and of each county in Texas. Those projections were prepared by personnel from the Office of the State Demographer and the Department of Rural Sociology in the Texas Agricultural Experiment Station in the Texas A&M University System as part of the Texas State Population Estimates and Projections Program. The following sections briefly summarize information obtained from those agencies in regard to methodology and scenario recommendation.

The available projections are of the population of the State and all Texas counties for each year from 2000 through 2040. These are similar in form to those previously released by the Population Estimates and Projections Program in previous years, but are noted therein to have been revised using 2000 census and other enhanced data bases. According to the methodology documentation, the projections were formulated using a cohort-component projection technique. The basic characteristics of this technique are the use of separate cohorts (persons with one or more common characteristic) and the separate projection of each of the major components of population change (fertility, mortality and migration) for each of the cohorts. The baseline cohorts used in the projections are single-year-of-age cohorts for males and females of Anglo, Black, Hispanic and Other racial/ethnic groups extracted from the data bases of the 2000 Census of Population and Housing. Population data for 2000 were used as the starting base because they provide the last complete count information available.

Three projection scenarios which produced three alternative sets of population values were presented in the *Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2000-2040* data. Those scenarios assumed the same set of mortality and fertility assumptions in each scenario but differ in their assumptions relative to net migration. The net migration assumptions made for three scenarios are derived from 1990-2000 patterns which have been altered relative to expected future population trends. This was done by systematically and uniformly altering the adjusted (as noted above) 1990-2000 net migration rates by age, sex and race/ethnicity. The scenarios so produced are referred to as the zero migration (0.0) scenario, the one-half 1990-2000 (0.5) scenario, and the 1990-2000 (1.0) scenario. In the recommendation section of that document, the 0.5 Scenario was generally set forth as the most appropriate scenario for most counties during the present time.

The document also notes that all projections involve the use of certain assumptions about future events that may or may not occur and further cautions that *“users of these projections should be aware that although the projections have been prepared with the use of detailed state-of-the-art methodologies and with extensive attempts being made to account for existing demographic patterns, they may not accurately project the future population of the*

State or of particular counties in the State”.

Table 4 below provides a summary of the projected populations for the counties of the DETCOG region from the Year 2000 to the Year 2040. These projections are those listed for the 0.5 Scenario.

<b>Table 4 - DETCOG Region Population Projections</b>					
<b>County Name</b>	<b>Year 2000 Population</b>	<b>Population Projection by Year</b>			
		<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>
Angelina	80,130	86,276	92,719	98,924	104,972
Houston	23,185	23,280	23,491	23,194	22,489
Jasper	35,604	38,445	40,897	42,344	42,712
Nacogdoches	59,203	62,974	67,056	70,612	73,933
Newton	15,072	16,008	16,731	16,825	16,370
Polk	41,133	45,583	50,028	53,530	56,249
Sabine	10,469	10,448	10,371	9,975	9,557
San Augustine	8,946	9,061	9,118	8,904	8,614
San Jacinto	22,246	25,466	28,441	30,643	32,276
Shelby	25,224	26,531	28,248	29,597	30,602
Trinity	13,779	14,145	14,339	14,096	13,721
Tyler	20,871	22,720	24,543	25,856	26,979
<b>Entire DETCOG Area</b>	<b>355,862</b>	<b>380,937</b>	<b>405,982</b>	<b>424,500</b>	<b>438,474</b>

2. **ECONOMIC ACTIVITY** - The following sections provide a general description of the DETCOG region's economic characteristics.

- a. **JOBS IN DEEP EAST TEXAS** - Table 5 contains a listing of jobs by category in each County of the DETCOG area. These figures were obtained from *Texas Regional Outlook - Southeast Texas Region*, dated May 2002 and published by the Texas State Comptroller. Also, Figure 3 contains a graphical representation of the job distribution by industry type in the entire region. Both apply to conditions for the Year 2001.

That information indicated that Services, Retail Trade, and Manufacturing jobs employ over 60% of the people in the DETCOG area. Specifically, about 21.36% of the region's workers were employed in the "services and other" industries, approximately 20.55% were employed in "retail trade" jobs, and approximately 18.82% were employed in "manufacturing" jobs.

Government employment also accounted for a large portion of the workforce. In all, Government jobs accounted for about 23% of the total employment in the region in the Year 2001.

The DETCOG region contains a large percentage of Texas' timberland, and the forest products industry supports several large manufacturing employers in the area. Temple Inland Forest Products, Abitibi Consolidated, and Louisiana-Pacific operate a variety of sawmills, paper mills, particle-board and plywood mills. Lufkin Industries is the world's largest manufacturer of oil pumping units, and is a major producer of marine gear and trailers. Other plants manufacture building products, electrical gear, and a wide range of fabricated equipment.

**<<INSERT Table 5>>**

Although manufacturing jobs represent nearly a fifth of all jobs in the DETCOG region, the percentage of jobs in the manufacturing sectors has dropped dramatically over the past three decades. In the last quarter of the Year 2000, manufacturing accounted for about 19.27% of the jobs in Angelina County and about 19.49% of the jobs in Nacogdoches County. This is in contrast to 1970 when 55.4% and 47.5% of the jobs in Angelina and Nacogdoches Counties, respectively, were in manufacturing. Much of the growth in jobs has been in the Service and Trade Industries. These two counties are noted since they are the largest counties in the region and because they lead in the number of manufacturing jobs. The same general trend has been followed in the other counties.



**FIGURE 3 - DETCOG REGION JOBS BY CATEGORY FOR 2001**

- b. PROBABLE GENERATORS OF SOLID WASTE** - Major industrial or commercial generators of solid waste will generally be located in the larger municipalities of the area. Additionally, all hospitals and medical clinics have special wastes. These are generally picked up by special medical waste haulers and taken to incinerators outside of the region.

School systems have large amounts of wastes. The region has a large amount of recreational facilities which also result in the production of wastes.

- c. INCOME LEVELS** - Income is a consideration in establishing the quantity and type of waste generated in an area. Since industrial, special wastes, and other types of waste are not considered if they are not being disposed in a municipal landfill, the primary composition of solid waste is derived from residential, commercial, and enterprises directly related to life-styles of the populace.

**Table 6 - Wages and Employment for DETCOG Region (Year 2000)**

County Name	Income		Unemployment Rate (%)		
	Personal Income (thousands)	Average Per Capita Income	Year 2001 (%)	Change from 2000 to 2001	Change from 1996 to 2001



Angelina	\$1,784,901	\$22,236	5.8	0.7	0.5
Houston	\$526,950	\$22,724	3.7	(0.1)	0.1
Jasper	\$745,059	\$20,914	11.4	1.6	(1.7)
Nacogdoches	\$1,210,561	\$20,445	3.5	0.1	(1.8)
Newton	\$223,501	\$14,854	12.6	1.7	1.1
Polk	\$1,011,269	\$24,304	5.1	(0.1)	(0.5)
Sabine	\$231,551	\$22,158	9.9	2.0	0.8
San Augustine	\$167,417	\$18,729	5.5	0.3	(1.3)
San Jacinto	\$444,881	\$19,819	4.0	0.2	0.2
Shelby	\$531,379	\$21,032	6.0	0.1	(1.1)
Trinity	\$248,604	\$17,998	5.0	0.5	(0.2)
Tyler	\$355,862	\$17,068	8.3	0.5	(4.3)
<b>AVERAGE</b>	<b>\$623,495</b>	<b>\$20,190</b>	<b>6.7</b>	<b>N/A</b>	<b>N/A</b>

SOURCE: State Comptroller's report entitled Texas Regional Outlook - Southeast Texas Region, dated May 2002.

One might expect a higher production of solid waste in the higher income counties since there is a higher income to purchase goods which will ultimately be disposed of.

Table 5 indicates that at the end of the Year 2001 Angelina County had the largest workforce with 35,715 workers, followed by Nacogdoches County with 22,081 workers and Jasper County with 10,509 workers. Conversely, the smallest labor force was noted in San Augustine County, with 1,856 workers.

- d. **TRENDS** - The information provided below was obtained from the report entitled Texas Regional Outlook - Southeast Texas Region, May 2002, by Carole Keeton Rylander, Texas State Comptroller of Public Accounts. The report contains the results indicated by the Comptroller's new 13-region economic model of Texas. The Southeast Texas region includes all of the DETCOG Counties plus Hardin, Jefferson, and Orange Counties. Overall, the area is projected to grow at a 1.5 percent annual rate, which the report notes is about the same rate seen from 1995 to 2000 but slightly slower than the 1.9 percent growth rate expected for the state as a whole.

The region saw significant growth during the last 30 years of the 20th century. The report indicates that the gross regional product nearly doubled from the Year 1970 to the Year 2000, with an average annual growth rate of 3.2 percent. During this time, the population of the region grew at a slower rate than the growth in the value of production. This resulted in a dramatic rise in per capita real income for the last 30 years of the 20th century. For example, the report noted that in real terms (1992 dollars) disposable personal income (income not used to pay federal taxes) rose from \$10,800 in 1970 to \$19,000 in 2000. This means that the average person or household in the region had 75 percent more real purchasing power in 2000 than they did in 1970.

According to the report, job growth in the region was good during much of the 1970s and early 1980s. From about 1981 to 1990 the region was impacted by fluctuating conditions in the oil and real estate industries, and was also affected by a national recession in the early 1990s. Starting in 1986, it was noted that the region's employment growth resumed an upward trend. Based on historical data since 1970, the Comptroller projects stable economic growth for the region. It is expected that growth for the next five years will be similar to the growth displayed in the late 1990s. The main challenge indicated for the region is in providing the educational skills needed to train the work force to meet the changing needs of business in an internet economy.

The report states that the Southeast Texas region is expected to grow at about the same rate as seen in recent years, but slightly slower than in the state as a whole. Through 2005, the real gross regional product is expected to expand at a 2.1 annual rate. It was noted that the region saw its real gross regional product expand at slightly more than a 2.1 percent annual rate in the 1990's. So the forecast through 2005 is about the same growth rate seen during the 1990s despite overall growth below the 3.2 percent real growth expected for the state as a whole. This pattern is likely to be repeated in terms of employment.

In terms of employment, the report also noted that many of the industries generating new jobs through the Year 2005 will be driven by changes in consumer expenditure patterns that have been seen over the past few years. As an example, the report referenced a continued shift toward expenditures on consumer services such as restaurants, health services, amusement expenditures, and direct personal services such as laundry. Many of the industries supplying these services employ a large number of people, so even modest growth in demand could result in sizeable employment growth. As a result, the largest job gains are expected to occur in retail trade employment. Additionally, increased employment of school teachers, police, sanitation workers, and most other local government employees will occur as the region's population grows. The report noted that construction could also add more jobs, but the forecasted growth rate paled in comparison to that posted from 1995 to 2000 in the area. The health care industry is also expected to be a strong job generator in the region through 2005, and should include a wide variety of health care professions and nursing services.

The report's projections also indicate that more jobs requiring technically skilled workers will emerge in the near future. The importance of education and the need for work force training is probably best seen when looking at the 25 occupational categories that the report expects to grow at the fastest rates through 2005. That list is led by the need for additional computer scientists, communication equipment personnel, lawyers, life scientists, health care diagnosticians, general technicians, information clerks, engineers and other professional workers. Of the top 10 occupations expected to grow the fastest from 2000 to 2005, seven will require some advanced training beyond high school, and most of these will require either an associate's degree, a bachelor's degree or other advanced degrees.

- 3. WASTE GENERATION AND CHARACTERIZATION** - The following sections provide calculations of solid waste production in the DETCOG region. The population projections utilized herein are based on data obtained from *Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2000-2040*, dated December 2001. These projections were prepared by personnel from the Office of the State Demographer and the Department of Rural Sociology in the Texas Agricultural Experiment Station in the Texas A&M University System as part of the Texas State Population Estimates and Projections Program. These have been revised using 2000 census and other enhanced data bases.

The population projections were utilized for the various planning periods addressed herein. These are listed in the following table along with the projected populations for each specified county. The Year 2000 census populations are also shown for comparison.

<b>Table 7 - Future Population Projections</b>						
<b>County Name</b>	<b>Year 2000 Census Population</b>	<b>Population Projections</b>				
		<b>Projected Year 2001 Population</b>	<b>Year 2002 Current Planning Period</b>	<b>Year 2007 Short-Range Planning Period</b>	<b>Year 2012 Intermediate Planning Period</b>	<b>Year 2022 Long-range Planning Period</b>
Angelina	80,130	80,733	81,340	84,410	87,543	93,971
Houston	23,185	23,177	23,170	23,200	23,341	23,461
Jasper	35,604	35,880	36,158	37,574	38,975	41,248
Nacogdoches	59,203	59,557	59,912	61,777	63,787	67,818
Newton	15,072	15,163	15,254	15,721	16,173	16,973
Polk	41,133	41,560	41,992	44,207	46,473	50,778
Sabine	10,469	10,467	10,465	10,454	10,441	10,310
San Augustine	8,946	8,955	8,964	9,019	9,089	9,082
San Jacinto	22,246	22,560	22,878	24,489	26,070	28,915
Shelby	25,224	25,347	25,471	26,117	26,873	28,546
Trinity	13,779	13,817	13,855	14,039	14,200	14,301
Tyler	20,871	21,045	21,221	22,138	23,091	24,836
<b>Total For Entire DETCOG Region</b>	<b>355,862</b>	<b>358,261</b>	<b>360,680</b>	<b>373,145</b>	<b>386,056</b>	<b>410,239</b>

**a. WASTE GENERATION**

**(1) IMPORTS/EXPORTS** - A portion of the solid waste generated in the DETCOG region is exported outside of the region for disposal. Similarly, a portion of the solid waste that is disposed of in the region has its origin outside of its boundaries.

According to the questionnaire responses, it can be generally stated that practically all of the solid waste in Trinity County is exported. In addition, approximately half of the solid waste from Sabine and Shelby Counties is exported. All of these counties lie along the border of the DETCOG region. Appendix 3 contains more specific information regarding the final destinations of this exported waste.

Similarly, the Waste Management Landfill in Newton County reports that about 80% of the waste disposed at that facility is imported from outside the DETCOG region. Specifically, the majority of this imported waste comes from the South East Texas Council of Governments Region (including Orange, West Orange, Beaumont, Vidor, and Mauriceville) and from Lake Charles, Louisiana.

(2) **ESTIMATED DETCOG PER CAPITA LANDFILL DISPOSAL RATE** - Municipal solid wastes disposed of at the region's landfills in 2001, according to annual reports for the Year 2001 or more specific data provided by the landfills, are as follows:

<b>Table 8 - Municipal Solid Waste Disposal at DETCOG Region Landfills</b>			
<b>Landfill Name</b>	<b>Landfill Location</b>	<b>Disposal (tons)</b>	
		<b>Monthly Disposal</b>	<b>Annual Disposal</b>
Angelina County Waste Management Center	Angelina County	10,223	122,680
City of Nacogdoches Landfill	Nacogdoches County	4,909	58,913
Polk County Waste Management Landfill	Polk County	4,083	48,991
Newton County Regional Solid Waste Complex	Newton County	19,441	233,288
<b>TOTAL</b>		<b>38,656</b>	<b>463,872</b>

As noted previously, it is estimated that 80% of the waste disposed of at the Newton County Regional Solid Waste Complex landfill is imported into the region from the south. Based on that assumption, the amount of regional waste at that facility is estimated as follows:

Based on the above information, the total amount of solid waste produced and disposed of in the DETCOG region landfills is approximately 277,242 tons per year, which breaks down to 1,519,132 lbs/day.

Similarly, the above information noted that practically all of the solid waste in Trinity County is exported and that approximately half of the solid waste from Sabine and Shelby Counties is exported. Based on the Year 2001 projected population, the total population of the DETCOG region that contributes solid waste to the local landfills can be estimated as follows:

Therefore, the Average Per Capita Landfill Disposal rate for the region can be estimated as follows:

According to the Solid Waste Management in Texas Strategic Plan 2001-2005, the Per Capita Landfill disposal for Texas is 6.45 lbs/person/day and the per capita disposal rate (includes combustion) is 6.46 lbs per/person/day.

Two factors would lead us to expect our region's landfill disposal per capita to be lower than the state average. Firstly, the region consists of predominantly rural areas resulting in lower per capita waste generation. Secondly, the rural areas probably result in more illegal disposal, particularly when collection services are limited and landfills are a great distance away.

The per capita disposal for non-hazardous MSW by the City of Lufkin (based on 2002 ACWMC records and 2002 projected population) is calculated to be 7.52 lb/person/day. This is only about 15% more than the state's estimation. It would be expected to be significantly higher than the Region's average, since the region is composed of so much rural area.

Eight haulers of municipal solid waste provided responses to questionnaires which could be used to calculate the amount hauled per capita. In many instances, the accuracy of the information provided was suspect, particularly because of lack of significant digits. In addition, whether or not the waste was compacted by the hauler had to be assumed in some cases. The per capita production of waste hauled to the landfills for disposal was calculated as 5.34 lbs/person/day (assuming compaction when not specified in response) and 4.91 lbs/person/day (assuming no compaction when not specified in response). Again this number exceeds the per capita landfill disposal which was calculated from export/import estimation and landfill data. This difference supports the suspicion that residences in the rural areas are not properly disposing of their solid wastes (i.e. through burning, illegal dumping, etc.).

The response from haulers was limited. It is estimated that the 16 haulers from which usable data was obtained cover about 37% of the population of the DETCOG region. No data was provided by the smaller haulers. It is expected that they are many and that they provide service to the most rural areas. It is worthy to note that the hauler(s) for the Jasper County compactor sites in Precincts 3 and 4 as well as Browning Ferris did not provide useful data.

**(3) QUANTIFYING IMPORTS/EXPORTS** - Summarily, the following observations apply to the DETCOG region concerning imports and exports of solid waste:

Imports - Based on information from the landfill, approximately 186,630 tons/year of solid waste was imported to the Newton County Regional Solid Waste Complex in 2001. This breaks down to approximately 1,022,632 lbs/day.

Exports - It is estimated that all of the municipal solid waste from Trinity County is exported. It is also estimated that approximately half of the solid waste from Sabine and Shelby Counties are also exported. Based on the average per capita landfill disposal rate (calculated above) and on the projected Year 2001 populations, the total amount of solid waste exported from the DETCOG region is estimated as follows:

$$\text{Trinity County Exports} \quad (1.0) * (13,817 \text{ people}) * (4.65 \text{ lbs/capita/day}) = 64,249 \text{ lbs/day}$$

$$\text{Shelby County Exports} \quad (0.5) * (25,347 \text{ people}) * (4.65 \text{ lbs/capita/day}) = 58,932 \text{ lbs/day}$$

$$\text{Sabine County Exports} \quad (0.5) * (10,467 \text{ people}) * (4.65 \text{ lbs/capita/day}) = 24,336 \text{ lbs/day}$$

Based on the above assumptions, the total municipal solid waste export from the DETCOG region is estimated to be 147,517 lbs/day or 26,922 tons/year for the Year 2001.

**(4) WASTE GENERATION AND RECYCLING CALCULATION** - It is assumed herein that the DETCOG region's recycling rate is consistent with that of the state. According to the *Solid Waste Management in Texas Strategic Plan 2001 - 2005*, the average recycling rate for the state was estimated to be 35%. The equation utilized to estimate waste generation is as follows:

$$\text{Waste Generation} = \text{Disposal} + \text{Net Exports}/(\text{Imports}) + \text{Recycling}$$

$$\text{Where Recycling} = 0.35 \text{ Waste Generation}$$

$$\text{and Net Imports/Exports} = 186,630 \text{ tons/year} - 26,922 \text{ tons/year} = 159,708 \text{ tons/year}$$

Therefore,

$$\text{Waste Generation} = \text{Disposal} + \text{Net Exports}/(\text{Imports}) + 0.35 \text{ Waste Generation}$$

$$\text{Waste Generation} = [\text{Disposal} + \text{Net Exports}/(\text{Imports})] / .65$$

$$\text{Waste Generation} = [463,872 \text{ tons/year} - 159,708 \text{ tons/yr}] / .65$$

$$\text{Waste Generation} = 467,945 \text{ tons/year}$$

Based on the above estimate, the waste generation rate for the DETCOG region was 467,945 tons/year for the Year 2001, which breaks down to about 2,564,080 lbs/day. Based on a total population of 358,261 people, that equates to approximately 7.16 lbs/capita/day.

The estimated waste generation rate for the region is 7.16 lbs/capita/day, which is less than the average of 10.1 lb/person/day stated in the *Texas Strategic Plan*.

Also, the Recycling Rate = (0.35) \* (7.16 lbs/capita/day) = 2.5 lbs/capita/day

The recycling rate of 2.5 lbs/capita/day is also less than the 4.3 lbs/person/day stated in the *Texas Strategic Plan*

Figure 4 shows a map of the DETCOG region and attempts to graphically illustrate the existing solid waste flows for the area. The information included on that map was obtained from questionnaires sent to area governmental entities and solid waste haulers.

**(5) ESTIMATED SOURCES OF SOLID WASTE** - The following information is estimated based on Landfill reports and other information.

Source	Newton	ACWMC	Nacogdoches	Santek	Total	%*	State %**
Residential	54,079	61,988	55,884	26,576	198,527	43	32
Commercial	108,158	46,154	0	16,166	170,478	37	35
Construction and Demolition	54,079	10,457	0	5,247	69,783	15	19
Non-hazardous industrial	16,972	0	46	0	17,018	3	5
Other	0	4,081	2,983	1,002	8,066	2	9

\*Source: 2001 annual reports from landfills

\*\*Source: Texas Strategic Plan

As indicated on the table, the amount of residential and commercial waste appears to be slightly higher than average for the State, while the remaining elements are slightly lower. This reflects the more rural nature of the majority of the DETCOG area in proportion to the percentage of industries in the area.

Component	Haulers		State %
Glass	21		5
Plastic	5		8
Paper	20		36
Metal, Aluminum	5	16	20
Metal, Other	11		
Yard Trimmings	38		31
			5

Food		9
Wood		6
Other		11

Figure 4 shows a map of the DETCOG region and attempts to graphically illustrate the existing solid waste flows for the area. The information included on that map was obtained from questionnaires sent to area governmental entities and solid waste haulers.

- (6) SOLID WASTE PROJECTIONS** - Based on the waste generation estimate found in the above sections, an attempt was made to calculate the projected solid waste generation for the DETCOG region for the planning period. The estimated solid waste generation rate of 7.16 lbs/person/day is assumed to remain constant. The total amount of solid waste generated was based on the per capita rate multiplied by the county population projected for the specified year.

The recycling rate was also assumed to remain the same as indicated above. It was assumed in the following calculations that the recycling rate remains at 35%.

In terms of exports, it was assumed that all of the solid waste in Trinity County is exported outside of the region, while 50% of the solid waste generated in Sabine and Shelby Counties is exported.

As noted above, most of the imported solid waste to the region comes from the South East Texas Council of Governments region or from Louisiana. It is assumed that the amount of solid waste imported is proportional to the population of those areas. The *Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2000-2040* data was consulted for the South East Texas region and its projected (0.5 scenario) growth was applied to the imports. The projected amount of imported solid waste is as follows:

Amount of Year 2007 Imported Solid Waste	192,872 tons/year
Amount of Year 2012 Imported Solid Waste	199,111 tons/year
Amount of Year 2022 Imported Solid Waste	216,025 tons/year

The estimated amount of solid waste produced within the region at the projected Year 2007 population is estimated as follows:

County Name	Projected Population For Year 2007	Solid Waste Generated (based on 7.16 lbs/person/day)			Estimated Solid Waste Exported (tons/year)
		Solid Waste Generated (tons/year)	Amount Recycled (tons/year)	Solid Waste to be Disposed (tons/year)	
Angelina	84,410	110,299	38,604	71,694	0



Houston	23,200	30,315	10,610	19,705	0
Jasper	37,574	49,098	17,184	31,914	0
Nacogdoches	61,777	80,724	28,253	52,471	0
Newton	15,721	20,543	7,190	13,353	0
Polk	44,207	57,765	20,218	37,547	0
Sabine	10,454	13,660	4,781	8,879	4,440
San Augustine	9,019	11,785	4,125	7,660	0
San Jacinto	24,489	32,000	11,200	20,800	0
Shelby	26,117	34,127	11,944	22,183	11,091
Trinity	14,039	18,345	6,421	11,924	11,924
Tyler	22,138	28,928	10,125	18,803	0
<b>TOTALS</b>				<b>316,933</b>	<b>27,455</b>

The estimated amount of solid waste to be disposed of at regional facilities for the Year 2007 is estimated as follows:

$$\begin{aligned}
 \text{Disposal Amount}_{2007} &= [\text{Total Solid Waste to be Disposed}] - [\text{Exports}] + [\text{Imports}] \\
 &= [316,933 \text{ tons}] - [27,455 \text{ tons}] + [192,872 \text{ tons}] \\
 &= 482,350 \text{ tons}
 \end{aligned}$$

The estimated amount of solid waste produced within the region at the projected Year 2012 population is estimated as follows:

County Name	Projected Population For Year 2012	Solid Waste Generated (based on 7.16 lbs/person/day)			Estimated Solid Waste Exported (tons/year)
		Solid Waste Generated (tons/year)	Amount Recycled (tons/year)	Solid Waste to be Disposed (tons/year)	
Angelina	87,543	114,392	40,037	74,355	0
Houston	23,341	30,500	10,675	19,825	0
Jasper	38,975	50,929	17,825	33,104	0
Nacogdoches	63,787	83,350	29,173	54,178	0
Newton	16,173	21,133	7,397	13,737	0

Polk	46,473	60,726	21,254	39,472	0
Sabine	10,441	13,643	4,775	8,868	4,434
San Augustine	9,089	11,877	4,157	7,720	0
San Jacinto	26,070	34,066	11,923	22,143	0
Shelby	26,873	35,115	12,290	22,825	11,412
Trinity	14,200	18,555	6,494	12,061	12,061
Tyler	23,091	30,173	10,561	19,612	0
<b>TOTALS</b>				<b>327,899</b>	<b>27,907</b>

The estimated amount of solid waste to be disposed of at regional facilities for the Year 2012 is estimated as follows:

$$\begin{aligned}
 \text{Disposal Amount}_{2012} &= [\text{Total Solid Waste to be Disposed}] - [\text{Exports}] + [\text{Imports}] \\
 &= [327,899 \text{ tons}] - [27,907 \text{ tons}] + [199,111 \text{ tons}] \\
 &= 499,103 \text{ tons}
 \end{aligned}$$

The estimated amount of solid waste produced within the region at the projected Year 2022 population is estimated as follows:

County Name	Projected Population For Year 2022	Solid Waste Generated (based on 7.16 lbs/person/day)			Estimated Solid Waste Exported (tons/year)
		Solid Waste Generated (tons/year)	Amount Recycled (tons/year)	Solid Waste to be Disposed (tons/year)	
Angelina	93,971	122,792	42,977	79,815	0
Houston	23,461	30,656	10,730	19,927	0
Jasper	41,248	53,899	18,865	35,034	0
Nacogdoches	67,818	88,618	31,016	57,602	0
Newton	16,973	22,179	7,763	14,416	0
Polk	50,778	66,352	23,223	43,129	0
Sabine	10,310	13,472	4,715	8,757	4,378

San Augustine	9,082	11,867	4,154	7,714	0
San Jacinto	28,915	37,783	13,224	24,559	0
Shelby	28,546	37,301	13,055	24,246	12,123
Trinity	14,301	18,687	6,540	12,147	12,147
Tyler	24,836	32,453	11,359	21,095	0
<b>TOTALS</b>				<b>348,439</b>	<b>28,648</b>

The estimated amount of solid waste to be disposed of at regional facilities for the Year 2022 is estimated as follows:

$$\begin{aligned}
 \text{Disposal Amount}_{2022} &= [\text{Total Solid Waste to be Disposed}] - [\text{Exports}] + [\text{Imports}] \\
 &= [348,439 \text{ tons}] - [28,648 \text{ tons}] + [216,025 \text{ tons}] \\
 &= 535,816 \text{ tons}
 \end{aligned}$$

**<<INSERT FIGURE 4>>**

**<<INSERT FIGURE 5>>**

**b. WASTE CHARACTERIZATION** - The following sections attempt to briefly describe the types of solid wastes that figure in this report.

- (1) RESIDENTIAL** - Residential wastes are those waste materials discarded from private residences, rural homes, and farms. The composition of this waste is typically food wastes, paper, cardboard, wood, plastics, cloth, leather, rubber, glass, leaves, metals, crockery, household appliances, and furniture. The majority of the DETCOG region is rural and the majority of the waste generated will fall under the residential classification. Residential waste is generally collected by private haulers and city compactor trucks for transport to area landfills.
- (2) COMMERCIAL** - Commercial wastes are those waste materials discarded from small businesses, retail stores, restaurants, markets, office buildings, hotels and motels, print shops, auto repair shops, etc. The composition of this waste is generally paper, cardboard, cloth, plastics, rubber, glass, and metals. Commercial waste is collected by private haulers and city compactor trucks for transport to area landfills.
- (3) INSTITUTIONAL** - Institutional waste are those waste materials discarded from schools, prisons, hospitals, and the like. The composition of institutional waste is a combination of residential and commercial waste. The following table lists some of the institutions which produce waste in the region. Waste from the various entities is generally collected by local city compactor trucks and transported to area landfills. Hospitals and medical offices typically utilize private haulers for medical wastes who transport and dispose of it out-of-region. There are no military bases within the DETCOG region.

<b>TABLE 14 - INSTITUTIONAL SOLID WASTE CONTRIBUTORS</b>	
<b>INSTITUTION</b>	<b>LOCATION</b>
AMI Medical Center	Nacogdoches, Nacogdoches County
Memorial Hospital	Nacogdoches, Nacogdoches County
Memorial Medical Center	Lufkin, Angelina County
Woodland Heights Medical Center	Lufkin, Angelina County
Trinity Memorial Hospital	Trinity County
Houston County Hospital	Crockett, Houston County
San Augustine Memorial Hospital	San Augustine, San Augustine County
Tyler County Hospital	Woodville, Tyler County
Memorial Medical Center	Livingston, Polk County
Mary Dickerson Hospital	Jasper, Jasper County
Jasper Memorial Hospital	Jasper, Jasper County
Texas Department of Criminal Justice - Duncan Transfer Unit	Diboll, Angelina County
Texas Department of Criminal Justice - Eastham Unit	Lovelady, Houston County
Texas Department of Criminal Justice - Goodman Transfer Unit	Jasper, Jasper County
Texas Department of Criminal Justice - Terrell Unit	Livingston, Polk County

Texas Department of Criminal Justice - Lewis Unit	Woodville, Tyler County
Newton County Contract Transfer Facility (Criminal Justice)	Newton, Newton County
Diboll Pre-Release (Private Prison)	Diboll, Angelina County
Stephen F. Austin University	Nacogdoches, Nacogdoches County
Lufkin State School	Angelina County
Area Schools	Throughout the DETCOG Region

**(4) RECREATIONAL** - Recreational waste are those waste materials discarded from parks, special events, and the like. The composition of the waste is food waste, paper, metal, cardboard, plastics, rubber, and glass. Located in the Region are three major lakes, Lake Sam Rayburn, Toledo Bend, and Lake Livingston. Also, portions of four National forests which include Angelina National Forest, Davy Crockett National Forest, Sabine National Forest, Sam Houston National Forest, as well as a portion of the Big Thicket National Preserve are located within the region. Other recreational sites would include the major rivers, municipal parks, and zoos. Typically the local, State, and Federal governments are responsible for waste collection and disposal in these areas.

**(5) MUNICIPAL SLUDGE** - Municipal sludge from area water and wastewater treatment plants is disposed of in three ways: the sludge is either land applied under existing permits, hauled to area landfills for disposal, or mixed with yard waste for composting. Cities or utility districts are responsible for disposing of sludges generated at their treatment facilities.

Local entities are working on reducing I/I into the headworks to reduce grit and sand to reduce the sludge volume. Regulations setting limits on heavy metal and toxins are closely monitored and limits are set for industrial discharges. This will limit the amount of these elements in sludges.

Sludge generated in the region is either land applied or disposed of in area landfills both in and out of the Region.

<b>TABLE 15 - SLUDGE/SEPTAGE GENERATED BY DETCOG ENTITIES</b> (Source of Information: Questionnaires responded to by all entities)						
COUNTY NAME	PUBLIC ENTITY NAME	NAME OF FACILITY	AMOUNT OF SLUDGE	POPULATION SERVED	ANNUAL DISPOSAL COST	FINAL DISPOSAL SITE
Angelina	City of Diboll	City of Diboll WWTP	329 cy/year	5,400	\$3,000	Angelina County Waste Management Center
	City of Huntington	City of Huntington WWTP	336 cy/year	2,000	\$7,022	Angelina County Waste Management Center
	City of Lufkin	Lufkin Water Pollution Control Plant	Not provided	Not provided	Not provided	Land application site

Houston	City of Crockett	Northside WWTP -and- Southside WWTP	400 cy/year	7,000	-	Angelina County Waste Management Center -or- Marketed and distributed as Class "A"
	City of Grapeland	Grapeland WWTP	None: Pond system	840	n/a	n/a
	City of Kennard	Kennard WWTP	None	450	n/a	n/a
	City of Lovelady	City of Lovelady WWTP	None yet: Pond system	620	n/a	n/a
Jasper	City of Kirbyville	Kirbyville WWTP	3.8 cy/year	816	<i>no response</i>	Newton County Regional Waste Complex
Nacogdoches	City of Cushing	Cushing WWTP	<i>no response</i>	630	\$3,000	Haul to Nacodoches WWTP
	City of Garrison	Garrison WWTP	15 cy/year	800	\$1,100	City of Nacodoches Landfill
	City of Nacogdoches	City WWTP	14,400 cy/year	30,000	\$130,000	City of Nacodoches Landfill
		City Surface Water Treatment Plant	<i>no response</i>	35,000	\$150,000 (contract removal)	City of Nacodoches Landfill (however, have recently received a land application permit)
Newton	Newton	City Sewer Treatment Plant	2,880 cy/year	2,450	\$1,718	Newton County Regional Waste Complex
Polk	City of Corrigan	Corrigan WWTP	50 cy/year	2,500	\$400	Angelina County Waste Management Center
	City of Goodrich	Goodrich WWTP	<i>no response</i>	243	<i>no response</i>	<i>no response</i>
Sabine	City of Hemphill	City of Hemphill WWTP	96 cy/year	1,106	<i>no response</i>	Angelina County Waste Management Center
		City of Hemphill Surface Water Treatment Plant	<i>no response</i>	1,106	<i>no response</i>	Transferred to Sabine River Authority Land Application Site
San Jacinto	City of Shepherd	Shepherd WWTP	96 cy/year	2,029	<i>no response</i>	Santek - Polk County Waste Management Landfill
Shelby	City of Center	City of Center East Bank WWTP	1,152 cy/year	5,000	\$56,500	Angelina County Waste Management Center



		City of Center-Pinkston Surface Water Treatment Plant	Sludge is hauled from lagoons on an as needed basis	7,000	<i>no response</i>	Angelina County Waste Management Center
		City of Center-Mill Creek Surface Water Treatment Plant	Sludge is hauled from lagoons on an as needed basis	<i>no response</i>	<i>no response</i>	Angelina County Waste Management Center
	City of Huxley	Huxley WWTP	3.2 TONS/yr	<i>no response</i>	\$1,300	Land applied
	City of Timpson	Timpson WWTP	37.16 TONS/yr	1,094	\$42,500	Royal Oaks Landfill in Jacksonville, Texas
Trinity	City of Groveton	Groveton WWTP	<i>no response</i>	<i>no response</i>	<i>no response</i>	Racetrack has only been cleaned once. Sludge disposed of at Sam Houston State University.

Tyler	City of Colmesneil	Colmesneil WWTP	<i>no response</i>	<i>no response</i>	<i>no response</i>	<i>no response</i>
	City of Woodville	Woodville WWTP	1,080 cy/year	4,500	\$21,500	Angelina County Waste Management Center

Almost all of the sludge generated within DETCOG is disposed of in the DETCOG region. Identified exceptions to this are the City of Timpson and the North Angelina County Regional Wastewater Facility which transport their dried sludge to the Royal Oaks Landfill in Jacksonville (Cherokee County). The City of Groveton has disposed of its sludge at Sam Houston State University in Huntsville (Walker County) on one occasion.

Septage from residential septic tanks is generally hauled by private individuals to local wastewater treatment plants for disposal. Similarly, many small, package-type wastewater treatment plants serving schools and communities produce sludge which is hauled in liquid form to larger local wastewater treatment plant for disposal. These sludges are accounted for in the above table. Several of the treatment plants in the area provide dumping pits for the disposal of septage into the collection system.

**(6) INDUSTRIAL/NON-HAZARDOUS** - Industrial wastes are those waste materials discarded from industrial operations or derived from manufacturing operations, including construction, fabrication, light and heavy manufacturing, refineries, chemical plants, lumbering (paper mills), mining, power plants, and so forth.

**(7) HAZARDOUS WASTES** - Hazardous waste produced in the region is transported out of the region for disposal. Area landfills do not except hazardous wastes. Producers of hazardous waste are responsible for disposal.

**4. WASTE MANAGEMENT SYSTEM** - The following sections provide a short listing of the existing solid waste facilities located within the region. This information was obtained from responses to questionnaires and from the Year 2000 Update to the Regional Solid Waste Plan.

**a. ROLES, RESPONSIBILITIES, AND INSTITUTIONAL ARRANGEMENTS** - Several entities have roles, responsibilities, and institutional arrangements in the Deep East Texas Council of Governments area. These entities include Federal, State, County, and City governments. The following sections describe each entity's roles and responsibilities in the disposal and collection of solid waste in the region.

**(1) FEDERAL** - The Environmental Protection Agency (EPA) is responsible for developing and implementing Federal regulations and guidelines. The EPA works closely with State agencies monitoring waste disposal sites throughout the State.

The "Subtitle D" regulations implemented by the EPA have had a major impact on landfills in the DETCOG region. Over the last decade the "Subtitle D" regulations forced many landfill closures simply because most of the then operating landfills were unable to meet the requirements of the regulations. In 1992 there were approximately 27 landfills operating in the DETCOG Region, now there are only four.

The Federal Aviation Administration (FAA) has review of solid waste sitings with regard to airport locations. See Figure 2-6 in Appendix 5 for the location of airports in the DETCOG region.

Other Federal agencies which may or may not become involved in different aspects of solid waste management are the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Forest Service, the Department of Interior, the Texas Historical Commission, and the National Park Service. These agencies would be involved in any areas which may have an effect on the environment or wetlands areas.

- (2) **STATE** - The State agency currently responsible for regulating, permitting, monitoring, and enforcement of solid waste disposal is the Texas Commission on Environmental Quality (TCEQ).

Other State agencies which may become involved are the Texas General Land Office and the Texas Water Development Board. The Texas General Land Office was established as the lead agency on recycling and education programs by S.B. 1340. The Texas General Land Office is currently studying the availability of recycling markets in the State. The Texas Water Development Board currently has a financial assistance program available to aid communities wishing to construct solid waste management facilities.

Other financial assistance, review, and impact on solid waste in Texas may come from the Department of Commerce, Texas Parks and Wildlife, Texas Department of Transportation, Railroad Commission, Texas Department of Health, River Authorities, and Texas Historic Commission

- (3) **COUNTIES** - Appendix 3 provides details regarding the waste activities of local County governments. The following table provides a tabulation of data received from the various counties indicating their involvement in solid waste disposal or collection. This chart shows the type of involvement in which each entity is responsible, whether in collection, transfer, or final disposal.

<b>TABLE 16 - COUNTY SOLID WASTE SERVICES</b> <b>(Source of Information: Questionnaires responded to by entities)</b>				
<b>ENTITY</b>	<b>COLLECTION</b>	<b>TRANSFER</b>	<b>DISPOSAL</b>	<b>OTHER</b>
Angelina	No	No	Yes	None
Houston	No*	No	No	None
Jasper	Yes**	Yes**	No	None
Nacogdoches	No	Yes***	No	None
Newton	No	Yes	No	None
Polk	No	Yes***	Yes	None
Sabine	No	No	No	None
San Augustine	No Response	No Response	No Response	No Response
San Jacinto	No Response	No Response	No Response	No Response
Shelby	No	No	No	None
Trinity	No Response	No Response	No Response	No Response
Tyler	No	Yes	No	None

\* In its response to the questionnaire, Houston County noted that its current means of financing solid waste operations was via "private contractor for the County". They listed Hutto Collection Service as operating in all of Houston County except for the far southern area. Buell Collection Service was noted as operating in the southern area.

\*\* In its response to the questionnaire, Jasper County noted that Precincts 3 and 4 of Jasper County provided solid waste collection services because of their compactor sites.

\*\*\* Operates citizen collection stations.

Over the past decade the Subtitle D requirements have forced the closure of most of the local county-run landfills. In recent years some counties have become involved in solid waste collection. In all counties there are also private contractors collecting solid waste from individual homes and businesses. This effort is a direct relationship between the contractors and the customers, and usually does not involve the counties. Additionally, some Counties are actively involved in the operation of transfer stations and citizen collection stations.

- (4) **MUNICIPALITIES** - Appendix 3 provides details regarding the waste activities of local city governments. The following table provides a tabulation of data received from the various cities indicating their involvement in solid waste disposal or collection. This chart shows the type of involvement in which each entity is responsible, whether in collection, transfer, or final disposal.

<b>TABLE 17 - CITY SOLID WASTE SERVICES</b>				
<b>(Source of Information: Questionnaires responded to by all entities)</b>				
<b>ENTITY</b>	<b>COLLECTION</b>	<b>TRANSFER</b>	<b>DISPOSAL</b>	<b>OTHER</b>
Broaddus	No Response	No Response	No Response	No Response
Center	No*	No	No	None
Chester	No	No	No	None
Chireno	No Response	No Response	No Response	No Response
Coldspring	No Response	No Response	No Response	No Response
Colmesneil	No	No	No	None
Corrigan	Yes	No	No	None
Crockett	Yes	Yes	No	None
Cushing	Yes	No	No	None
Diboll	No*	No	No	None
Garrison	No	No	No	None
Goodrich	No	No	No	None
Grapeland	Yes	No	No	None
Groveton	No*	No	No	None
Hemphill	No*	No	No	None
Hudson	No Response	No Response	No Response	No Response
Huntington	No*	No	No	None
Huxley	No	No	No	None
Jasper	Yes	Yes	No	None
Joaquin	No Response	No Response	No Response	No Response
Kennard	No	Yes**	No	None
Kirbyville	Yes	No	No	None
Livingston	No Response	No Response	No Response	No Response
Lovelady	No*	No	No	None
Lufkin	Yes	No	No	None
Nacogdoches	Yes	No	Yes	None
Newton	Yes	Yes	No	None
Oakhurst	No Response	No Response	No Response	No Response
Onalaska	No	No	No	None

Pineland	No Response	No Response	No Response	No Response
Point Blank	No	No	No	None
San Augustine	Yes	Yes	No	No
Shepherd	No	No	No	None
Tenaha	No	No	No	None
Timpson	No	No	No	None
Trinity	No Response	No Response	No Response	No Response
Woodville	Yes	Yes	No	None
Zavalla	No	No	No	No

\* City contracts with a private hauler.

\*\* Citizen Collection Station.

The only city currently operating a landfill is the City of Nacogdoches. As of 2001, the City of Nacogdoches projected the landfill to have a service live of 37.7 years, which would put its closure date to be the around the Year 2038.

The above table indicates that most of the larger cities handle their own collection and transfer operations. The smaller cities generally do not provide for solid waste collection, however private haulers are readily available for waste pickup in most communities throughout the region.

In the past the The City of Center (Permit No. 1689) operated its incineration facilities handling 40 tons per day of municipal solid waste or 30 tons per day of medical waste. Although still permitted, latest information indicates that the facility is no longer in operation. The City of Livingston has ceased operation of a solid waste incineration facility.

Several cities, such as the City of Lufkin, are permitted to dispose of sludge from their wastewater treatment plants by land application. Most who do not land apply or landfill, haul wet sludge to larger treatment plants, who in turn add it to their own treatment process and account for it in their final disposal method.

**(5) RIVER AUTHORITIES** - The Angelina & Neches River Authority (ANRA) operates a composting facility in the ETCOG Region. The facility processes 1.3 million pounds of sludge from municipal wastewater treatment plants annually in the production of a soil amendment. ANRA has indicated a desire to study the feasibility of locating a similar facility in the DETCOG Region during the next 3 to 5 years.

**(6) SCHOOLS, NON-PROFIT ORGANIZATIONS, MUSEUMS AND LIBRARIES** - The regional independent school districts and non-profit organizations such as churches and the Angelina Beautiful Clean Program can play important roles in public education and awareness. These entities can aid in the education of children and parents about issues such as recycling, waste reduction, and the proper disposal of household hazardous waste.

The Angelina Beautiful Clean (ABC) Organization currently sponsors several programs which promote recycling and waste minimization. One of the programs is an information exchange program developed to aid in the minimization of industrial waste by identifying waste from industries which may be used in other processes. The ABC also provides various types of literature, mailouts, market information, and other types of information on

recycling and waste reduction.

A video has been produced on recycling to be used by public schools and others.

- (7) **PRIVATE FIRMS** - Several private firms provide solid waste collection services to individual home and businesses in the DETCOG region. Many individuals also collect solid waste in the region. These individuals generally transport the waste to the various landfills or transfer stations in the area via pickup truck with sideboards. The majority of the firms transport the waste collected to landfills within the DETCOG area. The following table provides a list of private firms in the DETCOG region and the areas in which they operate.

<b>TABLE 18 - PRIVATE COLLECTION SERVICES</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
Alfred Powell	Solid waste	Lake Sam Rayburn Area
Browning Ferris, Inc.	Solid waste	Cities of Groveton, Lovelady, and Trinity
Buel Collection Service	Solid waste	Southern Houston County
Bubba Gibson	Solid waste	North Newton County
Calvin Roberts	Solid waste	Joaquin and vicinity in Shelby County
Clarence Frick	Solid waste	Licensed by Sabine County
Clifford Gray	Solid waste	Licensed by Sabine County
Clyde Adams Trucking	Solid waste, septic tank waste, and medical ash	Cities of Center, Timpson, and Tenaha; Portions of Angelina and Shelby County
D & J Heavy Equipment	Solid waste	Jasper County
Don's General Services (Don Tate)	Solid waste	City of Hemphill (Sabine County)
East Texas Sanitation	Solid waste	Nacogdoches County
Gary's Sanitation	Solid waste	Tyler County
Gary Tolar	Solid waste	Polk and Tyler Counties
Hancock Sanitation	Solid waste	Licensed by Sabine County
Hollis Sanitation	Solid waste	Zavalla area (Angelina County)
Houston County Scrap and Salvage	Solid waste	Cities of Crockett, Kennard, Lovelady, Latexo, Grapeland, Porter Springs, and Diboll.
Hutto Garbage Service	Solid waste	Rural areas of Houston County
J. T. Lowe	Solid waste	Licensed by Sabine County
Joe Hensarling	Solid waste	Woodville area (Tyler County)

Jerry B. Beasley	Solid waste	Rural Trinity and Polk Counties
Litter Gitter (Barbara Hale)	Solid waste	Nacogdoches and Shelby Counties
Matteson Sanitation	Solid waste	Lufkin and Nacogdoches areas (Angelina and Nacogdoches Counties)
Mike Shaw	Solid waste	Licensed by Sabine County
Mike's Trash	Solid waste	Goodrich Area (Polk County)
Olen Crumpler	Solid waste	Southeast Tyler County
Osburn Sanitation	Solid waste	Angelina and Nacogdoches County areas, including Huntington, Hudson, Bald Hill, Central, and Rocky Hill.
Padon Sanitation Services	Solid waste	Cities/communities of Milam, Hemphill, Pineland, Bronson, Six Mile, and Fairmont. Also services several marinas in Sabine County
Pineywoods Sanitation	Solid waste	City of Huntington (Angelina County)
Ponders Rural Garbage	Solid waste	Angelina County
Pro Star Waste	Solid waste	Cities and communities in Polk, San Jacinto, and Trinity Counties (except Livingston). Contract with Alabama-Coushatta Indian Reservation and several independent school districts.
Ruth Winters	Solid waste	Northern Tyler County
Santek	Solid waste	Operates Citizen Collection Stations and Landfill in Polk County
Servco	Solid waste	Joaquin and northeast Shelby County
Shorty's Trash	Solid waste	Goodrich area (Polk County)
Sunflower Sanitation	Solid waste	Areas near Colmesneil (Tyler County)
Tatums Sanitation Service/Piney Woods Sanitation	Solid waste	Cities and communities in Angelina, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, Trinity, and Tyler counties.
Universal Demolishing	Solid waste	Based in Lufkin (Angelina County)
Waste Management Environmental	Solid waste	Jasper County
Waste Services of Texas	Solid waste	Cities and communities in Polk and San Jacinto Counties.
Western Waste of Texas, LLC	Solid waste	Landfill in Newton County

Thirty haulers of septage in the DETCOG region were identified by respondents to the questionnaires. These are listed in the table below:

<b>TABLE 19 - PRIVATE COLLECTION SERVICES FOR SEPTAGE</b> (Source of Information: Questionnaires responded to by all entities)
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<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
A & W Septic Tank Cleaning	Grease trap and septic tank waste	Tyler County
A-1 Johnny Portable Toilets	Septic tank wastes and portable chemical toilet wastes	Angelina, Cherokee, Henderson, Houston, Nacogdoches, Newton, Polk, Rusk, Sabine, San Augustine, San Jacinto, Tyler, and Walker Counties
A-1 Septic <i>(Mr. L.J. Alexander)</i>	Grease trap and septic tank waste	Nacogdoches County
A-Vac Septic Service <i>(Mr. Cecil Hopkins)</i>	Grease trap and septic tank waste	Nacogdoches County
All America Plumbing	Grease trap and septic tank waste	Kirbyville area (Jasper County)
Ansley's Disposal Service	Grease trap and septic tank waste	Shelbyville area (Shelby County)
B. C. Powledge's Septic Systems	Grease trap and septic tank waste	Goodrich area (Polk County)
Blackwell Septic	Grease trap and septic tank waste	Nacogdoches and Shelby County
Clyde Adams Trucking	Solid waste, septic tank waste, and medical ash	Cities of Center, Timpson, and Tenaha; Portions of Angelina and Shelby County
Ellis' Septic Tank Services	Grease trap and septic tank waste	Angelina, Houston, and Trinity Counties
Envirovac Inc. <i>(Benjamin Winston)</i>	Grease trap and septic tank waste	Nacogdoches County
Green Sewer Service <i>(Mr. Levi Green)</i>	Grease trap and septic tank waste	Nacogdoches County
Jasper Septic Tank Cleaning	Grease trap and septic tank waste	Jasper County
Jones Septic Tank and Drain Service <i>(Mr. Lamar Jones)</i>	Grease trap and septic tank waste	Nacogdoches County
Keith Blackwell	Grease trap and septic tank waste	Nacogdoches County
Lake Area Septic Sludge (LASSO)	Grease trap and septic tank waste	Jasper County
Leggett Plumbing	Grease trap and septic tank waste	Polk County
Longhorn Septic Service	Grease trap and septic tank waste	Polk County
Mid Lake Septic Service <i>(Mr. Jeffery Cummings)</i>	Grease trap and septic tank waste	Nacogdoches and Sabine Counties
Mike Northern	Grease trap and septic tank waste	Northern Newton County
National Grease/U.S. Liquids <i>(Ms. Kerry Shehan)</i>	Grease trap and septic tank waste	Nacogdoches County



Oliver Plumbing <i>(Mr. Mike Oliver or Mr. John Young)</i>	Grease trap and septic waste	Angelina, Houston, Jasper, Nacogdoches, Polk, San Augustine, and Trinity Counties
Olympic Waste Services	Grease trap and septic tank waste	Area near the City of Center (Shelby County)
Perkin's Septic Service <i>(Mr. Mark Perkins)</i>	Grease trap and septic tank waste	Nacogdoches County
PWI Beaumont Texas	Grease trap and septic tank waste	Tyler County
Reliable Wastewater Management <i>(Mr. Kevin Dillon)</i>	Grease trap and septic tank waste	East Texas area
Safety Kleen	Grease trap and septic tank waste	Jasper, Kirbyville, and Buna (Jasper County)
Stine & Stine Assoc. <i>(Mr. Shannon Stine)</i>	Liquid wastes and chemical toilet wastes	Nacogdoches County
TRACO Waste Management, Inc.	Grease trap and septic tank waste	Shelby County
Velma Young	Grease trap and septic tank waste	Timpson area (Shelby County)
Weaver Dozer and Septic <i>(Mr. Jerry Emerson)</i>	Grease trap and septic tank waste	Nacogdoches County

All of the responses indicated that medical facilities in the DETCOG region rely heavily on private companies to collect and dispose of their medical wastes. The following table summarizes the haulers identified by name in the completed questionnaires and provides a description of their current areas of operation.

<b>TABLE 20 - PRIVATE COLLECTION SERVICES FOR MEDICAL WASTES</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
America 3CI	Medical Waste	Medical facilities in Cushing (Nacogdoches County), Center (Shelby County), and Woodville (Tyler County)
Ameritech	Medical Waste	Medical facilities in Onalaska (Polk County) and Center (Shelby County)
High Horizon, Inc.	Medical Waste	Medical facilities in Newton County

The following haulers were identified in the questionnaires as accepting used oil or oil related wastes.

<b>TABLE 21 - PRIVATE COLLECTION SERVICES FOR OIL AND RELATED WASTES</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
Baxter Oil	Used oil	Picks up used oil from Kirbyville, Buna, and transfer station in Jasper County

H & W Petroleum Co.	Liquid wastes	Jasper County, City of Lufkin
Parks Lease and Vacuum Service	Drilling mud, produced water, salt water	Areas in Jasper, Newton, Orange, and Harding Counties. In cities and communities including Buna, Kirbyville, Trout Creek, Silsbee, and Warren.

More information on sludge, septage, medical wastes, and used oil is provided in the sections below.

- (8) CONTRACTS AND RATES** - The Cities of Groveton and Lovelady have contracted with Browning-Ferris Industries (BFI) for the collection and disposal of solid waste. San Jacinto County has contracted with Western Waste Industries of Texas, Inc. for the collection and disposal of solid waste within the County.

The rate per residential or residential unit for collection varies throughout the DETCOG region. The following table summarizes the residential rates listed by various entities who responded to the questionnaires:

<b>TABLE 22 - RESIDENTIAL COLLECTION RATES</b>			
<b>(Source of Information: Questionnaires from responsive entities)</b>			
<b>HAULER GROUP</b>		<b>NAME OF HAULER</b>	<b>MONTHLY RESIDENTIAL RATE</b>
Government Entities	Angelina County	City of Diboll <i>(Contract with hauler)</i>	Not provided
		City of Hudson <i>(City Contract with hauler)</i>	Not provided
		City of Huntington <i>(Contract with Pineywoods Sanitation)</i>	Not provided
		City of Lufkin	\$14.53
	Houston County	City of Crockett	Not provided
		City of Grapeland	\$12.00
		City of Lovelady <i>(Contract with BFI)</i>	\$10.25
	Jasper County	Jasper County (Precincts 3 & 4)	No monthly rate, based on unit cost of \$1 per bag -or- \$2 per appliance
		City of Jasper	\$15.75
		City of Kirbyville	\$11.75
Nacogdoches County	City of Cushing	\$11.00	

	City of Nacogdoches	Curbside (1 Cart) = \$13.34 Curbside (2 Carts) = \$20.01 Curbside (3 Carts) = \$30.81  Apartment, Condominium, Townhouse - separately metered for other utilities = \$10.93 per unit per month  Apartment, Condominium, Townhouse, Mobile Home or Manufactured Housing Park - master metered all utilities = \$4.10 per cubic yard of waste collected per collection (with 1-6 pick-ups per week)
Newton County	City of Newton	\$11.91
Polk County	City of Corrigan	\$12.00
	City of Livingston	Not provided
Sabine County	City of Hemphill	\$12.25
Shelby County	City of Center	\$12.25
Trinity County	City of Groveton (Contract with BFI)	Not provided
	City of Trinity (Contract with BFI)	Not provided
Tyler County	City of Woodville	\$11.25
Private Haulers	Padon Sanitation Service	\$18.00

The residential rate varies from \$10.25 per month to \$18.00 per month. Based on the responses to the questionnaires, the average appears to be about \$12.79 per month. Very few private haulers responded to the questionnaire and most who did respond stated that they do not have a standard rate structure.

<b>TABLE 23 - COMMERCIAL COLLECTION RATES</b> (Source of Information: Questionnaires from responsive Government entities)		
<b>NAME OF HAULER</b>		<b>COMMERCIAL RATE</b>
Angelina County	City of Diboll (Contract with hauler)	Not provided
	City of Hudson (City Contract with hauler)	Not provided
	City of Huntington (Contract with Pineywoods Sanitation)	Not provided
	City of Lufkin	Commercial = \$5.90 per cubic yard Roll Off = \$10.29 per cubic yard

Houston County	City of Crockett	Not provided
	City of Grapeland	Not provided
	City of Lovelady (Contract with BFI)	Not provided
Jasper County	Jasper County (Precincts 3 & 4)	Not provided
	City of Jasper	Not provided
	City of Kirbyville	Not provided
Nacogdoches County	City of Cushing	Not provided
	City of Nacogdoches	<p><u>Commercial Roll-Out Carts:</u>  1 Cart = \$22.78 (once/week) or \$45.57 (twice/week)  2 Carts = \$22.78 (once/week) or \$45.57 (twice/week)  3 Carts = \$34.18 (once/week) or \$68.35 (twice/week)  4 Carts = \$45.57 (once/week) or \$91.13 (once/week)</p> <p><u>Monthly Dumpster Pick-Up Charges:</u>  3 Yd* = \$57.69  6 Yd* = \$115.37  8 Yd* = \$153.83  20 Yd* = \$384.59 or \$420.35 (compacted)  30 Yd* = \$576.89 or \$630.52 (compacted)  40 Yd* = \$710.67 or \$840.59 (compacted)  *assumes one pick-up per month. Two pick-ups doubles the price and three triples it.</p>
Newton County	City of Newton	<p><u>Dumpsters:</u>  4 Yd = \$30/month  6 Yd = \$45/month  8 Yd = \$60/month</p>
Polk County	City of Corrigan	Not provided
	City of Livingston	Not provided
Sabine County	City of Hemphill	Not provided
Shelby County	City of Center	Not provided
Trinity County	City of Groveton (Contract with BFI)	Not provided
	City of Trinity (Contract with BFI)	Not provided
Tyler County	City of Woodville	Not provided

The rate per month for commercial units vary depending upon bin size and frequency of pickup.

Collection contracts allow for and discuss the collection of special waste and hazardous waste. However, the special collection service will be at the sole discretion and upon such terms and conditions as specified by the Contractor. The San Jacinto County's contract does not allow for collection of any special waste or hazardous waste materials. The disposal of special or hazardous waste by the Contractor is prohibited under the County's contract with Western Waste.

- b. **WASTE DISPOSAL AND CAPACITY** - The following table provides a listing of the existing landfills in the DETCOG region. Also, illustrated is the approximate closure date of each landfill.

TABLE 24 - EXISTING LANDFILLS				
COUNTY	OPERATOR	MSW No.*	ESTIMATED REMAINING LIFE	PROJECTED CLOSURE DATE
Angelina	Angelina County	2105	32.1 Years	2033
Nacogdoches	City of Nacogdoches	720	37.7 Years	2038
Newton	Western Waste of	2242	37.3 Years	2039
Polk**	Santek Environmental	1384	38 Years	2040

\* From the TCEQ OPRR Waste Permits Division *Active Municipal Solid Waste Facilities* listing, dated July 21, 2003.

\*\* This information was obtained from the entity's response to the questionnaire. The most recent landfill report (2001) indicated that the remaining life of the permitted sections of the landfill is 2.23 years. However, correspondence with the entity indicates that the facility is currently in the process of expanding its permit and that the information contained in the table above reflects that expansion.

Full implementation of Subtitle D has greatly impacted the landfills that have remained open and the flow of waste within the region. The closure of many landfills operating at the time of the initial plan has contributed to increased disposal for the landfills still in operation. In addition, the closures have also resulted in greater distances between open landfills. This has resulted in problems regarding transportation logistics and/or costs to local governments and citizens. The Year 2000 update to the Solid Waste Plan noted that inaccessibility of landfills in many rural areas has resulted in increased illegal dumping within the region.

The elimination of the state tire program has dramatically increased the problems related to waste tires. The legal disposal of waste tires has placed a burden on the local governments and citizens, while the illegal dumping of waste tires has grown significantly. The potential for serious health hazards resulting from mosquitoes breeding in water standing in waste tires is a concern for the region, especially in view of the recent outbreaks of West Nile Virus.

Three of the landfills that remained open are located along the U.S Highway 59 corridor and are operated by Angelina County, the City of Nacogdoches and Polk County. The landfill operated by Waste Management was also opened in Newton County. These landfills are briefly described in below:

- (1) **ANGELINA WASTE MANAGEMENT CENTER** - The Angelina County Waste Management Center landfill is located approximately 6 miles south of the City of Lufkin in central Angelina County. Due to the extensive landfill closings over the last decade, the Angelina County WMC has become a regional landfill serving portions of the surrounding counties. According to the most recent annual report this facility received approximately 122,680 tons of solid waste in Fiscal Year 2001. The remaining disposal capacity of the landfill was 3,939,541 tons. Although the 2001 projected closure date was 2033,

ACWMC has recognized that the annual disposal rate is increasing, indicating that the closure date will be sooner. ACWMC is considering commissioning a study to determine the feasibility of expanding to adjacent lands.

**(2) CITY OF NACOGDOCHES MUNICIPAL SOLID WASTE LANDFILL** - The City of Nacogdoches owns and operates its own landfill. Several communities and cities in the area dispose of waste at this facility. There is a recycling drop-off area located at the front gate of the landfill that accepts newspaper, magazines, phone books, cardboard, No. 1 and No. 2 plastic, clear and colored glass, used motor oil, and used oil filters. Tires, metal, and white goods are also recycled in the landfill disposal area. The landfill site is 321 acres with approximately 110 acres of useable space remaining. In the Year 2002, approximately 62,888 tons were disposed of in their landfill, leaving 2,157,592 tons of available disposal capacity.

**(3) POLK COUNTY WASTE MANAGEMENT LANDFILL** - The Polk County Waste Management Landfill is located approximately 3.5 miles west of the City of Leggett in central Polk County. In addition, five Citizen Collection Stations are located throughout the County. The landfill and collection stations are all owned by the County and operated by Santek Environmental. At the present time, one of the Citizen Collection Stations accepts paper goods for recycling. All of the Stations accept white goods and aluminum cans for recycling at no charge. Facilities are also provided there for the collection of used oil and filters.

The landfill accepts residential solid waste, commercial solid waste, sludge from wastewater treatment plants, dead animals, and tires. It does not accept grease trap wastes, septic tank wastes, water treatment plant sludge, or batteries.

The landfill received 48,991 tons of MSW in 2001, leaving 109,176 of permitted disposal capacity. They have applied for a permit amendment which will give them capacity through 2040.

**(4) NEWTON COUNTY REGIONAL SOLID WASTE COMPLEX** - The Newton County Regional Solid Waste Complex is located in south Newton County near the City of Deweyville. Limited information was provided by the facility, but they have reported that they have applied for a permit amendment which will give them disposal capacity through 2039.

Because of the impossibility of determining how much of which counties contribute to each landfill and the subsequent application of growth rates, no attempt was made to more accurately project a closure date for each landfill. It is generally recognized by DETCOG as well as the individual landfills that the closure dates will be sooner than reported in their annual reports. Because of the assumed moderate, steady growth rates, the actual closure dates should not be much sooner than listed above. It should also be noted that the landfill operators closely monitor their projected closure dates. Based upon recent permit amendment requests and considerations of feasibility studies, the operators are responding appropriately, in a timely fashion. It is expected that all of the DETCOG region's disposal facilities are sufficient to provide more than 10 years of remaining disposal capacity.

**c. WASTE TRANSFER, STORAGE, TREATMENT, AND PROCESSING** - Some of the counties and cities in the region operate citizens collection stations and/or registered transfer stations for solid waste collection. Waste from these stations is transported to the area landfills for disposal. The following sections briefly address the existing transfer stations and citizen's collection stations located within the DETCOG region:

- (1) **TRANSFER STATIONS** - There are eight registered transfer stations in the DETCOG Region. The following information is provided for six of those facilities based on information obtained from the previous plans and from questionnaire responses.

<b>TABLE 25 - EXISTING TRANSFER STATION CAPACITIES</b>			
<b>OPERATOR</b>	<b>TYPE OF WASTE ACCEPTED</b>	<b>GENERAL SERVICE AREA</b>	<b>CAPACITY (TONS)</b>
City of Jasper	Household/Construction/Oil	Jasper, Newton, Sabine Counties	100
City of San Augustine	Household/Construction	San Augustine County	75
City of Woodville	Household	Woodville	25
City of Pineland	Household	Pineland/Hemphill	25
Tyler County	Household	Tyler County	25
Newton County	Household	Newton County	25

According to 30 TAC §330.4, no person may cause, suffer, allow, or permit any activity of storage, processing, removal, or disposal of any municipal solid waste unless such activity is authorized by a permit or other authorization from the State.

However, 30 TAC §330.4 (d) notes that a permit is not required for a municipal solid waste transfer station facility that is used in the transfer of municipal solid waste to a solid waste processing or disposal facility from: (1) a municipality with a population of less than 50,000; (2) a county with a population of less than 85,000; (3) a facility used in the transfer of municipal solid waste that transfers or will transfer 125 tons per day or less; or (4) a transfer station located within the permitted boundaries of a solid waste Type I, Type II, Type III, or Type IV facility.

It should be noted herein that according to the most recent census data, all of the cities in the DETCOG Region have populations of less than 50,000 people. Similarly, all of the Counties within the DETCOG Region have populations less than 85,000 people. This indicates that transfer stations located within the region are not required to be permitted. However, they do have to be registered.

A request for registration for sites or facilities exempted from permits shall be submitted in a format provided by the executive director of the Texas Commission on Environmental Quality (TCEQ). According to 30 TAC §330.65, construction of such a facility can not begin until the registration has been issued by the executive director. Operations can not begin until the registration has been issued and a pre-opening inspection is conducted by TCEQ staff. Even though such facilities are not required to go through the entire permitting process, as noted in 30 TAC §330.65 (d), the application for registration shall include Part I of the permit application for transfer stations. As such, elements to be submitted in the registration process includes the following items:

- (1) Documentation of the population to be served along with documentation of the incoming waste;
- (2) The applicant shall submit a site plan including the general design criteria, a site layout plan (signed and sealed by a professional engineer), and a location map (showing site boundaries, access to public roadway, site access control features, and site drainage features). Design criteria for the site includes water pollution control provisions, air pollution and ventilation, storage requirements, fire protection, noise pollution and

screening, site drainage, and site facilities (offices, storage area design, etc).

(3) Land use narrative including a description of the surrounding land use within a half mile shown on a topographic map, documentation of local government approval/acceptance of the site location, a landowners list and land ownership map for all land located within 500 feet of the project site. In addition, the applicant and TCEQ shall conduct a public meeting in the local area to describe the proposed action to the general public.

(4) Site operating plan shall include (as a minimum) a description of the waste data, the facility operation, operational characteristics of the equipment, facility maintenance, safety provisions, emergency procedures, fire protection, sanitation, facility rules, operating hours, litter control procedures, and vector control procedures. The plan shall also address alternate procedures or disposal procedures of the waste in the event that the facility becomes inoperable for periods longer than 24 hours. The solid waste data shall include an estimate of the amount of solid waste received daily, the maximum amount of solid waste to be stored, and maximum and average lengths of time that solid waste is to remain on the site, and the intended destination of the solid waste received at this site.

(5) Legal description of the property, including the book and page number of the county deed records of the current property owner shall be submitted, including a metes and bounds description and drawing of the site (signed and sealed by a registered professional land surveyor).

(6) Evidence of competency shall be submitted by the applicant in the form of a list of all Texas solid waste sites which the applicant has operated within the past 10 years, along with previous affiliations with other organizations engaged in solid waste activities.

(7) Evidence of financial assurance shall be provided for all facilities registered.

(8) Statement of applicant providing documentation of the person signing the application meets the requirements of TAC § 305.44.

The following table summarizes the current registered sites within the DETCOG Region. This information was obtained from the questionnaire responses and from the most recent update to the Regional Solid Waste Plan:

<b>TABLE 26 - REGISTERED MUNICIPAL SOLID WASTE TRANSFER STATIONS</b> (SOURCE: QUESTIONNAIRE RESPONSES AND YEAR 2000 PLAN UPDATE)			
<b>OPERATOR</b>	<b>COUNTY LOCATION</b>	<b>DATE PERMITTED</b>	<b>REGISTRATION NUMBER</b>
City of Woodville	Tyler County	January 24, 1994	40013
City of San Augustine	San Augustine County	February 15, 1994	40024
City of Jasper	Jasper County	June 3, 1994	40044
Tyler County	Tyler County	June 30, 1994	40038
Houston County Salvage	Houston County	July 30, 1996	40033
City of Pineland	Sabine County	October 31, 1996	40054
City of Crockett	Houston County	July 31, 1998	40114
Newton County	Newton County	January 12, 1999	40106

In response to the questionnaires, several of the private haulers in Trinity County



indicated a need for a centrally located transfer station in that area. At the time of this writing, many of the County's small private haulers are making enquiries regarding the possibility of establishing a public or privately owned registered transfer station.

- (2) CITIZEN'S COLLECTION STATIONS** - According to the Texas Administrative Code, a citizen collection station is defined as "*A facility established for the convenience and exclusive use of residents (not commercial or industrial users or collection vehicles). The facility may consist of one or more storage containers, bins, or trailers.*"

According to the questionnaire responses, there are Citizen Collection Stations located in Nacogdoches, Houston, and Jasper Counties. In addition, the Year 2000 update to the Solid Waste Report noted that San Jacinto County also has citizen collection stations, but no additional information is available because they did not respond to the questionnaire.

- d. WASTE COLLECTION AND TRANSPORTATION SERVICES** - Collection in the DETCOG region is performed by cities, private firms and individuals. Several types of waste transfer vehicles are in operation in the region today. Types of transfer vehicles are front and rear loaders, bin roll off, transfer tractor, and sewer vacuum trucks. Some cities currently use compactor curbside vehicles, sometimes incorporating automatic receptacle emptying methods. In rural areas, many small private haulers utilize trailers and small trucks to collect sacked solid waste and transport it to transfer stations or disposal sites.

Refer to Section A.4.a. for more specific information regarding solid waste collection and transportation services provided in the DETCOG region by both governmental and private entities. Figure 5 indicates the locations of existing landfills, transfer stations, and citizen's collection stations. Questionnaire responses indicate that there are Citizen Collection Stations located in Nacogdoches, Houston, and Jasper Counties. In addition, the Year 2000 update to the Solid Waste Report noted that San Jacinto County also has citizen collection stations, but no additional information is available because they did not respond to the questionnaire. Figure 5 indicates the locations of existing landfills, transfer stations, and citizen's collection stations.

- e. RECYCLING SERVICES** - Recycling efforts are being made throughout the DETCOG region. The City of Crockett owns and operates a recycling center and markets and distributes class "A" compost. The City of Jasper collects used oil. The City of Center collects cardboard, aluminum cans, plastic bottles, and oil. Polk County collects white goods, aluminum cans, oil and filters, and newspapers. Land application of wastewater treatment plant sludge is performed by Hemphill, Nacogdoches, and Lufkin. The Nacogdoches landfill collects newspaper, magazines, telephone books, cardboard, 1 & 2 plastic, clear & colored glass, metal, white goods, used oil & filters, tires, and performs chipping/mulching.

The City of Lufkin operates a Recycling Center where recyclables are collected, separated, and packaged for shipment. The recyclables are then picked up by distributors at the center for transport to various locations. The types of waste recycled are aluminum cans, metal products, glass, newspaper, plastics, and general paper products. The City of Lufkin has also implemented a curb-side recycling program.

In addition to the recycling efforts listed above, some recycling is accomplished by private entities involving the purchase of the recyclable materials (such as cardboard, aluminum cans, steel, and scrap metal) from individuals. Construction and demolition materials are also likely to be recycled without ever entering the public solid waste stream. There are also indications that vigilance is being practiced to find ways to recycle for profit. For example, the Angelina and Neches River Authority has plans to develop a wastewater sludge composting facility in the DETCOG region during the next three to five years. The City of Lufkin is also investigating the possibility of developing, marketing and distributing a Class "A" compost

from wastewater treatment plant sludge.

As noted previously, the Angelina and Neches River Authority currently operates a sludge composting facility in Cherokee County that produces a Class "A" compost for sale to the public. ANRA has worked to develop the market for that product, and recently the demand has reached the point to where that facility is selling all of the product that it produces. Spurred by the success of that facility, ANRA is studying the feasibility of establishing a similar facility in the DETCOG region.

None of the questionnaire responses from local entities indicated that the illegal dumping of used tires or motor oil was a significant problem. This would seem to indicate that the mechanisms that are currently in place for handling tire collection and used oil are adequate at this time. More information regarding these items is presented in Section g. below.

- f. HOUSEHOLD HAZARDOUS WASTE SERVICES** - The Texas Commission on Environmental Quality (TCEQ) defines Hazardous Household Wastes as "A solid waste generated in a household by a consumer, which except for the exclusion provided in 40 Code of Federal Regulations, {261.4 (b)(1)}, would be classified as a hazardous waste". Some items that would be considered household hazardous waste would be paint, pesticides, cleaners, solvents, polishes, and fertilizers.

No known local programs for disposal of household hazardous wastes currently exist in the region. Based on the response to questionnaires and contact with various entities, it appears that there are currently no firm plans for developing household hazardous waste collection programs. However, several of the cities are currently discussing the possibility of such a service.

The Texas Agricultural Extension Service, Texas Department of Agriculture, and the Texas Commission on Environmental Quality work together as part of the Agricultural Waste Pesticide Program to organize regional waste pesticide collections Statewide. These collections are free. The program also accepts household hazardous wastes.

It should be noted that the disposal or illegal dumping of household hazardous waste was not specifically indicated to be a particular problem from any of the entities who responded to the questionnaires. This would seem to indicate that the collection mechanisms that are currently in place are meeting the needs of the region.

**g. OTHER SOLID WASTE SERVICES**

- (1) MEDICAL WASTES** - In the past, most of the larger hospitals in the DETCOG region incinerated medical waste at privately owned facilities that were located at the individual hospitals. The City of Center incinerator was permitted to handle either 40 tons per day of municipal solid waste or 30 tons per day of medical waste. Responses to questionnaires indicate that the City no longer operates this incinerator, having instead sold it to Ameritech Resource Recovery, Inc. Ameritech provided no response to the questionnaire. Based on the information gathered, we assume that the incinerator is still being used for medical waste.

However, responses to the questionnaires indicate that the majority of medical wastes are no longer being incinerated in the region. All of the responses indicated that medical facilities rely heavily on private companies to collect and dispose of their medical wastes. The following table summarizes the haulers identified by name in the completed questionnaires and provides a description of their current areas of operation.

**(2) TIRE COLLECTION SERVICES** - In Texas, the TCEQ oversees the collection, processing, recycling, and disposal of over 19 million discarded tires per year. Management of discarded tires is necessary in order to prevent fires and control disease vectors (such as rats and mosquitos). Any entity that stores more than 500 scrap tires must register with the TCEQ. Transporters of scrap tires must also register with the TCEQ if they collect them for other businesses. Good reusable tires are not considered to be scrap tires if they are stacked, sorted, classified, or otherwise organized for sale. Good used tires that are stored in stockpiles are classified as scrap tires. Scrap tires must be hauled by a registered transporter to an authorized facility (either a permitted landfill or registered scrap tire facility). All facilities must keep manifest (cradle-to-grave) records showing the disposition of these scrap tires.

There are several companies in the DETCOG region that currently pick up used tires for a fee. Usually, the tires are collected, cut in halves, separated by radial and polyester types, stacked cut side down and stored. Several processes for recycling used tires are currently being studied in the State of Texas. Some of the processes included the use of tires in road construction, as fuels, and as a source of steel and oil byproducts. The Angelina County Waste Management Center Landfill (Angelina County), the City of Nacogdoches Landfill (Nacogdoches County), and the Santek Environmental Landfill (Polk County) accept used tires if they have been shredded or halved in order to reduce landfill volume lost due to air pockets in the tires. Only permitted landfills, permitted tire disposal sites, or permitted tire processing facilities are allowed to accept used tires. Regulation requires that tires must be halved prior to disposal in a landfill.

Several entities within the DETCOG region periodically organize tire collection drives in which citizens may bring their scrap tires to a central location. The tires are then disposed of at a registered site.

For example, at the time of this writing the City of Lufkin had just completed a tire collection program in which a day was set aside for citizens to bring in their tires. The event was very successful, largely due to community involvement: a local radio station came out and held a live broadcast, free pizza was provided by a local restaurant, etc. The event resulted in the collection of 1,753 used tires. These tires were then transported out of region (to Midlothian) for recycling.

**(3) INCINERATORS** - The use of the incineration process prolongs the life of area landfills by reducing the volume of waste disposed. However, their use also brings air-quality issues to the forefront. According to the Year 2000 update to the Regional Solid Waste Plan, there are two sites within the DETCOG Region that are permitted for solid waste incinerators. These are Polk County and the City of Center.

The City of Center's facility is identified as a Solid Waste Incinerator Facility without Energy Recovery, MSW No. 1689. The City of Center formerly used its incinerator to reduce its solid waste to an ash prior to landfilling. The City also utilized that process to produce steam for industrial purposes. Previous report data indicates that this incinerator has a capacity of approximately 40 tons of municipal solid waste per day or 30 tons per day in medical waste. Responses to the questionnaires indicated that the City of Center has sold its incinerator to Ameritech Resource Recovery, Inc. The current operational status of this incinerator is unknown.

The Polk County facility located in the City of Livingston is not currently being operating.

**(5) USED OIL** - Texas law prohibits the dumping of used oil on land, into sewers, or into waterways. The State has also banned used oil filters from being placed in or accepted

for disposal in landfills.

Used oil in the area is collected by registered haulers. This used oil is generally collected free of charge and is refined for use as a heating fuel. However, most service stations in the area will accept used oil from individuals.

- (6) **SOLID WASTE GRANTS** - In accordance with Section 361.014 of the Texas Health and Safety Code, the Texas Commission on Environmental Quality awards approximately \$11 million per year in grants to regional and local governments for municipal solid waste management projects through the State's Regional Solid Waste Grants Program. The TCEQ is directed by the Legislature to dedicate a portion of the revenue generated by State fees on landfills to grants for regional and local municipal solid waste projects. The TCEQ allocates these funds to local Councils of Government, who in turn use the funds to develop a closed landfill inventory, conduct regional coordination and planning activities, and administer grant programs to provide funding for regional and local municipal solid waste projects.

Entities eligible for funding under this program include cities, counties, public schools, special law districts, and councils of government. Several project categories are eligible for funding. The following is a list of grants awarded by the Deep East Texas Council of Governments in cooperation with the TCEQ for the period between 1996 and 2002.

<b>TABLE 27A - SOLID WASTE GRANTS FOR FISCAL YEAR 1996</b>		
<b>NAME</b>	<b>PURPOSE</b>	<b>AMOUNT</b>
Nacogdoches County	Local Enforcement	\$18,495.03
Nacogdoches ISD	Source Reduction	\$17,325.20
Polk County	Local Enforcement	\$18,351.18
Angelina County	Local Enforcement	\$18,500.00
San Jacinto County	Recycling	\$18,500.00
<b>TOTAL</b>		<b>\$91,171.41</b>

<b>TABLE 27B - SOLID WASTE GRANTS FOR FISCAL YEAR 1997</b>		
<b>NAME</b>	<b>PURPOSE</b>	<b>AMOUNT</b>
City of Crockett	Source Reduction	\$10,449.00
Jasper County	Citizens' Collection	\$20,500.00
City of Nacogdoches	Source Reduction	\$20,426.00
Nacogdoches County	Local Enforcement	\$20,500.00
Polk County	Local Enforcement	\$20,500.00
Sabine County	Local Enforcement	\$20,500.00
<b>TOTAL</b>		<b>\$112,875.00</b>

<b>TABLE 27C - SOLID WASTE GRANTS FOR FISCAL YEAR 1998</b>		
<b>NAME</b>	<b>PURPOSE</b>	<b>AMOUNT</b>
City of Crockett	Source Reduction	\$6,749.00
City of Center	Source Reduction	\$25,000.00
Central Heights ISD	Recycling	\$24,547.00
Jasper County	Local Enforcement	\$25,000.00
City of Nacogdoches	Landfill Scales*	\$25,000.00
San Jacinto County	Citizens' Collection	\$25,000.00
<b>TOTAL</b>		<b>\$131,296.00</b>

\* The grants program no longer funds landfill scales.

<b>TABLE 27D - SOLID WASTE GRANTS FOR FISCAL YEAR 1999</b>		
<b>NAME</b>	<b>PURPOSE</b>	<b>AMOUNT</b>
City of Center	Source Reduction	\$25,000.00
Houston County	Local Enforcement	\$25,000.00
Sabine County	Local Enforcement	\$25,000.00
Tyler County	Local Enforcement	\$25,000.00
City of Crockett	Source Reduction	\$25,000.00
<b>TOTAL</b>		<b>\$125,000.00</b>

<b>TABLE 27E - SOLID WASTE GRANTS FOR FISCAL YEAR 2000</b>		
<b>NAME</b>	<b>PURPOSE</b>	<b>AMOUNT</b>
City of Center	Source Reduction	\$20,000.00
City of Crockett	Source Reduction	\$20,000.00
Angelina County	Local Enforcement	\$20,000.00
City of Nacogdoches	Source Reduction	\$20,000.00
Southwest Texas State University	Closed Landfill Inventory	\$80,000.00
<b>TOTAL</b>		<b>\$160,000.00</b>

<b>TABLE 27F - SOLID WASTE GRANTS FOR FISCAL YEAR 2001</b>		
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NAME	PURPOSE	AMOUNT
Newton County	Citizens' Collection	\$20,000.00
Nacogdoches County	Citizens' Collection	\$21,308.13
City of Crockett	Source Reduction	\$21,225.47
San Augustine County	Local Enforcement	\$20,000.00
Polk County	Local Enforcement	\$20,000.00
Sabine County	Local Enforcement	\$20,000.00
City of Center	Local Enforcement	\$20,000.00
<b>TOTAL</b>		<b>\$142,533.60</b>

TABLE 27G - SOLID WASTE GRANTS FOR FISCAL YEAR 2002		
NAME	PURPOSE	AMOUNT
Jasper County	Citizens' Collection	\$20,000.00
Tyler County	Source Reduction	\$20,000.00
Houston County	Local Enforcement	\$20,000.00
Polk County	Local Enforcement	\$20,000.00
San Augustine County	Local Enforcement	\$20,000.00
<b>TOTAL</b>		<b>\$100,000.00</b>

According to the above information, \$862,876 in grants have been awarded for solid waste projects in the DETCOG region over the seven year period from 1996 to 2002. The following table summarizes the total amount of funding directed toward specific programs or purposes for that period:

TABLE 28 - FUND DISTRIBUTION BY PROGRAM (1996-2002)		
PROGRAM OR PURPOSE	TOTAL FUNDING	PERCENTAGE (%)
Local Enforcement	\$376,846.21	43.7
Source Reduction	\$231,174.67	26.8
Citizens' Collection	\$106,808.13	12.4
Closed Landfill Inventory	\$80,000.00	9.3
Recycling	\$43,047.21	5.0
Landfill Scales*	\$25,000.00	2.9

\* The grants program no longer funds landfill scales.

As indicated in the above table, the largest portion of those grants (\$376,846.21 or 43.7% of the total) went towards local enforcement programs. These projects contribute to the prevention of illegal dumping of municipal solid waste, and may include programs that investigate illegal dumping problems, educate the public on illegal dumping laws, and prosecute violators. The above data indicates that County Governments accounted for the majority of the recipients, with Polk and Sabine Counties receiving the largest percentages of the local enforcement funding. In descending order, the following entities received the indicated percentage of the enforcement funding over the seven year time frame: Polk County, 20.9%; Sabine County, 17.4%; Houston County, 11.9%; San Augustine County, 10.6%; Nacogdoches County, 10.3%; Angelina County, 10.2%; Jasper County, 6.6%; Tyler County, 6.6%; and the City of Center, 5.3%.

Approximately 26.8% of the total funding was directed toward source reduction programs. The majority of these funds were directed to the Cities of Center, Crockett, and Nacogdoches. In descending order, the following entities received the indicated percentages of the total source reduction funding: City of Crockett, 36.1%; City of Center, 30.3%; City of Nacogdoches, 17.5%; Tyler County, 8.6%; and Nacogdoches Independent School District, 7.5%.

Approximately 12.4% of the total funding was directed to counties for citizen collection programs. This includes projects to construct collection facilities in areas which are not adequately served by haulers or do not have access to proper disposal facilities. Included are the construction of citizen's collection stations and municipal solid waste transfer stations that do not require a permit. Out of the funding for this item, approximately 37.9% of the total was directed to Jasper County. Similarly, approximately 23.5% was directed to San Jacinto County, about 19.9% to Nacogdoches County, and about 18.7% to Newton County.

About 5% of the total funding went toward recycling programs. These funds were divided between San Jacinto County and the Central Heights Independent School District, which is located in Nacogdoches County.

Approximately 9.3% of the total funds (or \$80,000) was directed to the Geography Department of Southwest Texas State University (in the Capital Area Council of Governments Region) for work on the required Closed Landfill Inventory (included as an attachment to this report update). Similarly, approximately 2.9% of the total funding (or \$25,000) was directed to the City of Nacogdoches for landfill scales (this was in FY 1998, please note that the grant program no longer funds landfill scales)..

The total distribution of grant funding by county in descending order was: Nacogdoches County, 19.4%; Houston County, 14.9%; Shelby County, 10.4%; Polk County, 9.1%; Sabine County, 7.6%; Jasper County, 7.6%; Tyler County, 5.2%; San Jacinto County, 5.0%; San Augustine County, 4.7%; Angelina County, 4.5%; Newton County, 2.3%; and Trinity County, 0%. The remaining 9.3% went to Southwest Texas State University, which is located outside of the DETCOG region in Hays County (Capital Area Council of Governments Region) for the preparation of the closed landfill inventory.

- h. LITTER AND ILLEGAL DUMPING** - Information regarding illegal dumping was obtained by sending questionnaires to all of the county and city governments within the DETCOG region. The following section provides an overview of the information provided from those entities who responded:

- (1) ANGELINA COUNTY** - In response to the questionnaire, illegal dumping and uncovered

trucks hauling solid waste are indicated to be problems throughout the County. Another solid waste problem noted was that many people are not using the landfill to properly dispose of their solid waste, especially with regard to waste materials generated from construction, demolition, and roofing activities.

- **LUFKIN** - In the response to the questionnaire, illegal dumping was noted as being a problem in most areas of the City. The Angelina Beautiful Clean program specifically targets this problem.

(2) **HOUSTON COUNTY** - In its response to the questionnaire, Houston County indicated that illegal dumping was a problem in the rural areas of the county. Various creek crossings and ditches are subject to illegal dumping. The County is aware that illegal dumping is a problem in the Ash Community and in the Box Creek areas, but also notes that there are other areas in similar rural settings that suffer illegal dumping from time to time. Another noted solid waste problem was that a lack of funds exists for education and enforcement.

- **CROCKETT** - The City of Crockett indicated that illegal dumping is a problem in the area, although there are programs specifically targeting this issue.

(3) **JASPER COUNTY** - None of the respondents indicated that illegal dumping was a problem.

(4) **NACOGDOCHES COUNTY** - In its response to the questionnaires, the County listed illegal dumping as being a problem in the northwest and northeastern portions of Nacogdoches County. The County currently has programs in place to target the problem.

(5) **NEWTON COUNTY** - In its response to the questionnaire, the County noted that illegal dumping is a problem in areas scattered throughout the County. The County provides a deterrent to this by having its constables follow up on illegal dumping.

(6) **POLK COUNTY** - The county did not respond to the questionnaire.

- **ONALASKA** - The City of Onalaska noted several problems regarding solid waste disposal in the area. Illegal dumping was noted as being a problem, especially along Gentry Drive (Old Groveton Road) and in any commercial dumpster that was not locked up after dark. Solid waste generated by flea markets and uncovered trucks hauling solid waste were also noted as being problems.

When asked for ideas regarding solid waste in the area, the City indicated the desire for more education awareness programs, civilian code enforcement, and the Keep Texas Beautiful program to improve situations.

(7) **SABINE COUNTY** - In its response to the questionnaire, Sabine County noted that illegal dumping was a county-wide problem, even though there are programs in place to specifically target it. Problems with uncovered trucks hauling solid waste were also noted.

The presence of illegal dump sites was specifically noted as being a significant problem in the county, especially along rural dirt roads. The County further noted that it cleans up illegal sites when it cannot identify the person or persons responsible. However, clean-ups are done only when funds are available. The County currently has no means of



financing solid waste operations.

- (8) **SAN AUGUSTINE COUNTY** - None of the respondents indicated that illegal dumping was a problem.
- (9) **SAN JACINTO COUNTY** - None of the respondents indicated that illegal dumping was a problem.
- (10) **SHELBY COUNTY** - Illegal dumping was indicated to be a problem in the Shelby County area, especially along county roads and dirt roads that dead end in wooded areas. In the response to the questionnaire it was indicated that some private landowners in the area may be allowing these activities to take place on their properties.
- (11) **TRINITY COUNTY** - Trinity County did not respond to the questionnaires. However, it is known that the County has recently enacted an ordinance aimed at eliminating illegal dumping in rural areas. Many of the small private haulers in the area are making enquiries regarding the possibility of establishing a public or privately owned registered transfer station in a centrally located area.
  - **GROVETON** - Illegal dumping and uncovered trucks hauling waste are both indicated to be problems that occur within the city limits. The City currently has programs in place that target those problems.
- (12) **TYLER COUNTY** - Tyler County noted that illegal dumping is a problem in all portions of Tyler County, especially along county roads in areas with no garbage collection service. Programs are in place that specifically target dumping.

- i. **FACILITY SITING** - The map in Appendix 1 shows the locations of the existing permitted MSW landfills in the DETCOG region.

All of the existing landfills in the DETCOG region are well established facilities. No new landfills are currently proposed. Local government concerns about the impacts of a facility on residents and the community will be considered if new facilities are proposed or when the existing facilities are expanded. An environmental assessment will be required during the preliminary planning stage of any new facility. Such assessment will consider all applicable impacts and determine whether the benefits will outweigh the costs of such facility.

- j. **CLOSED MSW LANDFILL INVENTORY** - §363.064(a)(1) of the Texas Health and Safety Code, as amended by Senate Bill 1447, 76<sup>th</sup> Texas Legislature requires the Deep East Texas Council of Governments to complete an inventory of the closed municipal landfills for the region. This listing must include either the exact boundaries of the landfills or, if the exact boundaries are not known, a map showing the best approximation of those boundaries. Land use and land owner information must be documented where available.

On March 1, 2000, DETCOG contracted with Southwest Texas State University to complete the required inventory. The Geography Department of Southwest Texas State University compiled the Closed Landfill Inventory for the DETCOG region. That inventory is included as Appendix 2.

- k. **LOCAL SOLID WASTE MANAGEMENT PLANS** - No local solid waste management plans currently exist.

## **B. REGIONAL GOALS, OBJECTIVES, AND ACTION PLAN**

- 1. **SUMMARY OF NEEDS AND PROBLEMS**- In order to assess the current and future solid waste

management needs, consideration was given to the various alternatives listed below. Parameters such as cost factors, environmental and regulatory constraints, and public acceptability were considered.

**a. CURRENT & FUTURE SOLID WASTE MANAGEMENT SYSTEM FACILITY NEEDS**

- (1) WASTE MINIMIZATION** - Waste minimization is normally thought of as avoidance of use which will lead to waste by-products. As such, scaling back of use by consumers, and longer life of products are means of accomplishing this goal.

Historically, most efforts to reduce the amount of waste generated have lagged far behind the push to recycle. However, more agencies are beginning to recognize that source reduction techniques can have significant impacts on solid waste and that they can often be implemented at far less cost than recycling.

In order for waste minimization to have significant impact on generation, it must be practiced by large segments of the general public. This is most likely to occur only through a significant change in philosophy on the part of the general public, or through direct intervention by State or Federal Government either through taxing, direct legislation, or other such approaches. The only possibility for an impact in this area by a regional group would appear to be through a continuing publicity campaign. Emphasis must be placed on the minimization aspect since attitudes do not change overnight.

The regional approach on this publicity campaign could be coordinated through the DETCOG staff and in cooperation with the various news media, radio stations, or marketing consultants of the region. The effort should incorporate an advisory committee consisting of representatives from the above groups.

- (2) SOURCE SEPARATION AND COMPOSTING** - Another method involves source separation, the separating of waste from the waste stream which does not need to go to the landfill. The most likely components of this approach include the handling of yard waste and corrugated cardboard.

Yard waste should either be composted by the generator at the home or kept in a separate system to be composted. The majority of corrugated cardboard is normally generated by grocery and large commercial stores. This is often recycled by the generator or by their parent company. However, if they are not currently in such a program, then provision should be made for the separation and binding of this material at the store, and for it to be transferred to a recycling center.

The Angelina and Neches River Authority (ANRA) intends to study the feasibility of developing a composting facility in the DETCOG region within the next 3 to 5 years. At the present time, ANRA operates a composting facility in Cherokee County. That facility is currently the largest composting operation in the immediate vicinity and is mentioned herein in order to provide a comparison of the potential for similar operations in the DETCOG area. That facility is called the Neches Composting Facility and it receives an annual total of 1.3 million pounds of biosolids from five participating municipalities and nearly 5,000 cubic yards of tree trimmings and wood material from one industry. The facility generates between 7,000 and 10,000 cubic yards of Class A rated compost per year. This product is then sold as a soil amendment. The facility began operations in August 2000 and ANRA has developed a significant local market for the product, so much so that by 2002 the facility was able to sell all the final product produced. The balance of the product was sold to the public, but TxDOT has also developed a specification for this compost and significant quantities have also been sold to contractors

for use on highway construction projects.

**(3) EXISTING SUPPORT FACILITIES** - The following sections attempt to summarize the most prominent needs of the existing solid waste facilities in the DETCOG region:

- Collection Systems - One of the most prominent problems in the region involves the collection of solid waste. Prior to the implementation of Subtitle D regulations, there were as many as six "dumps" per county. At that time East Texans were accustomed to having at least a county dump within 5 to 8 miles of their homes and being able to haul their own solid waste to those locations without an unreasonable amount of difficulty. However, the new regulations have resulted in the number of landfills and dumps in the area dropping from more than 50 sites to only 4 landfills. At the present time, some citizens are located over 50 miles from the nearest disposal site. As a result, the majority of the citizens in the DETCOG region depend on solid waste haulers to pick up their solid waste and transport it to a disposal site. Many of the cities in the region provide these services, and private haulers service much of the remaining area. However, there are still some rural locations in which the population is relatively scattered, which makes it more expensive and difficult for private haulers to operate. Indications are that there are some isolated areas in which collection is not available or cost prohibitive to the residents with lower incomes. It is generally felt that much of the illegal dumping in the more distant areas of the region is directly related to the increased cost or difficulty of rural residents to dispose of their wastes. If enforcement of illegal dumping laws is limited or non-existent in the area, many residents give in to the temptation to "dump" their trash at convenient areas along rural roads. Quite often, this would be located either in U. S. Forests or in the middle of large privately owned timber companies.

A logical assumption is that if residents are that scattered, then "dumping" of waste is bad but would not really have a drastic impact on the environment since only a fewer number of people would be involved. However, the cumulative effect is important to the area and can have a devastating impact on the environment. Ultimately, wastes not properly disposed of lead to pollution of the environment. The impact of isolated small dump sites increases as runoff or groundwater infiltration from those sites combines with those from thousands of other locations. The appeal of East Texas is primarily the natural beauty of the area and its people. The aesthetics of the area decrease rapidly in proportion to the amount of pollution not dealt with, particularly that of solid waste.

In order to alleviate that problem, several citizens collection stations and registered transfer stations have been strategically established in the region at centralized locations. However, conversations with various operators indicates that many of the transfer stations are currently operating at a loss, which in turn will require an increase in fees or some other means of financial augmentation.

The majority of the DETCOG region appears to be now served by collection entities, including both public and private haulers. Appendix 4 outlines the large amount of land in National Forests, in reservoirs, and owned by large private timber companies. These usages tend to result in "pockets" of isolated population. These "pockets" may end up being areas that cannot be picked up cost-effectively on an individual basis. Should such areas be identified, it may be possible for counties to enact some sort of a franchising approach, and thereby cause collection entities to agree to pick up in these "pockets" in order to be

allowed to pick up in more densely populated areas where the financial return would be more beneficial.

Based on the questionnaires, many of the regional entities currently have programs in place to battle illegal dumping. However, many respondents indicated that dumping continues to be a problem in many portions of the region. It appears to be especially pronounced in the areas that are furthest away from the existing landfills.

- Recycling Centers - According to the *Solid Waste Management in Texas Strategic Plan 2001-2005* the official recycling rate for Texas is 35% based upon a 1997 estimation, as a result of a voluntary statewide survey of recyclers coordinated by the Texas Commission on Environmental Quality through the Recycling Coalition of Texas. A full accounting of the recycled materials has not been accomplished so that the region's recycling rate can be determined. However, it is apparent that recycling efforts are being made throughout the region. Recycling efforts which have been confirmed within the region are:

The City of Lufkin began operating a 60 ton/day recycling plant in early 1995. It processes recyclables from Lufkin, Nacogdoches, and any entity in the region who will deliver to the plant. The facility is located in South Lufkin on FM 819. According to Mr. Derek Brown, the Recycling Superintendent, the facility processed the following amounts of recyclables for the fiscal year beginning October 2001 to October 2002: 3,953,788 lbs of cardboard; 1,969,107 lbs of newspaper; 46,955 lbs of No. 1 Plastic; 46,913 lbs of No. 2 Plastic; 24,835 lbs of Mixed Color Plastic; 31,866 lbs of aluminum cans; 27,815 lbs of shredded office paper; and 8,098,000 lbs of wood and yard waste. He noted that the wood and yard waste is processed and sold to International Paper in Mansfield, Louisiana for use as fuel. He said that at the present time they are able to sell all of their recyclables to vendors. The facility is presently in the process of discussing partnership possibilities with local haulers in hopes of extending further recycling opportunities to rural residents.

The City of Crockett owns and operates a recycling facility to process recyclables for the City only. The center also markets and distributes class "A" compost.

The City of Jasper collects used oil.

The City of Nacogdoches landfill collects newspaper, magazines, telephone books, cardboard, No. 1 and No. 2 plastic, clear and colored glass, metal, white goods, used oil and oil filters, and tires. It also performs chipping and mulching operations.

The City of Center collects cardboard, aluminum cans, plastic bottles, and oil.

Polk County collects white goods, aluminum cans, used oil and oil filters, and newspapers.

Land application of wastewater treatment plant sludge is performed by the Cities of Hemphill, Nacogdoches, and Lufkin

In addition to the recycling efforts listed above, some recycling is accomplished by private entities. This involves the purchase of recyclable materials (such as aluminum cans, steel, and scrap metal) from private individuals. Construction

and demolition materials are also likely to be recycled without ever entering the public solid waste stream. We have been unable to verify that all of this recycling is included in the State's 35% estimation. If so, it is likely that the DETCOG region's recycling could be consistent with the State's estimation.

We have seen signs that vigilance is being practiced in finding ways to recycle for profit. In example, the City of Lufkin is investigating the possibility of developing, marketing and distributing a class "A" compost from wastewater treatment plant sludge. From a pure assessment, this would result in an increase of their solid waste generation rate by transitioning from land application to compost. By being disposed of by land application, the sludge is not considered solid waste. By composting, the sludge will enter the solid waste equation as a recycled item.

- Transfer Stations - Shortly after the original Regional Solid Waste Management Plan was written in 1992, the majority of the landfills in the region were closed, leaving only four in operation today. It was recognized at that time that hauling solid waste to the remaining disposal sites could become very expensive, depending on the location collected and length of haul. It was further understood that these increased costs would be passed on to the user and that the less densely populated and/or most remote areas could be heavily penalized due to the increased hauling costs. As such, several registered transfer stations were incorporated into the region. The idea behind the transfer stations was to strategically place them in centralized locations in order to provide a more cost effective transport of waste from the more remote regions of the DETCOG area.

At the present time there are eight registered municipal solid waste transfer stations located in the DETCOG region. Hard data is sparse for most of them. However, detailed data was obtained from the Angelina County Waste Management Center with regard to those stations that transport waste solely to that facility for disposal. Based on that data, the following estimates were made for the listed transfer stations:

*Houston County Area* - It is estimated that approximately 41% of Houston County's population has their solid waste hauled to the Houston County Salvage transfer station and the City of Crockett's transfer station.

*Jasper County Area* - It is estimated that 23% of Jasper County's population has their waste hauled to the City of Jasper's transfer station.

*San Augustine County Area* - It is estimated that about 29% of the population of San Augustine County has its solid waste transported to the City of San Augustine's transfer station.

*Tyler County Area* - The most recent data indicates that there are two transfer stations in Tyler County, registered to the City of Woodville and to Tyler County. It is estimated that 24% of the County's population has their solid waste transported to these facilities.

The solid waste is then transported from those facilities to the Angelina County Waste Management Center for disposal. Based on the above estimates, it appears that the transfer stations are an effective means of transferring solid waste from a large number of residents to the existing landfills.

- Incineration and Energy Recovery - Incineration can be used either to simply reduce the volume of waste (normally to about 10% of the original volume) or it can be coupled with an energy recovery system to capture the energy released by the incineration of the waste. There are several methods to capture the energy, such as utilizing the thermal energy for space or process heating, mechanical energy, and electrical generation. Steam, which is a primary energy product of solid waste incineration, depends heavily on the following considerations.

- (1). Proximity to customers, generally within 1-2 miles.
- (2). Value must be competitive with alternatives.
- (3). Quantity, since if not all needs are met consistently, back-up fossil fuel fired boilers will be required.
- (4). Operating Schedule which will conform to the steam customer's needs
- (5). Reliability, such that the service will be non-interruptible.
- (6). Diurnal and seasonal fluctuations must be limited and must be predictable

The industries located in the region which require steam include food, lumber and wood, furniture, paper, fabricated metal products, machinery, electrical machinery, transportation equipment, and miscellaneous manufacturing. In the case of larger users, such as paper mills, the industry normally has already secured a low cost steam.

Concerns regarding incineration include air quality requirements, which have become enormously important in recent years. Aesthetic concerns also arise, because emission stacks often draw opposition because of their visibility. The ash from incineration must also be disposed of at a landfill.

When the original Regional Solid Waste Management Plan was written in 1992, the only incinerator being used for municipal waste in the DETCOG region was located in the City of Center in Shelby County. At that time it had an operating contract to sell steam to a private poultry processing plant. Responses to the questionnaires indicate that the City sold the incinerator to Ameritech in the recent past. Its current operating status is unknown.

- Composting - According to Senate Bill 1340, Composting is defined as *"the controlled biological decomposition of organic materials through microbial activity. Depending on the specific application, composting can serve as both a volume reduction and a waste treatment measure. A beneficial organic composting activity is an appropriate waste management solution that shall divert compatible materials from the solid waste stream that cannot be recycled into higher grade uses and convert these materials into a useful product that can serve as a soil amendment or mulch."* The definition for recycling includes the statement, *"Except for mixed municipal solid waste composting, that is, composting of the typical mixed solid waste stream generated by residential, commercial, and/or institutional sources, recycling includes the composting process if the compost material is put to beneficial use."*

This appears to mean that if the solid waste is first sorted to separate materials for higher grade uses with the remainder composted and the resulting composted material being put to beneficial use, then this composting is considered to be recycling. Composting mixtures of yard waste and wastewater treatment sludges are especially beneficial as fertilizing agents.

Composting can be accomplished in four main ways:

*In-vessel*, which provides a tightly controlled environment with rapid action on the part of the microorganisms since the environment is maintained perfectly for their growth and reproduction.

*Basic open composting*, in which a larger amount of land is used, composting is uncovered, and the factors of temperature and moisture control play an increasing role in limiting somewhat the growth of the organisms.

*Modified covered composting*, accomplished under a roof and generally with microorganisms (superbugs) which have been acclimated to municipal solid waste and which grow and reproduce at a higher rate than unacclimated microorganisms. Any microorganism colony at a composting facility will, over a period of time, acclimate to the nature of the particular solid waste they are breaking down, and effectively become "superbugs" themselves.

*Backyard composting* using methods and kits to compost small amounts.

As noted above, ANRA operates the Neches Composting Facility just outside of the DETCOG region in Cherokee County. That facility began operations in the Year 2000 and processes 1.3 million pounds of biosolids per year into a Class A rated biosolids product. This product is sold as a soil amendment. By the Year 2002, local demand was such that all final product from that facility was sold.

ANRA is also pursuing the possibility of establishing a regional or sub-regional wastewater sludge composting facility within the DETCOG region. This facility will be similar to the Neches Composting Facility and will service multiple municipalities. ANRA is considering commissioning a feasibility study to evaluate the need for such facility.

The City of Lufkin is currently investigating the possibility of developing, marketing and distributing a class "A" compost from wastewater treatment plant sludge.

- Sanitary Landfills - There are currently four permitted sanitary landfills in the region. Three of these landfills are located along the U.S. Highway 59 corridor and are owned by the City of Nacogdoches, Angelina County, and Polk County. The other landfill is located in Newton County and is owned and operated by Waste Management. Based on existing waste flows, all of these facilities are expected to have remaining operating lives in excess of thirty years.

No new landfill facilities are planned at this time. However, the Angelina County Waste Management Center is currently conducting a feasibility study for expanding their existing landfill. This project is expected to move forward over the next 2 years.

**(4) APPARENT TRENDS BASED ON QUESTIONNAIRE INFORMATION** - From the Data Collected, the following observations apply to the trends of solid waste collection and transfer:

Private haulers tend to deliver to the nearest landfill or transfer station, unless the hauler has ownership interest in landfill. Peak disposal rates may dictate otherwise.

Sludge from wastewater treatment plants tends to go to the nearest landfill.

Although there are some exceptions, at a minimum, a landfill tends to service the entire county that it is in.

Similarly, a transfer station tends to serve the entire county in which it is in.

A hauler with an ownership interest in a landfill delivers to that landfill, unless peak disposal rates dictate otherwise

The responses received from haulers accounts for collection from roughly 33% of the residential customers and a proportional number of commercial customers. Use of this data for extrapolating solid waste generation data would be skewed because the smallest haulers serving the most rural areas generally did not respond.

## **b. SPECIAL REQUIREMENTS, PROBLEMS, OPPORTUNITIES AND ALTERNATIVES**

**(1) SPECIAL REQUIREMENTS** - Requirements of the Deep East Texas Council of Governments have been established to meet the current and future waste management needs. The goals of the DETCOG correspond with those of the State of Texas. In the report to the 77<sup>th</sup> Legislature entitled *Solid Waste Management in Texas - Strategic Plan 2001-2005 (Appendix 3)*, the following hierarchy of solid waste management methods was listed. This was referenced back to the Texas Solid Waste Disposal Act (Chapter 361, Texas Health and Safety Code) which established the following priorities for the management of solid waste in Texas:

- **MUNICIPAL SOLID WASTE** - For municipal solid waste, not including sludge, the following methods are preferred, in the order listed:
  - (1) Source reduction and waste minimization;
  - (2) Reuse or recycling of waste;
  - (3) Treatment to destroy or reprocess waste to recover energy or other beneficial resources if the treatment does not threaten human health, safety, or the environment; or
  - (4) Land disposal.
  
- **MUNICIPAL SLUDGE** - For municipal sludge, the following methods are preferred, in the order listed:
  - (1) Source reduction and minimization of sludge production and concentrations of heavy metals and other toxins in sludge;
  - (2) Treatment of sludge to reduce pathogens and recover energy, produce beneficial by-products, or reduce the quantity of sludge;
  - (3) Marketing and distribution of sludge and sludge products if the marketing and distribution do not threaten human health, safety, or the environment;
  - (4) Applying sludge to land for beneficial use;
  - (5) Land treatment; or



(6) Landfilling.

**(2) PROBLEMS** - Potential problems that may impede the process of meeting the special requirements and developing a successful solid waste management program include the following.

- **RURAL SETTING** - Does not provide large volumes and cost benefits based on volume; long haul distances
- **UNIQUE SETTING** - High tourism, with lakes, natural beauty, varying rates, seasonal cycles
- **ILLEGAL DUMPING** - It is hard to control illegal dumping because of so many isolated sites in the National Forests, private timberland, etc.
- **UNSTABLE MARKETS** - The recyclable markets are sometimes unstable. Distance from the more rural areas of the region can also pose difficulties.
- **RECYCLING IN THE DETCOG REGION** - Recycling in the DETCOG region appears to be on the increase. However, the market for recycled materials is such that landfilling is still cost effective, which appears to be hampering efforts somewhat.
- **NEGATIVE EFFECTS ON LANDFILLS** - With efforts to eliminate waste and reduce waste stream, the effect could be negative for the landfill that must remain cost effective for the wastes that cannot be handled in any other way.
- **MANAGEMENT OF DIFFICULT ITEMS** - Management of difficult or hard to handle items such as sludges, grease trap, and septage waste and others where no long term plan exists to handle the waste.
- **LACK OF LOCAL FINANCIAL RESOURCES TO MEET ALL MANDATED REQUIREMENTS** - Household hazardous waste is extremely costly to collect and dispose of. Current programs by entities only address a small percentage of the problem. At this point regional goals or mandates are not set to allow individual entities the flexibility to create approaches that will be more comprehensive and less costly. This will be a part of local planning to assist and encourage the establishment of a household hazardous waste solution. DETCOG will assist in ways to educate, provide training assistance and assist with funding sources for such projects.

**(3) OPPORTUNITIES**

- **WASTE MINIMIZATION** - The idea of waste minimization is not to produce the waste in the first place. In the Industrial arena, this means separation of materials which are not necessarily waste from those that must be disposed of, thus minimizing the quantities that must be dealt with.

Waste minimization means either: (1) people using less products, and thus having less wastes; or (2) using materials for longer periods of time so that there is not as much "throw-away" material. This involves changing cultures which is not something that can be readily accomplished by an entity through regulations or policies.

The *Solid Waste Management in Texas - Strategic Plan 2001-2005 (Appendix 3)* notes that TCEQ (formerly TNRCC) is required to establish a waste reduction goal for the state. It is able to adjust this goal as necessary to account for such variables as disposal capacity, feasibility, and population growth. It further notes that the original goal established by the Texas State Legislature was to achieve a 40% recycling rate by the Year 1994, although this was later changed to a goal of 40% reduction in the amount of municipal solid waste disposed of in the State. That same document notes that an official recycling rate of 35% was estimated for Texas in the Year 1997 (based on a voluntary state-wide survey of recyclers). In its summary, the *Plan* states the following:

*“In addition, progress can still be made in both reducing waste generation and in diverting from disposal the waste that is generated, through reuse and recycling. A recycling rate of over 40 percent is achievable; however, the ability of each region to recycle varies, depending on geographic location (urban vs. rural) and the availability of markets and other local factors. However, even with increases in recycling to over 50 percent by 2005, Texas would potentially only gain about four or five years of additional disposal capacity..... Therefore, the emphasis needs to be on the benefits of waste reduction in terms of economics and conservation of natural resources. Programs should target those sources and types of waste where reductions can be made through continued voluntary efforts.”*

Some of the items that the governments can perform to bring about waste minimization include:

1. Public education about the best use of our resources, with emphasis on using only what is essentially needed. The education should also address the costs of disposal, and the ultimate cost to our environment.
2. Adoption of proper mechanisms for charging for collection and disposal of solid wastes. These costs should not be underwritten by tax bases or from other revenue sources. If possible, disposers should be charged in relation to the quantity of their wastes, similarly to the billing rate structures for water and sewer.

It is possible that a surcharge system could be adopted to "penalize" those who produce higher than average quantities of solid waste. However, such an approach must be exercised with caution and must be based on sound and fair principles.

- **REUSE OR RECYCLING OF WASTE** - If production of the waste cannot be avoided, then the waste should be reused or recycled to the maximum extent. Reuse involves reusing the material in the same form it is in. This might include reuse of barrels, wood products, or glass bottles.

Recycling includes converting discarded, used, surplus by-products and other elements of solid waste into valuable new materials and products. This includes the recycling of aluminum cans, plastic, and newspaper. Reuse is preferred to recycling since it is a simpler process, but recycling can be highly effective and

efficient.

Dependent on how the process is viewed, composting can be considered recycling. In that process, paper, food wastes, and other materials are converted into a mulch or soil conditioner. Essentially, this returns much of the organic material in solid waste to the ground from which it originated.

- **TREATMENT OR DESTRUCTION OF WASTE** - This category involves either treating the waste such that it is less dangerous to the environment, and ideally may be applied to land or disposed of in some other means than landfilling. Destruction of the waste would include incineration and would involve breaking down the waste to simpler compounds, hopefully simultaneously freeing energy or other resources that could then be reused.

Other treatment processes that have been mentioned include pyrolysis and composting (depending on its categorization). The primary emphasis should be on composting of yard waste, wastewater treatment plant sludges, food, and wood wastes, along with non-recyclable paper products. This composting effort should result in a useful by-product of either a soil conditioner, or a fertilizer (if nutrients are added.)

- **DISPOSAL** - Emphasis should be directed on the prior programs. Resource conservation and recovery will reduce reliance on land disposal, associated long term costs, liabilities and potential for environmental impacts. However, there should be a commitment to ensure that all solid waste including those not recycled and the final product of destruction or treatment processes, be disposed of properly. This involves properly operated disposal sites to insure protection of the environment.

- **JOINT ACTION TO ADDRESS COMMON SOLID WASTE PROBLEMS**  
- The original Solid Waste Management Plan and its Year 2000 update divided the DETCOG region into four subregions. These are:

Subregion 1 - Consisting of Angelina County

Subregion 2 - Consisting of Nacogdoches County

Subregion 3 - Consisting of Polk, San Jacinto, and Trinity Counties

Subregion 4 - Consisting of Houston, Jasper, Newton, Sabine, San Augustine, and Tyler Counties.

The Year 2000 update noted that the counties in Subregion 4 were grouped together in the original plan because they did not have a regional landfill. That was prior to the landfill in Newton County becoming operational. Disposal has been addressed previously and it appears that adequate landfill space exists in the regional facilities. Generally speaking, it appears that adequate transfer facilities and transportation is in place to move the solid waste to regional facilities.

Joint action is needed in regard to composting of yard waste, trees and tree limbs, and building material debris from condemned and abandoned buildings and new construction. Transportation of this material to a regional facility for

processing is not cost effective. Additional subregions should most likely be formed in terms of joint composting projects. Joint action would be beneficial among sub-regional entities for the purchase of the processing equipment. Portable tub grinders, windrow turners and materials handlers should be rotated from one composting site to the next because full time use at any one site is not necessary. Staffing for this processing should also be a part of the sub-region and be responsible for the quality of the compost and the equipment maintenance. This could provide compost for local markets and residents while eliminating a possible solid waste problem.

**(4). EVALUATION OF ALTERNATIVES** - The State of Texas has established the hierarchy of solid waste management methods. The Deep East Texas Council of Governments is united in wanting each public entity to be able to make the best decision for that entity. That decision includes many factors, some of which are political in nature. However, an important consideration is initial and operating costs for various waste management systems.

- **MINIMIZATION** - Generally there is little that the DETCOG entities can do to accomplish minimization other than through education of the general public to use less material or use it longer. Manufacturing and Industry are doing a good job in the region to minimize waste. The DETCOG will continue to encourage waste minimization and when opportunities arise will assist with implementation through available grants and expertise. Since so much of our manufacturing and industry is wood products based, any ideas developed will be shared through use of the DETCOG to provide regional waste reductions.
- **REUSE AND RECYCLING** - Reuse and recycling efforts are market-driven. If there is no market, then recycling and reuse cannot be effective. Input from area recycling centers indicates that the markets for most recycled items are currently good enough to encourage efforts in recycling and reuse.

Regional effort will focus on the recycling of solid waste. Short term effort should incorporate volunteer recycling with emphasis on education to encourage the general public to recycle. Long term effort should work toward bio-processing incorporating commingled household and commercial solid waste, municipal sludges, grit, septic tank and grease trap wastes. The bio-processing will convert to compost all elements, that will decompose. Separation of compost, inerts and recyclables will follow decomposition. This compost could then be further processed, cured and screened for sale. The inerts from the process would be landfilled and the recyclables will be transported to the regional recycling center for processing and sale.

Several cities in the DETCOG region have recycling programs in place. In the past, recycling markets have been a problem for the more rural areas of the region, along with the inability to generate sufficient amounts of recycled materials to attract a recycling vendor to the smaller and more remote areas of the region. Transportation costs can also have an inhibiting effect on the regional approach to recycling. However, it should also be noted that the City of Lufkin Recycling Center reports that they currently have no problem finding vendors for their recycled materials. The Lufkin facility is one of the largest in the region and is currently in the process of increasing public education programs and attempting to forge a partnership with private haulers to enable curbside recycling efforts in rural areas. Through those measures, the Lufkin Recycling

Center hopes to double its intake of recyclable materials by the end of the next fiscal year.

One of the main goals stated in the original 1992 Plan was to reduce by 40% the amount of solid waste produced or introduced into the waste stream and landfills by January 1, 1994. Out of that reduction in solid waste, 15% was expected to be reduced by composting. Similarly, the extended goal was to further reduce the amount of solid waste by 5% over the intermediate planning period and by 25% over the long range planning period. However, in the Year 2000 update to the plan, it was stated that *“the 40% reduction goal for the immediate planning period has not yet been met and is unlikely to be met in the near future”* and that *“it is highly unlikely that the long range planning goal of 70% will be met by 2010.”* At that time it was stated that *“one possible amendment [to the initial plan] would involve reducing the region’s waste reduction goals to a more realistic level.”*

- **COLLECTION SYSTEMS** - Responses from local entities and private haulers indicates that the majority of the DETCOG region has some form of solid waste pickup available, whether from public or private haulers. This report encourages strong consideration be given to encouraging private pickup being made for any areas in which it is not currently available.

In previous reports, it was recommended that strong consideration be given to establishing transfer stations where hauling in collection vehicles exceeds economical limits.

- **INCINERATION AND ENERGY RECOVERY** - No future facilities are known to be planned or proposed in the region. Utilization of incineration in the DETCOG region is currently limited due to a variety of factors, including air quality issues.
- **SANITARY LANDFILLING** - Even though the State has placed the least priority for landfilling, this option appears to remain the most cost-effective at this time. Additionally, other options can minimize the amount of waste being landfilled, but none is available that completely displaces the need for a sanitary landfill. Even in the case of composting or incineration, over 10% of the wastes must still be landfilled.
- **BACKYARD COMPOSTING** - Backyard composting results in leaves, grass, and brush not going into collection vehicles and to treatment or disposal facilities. Studies indicate that a significant portion of municipal solid waste collected in the more populated areas is in the form of landscaping wastes. As such, emphasis on backyard composting could be an effective method of minimization.
- **SLUDGES** - Sludge management methods will be based on the preferred hierarchy. Local plans must be developed to incorporate source reduction and minimization of sludge production and concentrations of heavy metals and other toxins. State and Federal regulations for sludge also place limits on local wastewater works producing sludge and these guidelines will need to be followed for local plans. As a matter of course, most local government entities work toward reducing infiltration and inflow of runoff (I/I) into the headworks to reduce grit and sand and to reduce the sludge volume in their central wastewater treatment plants. Regulations setting limits on heavy metals

and toxins are closely monitored and limits are set for industrial discharges. This will limit the amount of these elements in sludges.

As time goes by, land application of sludge is becoming more restricted by governmental regulation. Landfilling of sludge is generally discouraged. At the present time, sludges account for only a small percentage of the total waste landfilled in the region. This will continue to be less and less until such time that bio-processing is implemented. Currently testing is performed on all sludges before acceptance into any landfill.

The long term goal is to produce a beneficial by-product from sludge safe for use that meets EPA requirements. Sludges will be blended with residential and commercial solid waste and then bio-processed for use as a compost and soil conditioner. Blending will reduce any heavy metal or toxin concentrations and the bio-processing will destroy any pathogens. The product will be sold to East Texas markets including nurseries, the timber industry, individuals, cities and TxDOT for park and landscaping applications and agricultural production. The bioprocessing product meets all current EPA requirements and is being sold in other parts of the U.S. with no restrictions. The City of Lufkin is currently studying the feasibility of such a program.

Land application will continue as currently is the practice until bio-processing is implemented EPA and TCEQ rules apply to these beneficial sites and the regional goals will continue to allow such use in the short term planning. Land treatment is not commonly practiced in the region and will not be considered.

#### **(5) LOCAL PLAN DEVELOPMENT**

- **COMPOSTING** - Local plans should incorporate composting and locate compost sites for processing. Processing should be developed on a sub-regional basis for equipment and labor. Local markets should be developed to reduce transportation costs. Yard wastes and trees should be processed on a local level and not regionalized.
- **HAZARDOUS WASTE** - Local plans should develop household hazardous waste reduction through cost efficient methods. DETCOG staff should assist where possible with methods and funding. Other hazardous waste including industrial is currently collected and shipped outside the region for disposal. Local plans should include transport of hazardous waste and an inventory of hazardous waste within the locality. Transportation within the region is governed by federal and state regulations.
- **RESIDENTIAL, COMMERCIAL AND RECREATIONAL WASTES** - These wastes will continue to be collected and transported by direct haul or transfer and transport to regional facilities for disposal or processing. This may involve private contractors, public entities and or federal agencies.
- **MUNICIPAL SLUDGE** - Local plans should include municipal sludge handling and disposal. Water treatment and wastewater treatment plant sludges should continue to be land applied for beneficial use. The long term intent is to bring the sludge into the bio-processing with other solid waste. This will change from local handling and disposal to a regional approach. This will change to use in the bio-processing when in operation.

**(6) OTHER PROGRAMS** - No other programs exist in the region.

**(7) PRIORITIES**

- **WASTE REDUCTION** - To encourage waste reduction through education and cooperation.

- **RECYCLING AND COMPOSTING** - To continue recycling efforts by voluntary action and encourage it through education.

To develop sub-regional compost-processing of yard waste and tree trimmings.

To develop bio-processing as a long term solution to eliminating wastes going into the landfill.

To develop the recycling processing plant for regional use.

**2. GOALS AND OBJECTIVES** - Requirements of the Deep East Texas Council of Governments have been established to meet the current and future waste management needs. The goals of the DETCOG should be consistent with those of the State of Texas. The current goals and objectives established by the State in the report to the 77<sup>th</sup> Legislature entitled *Solid Waste Management in Texas - Strategic Plan 2001-2005 (Appendix 3)* lists the following goals, objectives, and recommendations:

**a. GOALS**

**(1) GOAL 1: Ensure the proper management and disposal of municipal solid waste.**

- One of the *Strategic Plan's* stated goals for the Texas Commission on Environmental Quality was for it to continue to implement efficiency improvements in municipal solid waste permitting and regulatory processes.

In order to augment this, the *Plan* suggests that the Deep East Texas Council of Governments should take on a greater role in helping to resolve local issues and concerns before a permit application is submitted to the TCEQ. As part of this role, DETCOG should establish voluntary pre-application review and public participation procedures through their existing solid waste advisory committees, and should actively encourage potential applicants to participate in those processes early in planning for a facility.

- The Deep East Texas Council of Governments should assess disposal capacity needs in its regional solid waste management plan and should target local areas with less than 10 years of capacity for development of plans or technical studies to identify the best approach to meet those capacity needs. When such options are possible, DETCOG should consider establishing long-term agreements with private disposal service providers, cooperative agreements with other local governments, or other mechanisms to assure long-term availability of disposal capacity.

- In its regional solid waste planning, the Deep East Texas Council of Governments should identify those subregional areas which lack adequate collection services and/or access to available disposal facilities, and identify actions to ensure that those needs are met. The regional solid waste

management plans should include regional and multi-regional solutions for providing services, and should encourage use of citizens' collection stations and transfer stations where appropriate.

- The Deep East Texas Council of Governments should identify those areas with litter and illegal dumping problems, and identify entities that should establish a local enforcement program, with an emphasis on regional cooperation. Based on the priorities established in the regional plan, DETCOG should use the solid waste grant funding programs to support development of local enforcement programs, and those programs should be standardized to ensure that the grant funding is effectively utilized.

**(2) GOAL 2: Ensure the proper and safe management of solid waste, the availability of management alternatives, and implementation of statewide goals at the regional and local levels, through development and implementation of regional and local plans.**

- The *Plan's* goal for the TCEQ was that it clarify and then implement the role of regional plans and local Councils of Governments in municipal solid waste permitting decisions. The goal for the Deep East Texas Council of Governments was that its regional solid waste management plan should identify the factors that should be used to evaluate a permit application for conformance with the regional plan and that DETCOG should establish clearly defined internal processes for how conformance recommendations will be made to the TCEQ.
- Use the Regional Solid Waste Grants Program as a tool to implement the regional solid waste management plans. The Deep East Texas Council of Governments should include priorities for use of solid waste grant funds in its regional solid waste management plan which, once approved, will form the basis for regional solid waste grant funding decisions.
- The Deep East Texas Council of Governments should target areas with critical needs for development of a local solid waste management plan or a specific technical study to identify how those needs can be addressed.
- After completing its regional inventory of closed municipal solid waste landfill sites, the Deep East Texas Council of Governments should establish a process to maintain that inventory. The regional solid waste management plan should address whether further assessments are needed of the potential risks posed by closed landfill sites in the region.

**(3) GOAL 3: Reduce the amount of municipal solid waste generated and disposed of in Texas, through source reduction and recycling, to the extent feasible through voluntary approaches.**

- The Deep East Texas Council of Governments should identify the status of local governmental entities' compliance with requirements to establish programs for the separation and collection of recyclables from governmental facilities.
- The Deep East Texas Council of Governments and other regional and local entities should consider establishing cooperative purchasing and market development programs to support markets for recyclable materials



and for products made from those materials.

- Continue to use outreach and education programs to support program initiatives and to facilitate long-term changes in attitudes about source reduction and recycling. The Deep East Texas Council of Governments should establish a regional outreach and education program under the regional coordination activities conducted with solid waste grant funds.
- Target waste reduction activities to the major components of waste disposal. The Deep East Texas Council of Governments' regional solid waste management plan should identify programs to target source reduction and diversion of paper, yard trimmings, and construction and demolition debris.
- Target waste reduction activities to certain components of the waste stream that may pose special risks or problems. The Deep East Texas Council of Governments and local governments should emphasize source reduction of household hazardous waste in education and outreach programs, in conjunction with programs to collect these materials. The Deep East Texas Council of Governments should consider facilitating cooperative contracting agreements between local governments to help collect and recycle these materials.
- The Deep East Texas Council of Governments should identify where the greatest benefits can be achieved through waste reduction, and local implementation efforts should focus on those activities that will achieve the greatest results. DETCOG's solid waste grant funding decisions should be directly tied to implementation of the regional solid waste management plans.

#### **b. MANAGEMENT METHODS**

- (1) GOALS FOR WASTE REDUCTION AND REUSE** - Waste reduction and reuse comprise the elements of solid waste management that are generally considered to be source reduction and waste minimization. Source reduction or waste minimization can be defined as the design, manufacture, acquisition, and reuse of materials so as to minimize the quantity and/or toxicity of waste produced. That is to say that changes in practices that reduce the amount of waste and/or recyclables that need to be discarded is source reduction or waste minimization.

**It is the goal of the DETCOG:**

- To reduce the amount of solid waste produced or introduced into the waste stream and landfills.
- To provide and support incentives for waste reduction and reuse programs by individuals, private organizations, industry or commercial retailers, and government agencies.
- To establish public education programs that educate the public in all aspects of solid waste reduction and reuse programs that can be implemented by individuals, private organizations, industry or commercial retailers, and government agencies.

- (2) OBJECTIVES FOR WASTE REDUCTION AND REUSE** - The objectives for waste reduction and reuse are those steps that will be taken to facilitate the meeting of the

goals established.

The *Solid Waste Management in Texas - Strategic Plan 2001-2005 (Appendix 3)* notes that TCEQ (formerly TNRCC) is required to establish a waste reduction goal for the state. It is able to adjust this goal as necessary to account for such variables as disposal capacity, feasibility, and population growth. It further notes that the original goal established by the Texas State Legislature was to achieve a 40% recycling rate by the Year 1994, although this was later changed to a goal of 40% reduction in the amount of municipal solid waste disposed of in the State. Based on those requirements, the objectives for Goal Number 1 as stated in the original Regional Solid Waste Management Plan was to reduce by 40% the amount of solid waste produced or introduced into the waste stream and landfills by January 1, 1994 (of which 15% was to be reduced by composting). According to the State's *Strategic Plan*, an official recycling rate of 35% was estimated for Texas in the Year 1997 (based on a voluntary state-wide survey of recyclers). In its summary, the *Plan* states that

*"....progress can still be made in both reducing waste generation and in diverting from disposal the waste that is generated, through reuse and recycling. A recycling rate of over 40 percent is achievable; however, the ability of each region to recycle varies, depending on geographic location (urban vs. rural) and the availability of markets and other local factors. However, even with increases in recycling to over 50 percent by 2005, Texas would potentially only gain about four or five years of additional disposal capacity..... Therefore, the emphasis needs to be on the benefits of waste reduction in terms of economics and conservation of natural resources. Programs should target those sources and types of waste where reductions can be made through continued voluntary efforts."*

Waste reduction should continue in the larger cities and move progressively to the rural areas, benefitting from the experiences of previous efforts.

#### Recycling Objectives

- Support all legislation that will make recycling an effective solid waste management practice
- Support the establishment of tax incentives to encourage market development
- Promote educational programs that inform the public about which materials are recyclable and the details of how to recycle items which will be acceptable to the various markets
- Should support cooperative marketing arrangements for the public and private sectors
- Encourage government agencies to buy products made from recycled materials and to recycle their own internal waste
- Investigate grant programs for recycling activities and inform all recyclers of such programs
- Provide workshops and seminars to support the development

and implementation of local community recycling programs

- Develop and maintain market information for local government use

#### Composting Objectives

- Support legislation that will make composting an effective solid waste management practice
- Educate the consumers on what "composting" is and how it can be beneficial
- Create compost programs that focus on yard waste and other organic materials that are common in the waste stream
- Educate the private and public entities as to requirements for siting and operation requirements for composting facilities
- Encourage government agencies to use compost materials whenever possible and to establish their own composting facilities to compost yard waste and wastewater treatment sludge
- Support the development of composting programs that beneficially use compostable materials
- Support the development of compostable packaging and products

#### Sludge

- Source reduction by reducing infiltration and inflow (I/I) of surface runoff into WWTP headworks and reducing industrial discharges of heavy metals and toxins.
- Treatment to reduce pathogens and to encourage bio-processing to produce a beneficial by-product.
- Market the composted product from bio-processing and work with timber industry to run pilot project to determine effects of compost on timber growth.
- Market fact that the bio-process produces an EPA approved product.
- Continue land application until implementation of bio-processing.
- No land treatment unless proven beneficial for specific purpose.
- Reduce landfilling of sludge which is currently only about 0.2% of total solid waste disposed.

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Incineration - At the present time the use of incineration in the DETCOG region is very limited. This is mainly due to environmental/air quality issues.

Objectives for Goal Number 2 - The objectives for goal number 2 are to provide and support incentives for waste reduction and reuse programs by individuals, private organizations, industry or commercial retailers, and government agencies.

- Support or sponsor recognition programs that will acknowledge individuals, private, or public entities that have implemented a successful waste minimization or recycling program.
- Support and educate the private and public sectors on the use of reusable containers
- Encourage the use of a "green" labeling system that identifies that a product is recyclable
- Support the use and development of reduced packaging by industry and retailers
- Encourage the establishment of a rate structure that rewards consumers for participation in reducing household waste and recycling

Objectives for Goal Number 3 - The objectives for goal number 3 are to establish public education programs that educate the public in all aspects of solid waste reduction and reuse programs that can be implemented by individuals, private organizations, industry or commercial retailers, and government agencies.

- Target grade school children for programs designed to educate and instill "green" lifestyle patterns as adults
- Create educational programs that target and lobby key industries that generate large quantities of solid waste
- Educate the public on products that will reduce the use of products that are toxic or produce excess waste
- Create educational programs that target the removal of items that are most commonly found in the waste stream
- Educate the public concerning the problems and limitations of the existing waste system
- Educate the public concerning the environment and the effects of solid waste disposal

#### **c. FACILITIES AND PRACTICES**

**(1) GOALS FOR FACILITIES AND PRACTICES** - Solid waste facilities and practices comprise all aspects of solid waste disposal, collection, transfer, and permitting.

**It is the goal of the DETCOG:**

- To promote regional landfills that will provide for the final disposal of all solid waste that is not reuseable or recyclable.
- To promote transfer and collection facilities based on a regional

concept that would provide for the efficient removal and transport of solid waste to the final disposal site.

- To determine landfill and transfer station siting criteria that will provide for the location of facilities based on the regional concept.

**(2) OBJECTIVES FOR FACILITIES AND PRACTICES** - The objectives for facilities and practices are those steps that will be taken to facilitate the meeting of the goals established.

The objectives of goal number 1 are:

- Encourage the establishment of regional landfills
- Encourage the cooperation of all government entities in the establishment of regional solid waste facilities
- To encourage the development of recycling and composting facilities at all regional landfills

The objectives of goal number 2 are:

- To encourage the development of voluntary recycling facilities at transfer stations
- To encourage individuals and government entities to provide effective collection systems for all solid waste producers
- To encourage curbside recycling in those Cities with the capability of implementing an effective program
- To aid in the construction of solid waste transfer stations in locations if future need arises

The objectives of goal number 3 are:

- To provide criteria and recommendations for the general locating of landfills, incinerators, composting facilities, and transfer station sites in the DETCOG region
- To provide information on environmental concerns and environmentally sensitive areas which will affect the location of facilities in the DETCOG region
- Educate the public concerning the different types and technologies of solid waste facilities and operations
- Increase applicant awareness of the TCEQ review options and the advantages and disadvantages of permitting options

**d. INTERGOVERNMENTAL COOPERATION** - The goal of the DETCOG is to inform solid waste permit applicants of the most current regulations and to participate in TCEQ's permit review process.

The objectives are:

- Establish an information center which provides the latest information on all aspects of solid waste management which will be made available to all government entities
  - Lobby for legislation that provides funding resources to assist local governments in developing solid waste programs
  - Encourage the development of cooperative solid waste operations and facilities
- e. **REGULATORY COMPLIANCE** - The goal of the DETCOG is to inform solid waste permit applicants of the most current regulations and review permit applications to insure that all regulations are met.

The objectives are:

- Provide the latest regulatory information on solid waste permitting to any potential applicants
  - Request TCEQ to include the DETCOG as a participant in the permit review process to the extent allowed under legal authority by all parties involved
  - Require a review time of 30 days by DETCOG personnel or consultants of all proposed solid waste facilities
  - Require that the DETCOG review any projects which include hazardous waste disposal facilities
  - Require that all siting of solid waste facilities be approved by the DETCOG
  - Require that all grant applications for funding be reviewed and approved by DETCOG
- f. **RECOMMENDED ACTIONS** - The following is a list of recommended actions to be implemented under the solid waste regional management plan:

**(1) MANAGEMENT METHODS**

- Through comprehensive composting and recycling programs, reduce the amount of the municipal solid waste stream being disposed of in landfills.
- Provide and support incentives for waste reduction and reuse programs.
- Establish and support public education programs to educate the public on all aspects of solid waste reduction and reuse.
- Develop subregions with common goals, problems, and objectives from which to develop local plans. Local plans should develop in detail the most effective approach to handle solid waste in the subregion with the regional goals in mind. The plans should be coordinated with the DETCOG staff

to insure conformity to the plan or where amendments may be necessary to begin the process early to avoid delay. Subregions listed in the original solid waste plan are indicated below:

Subregion 1: Angelina County

Subregion 2: Nacogdoches County

Subregion 3: Polk, San Jacinto and Trinity Counties

Subregion 4: Houston, Jasper, Newton, Sabine, San Augustine, Shelby and Tyler Counties

The Year 2000 update noted that the counties in Subregion 4 were grouped together in the original plan because they did not have a regional landfill. That was prior to the landfill in Newton County becoming operational, which modifies the setting somewhat. It might be more expedient to further sub-divide Subregion 4 based on proximity to available landfills. The following observations are noted:

1. Questionnaire responses indicate that the majority of haulers in Newton County haul solid waste to the new landfill located in the County. In addition, a great deal of waste is transported there from out of region. This landfill is operated by Western Waste of Texas, LLC, and is currently in the process of applying for a permit amendment for vertical expansion at the facility.
2. Questionnaire responses indicate that the majority of haulers in Houston, San Augustine, Jasper, and Tyler Counties transport their waste to the landfill in Angelina County.
3. Questionnaire responses indicate that haulers in Sabine and Shelby Counties haul waste to a variety of landfills, the majority of which are out of region. The main reason for this apparently is due to the long haul distances involved to the nearest regional landfill.

It appears that adequate landfill space exists in the regional facilities. Generally speaking, it appears that adequate transfer facilities and transportation is in place to move the solid waste to regional facilities.

Local plans may be developed by the subregion in its entirety or by areas or Counties within the subregion.

## **(2) FACILITIES AND PRACTICES**

- Support the continued development of recycling and composting facilities. When locating new facilities, the region should give consideration on the moving recyclables toward US 59 where transportation has easy access to move the materials north or south. From the DETCOG region US 59 provides access to IH 20 and IH 30, two major east-west interstates.
- Composting facilities should be encouraged in a number of locations in the DETCOG region. Low tech composting requires very little capital costs, the main concern being land availability. Existing landfills or other sites

already owned by entities can be used. Having a number of sites reduces the haul cost and the compost remains in the community where it is most likely to be marketed. Equipment to work the compost includes a tub grinder or similar machine to grind up the waste limbs, leaves, grass and lumber from demolition of condemned and abandoned buildings or new construction scraps and debris. A windrower to turn the windrows during the curing process and a front end loader to move materials. Since low tech composting does not require constant working for the small quantities experienced in the DETCOG region, equipment could be purchased to work a number of sites and rotate from site to site as necessary.

- Encourage and support the construction of transfer stations in needed areas not in close proximity to available regional landfills. Transfer facilities should be constructed to more efficiently move solid waste to the management facilities. Each transfer station should provide voluntary recycling bins and have a full time operator on duty.
- Consider a regional Material Recovery Facility (M.F.). This was suggested in the original Solid Waste Management Plan in order to achieve full recycling capability. Only a certain level of recovery can be expected through volunteer recycling centers, curbside recycling and composting. The long range planning period must include a materials recovery facility to sort and separate 100% of the waste stream. This will require total regional cooperation and possibly only one facility in the region jointly owned. M.F.'s are capable of 85% to 90% recovery with only 10% having to be landfilled.

### **(3) INTERGOVERNMENTAL COOPERATION**

- Establish a governmental network to channel information on solid waste issues.
- Coordinate with entities in providing technical assistance.

### **(4) REGULATORY COMPLIANCE**

- Maintain existing Solid Waste Technical Review Committee and Solid Waste Task Force as functioning committees.
- Review all permit applications for solid waste facilities within the region.

**3. ACTION PLAN** - The majority of the DETCOG region is rural in nature and does not lend itself easily to the standard facility types where volume of the waste stream is readily available. The people of this region must work in a cooperative effort and provide creative opportunities to cost effectively manage the solid waste. Please refer to Appendix 6 for details regarding specific actions and responsibilities.

**a. PLAN CONFORMANCE/PERMIT REVIEW** - State regulatory activities must conform to an adopted regional solid waste management plan. Under current policy, DETCOG is asked to provide a recommendation to TCEQ regarding the conformance of an MSW permit or registration application with the regional plan. DETCOG's recommendation is considered by TCEQ in making a decision on the application.

**b. GRANTS FUNDING PLAN**



- (1) **REGIONAL SOLID WASTE MANAGEMENT PLAN PRIORITIES** - In accordance with Section 361.014 of the Texas Health and Safety Code, the Texas Commission on Environmental Quality awards grants to regional and local governments for municipal solid waste management projects through the State's Regional Solid Waste Grants Program. The TCEQ allocates funds to local Councils of Government, who in turn use the funds to develop a closed landfill inventory, conduct regional coordination and planning activities, and administer grant programs to provide funding for regional and local municipal solid waste projects. The following is a list of acceptable projects established by the State in its latest cycle, arranged in order of priority:

Regional Solid Waste Grants Program Projects	
Priority Order	Project Description
1	Local Enforcement
2	Source Reduction and Recycling
3	Citizen's Collection Stations and "Small" Registered Transfer Stations
4	Technical Studies
5	Educational and Training Projects
6	Community Clean-up Events
7	Local Solid Waste Management Plans
8	Household Hazardous Waste Management

Entities eligible for funding under this program include cities, counties, public schools, special law districts, and councils of government. Several project categories are eligible for funding. Eligible entities who are interested in receiving more information about this program should contact the Deep East Texas Council of Governments or Texas Commission on Environmental Quality.

- (2) **SPECIFIC PROJECTS** - DETCOG has not identified any specific projects for funding. As requests for funding are received, DETCOG will evaluate them with respect to their applicability to DETCOG's established priorities and the funding plan.
- (3) **PROJECT CATEGORIES** - DETCOG is working on a funding plan for the next two years. Until that plan is completed, the fund allocations will not be available. The fund allocation to categories will reflect the priorities of the Regional Solid Waste Management Plan.
- (4) **ALLOCATION OF PRIORITIES** - Grant moneys are usually divided such the same amount is available each year. Within a given year, the grant funds available are further divided such that four to six projects can be funded. As stated above, no specific projects are under consideration and the funding plan for the next two years has not been completed.
- (5) **PROJECT SELECTION PROCESS** - Counties will be notified of availability of grant funds. The County acts as a liaison for placing entities who may qualify for grant funding in contact with DETCOG. Applications are reviewed annually on a competitive basis,

using applicability to priorities and effective intended use of the grant funds as ranking criteria.

- c. **LOCAL SOLID WASTE MANAGEMENT PLANS** - There are no known local solid waste management plans in existing in the DETCOG region.
- d. **REGIONAL COORDINATION AND PLANNING** - No recommendations for local action are provided.
- e. **LOCAL AND SUBREGIONAL RECOMMENDATIONS** - No recommendations for local action are provided.
- f. **RECOMMENDATIONS FOR STATE-LEVEL ACTION** - No recommendations for state-level action are provided in this Plan.

<b>TABLE 1 - HISTORICAL POPULATION*</b>									
<b>COUNTY NAME</b>	<b>POPULATION</b>					<b>POPULATION GROWTH (%)</b>			
	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>1960-1970</b>	<b>1970-1980</b>	<b>1980-1990</b>	<b>1990-2000</b>
Angelina	39,814	49,349	64,172	69,884	80,130	23.95	30.04	8.90	14.66
Houston	19,376	17,855	22,299	21,375	23,185	(7.85)	24.89	(4.14)	8.47
Jasper	22,100	24,692	30,781	31,102	35,604	11.73	24.66	1.04	14.48
Nacogdoches	28,046	36,362	46,786	54,753	59,203	29.65	28.67	17.03	8.13
Newton	10,372	11,657	13,254	13,569	15,072	12.39	13.70	2.38	11.08
Polk	13,861	14,457	24,407	30,687	41,133	4.30	68.82	25.73	34.04
Sabine	7,302	7,187	8,702	9,586	10,469	(1.57)	21.08	10.16	9.21
San Augustine	7,722	7,858	8,785	7,999	8,946	1.76	11.80	(8.95)	11.84
San Jacinto	6,153	6,702	11,434	16,372	22,246	8.92	70.61	43.19	35.88
Shelby	20,479	19,672	23,084	22,034	25,224	(3.94)	17.34	(4.55)	14.48
Trinity	7,539	7,628	9,450	11,445	13,779	1.18	23.89	21.11	20.39
Tyler	10,666	12,417	16,223	16,646	20,871	16.42	30.65	2.61	25.38
<b>DETCOG TOTAL</b>	<b>193,430</b>	<b>215,836</b>	<b>279,377</b>	<b>305,452</b>	<b>355,862</b>	<b>11.58</b>	<b>29.44</b>	<b>9.33</b>	<b>16.50</b>

\* Source of Information: Year 2000 U.S. Census data and compilations from the Deep East Texas Council of Governments Regional Solid Waste Management Plan (1992) and the 2002-2003 Texas Almanac (copyright 2001, the Dallas Morning News).

**TABLE 2 - POPULATION OF CITIES SORTED BY SIZE**

ENTITY		YEAR*				CHANGE		
CITY	COUNTY	1970	1980	1990	2000	1970-1980	1980-1990	1990-2000
Nacogdoches ‡	Nacogdoches	22,544	27,149	30,872	36,709	20.43	13.71	18.90
Lufkin	Angelina	23,049	28,562	30,206	32,709	23.92	5.76	8.29
Jasper	Jasper	6,251	6,959	6,959	8,247	11.33	0.00	18.51
Crockett	Houston	6,616	7,405	7,024	7,141	11.93	(5.15)	1.67
Center	Shelby	4,989	5,827	4,950	5,678	16.80	(15.05)	14.71
Diboll	Angelina	3,557	5,227	4,341	5,470	46.95	(16.95)	26.01
Livingston	Polk	3,965	4,928	5,019	5,433	24.29	1.85	8.25
Hudson	Angelina		1,659	2,374	3,792	N/A	43.10	59.73
Trinity	Trinity	2,512	2,620	2,648	2,721	4.30	1.07	2.76
San Augustine	San Augustine	2,539	2,930	2,337	2,475	15.40	(20.24)	5.91
Newton	Newton		1,620	1,895	2,459	N/A	16.98	29.76
Woodville	Tyler	2,662	2,821	2,636	2,415	5.97	(6.56)	(8.38)
Bessmay-Buna**	Jasper		2,076	2,127	2,269	N/A	2.46	6.68
Kirbyville	Jasper		1,972	1,871	2,085	N/A	(5.12)	11.44
Huntington	Angelina		1,672	1,794	2,068	N/A	7.30	15.27
Shepherd	San Jacinto		1,674	1,812	2,029	N/A	8.24	11.98
Corrigan	Polk		1,770	1,764	1,721	N/A	(0.34)	(2.44)
Grapeland	Houston		1,634	1,450	1,451	N/A	(11.26)	0.07
Evadale	Jasper			1,422	1,430	N/A	N/A	0.56
Milam***	Sabine				1,329	N/A	N/A	N/A
Camden***	Polk				1,200	N/A	N/A	N/A
Deweyville	Newton			1,218	1,190	N/A	N/A	(2.30)
Onalaska	Polk			728	1,174	N/A	N/A	61.26
Groveton	Trinity		1,262	1,071	1,107	N/A	(15.13)	3.36
Hemphill	Sabine		1,353	1,182	1,106	N/A	(12.64)	(6.43)
Timpson	Shelby		1,164	1,029	1,094	N/A	(11.60)	6.32
Tenaha	Shelby		1,005	1,072	1,046	N/A	6.67	(2.43)
Pineland	Sabine		1,111	882	980	N/A	(20.61)	11.11
Joaquin	Shelby			805	925	N/A	N/A	14.91
Garrison	Nacogdoches		1,059	883	844	N/A	(16.62)	(4.42)
Coldspring	San Jacinto		569	538	691	N/A	(5.45)	28.44
Zavalla	Angelina			701	647	N/A	N/A	(7.70)
Colmesneil	Tyler			569	638	N/A	N/A	12.13
Cushing	Nacogdoches			587	637	N/A	N/A	8.52
Lovelady	Houston			587	608	N/A	N/A	3.58
South Toledo Bend***	Newton				576	N/A	N/A	N/A
Point Blank	San Jacinto			443	559	N/A	N/A	26.19
Burkeville***	Newton				515	N/A	N/A	N/A
Leggett***	Polk				500	N/A	N/A	N/A
Bon Wier***	Newton				475	N/A	N/A	N/A
Spurger***	Tyler				472	N/A	N/A	N/A
Wiergate***	Newton				461	N/A	N/A	N/A
Appleby	Nacogdoches			449	444	N/A	N/A	(1.11)
Chireno	Nacogdoches			415	405	N/A	N/A	(2.41)
Bronson***	Sabine			259	377	N/A	N/A	45.56
Dallardsville***	Polk				350	N/A	N/A	N/A

Kennard	Houston			341	317	N/A	N/A	(7.04)
Burke	Angelina			314	315	N/A	N/A	0.32
Warren***	Tyler				304	N/A	N/A	N/A
Brookland***	Sabine				300	N/A	N/A	N/A
Pollok***	Angelina				300	N/A	N/A	N/A
Huxley	Shelby			335	298	N/A	N/A	(11.04)
Latexo	Houston			289	272	N/A	N/A	(5.88)
Chester	Tyler			285	265	N/A	N/A	(7.02)
Goodrich	Polk			239	243	N/A	N/A	1.67
Fred***	Tyler				239	N/A	N/A	N/A
Oakhurst	San Jacinto			219	230	N/A	N/A	5.02
Browndell	Jasper			192	219	N/A	N/A	14.06
Shelbyville***	Shelby				215	N/A	N/A	N/A
Hillister***	Tyler				200	N/A	N/A	N/A
Broaddus	San Augustine			212	189	N/A	N/A	(10.85)
Apple Springs***	Trinity				185	N/A	N/A	N/A
Call***	Newton				170	N/A	N/A	N/A
Moscow***	Polk				170	N/A	N/A	N/A
Sacul***	Nacogdoches				170	N/A	N/A	N/A
Doucette***	Tyler				131	N/A	N/A	N/A
Seven Oaks	Polk			171	131	N/A	N/A	(23.39)
Martinsville***	Nacogdoches				126	N/A	N/A	N/A
Sebastopol***	Trinity				120	N/A	N/A	N/A
Ratcliff	Houston				106	N/A	N/A	N/A
Geneva***	Sabine				100	N/A	N/A	N/A
Woodlake***	Trinity				98	N/A	N/A	N/A
Magnolia Springs***	Jasper				80	N/A	N/A	N/A
Segno***	Polk				80	N/A	N/A	N/A
Douglass***	Nacogdoches				75	N/A	N/A	N/A
Woden***	Nacogdoches				70	N/A	N/A	N/A
Pennington***	Trinity				67	N/A	N/A	N/A
Centralia***	Trinity				53	N/A	N/A	N/A
Ace***	Polk				40	N/A	N/A	N/A
Arcadia***	Shelby				20	N/A	N/A	N/A

☞ 1970-1990 Populations from the 1990 DETCOG Solid Waste Plan. Year 2000 populations taken directly from Year 2000 Census

\*\* Listed in 2000 Census Records as "Buna CDP".

\*\*\* Not specifically listed in the 2000 Census records. Population obtained from the 2002-2003 Texas Almanac.

‡ The City of Nacogdoches disputes the census numbers. As per their request, the population data noted above have been revised to match the population projections prepared by KSA Engineers, Inc. in their Projected Water Needs report for the City of Nacogdoches. These projections were accepted by the Texas Water Development Board in their State Water Plan.

**TABLE 3 - URBAN POPULATIONS VERSUS RURAL POPULATIONS**

COUNTY NAME	CATEGORY	TOTAL POPULATION (PER CAPITA)			POPULATION PERCENTAGE (%)		
		YEAR 1990*	YEAR 2000	GROWTH (%)	YEAR 1990	YEAR 2000	DIFFERENCE
Angelina	Total Population	69,884	80,130	14.66	---	---	---
	<i>Urban</i>	38,715	45,301	17.01	55.40	56.53	1.14
	<i>Rural</i>	31,169	34,829	11.74	44.60	43.47	(1.14)
Houston	Total Population	21,375	23,185	8.47	---	---	---
	<i>Urban</i>	8,474	9,895	16.77	39.64	42.68	3.03
	<i>Rural</i>	12,901	13,290	3.02	60.36	57.32	(3.03)
Jasper	Total Population	31,102	35,604	14.48	---	---	---
	<i>Urban</i>	10,957	14,330	30.78	35.23	40.25	5.02
	<i>Rural</i>	20,145	21,274	5.60	64.77	59.75	(5.02)
Nacogdoches**	Total Population	54,753	59,203	8.13	---	---	---
	<i>Urban</i>	31,755	39,480	24.33	58.00	66.69	8.69
	<i>Rural</i>	22,998	26,518	15.31	42.00	44.79	2.79
Newton	Total Population	13,569	15,072	11.08	---	---	---
	<i>Urban</i>	1,895	5,846	208.50	13.97	38.79	24.82
	<i>Rural</i>	11,674	9,226	(20.97)	86.03	61.21	(24.82)
Polk	Total Population	30,687	41,133	34.04	---	---	---
	<i>Urban</i>	6,783	11,042	62.79	22.10	26.84	4.74
	<i>Rural</i>	23,904	30,091	25.88	77.90	73.16	(4.74)

Sabine	Total Population	9,586	10,469	9.21	---	---	---
	Urban	2,064	4,192	103.10	21.53	40.04	18.51
	Rural	7,522	6,277	(16.55)	78.47	59.96	(18.51)
San Augustine	Total Population	7,999	8,946	11.84	---	---	---
	Urban	2,337	2,664	13.99	29.22	29.78	0.56
	Rural	5,662	6,282	10.95	70.78	70.22	(0.56)
San Jacinto	Total Population	16,372	22,246	35.88	---	---	---
	Urban	2,350	3,509	49.32	14.35	15.77	1.42
	Rural	14,022	18,737	33.63	85.65	84.23	(1.42)
Shelby	Total Population	22,034	25,224	14.48	---	---	---
	Urban	7,051	9,276	31.56	32.00	36.77	4.77
	Rural	14,983	15,948	6.44	68.00	63.23	(4.77)
Trinity	Total Population	11,445	13,779	20.39	---	---	---
	Urban	3,719	4,351	16.99	32.49	31.58	(0.92)
	Rural	7,726	9,428	22.03	67.51	68.42	0.92
Tyler	Total Population	16,646	20,871	25.38	---	---	---
	Urban	2,636	4,664	76.93	15.84	22.35	6.51
	Rural	14,010	16,207	15.68	84.16	77.65	(6.51)

\* Obtained from the Deep East Texas Council of Governments Regional Solid Waste Management Plan, June 1992.

\*\* Includes revised population estimate for the City of Nacogdoches as requested by the City.

**TABLE 5 - DETCOG REGION: NUMBER OF JOBS BY CATEGORY (YEAR 2001)**

SOURCE: *Texas Regional Outlook - Southeast Texas Region, May 2002, State Comptroller Report*

<u>County Name</u>	<u>Agriculture, Forestry, &amp; Fishing</u>	<u>Mining</u>	<u>Construction</u>	<u>Manufacturing</u>	<u>Transportation, Public Utilities, &amp; Communications</u>	<u>Wholesale Trade</u>	<u>Retail Trade</u>	<u>Services &amp; Other</u>	<u>Financial, Insurance, Real Estate</u>	<u>Government</u>	<u>TOTAL COUNTY JOBS</u>
Angelina	360	33	1,470	6,882	1,659	1,039	7,921	8,938	1,027	6,386	35,715
Houston	71	76	207	874	383	564	1,017	2,305	320	2,140	7,957
Jasper	234	95	356	2,163	454	295	2,304	2,133	367	2,108	10,509
Nacogdoches	499	21	889	4,303	428	762	5,200	4,481	665	4,833	22,081
Newton	4	26	38	488	30	20	209	385	91	724	2,015
Polk	45	175	251	1,485	564	230	2,265	1,608	336	2,964	9,923
Sabine	44	69	167	713	108	6	384	352	72	545	2,460
San Augustine	26	54	103	170	191	20	314	447	52	479	1,856
San Jacinto	15	1	145	152	97	59	372	395	67	872	2,175
Shelby	282	9	257	2,535	206	274	1,145	1,045	268	1,291	7,312
Trinity	13	0	77	248	84	106	415	547	97	691	2,278
Tyler	95	14	134	335	133	70	676	451	141	1,780	3,829
<b>TOTALS</b>	<b>1,688</b>	<b>573</b>	<b>4,094</b>	<b>20,348</b>	<b>4,337</b>	<b>3,445</b>	<b>22,222</b>	<b>23,087</b>	<b>3,503</b>	<b>24,813</b>	<b>108,110</b>



ALPHABETICAL

County	1960	1970	1980	1990	2000
Angelina	39,814	49,349	64,172	69,884	80,130
Houston	19,376	17,885	22,299	21,375	23,185
Jasper	22,100	24,692	30,781	31,102	35,604
Nacogdoches	28,046	36,362	46,786	54,753	59,203
Newton	10,372	11,657	13,254	13,569	15,072
Polk	13,861	14,457	24,407	30,687	41,133
Sabine	7,302	7,187	8,702	9,586	10,469
San Augustine	7,722	7,858	8,785	7,999	8,946
San Jacinto	6,153	6,702	11,434	16,372	22,246
Shelby	20,479	19,672	23,084	22,034	25,224
Trinity	7,539	7,628	9,450	11,445	13,779
Tyler	10,666	12,417	16,223	16,646	20,871

RANKED

	County	1960	1970	1980	1990	2000
1	Angelina	39,814	49,349	64,172	69,884	80,130
2	Nacogdoches	28,046	36,362	46,786	54,753	59,203
3	Polk	13,861	14,457	24,407	30,687	41,133
4	Jasper	22,100	24,692	30,781	31,102	35,604
5	Shelby	20,479	19,672	23,084	22,034	25,224
6	Houston	19,376	17,885	22,299	21,375	23,185
7	San Jacinto	6,153	6,702	11,434	16,372	22,246
8	Tyler	10,666	12,417	16,223	16,646	20,871
9	Newton	10,372	11,657	13,254	13,569	15,072
10	Trinity	7,539	7,628	9,450	11,445	13,779
11	Sabine	7,302	7,187	8,702	9,586	10,469
12	San Augustine	7,722	7,858	8,785	7,999	8,946

FIGURE 1-14: HISTORICAL POPULATIONS MOST POPULOUS COUNTIES

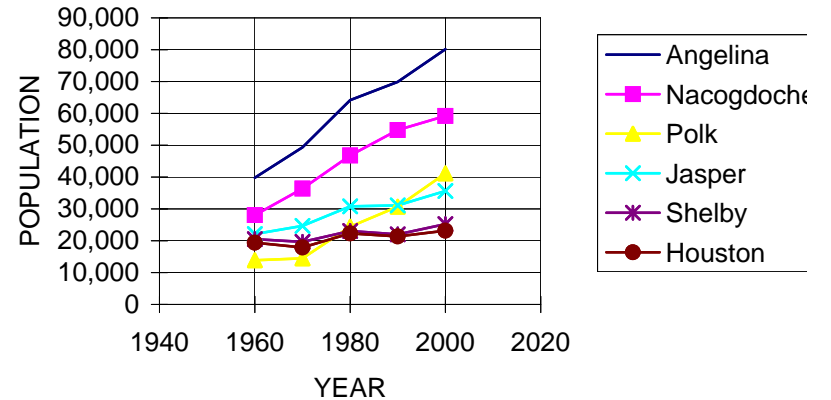
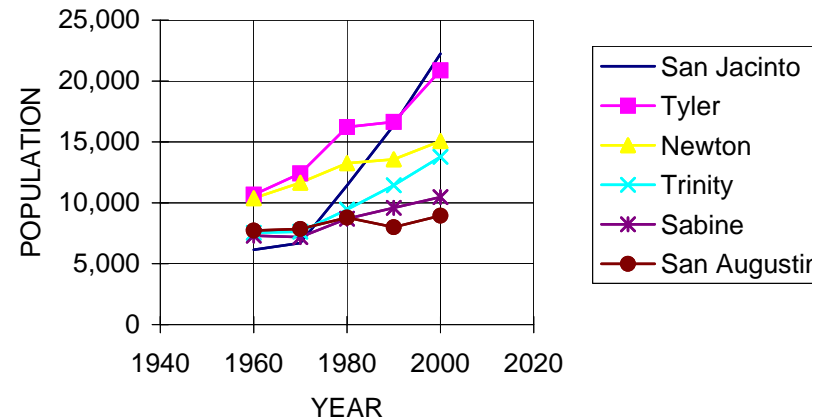


FIGURE 1-15: HISTORICAL POPULATIONS LESS POPULOUS COUNTIES



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**APPENDIX 1**  
**STATUS AND LOCATION OF**  
**PERMITTED MSW LANDFILLS**

# APPENDIX 1

## STATUS AND LOCATION OF PERMITTED MSW LANDFILLS

The following table provides a listing of the existing landfills in the DETCOG region. Also, illustrated is the approximate closure date of each landfill.

EXISTING LANDFILLS				
COUNTY	OPERATOR	MSW No.*	ESTIMATED REMAINING LIFE	PROJECTED CLOSURE DATE
Angelina	Angelina County	2105	32.1 Years	2033
Nacogdoches	City of Nacogdoches	720	37.7 Years	2038
Newton	Western Waste of Texas	2242	37.3 Years	2039
Polk**	Santek Environmental	1384	38 Years	2040

\* From the TCEQ OPRR Waste Permits Division *Active Municipal Solid Waste Facilities* listing, dated July 21, 2003.

\*\* This information was obtained from the entity's response to the questionnaire. The most recent landfill report (2001) indicated that the remaining life of the permitted sections of the landfill is 2.23 years. However, correspondence with the entity indicates that the facility is currently in the process of expanding its permit and that the information contained in the table above reflects that expansion.

Three of the landfills that remained open are located along the U.S Highway 59 corridor and are operated by Angelina County, the City of Nacogdoches and Polk County. The landfill operated by Waste Management was also opened in Newton County. These landfills are briefly described below:

**ANGELINA WASTE MANAGEMENT CENTER** - The Angelina County Waste Management Center landfill is located approximately 6 miles south of the City of Lufkin in central Angelina County. Due to the extensive landfill closings over the last decade, the Angelina County WMC has become a regional landfill serving portions of the surrounding counties. According to the most recent annual report this facility received approximately 122,680 tons of solid waste in Fiscal Year 2001. The report indicates that about 160.24 tons of metal, glass, paper, cardboard, plastic, and construction material were diverted at the facility for recycling or reuse.

**CITY OF NACOGDOCHES MUNICIPAL SOLID WASTE LANDFILL** - The City of Nacogdoches owns and operates its own landfill. Several communities and cities in the area dispose of waste at this facility. There is a recycling drop-off area located at the front gate of the landfill that accepts newspaper, magazines, phone books, cardboard, No. 1 and No. 2 plastic, clear and colored glass, used motor oil, and used oil filters. Tires, metal, and white goods are also recycled in the landfill disposal area. The landfill site is 321 acres with approximately 110 acres of useable space remaining.

**POLK COUNTY WASTE MANAGEMENT LANDFILL** - The Polk County Waste Management Landfill is located approximately 3.5 miles west of the City of Leggett in central Polk County. In addition, five Citizen Collection Stations are located throughout the County. The landfill and collection stations are all owned by the County and operated by Santek Environmental. At the present time, one of the Citizen Collection Stations accepts paper goods for recycling. All of the Stations accept white goods and aluminum cans for recycling at no charge. Facilities are also provided there for the collection of used oil and filters.

The landfill accepts residential solid waste, commercial solid waste, sludge from wastewater treatment plants, dead animals, and tires. It does not accept grease trap wastes, septic tank wastes, water

treatment plant sludge, or batteries. The average waste inflow to the facility is approximately 17,160 cubic yards per month. The facility has approximately 280 acres of remaining acreage.

**NEWTON COUNTY REGIONAL SOLID WASTE COMPLEX** - The Newton County Regional Solid Waste Complex is located in south Newton County near the City of Deweyville.

**APPENDIX 2  
INVENTORY OF CLOSED  
MSW LANDFILLS**

## **APPENDIX 2 INVENTORY OF CLOSED MSW LANDFILLS**

The Geography Department of Southwest Texas State University compiled the Closed Landfill Inventory for the DETCOG region. That inventory is included the four attached binders.

In their staff comments of the closed landfill inventory, TCEQ noted that the following sites need to be accounted for in the Regional Solid Waste Management Plan or the closed landfill inventory:

Permit 720  
Permit 981  
Permit 1384  
Permit 2105  
Permit 2242

The sites were listed in the Status Database that was distributed by TCEQ with the closed landfill inventory information. Permit Number 981 in Jasper County was accounted for. However, the remaining sites are permitted facilities; specifically

Permit 720: City of Nacogdoches Municipal Solid Waste Landfill  
Permit 1384: Polk County Waste Management Landfill  
Permit 2105: Angelina County Waste Management Center  
Permit 2242: Newton County Regional Solid waste Complex.

**APPENDIX 3**  
**DESCRIPTION OF SOLID WASTE**  
**ACTIVITIES IN COUNTIES AND CITIES**



**DEEP EAST TEXAS COUNCIL OF GOVERNMENTS  
REGIONAL SOLID WASTE MANAGEMENT PLAN  
APPENDIX 3: DESCRIPTION OF SOLID WASTE ACTIVITIES IN COUNTIES AND CITIES**

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	•	LUFKIN	1
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	•	GRAPELAND	2
	•	KENNARD	3
	•	LOVELADY	3
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	•	HEMPHILL	6
	•	PINELAND	7
h.		SAN AUGUSTINE COUNTY	7
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**DEEP EAST TEXAS COUNCIL OF GOVERNMENTS  
 REGIONAL SOLID WASTE MANAGEMENT PLAN  
 APPENDIX 3: DESCRIPTION OF SOLID WASTE ACTIVITIES IN COUNTIES AND CITIES**

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**DETCOG REGION SOLID WASTE MANAGEMENT PLAN**  
**APPENDIX 3: DESCRIPTION OF SOLID WASTE ACTIVITIES IN COUNTIES AND CITIES**

This section has been added to provide a summary of specific solid waste activities in cities and counties of the Deep East Texas Council of Governments region. Updated information was obtained by sending questionnaires to all of the county and city governments within the region. The following section provides an overview of the information provided from those entities who responded:

- a. **ANGELINA COUNTY** - The Angelina County Waste Management Center landfill is located approximately 6 miles south of the City of Lufkin in central Angelina County. Due to the extensive landfill closings over the last decade, the Angelina County WMC has become a regional landfill serving portions of the surrounding counties. According to the most recent annual report this facility received approximately 122,680 tons of solid waste in Fiscal Year 2001. The report indicates that about 160.24 tons of metal, glass, paper, cardboard, plastic, and construction material were diverted at the facility for recycling or reuse. Based on this information, the facility is expected to have enough capacity remaining to operate for 32.1 years (circa AD 2033).

In response to the questionnaire, illegal dumping and uncovered trucks hauling solid waste are indicated to be problems throughout the County. Another solid waste problem noted was that many people are not using the landfill to properly dispose of their solid waste, especially with regard to waste materials generated from construction, demolition, and roofing activities.

- **DIBOLL** - The City of Diboll operates a wastewater treatment plant that is sized to accommodate a flow of 2.0 MGD. The facility serves approximately 5,400 people and produces approximately 329 cubic yards of sludge per year. This sludge is dewatered via sludge drying beds and centrifuge to an approximate solids content of 24%. The City then hauls the sludge to the Angelina County Waste Management Center landfill for disposal.

The City of Diboll contracts a private hauler to collect the solid waste and transport it to the Angelina County Waste Management Center for disposal. Collection is available in all areas of the City.

- **HUDSON** - No Response
- **HUNTINGTON** - The City of Huntington has contracted with Piney Woods Sanitation to provide solid waste collection services. The solid waste is transported to the Angelina County Waste Management Center landfill for disposal.

The City of Huntington operates a wastewater treatment plant which services a population of approximately 2,000 people and is sized to accommodate a daily average flow of 350,000 gallons per day. The wastewater treatment plant produces approximately 336 cubic yards of sludge per year. This sludge is dewatered by a sludge dewatering trailer. The dried sludge is then hauled to the Angelina County Waste Management Center landfill for final disposal.

- **LUFKIN** - The City of Lufkin provides solid waste collection services for residents within its corporate limits. The City also operates a recycling center and provides commercial cardboard recycling services for a fee. Solid waste collected by the City is disposed of at the Angelina County Waste Management Center.

The City also operates a wastewater treatment plant. Sludge from the wastewater treatment is disposed of by land application.

Memorial Hospital and Woodland Heights Hospital are both located within the City. Medical wastes from these facilities are disposed of by contract with independent waste haulers.

Lufkin Industries, Pilgrims Pride, Texas Foundries, Abitibi, Georgia-Pacific, Atkinson Candy, and Lufkin Independent School District are listed as being large solid waste generators within the City Limits. None of these are known to produce hazardous wastes.

In the response to the questionnaire, illegal dumping was noted as being a problem in most areas of the City. The Angelina Beautiful Clean program specifically targets this problem.

The City plans to modify its solid waste operations in the future by implementing on-board scales with its commercial collection vehicles. They are also interested in developing a true "Class A" compost for marketing. The compost would be from the wood and bagged yard waste that is currently collected.

- **ZAVALLA** - No Response

- b. **HOUSTON COUNTY** - In its response to the questionnaire, Houston County noted that garbage collection was available in all parts of the County, either from public or private entities. They noted that their current means of financing solid waste operations was limited to a private contractor for the entire county. The County apparently incurs no costs for solid waste operations.

Illegal dumping was indicated to be a problem in the rural areas of Houston County. Various creek crossings and ditches are subject to illegal dumping. The County is aware that illegal dumping is a problem in the Ash Community and in the Box Creek areas, but also notes that there are other areas in similar rural settings that suffer illegal dumping from time to time. Another noted solid waste problem was that a lack of funds exists for education and enforcement.

- **CROCKETT** - The City of Crockett provides solid waste collection services for residents within its corporate limits. The City collects for approximately 2,444 residential customers and 318 commercial customers. The total quantity of waste hauled is estimated to be 528 cubic yards per month. The City also operates a transfer station (for City of Crockett use, only). The solid waste is transported to the Angelina County Waste Management Center landfill for disposal.

East Texas Medical Center Hospital is located within the City of Crockett. The hospital and other health care professionals in the area utilize a contract hauler from the City of Tyler to dispose of their medical wastes.

The City operates two wastewater treatment plants. The North Side Wastewater Treatment Plant is sized for a flow of 2.0 MGD and the South Side Wastewater Treatment Plant is sized for a flow of 0.5 MGD. In total, the two facilities service approximately 7,000 people. The North Side facility produces approximately 320 cubic yards of sludge per year and the South Side facility produces approximately 80 cubic yards of sludge per year. The sludge from the North Side WWTP is dewatered via sludge drying beds to an approximate solids content of 24%. According to the questionnaire response some of the sludge is disposed of at the Angelina County Waste Management Center landfill, with the remainder being utilized in Class "A" marketing and distribution. The sludge from the South Side WWTP is dewatered via sludge drying beds to an approximate solids content of 7%. It is then transported to the Angelina County Waste Management Center landfill for disposal.

The City indicated that illegal dumping is a problem in the area, although there are programs

specifically targeting this issue. The city also operates the Crockett Recycling Center.

- **GRAPELAND** - The City of Grapeland provides solid waste collection services for residents within its incorporated limits. The City's solid waste is transported a transfer station. The City's solid waste operations are financed through monthly collection fees. The City plans on increasing its user fees in the near future. Doctor's offices in the City contract with Inviro Clear Management Service to dispose of their medical wastes.

From 1987 through 2001 the City of Grapeland operated a facultative lagoon waste water treatment that required no sludge removal. They have indicated that they currently do not produce sludge at their treatment plant which requires disposal.

- **KENNARD** - The City provides a collection point for solid waste. Houston County Scrap and Salvage then transports the waste to the Angelina County Waste Management Center landfill for final disposal. The City finances this operation by charging customers on their water bills.
- **LOVELADY** - Browning Ferris, Inc. collects solid waste for the City of Lovelady. The City bills its citizens a monthly rate for this service.

The City operates its own wastewater treatment facility, which is permitted for a daily average flow of 0.105 MGD and serves approximately 620 people within in city limits and along the outer edges of town. The facility is a new pond system, and no sludge removal is expected to be required for at least 20 years.

WEDCO, a plastic grinding company, was noted as being a large commercial solid waste generator in the City.

- c. **JASPER COUNTY** - In its response to the questionnaire, the County noted that Precincts 3 and 4 of Jasper County have compactor sites located within them and that they provide solid waste collection services. Several private collectors were also noted as operating in the area.

- **CITY OF JASPER** - The City of Jasper provides solid waste collection services to approximately 3,000 residential customers and approximately 500 commercial customers within its corporate limits. Household waste is also accepted from the Texas Department of Criminal Justice facility. Jasper also operates a transfer station located on Temple Drive in the northern portion of the city which accepts solid waste and used oil. Solid waste is transported from the transfer station to the Angelina County Waste Management Center for final disposal.

Christus Jasper Memorial Hospital and Dickenson Memorial Hospital are both located within the City of Jasper. Their medical wastes are disposed of by contract pick-up.

The City of Jasper operates a wastewater plant. Sludge from the facility is transported to the Angelina County Waste Management Center for final disposal.

- **KIRBYVILLE** - The City of Kirbyville provides solid waste collection services for residents and businesses within its corporate limits. At the present time, the City services approximately 702 residential customers and approximately 114 commercial customers. The solid waste collected is transported to the Newton County Regional Solid Waste Complex for disposal.

The City also operates a 0.93 MGD wastewater treatment plant which services approximately 816 people within the city limits. The plant dewater its sludge via drying bed. The City then transports it to the Newton County Regional Waste Complex for disposal.

d. **NACOGDOCHES COUNTY** - Nacogdoches County operates solid waste collection sites in Elbow Ridge, Douglass, and Etoile. The County listed several private solid waste haulers and septic waste haulers who operate in the area (please refer below for a listing). In its response to the questionnaires, the County listed illegal dumping as being a problem in the northwest and northeastern portions of Nacogdoches County. The County currently has programs in place to target the problem.

- **CITY OF NACOGDOCHES** - The City of Nacogdoches provides solid waste collection services for residents within its corporate limits. The City does not collect grease trap or septic wastes.

The City also owns and operates its own landfill. Several communities and cities in the area dispose of waste at this facility. There is a recycling drop-off area located at the front gate of the landfill that accepts newspaper, magazines, phone books, cardboard, No. 1 and No. 2 plastic, clear and colored glass, used motor oil, and used oil filters. Tires, metal, and white goods are also recycled in the landfill disposal area. The landfill site is 321 acres with approximately 110 acres of useable space remaining.

The City of Nacogdoches provides water service to customers within its corporate limits, as well as to the community of Central Heights. In addition, the City also maintains contracts with surrounding communities. The City of Nacogdoches obtains its drinking water from conventional water wells and from a surface water treatment plant located on Lake Nacogdoches. Sludge from this facility is dewatered via lagoon. The sludge is currently removed by contracted personnel and disposed of at the City of Nacogdoches Landfill. However, the City has recently received a land application permit. Land application is expected to reduce the cost of disposal by 66%.

The City of Nacogdoches also operates a 12.88 MGD wastewater treatment plant that services approximately 30,000 people. The facility produces approximately 1,200 cubic yards of sludge per month. It is dewatered via filter and belt presses to an approximate solids content of 14.5%. It is then disposed of at the City of Nacogdoches Landfill.

Lone Star Feed, Cooper Industries, International Paper, Stephen F. Austin State University, Moore Business Forms, Cal-Tex Lumber, J.M. Clipper, Wal-Mart, Pilgrim Poultry, Southwest Canners, Medical Center Hospital, Memorial Hospital, Goodwill, and Foretravel are noted as being large solid waste generators within the City. None of those entities are known to produce hazardous wastes. Hospitals and other medical facilities within the City contract individually with private transporters for removal and disposal of medical wastes.

- **GARRISON** - The City of Garrison indicates that it does not provide solid waste hauling services. Refer to below for a listing private haulers in the area.

The City operates a 0.12 MGD wastewater treatment plant that services approximately 800 people within the city limits. This facility produces approximately 15 cubic yards of sludge per year, which is dewatered on sludge drying beds. The dried sludge is disposed of at the City of Nacogdoches Landfill.

- **CHIRENO** - No Response
- **CUSHING** - The City of Cushing provides solid waste collection services. It finances its solid waste operations by charging a collection fee of \$11.00 per month. The solid waste is transported to the City of Nacogdoches Landfill for disposal. Doctor's offices and other medical

facilities in the area have their medical wastes hauled by America 3CI.

The City of Cushing operates a wastewater treatment plant. Sludge from this facility is transported to the City of Nacogdoches for disposal.

- e. **NEWTON COUNTY** - Public entities that supply solid waste hauling services are the City of Newton and the County of Newton. Refer below for a listing private haulers in the area.

The County's response to the questionnaire indicated that there are areas of the county that do not currently have garbage collection available from either a public or private entity. However, it also noted that there are seven strategically located collection stations throughout the County where citizens may take their household waste. Newton County then picks it up and transports it to the Newton County Regional Solid Waste Complex in Deweyville. These operations are currently funded by taxes budgeted for operations. However, the County is considering the possibility of implementing a \$1 a bag fee to offset the tipping fees charged at the landfill.

The County also operates a transfer station jointly with the City of Newton. This facility is located within the City of Newton. Solid waste collected from citizen collection stations in the northern portion of the County goes to the compactor at the transfer station, thence to the landfill in Deweyville. Solid waste collected from the southern portion of the County is delivered directly to the landfill. Please note that the County also provides for the collection of used oil at its facilities. The used oil is disposed of by Baxter Oil Company in Beaumont. It is estimated that the County hauls approximately 1,200 cubic yards of solid waste per month.

Medical facilities in Newton County all use High Horizon, Incorporated to haul and dispose of their medical wastes. Other large solid waste generators in the area include Newton County Correctional Center (private prison), Newton ISD, Burkeville ISD, Deweyville ISD, the Louisiana-Pacific plywood mill, and the City of Newton. There are no known generators of hazardous waste in the area.

Illegal dumping is noted to be a problem scattered throughout the County. The County provides a deterrent to this by having its constables follow up on illegal dumping.

- **CITY OF NEWTON** - As noted above, Newton County operates a transfer station jointly with the City of Newton. This facility is located within the City of Newton at 720 Jamestown Road. The transfer station receives about 320 cubic yards of solid waste per week.

The City of Newton provides solid waste collection services to residents and businesses within the city limits. At the present time, the City services 1,000 residential customers and 120 commercial customers.

The City of Newton also operates a 0.98 MGD wastewater treatment plant. The plant services a population of approximately 2,450 within the city limits. Sludge from it is hauled to the Newton County Regional Solid Waste Complex for final disposal.

- **NEWTON COUNTY REGIONAL SOLID WASTE COMPLEX** - This facility is listed as a separate item because it is not owned by a government entity. All of the other landfills in the DETCOG region are briefly described under the listing of the agency that owns or operates it. The Newton County Regional Solid Waste Complex is owned by Western Waste of Texas, LLC, which is a wholly owned subsidiary of Waste Management of Texas. The landfill accepts residential solid waste, commercial solid waste, grease trap waste, septic tank waste, water treatment plant waste, and wastewater treatment plant sludge. It also accepts Class I, II, and III industrial waste. It does not accept tires, batteries, or hazardous wastes. No recycling programs are currently in

place at the facility. According to the facility's most recent annual report, in 2001 the landfill accepted approximately 232,492 tons of solid waste from in-state sources and approximately 796 tons from out-of-state sources. Based on that rate of waste inflow and the remaining capacity of the landfill, the 2001 annual report estimates that the facility has a remaining life expectancy of 37.3 years. However, it should also be noted that the landfill is currently undergoing redesign, which will include expansion of its permitted capacity.

- f. **POLK COUNTY** - The Polk County Waste Management Landfill is located approximately 3.5 miles west of the City of Leggett in central Polk County. In addition, five Citizen Collection Stations are located throughout the County. The landfill and collection stations are all owned by the County and operated by Santek Environmental. At the present time, one of the Citizen Collection Stations accepts paper goods for recycling. All of the Stations accept white goods and aluminum cans for recycling at no charge. Facilities are also provided there for the collection of used oil and filters. Wastewater treatment plant sludge may be disposed of at the landfill only.

The landfill accepts residential solid waste, commercial solid waste, sludge from wastewater treatment plants, dead animals, and tires. It does not accept grease trap wastes, septic tank wastes, water treatment plant sludge, or batteries. The average waste inflow to the facility is approximately 17,160 cubic yards per month. The facility has approximately 280 acres of remaining acreage and its projected closure date is 2040.

- **CORRIGAN** - The City of Corrigan provides solid waste collection services for about 600 residential customers and about 90 commercial customers. Approximately 95% of its residential customers are located within the city limits, but 5% are listed as being rural. The City transports its solid waste to the Angelina County Waste Management Center for final disposal.

The City of Corrigan also operates a 0.3 MGD wastewater treatment plant which services a population of approximately 2,500 people within the city limits. Sludge from the facility is dewatered via drying beds and transported to the Angelina County Waste Management Center.

- **GOODRICH** - The City of Goodrich does not provide solid waste collection services for its residents. However, in its response to the questionnaire the City indicated that all portions of its incorporated limits have access to private haulers.
- **LEGGETT** - No Response
- **LIVINGSTON** - No Response
- **ONALASKA** - The City of Onalaska does not provide solid waste collection services for its residents. In its response to the questionnaire, the City noted that there were no areas in the City in which garbage collection from private contractors was unavailable. The Onalaska Medical Clinic was noted to depend upon Ameritec out of Tyler to transport and dispose of its medical wastes.

The City noted several problems regarding solid waste disposal in the area. The primary difficulty listed was the expense to average citizens. In that case, the City specified that there was a need for one reputable consistent company for solid waste removal in Onalaska. Illegal dumping was noted as being a problem, especially along Gentry Drive (Old Groveton Road) and in any commercial dumpster that was not locked up after dark. Solid waste generated by flea markets and uncovered trucks hauling solid waste were also noted as being problems.

When asked for ideas regarding solid waste in the area, the City indicated the desire for more



education awareness programs, civilian code enforcement, and the Keep Texas Beautiful program to improve situations.

- g. SABINE COUNTY** - Sabine County does not provide waste collection services, nor does it operate a landfill or transfer stations. According to its response to the questionnaire, there are locations within the County in which garbage collection services are not available. Illegal dumping was also noted as being a county-wide problem, even though there are programs in place to specifically target illegal dumping. Problems with uncovered trucks hauling solid waste were also noted.

The presence of illegal dump sites was specifically noted as being a significant problem in the county, especially along rural dirt roads. The County further noted that it cleans up illegal sites when it cannot identify the person or persons responsible. However, clean-up's are done only when funds are available. The County currently has no means of financing solid waste operations.

The Sabine County Hospital is licensed for thirty-six beds and is located in the City of Hemphill. It utilizes a commercial disposal company to dispose of its medical wastes.

- **HEMPHILL** - The City of Hemphill has a contract with a private hauler to provide solid waste services to its residents.

The City operates a surface water treatment plant. The facility is owned by the Sabine River Authority, with Hemphill serving as the contract operator of the plant. The plant is sized for a flow of 1.5 MGD and serves customers in the City of Hemphill and in the surrounding area. Alum and Polymer are utilized in the plant's treatment processes. Sludge from the facility is transferred to the Sabine River Authority land application site.

The City also operates a wastewater treatment plant. The facility is sized for a flow of 0.2 MGD and services approximately 1,106 people. The City is currently expanding the facility's capacity through CDBG and USDA funding. The facility generates approximately 96 cubic yards of sludge per year. This sludge is dewatered via drying bed and transported to the Angelina County Waste Management Center landfill for disposal.

In its questionnaire response, the City indicated that it viewed the absence of nearby landfills as a problem for the area. It also provided a comment that Sabine County should re-establish its own landfill.

- **PINELAND** - The City of Pineland did not respond to the questionnaires. However, other information indicates that the City currently operates a registered municipal transfer station. Other information obtained from the *Toledo-Bend.com* website states that the City of Pineland provides garbage collection service for customers within its city limits.

**h. SAN AUGUSTINE COUNTY** - No Response

- **BROADDUS** - No Response
- **CITY OF SAN AUGUSTINE** - The City of San Augustine did not respond to the questionnaires. However, available information indicates that the City operates a transfer Station. Conversations with city officials indicates that solid waste is hauled from that facility to the Angelina County Waste Management Center.

- i. SAN JACINTO COUNTY** - In its response to the questionnaires, the City of Shepherd listed San Jacinto County as a public supplier of solid waste collection services in its area. The City notes that

San Jacinto County's recycling efforts include the collection of cardboard, paper, glass, oil, and oil filters.

- **COLD SPRING** - No Response
- **POINT BLANK** - In its response to the questionnaire, the City indicated that it does not operate a wastewater treatment plant and that waste services in its area are covered by San Jacinto County.
- **SHEPHERD** - The City noted that San Jacinto County and private solid waste haulers provide service in the area. Refer below for a listing private haulers in the area.

The City operates a 0.4 MGD wastewater treatment plant that services approximately 2,029 people. The facility produces approximately 8 cubic yards of sludge per month. The sludge is dewatered via drying bed and then transported to the Waste Management Landfill for final disposal.

- k. **SHELBY COUNTY** - Rural residents contract with various private haulers on a monthly basis for solid waste collection. Illegal dumping was indicated to be a problem in the Shelby County area, especially along county roads and dirt roads that dead end in wooded areas. In the response to the questionnaire it was indicated that some private landowners in the area may be allowing these activities to take place on their properties.
- **CENTER** - The City of Center contracts a private hauler to collect solid waste within its incorporated limits. Citizens are charge on their water bill for this service. The waste is transported to various landfills, including the ones located in Jacksonville and Kilgore. In addition, the City operates a recycling center that collects cardboard, aluminum cans, plastic bottles, and used oil.

The City of Center operates two surface water treatment plants. These facilities obtain their raw water from Pinkston Reservoir and from Lake Center. The Pinkston Water Treatment Plant is sized for a capacity of 3.5 MGD and utilizes lime and alum in its treatment processes. The Mill Creek Water Treatment Plant is sized for a capacity of 1.5 MGD and utilizes blended polymer and caustic soda in its treatment processes. Sludge from these processes is directed to lagoons and removed only on an "as needed" basis. The sludge is transported to the Angelina County Waste Management Center landfill for final disposal. The City provides potable water to residents within its corporate limits as well as to the Sandhill Water Supply Corporation and Shelbyville Water Supply Corporation. In all, these two plants supply water for approximately 7,000 residential customers. Water is also provided to businesses in the area, the largest of which is the Tyson Poultry Facility which utilizes more than 1.5 million gallons per day.

The City also operates a wastewater treatment plant sized for a daily average flow of 1.77 MGD. This facility services a residential population of approximately 5,000 people. Sludge from the facility is dewatered via belt press to a solids content of approximately 12%. The facility produces approximately 96 cubic yards of sludge per month. This sludge is transported to the Angelina County Waste Management Center landfill for disposal.

Several businesses exist in Center, with Tyson Foods being indicated as a large commercial solid waste generator in the area. There are no known hazardous waste generators in the area.

Shelby Regional Hospital is located within the City. Medical wastes from the hospital and other medical facilities are bagged and boxed as required by law, then stored in a locked building until

a contracted medical waste handler, such as 3CI or Ameritech, collects it.

- **HUXLEY** - The City of Huxley Surface Water Treatment Plant services a population of approximately 1,899 people in the City of Huxley and the Possum Trot Area (all located in Shelby County). The plant draws its raw water from Toledo Bend Reservoir and has a treatment capacity of 600 gallons per minute. Alum, chlorine, and caustic are used in the water treatment processes at this facility. The approximate quantity of sludge produced at the plant is 3.188 dry tons per year and is land applied to a site in Shelbyville.
- **JOAQUIN** - No Response
- **TENAHA** - The City of Tenaha does not provide collection services. However, a private collector (Litter Gitter) was noted as being located within the City. There are no hospitals located within the City and its local clinic is closed at the present time.

The City operates a wastewater treatment plant that services approximately 900 people. Sludge from the facility is dewatered via sludge drying bed and disposed of at a permitted landfill. However, they anticipate changing their disposal methods to land application in the future.

- **TIMPSON** - The City of Timpson identified Clyde Adams as a private hauler of solid waste in the area. Other questionnaire responses indicate that there are no areas within the City in which garbage collection services are unavailable. Illegal dumping is not listed as a major problem in the City, as it is deterred by City ordinances. The City currently has no plans for establishing recycling centers, but noted that it would be willing to consider it.

The City also operates a 0.4 MGD wastewater treatment plant that services approximately 1,094 people. Sludge from the facility is dewatered on sludge drying beds. Approximately 37.16 tons of dried sludge is produced by the facility in a year. The sludge is disposed of at the Royal Oaks Landfill in Jacksonville, Texas. Sewer charges provide the funding for this disposal.

- I. **TRINITY COUNTY** - Trinity County did not respond to the questionnaires. However, it is known that the County has recently enacted an ordinance aimed at eliminating illegal dumping in rural areas. Many of the small private haulers in the area are making enquiries regarding the possibility of establishing a public or privately owned registered transfer station in a centrally located area.

- **GROVETON** - The City of Groveton contracted Browning Ferris, Inc. as its solid waste hauler. The City collects the monthly billing for BFI.

Illegal dumping and uncovered trucks hauling waste are both indicated to be problems that occur within the city limits. The City currently has programs in place that target those problems.

The City of Groveton Wastewater Treatment Plant is managed by Severn Trent Environmental Services, Inc. The plant is sized for a daily flow of 0.220 MGD. Sludge from the facility is removed on an "as needed" basis. This was required for the first time in 2001, and the sludge was disposed of by land application at Sam Houston State University in Huntsville, Texas.

- **TRINITY** - In its response to the questionnaires, the City of Trinity indicates that BFI collects residential and commercial solid waste within the City Limits.

The City of Trinity also operates a 0.61 MGD wastewater treatment plant. Sludge from the facility is dewatered on sludge drying beds. Approximately 133 tons of dry sludge per year is disposed of by either land application or transportation to the Waste Management landfill in Conroe.

m. **TYLER COUNTY** - Tyler County operates a community collection center located in the City of Woodville. Rural residents must contract with private waste haulers or deliver their solid waste to the collection center themselves. The collection center operations are funded by fees collected for waste disposal. The County expects that it will have to increase the existing disposal fees in order to offset operating expenses. At the present time, waste from the collection center is transported to the Angelina County Waste Management Center landfill for final disposal.

In its responses to the questionnaire, the County noted that they do get complaints from residents in the Spurger and Fred Communities. Those communities are located in the southern end of the County and the residents must travel approximately 35 miles to dispose of their solid waste at the collection station in Woodville.

The County also noted that illegal dumping is a problem in all portions of Tyler County, especially along county roads in areas with no garbage collection service. Programs are in place that specifically target dumping.

- **CHESTER** - In its response to the questionnaires, the City of Chester indicates that it does not provide public waste collection services. Refer below for a listing private haulers in the area.
- **COLMESNEIL** - The City of Colmesneil operates a wastewater treatment plant which has had an average daily flow of about 18,600 gallons per day over the last five years. Refer below for a listing private haulers in the area.
- **WOODVILLE** - The City of Woodville supplies solid waste collection services to its residents. The City finances its solid waste collection service by garbage fees. Residential customers are charged a straight monthly fee of \$11.25 and commercial customers are charged based on dumpster size and collection period. The City also operates a transfer station within its incorporated limits. Solid waste is transported to the Angelina County Landfill for final disposal.

The City of Woodville operates a 1.6 MGD wastewater treatment plant which services approximately 4,500 people in the City. The wastewater plant also services the Lewis Unit (Texas Department of Criminal Justice). The facility produces approximately 90 cubic yards of sludge per month, which is then de-watered via centrifuge and disposed of at the Angelina County Landfill.

The Tyler County Hospital is located in Woodville. The hospital disposes of its medical wastes in bio-hazard bins, which are then hauled away for final disposal by Stericycle. Other medical facilities in the area have their bio-hazard bins hauled by America 3CI.

n. **PRIVATE FIRMS** - Several private firms provide solid waste collection services to individual home and businesses in the DETCOG region. Many individuals also collect solid waste in the region. These individuals generally transport the waste to the various landfills or transfer stations in the area via pickup truck with sideboards. The majority of the firms transport the waste collected to landfills within the DETCOG area. The following table provides a list of private firms in the DETCOG region and the areas in which they operate.

<b>PRIVATE COLLECTION SERVICES</b>		
<b>(Source of Information: Questionnaires responded to by all entities)</b>		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>

Alfred Powell	Solid waste	Lake Sam Rayburn Area
Browning Ferris, Inc.	Solid waste	Cities of Groveton, Lovelady, and Trinity
Buel Collection Service	Solid waste	Southern Houston County
Bubba Gibson	Solid waste	North Newton County
Calvin Roberts	Solid waste	Joaquin and vicinity in Shelby County
Clarence Frick	Solid waste	Licensed by Sabine County
Clifford Gray	Solid waste	Licensed by Sabine County
Clyde Adams Trucking	Solid waste, septic tank waste, and medical ash	Cities of Center, Timpson, and Tenaha; Portions of Angelina and Shelby County
D & J Heavy Equipment	Solid waste	Jasper County
Don's General Services (Don Tate)	Solid waste	City of Hemphill (Sabine County)
East Texas Sanitation	Solid waste	Nacogdoches County
Gary's Sanitation	Solid waste	Tyler County
Gary Tolar	Solid waste	Polk and Tyler Counties
Hancock Sanitation	Solid waste	Licensed by Sabine County
Hollis Sanitation	Solid waste	Zavalla area (Angelina County)
Houston County Scrap and Salvage	Solid waste	Cities of Crockett, Kennard, Lovelady, Latexo, Grapeland, Porter Springs, and Diboll.
Hutto Garbage Service	Solid waste	Rural areas of Houston County
J. T. Lowe	Solid waste	Licensed by Sabine County
Joe Hensarling	Solid waste	Woodville area (Tyler County)
Jerry B. Beasley	Solid waste	Rural Trinity and Polk Counties
Litter Gitter (Barbara Hale)	Solid waste	Nacogdoches and Shelby Counties
Matteson Sanitation	Solid waste	Lufkin and Nacogdoches areas (Angelina and Nacogdoches Counties)
Mike Shaw	Solid waste	Licensed by Sabine County
Mike's Trash	Solid waste	Goodrich Area (Polk County)
Olen Crumpler	Solid waste	Southeast Tyler County
Osburn Sanitation	Solid waste	Angelina and Nacogdoches County areas, including Huntington, Hudson, Bald Hill, Central, and Rocky Hill.

Padon Sanitation Services	Solid waste	Cities/communities of Milam, Hemphill, Pineland, Bronson, Six Mile, and Fairmont. Also services several marinas in Sabine County
Pineywoods Sanitation	Solid waste	City of Huntington (Angelina County)
Ponders Rural Garbage	Solid waste	Angelina County
Pro Star Waste	Solid waste	Cities and communities in Polk, San Jacinto, and Trinity Counties (except Livingston). Contract with Alabama-Coushatta Indian Reservation and several independent school districts.
Ruth Winters	Solid waste	Northern Tyler County
Santek	Solid waste	Operates Citizen Collection Stations and Landfill in Polk County
Servco	Solid waste	Joaquin and northeast Shelby County
Shorty's Trash	Solid waste	Goodrich area (Polk County)
Sunflower Sanitation	Solid waste	Areas near Colmesneil (Tyler County)
Tatums Sanitation Service/Piney Woods Sanitation	Solid waste	Cities and communities in Angelina, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, Trinity, and Tyler counties.
Universal Demolishing	Solid waste	Based in Lufkin (Angelina County)
Waste Management Environmental	Solid waste	Jasper County
Waste Services of Texas	Solid waste	Cities and communities in Polk and San Jacinto Counties.
Western Waste of Texas, LLC	Solid waste	Landfill in Newton County

Thirty haulers of septage in the DETCOG region were identified by respondents to the questionnaires. These are listed in the table below:

<b>PRIVATE COLLECTION SERVICES FOR SEPTAGE</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
A & W Septic Tank Cleaning	Grease trap and septic tank waste	Tyler County
A-1 Johnny Portable Toilets	Septic tank wastes and portable chemical toilet wastes	Angelina, Cherokee, Henderson, Houston, Nacogdoches, Newton, Polk, Rusk, Sabine, San Augustine, San Jacinto, Tyler, and Walker Counties
A-1 Septic (Mr. L.J. Alexander)	Grease trap and septic tank waste	Nacogdoches County
A-Vac Septic Service (Mr. Cecil Hopkins)	Grease trap and septic tank waste	Nacogdoches County
All America Plumbing	Grease trap and septic tank waste	Kirbyville area (Jasper County)
Ansley's Disposal Service	Grease trap and septic tank waste	Shelbyville area (Shelby County)

B. C. Powledge's Septic Systems	Grease trap and septic tank waste	Goodrich area (Polk County)
Blackwell Septic	Grease trap and septic tank waste	Nacogdoches and Shelby County
Clyde Adams Trucking	Solid waste, septic tank waste, and medical ash	Cities of Center, Timpson, and Tenaha; Portions of Angelina and Shelby County
Ellis' Septic Tank Services	Grease trap and septic tank waste	Angelina, Houston, and Trinity Counties
Envirovac Inc. <i>(Benjamin Winston)</i>	Grease trap and septic tank waste	Nacogdoches County
Green Sewer Service <i>(Mr. Levi Green)</i>	Grease trap and septic tank waste	Nacogdoches County
Jasper Septic Tank Cleaning	Grease trap and septic tank waste	Jasper County
Jones Septic Tank and Drain Service <i>(Mr. Lamar Jones)</i>	Grease trap and septic tank waste	Nacogdoches County
Keith Blackwell	Grease trap and septic tank waste	Nacogdoches County
Lake Area Septic Sludge (LASSO)	Grease trap and septic tank waste	Jasper County
Leggett Plumbing	Grease trap and septic tank waste	Polk County
Longhorn Septic Service	Grease trap and septic tank waste	Polk County
Mid Lake Septic Service <i>(Mr. Jeffery Cummings)</i>	Grease trap and septic tank waste	Nacogdoches and Sabine Counties
Mike Northern	Grease trap and septic tank waste	Northern Newton County
National Grease/U.S. Liquids <i>(Ms. Kerry Shehan)</i>	Grease trap and septic tank waste	Nacogdoches County
Oliver Plumbing <i>(Mr. Mike Oliver or Mr. John Young)</i>	Grease trap and septic waste	Angelina, Houston, Jasper, Nacogdoches, Polk, San Augustine, and Trinity Counties
Olympic Waste Services	Grease trap and septic tank waste	Area near the City of Center (Shelby County)
Perkin's Septic Service <i>(Mr. Mark Perkins)</i>	Grease trap and septic tank waste	Nacogdoches County
PWI Beaumont Texas	Grease trap and septic tank waste	Tyler County
Reliable Wastewater Management <i>(Mr. Kevin Dillon)</i>	Grease trap and septic tank waste	East Texas area
Safety Kleen	Grease trap and septic tank waste	Jasper, Kirbyville, and Buna (Jasper County)
Stine & Stine Assoc. <i>(Mr. Shannon Stine)</i>	Liquid wastes and chemical toilet wastes	Nacogdoches County
TRACO Waste Management, Inc.	Grease trap and septic tank waste	Shelby County
Velma Young	Grease trap and septic tank waste	Timpson area (Shelby County)

Weaver Dozer and Septic (Mr. Jerry Emerson)	Grease trap and septic tank waste	Nacogdoches County
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All of the responses indicated that medical facilities in the DETCOG region rely heavily on private companies to collect and dispose of their medical wastes. The following table summarizes the haulers identified by name in the completed questionnaires and provides a description of their current areas of operation.

<b>PRIVATE COLLECTION SERVICES FOR MEDICAL WASTES</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
America 3CI	Medical Waste	Medical facilities in Cushing (Nacogdoches County), Center (Shelby County), and Woodville (Tyler County)
Ameritech	Medical Waste	Medical facilities in Onalaska (Polk County) and Center (Shelby County)
High Horizon, Inc.	Medical Waste	Medical facilities in Newton County

The following haulers were identified in the questionnaires as accepting used oil or oil related wastes.

<b>PRIVATE COLLECTION SERVICES FOR OIL AND RELATED WASTES</b> (Source of Information: Questionnaires responded to by all entities)		
<b>PRIVATE FIRM OR INDIVIDUAL</b>	<b>TYPE OF WASTE</b>	<b>AREA OF OPERATION</b>
Baxter Oil	Used oil	Picks up used oil from Kirbyville, Buna, and transfer station in Jasper County
H & W Petroleum Co.	Liquid wastes	Jasper County, City of Lufkin
Parks Lease and Vacuum Service	Drilling mud, produced water, salt water	Areas in Jasper, Newton, Orange, and Harding Counties. In cities and communities including Buna, Kirbyville, Trout Creek, Silsbee, and Warren.



**APPENDIX 4**  
**DESCRIPTION OF REGION**  
**PHYSICAL CHARACTERISTICS**

**DEEP EAST TEXAS COUNCIL OF GOVERNMENTS  
REGIONAL SOLID WASTE MANAGEMENT PLAN  
APPENDIX 3: DESCRIPTION OF SOLID WASTE ACTIVITIES IN COUNTIES AND CITIES**

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## APPENDIX 4

### REGION DESCRIPTION: PHYSICAL CHARACTERISTICS

- Geographic Area** - The Deep East Texas Council of Governments is comprised of the following twelve counties: Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity and Tyler. The region covers 10,545 square miles of the Deep East Texas area.

Figure 1-1 indicates the DETCOG region showing area communities, as well as major highways in the area. The region is bounded on the east by the Sabine River. In the south, the region is bounded by Orange, Hardin, Liberty, and Montgomery Counties with the Neches River forming some of these boundaries. Along the western boundary the region is bordered by Walker, Madison and Leon Counties, with the Trinity River forming some of these boundaries. To the north and northwest, Anderson, Cherokee, Rusk and Panola Counties form the limits. This area encompasses the region commonly known as the Pineywoods Region or Deep East Texas.

- Climate** - Certain of the parameters describing the climate of the region are included in Table 1-1 as obtained from the 2002-2003 Texas Almanac. Regional weather is heavily influenced by proximity to the Gulf of Mexico. The heavy vegetation and forested areas also have an impact on the weather of the region. Table 1-1 shows that annual rainfall ranges from 38.9 inches in Angelina to 56.0 inches in Newton County. The average low January temperature ranges from 33°F in Shelby County (the northernmost county) to 40°F in Newton County (the westernmost county). The average high July temperature shows a narrower range, hovering between 93°F and 94°F throughout the entire DETCOG region.

COUNTY	AREA (sq mi)	ALTITUDE (ft MSL)		ANNUAL RAINFALL (inches)	TEMPERATURE (°F)	
		Low	High		Jan (min)	July (max)
Angelina	864.4	139	406	38.9	37	93
Houston	1,236.8	160	552	42.4	34	93
Jasper	969.6	25	550	52.7	36	93
Nacogdoches	946.8	164	700	47.5	36	94
Newton	939.5	23	510	56.0	40	93
Polk	1,109.8	68	404	48.7	35	94
Sabine	576.5	164	590	52.5	36	93
San Augustine	592.2	164	550	48.6	35	93
San Jacinto	627.9	74	386	48.3	36	93
Shelby	834.5	174	630	50.2	33	94
Trinity	713.9	131	400	44.9	36	94
Tyler	935.7	50	443	54.3	38	93

<b>Total DETCOG Region</b>	<b>TOTAL</b>	<b>10,347.6</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
	<b>MINIMUM</b>	<b>576.5</b>	<b>23</b>	<b>386</b>	<b>38.9</b>	<b>33</b>	<b>93</b>
	<b>MAXIMUM</b>	<b>1,236.8</b>	<b>174</b>	<b>700</b>	<b>56.0</b>	<b>40</b>	<b>94</b>
	<b>AVERAGE</b>	<b>862.3</b>	<b>111.3</b>	<b>510.1</b>	<b>48.8</b>	<b>36</b>	<b>93.3</b>

Source of Information: 2002-20035 Texas Almanac, copyright 2001-The Dallas Morning News. It is noted therein that the climate information provided by the National Oceanic and Atmospheric Administration state climatologist. That information is listed as being the latest compilation as of January 1, 1993 and pertain to a particular site within the county, usually the county seat.

Weather conditions, physical location, and other factors present in the DETCOG Region usually conspire to cause high humidity for the area. The combination of high summer temperatures with high humidity has the added effect of causing high heat indexes. The heat index (also known as "apparent temperature") is a measure of how humidity acts along with high temperatures to reduce the human body's ability to cool itself. The Heat Index is the temperature (in degrees) that the body senses based on "normal" humidity levels. Please note that these calculations are based on the "normal" condition of a person in the shade, at sea level, with a wind speed of 6 mph. Exposure to full sunlight can increase the Heat Index by up to 15°F. In some cases, wind speeds can also alter the Heat Index. Table 1-2 below provides a chart of the Heat Index based on temperature and relative humidity.

<b>TABLE 1-2: HEAT INDEX CHART (BASED ON TEMPERATURE AND RELATIVE HUMIDITY)</b>						
<b>Relative Humidity (%)</b>	<b>TEMPERATURE</b>					
	<b>80°F</b>	<b>85°F</b>	<b>90°F</b>	<b>95°F</b>	<b>100°F</b>	<b>105°F</b>
90	88	102	119	141	168	199
85	87	99	115	136	161	190
80	86	97	112	131	154	180
75	86	95	109	126	147	171
70	85	93	106	122	141	163
65	83	91	103	117	135	155
60	82	90	100	114	129	148
55	81	89	98	110	124	141
50	81	88	96	107	119	135
45	80	87	94	104	115	129
40	79	86	92	101	111	123

35	79	85	91	98	107	118
30	78	84	89	96	104	114

The impact of temperature and humidity on the human body is indicated as follows:

- Heat Index 80°F to 90°F - Fatigue possible with prolonged exposure and physical activity.
- Heat Index 90°F to 105°F - Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity.
- Heat Index 105°F to 130°F - Sunstroke, heat cramps, or heat exhaustion likely. Heatstroke possible with prolonged exposure and physical activity.
- Heat Index 130°F and above - Heatstroke or sunstroke imminent.

Figure 1-2 is based on information provided by the Climatic Atlas of Texas (published by the Texas Department of Water Resources, December 1983) and portrays the average annual temperature and average annual precipitation for the period from 1951 to 1980. It also indicates the average gross lake surface evaporation rates from 1950 to 1979. According to that information, the average annual temperature ranges from around 64°F in the northeast part of the region to around 68°F in the south part of the region. Average annual precipitation varies from about 56 inches in southeastern Newton County and lessens to around 40 inches in western Houston County. Average gross lake surface evaporation rates vary from around 51 inches in western Houston County to less than 45 inches in the eastern portion of the DETCOG region.

**3. Geology** - Included in the following are excerpts from the Deep East Texas Development Council of Government's Regional Solid Waste Plan published in 1992.

*"The DETCOG region lies almost entirely within the West Gulf Coastal Plain section of the Coastal Plain physiographic province. Generally the thickness and number of Eocene and Cretaceous formations results in a wide coastal plain, and the increased variability of the rocks. As a consequence, the West Gulf Coastal Plain displays a series of low and cuestas with infacing escarpments, thereby giving rise to its designation as a belted coastal plain. Actually, the topography can be classified into two district types: (1) the belted coastal plain, which includes a series of low lands developed on weak rock, usually limestones or clay and shales, and bounded on the seaward side by cuesta scarps and dip slopes which are expressions of the more resistant rocks, commonly sandstones; and (2) a narrow strip of coastwise terraces of mixed fluvial, deltaic, estuarine, and/or marine origin."*

The planning area falls largely within the first category of the belted coastal plains, and display two prominent scarps or wolds, as they are locally called. The northernmost of the two is formally known as the Nacogdoches escarpment, and is the easternmost extension of the Bordas-Oakville-Kisatchie system. These scarps are a consequence of differential erosion of Tertiary and Cretaceous formations resulting in a series of lowlands on the weaker rocks and, low westward or inward facing scarps on the more resistant rocks. Characteristically, the gentle dip slopes face eastward, or seaward.

*"The Nacogdoches escarpment runs through the middle of Angelina, and the northern portions of San Augustine and Sabine Counties. The Kisatchie escarpment passes through Trinity, and the northern portions of Polk, Tyler, Jasper, and Newton Counties."*

*"In contrast to these cuesta scarps of the inner coastal plain, which face inland and updip, are the terrace scarps that bound the Pleistocene terraces, and which face seaward. The most prominent of these is the Hockley Scarp, occurring between the Willis and Lissie terraces. Although once considered to be a fault scarp similar in origin to the inner cuestas, it is now considered to be an erosional scarp separating the Willis and Lissie Pleistocene terraces. The Hockley Scarp runs through Hardin County and the southern portions of Jasper and Newton Counties. . . ."*

*". . . The main features of the region's surface geology, which can be divided into three belts (include) the northernmost belt comprising all of Houston, Angelina, Nacogdoches, Shelby, San Augustine, Sabine, and most of Trinity Counties, consists largely of Eocene materials. The second belt consists of Pliocene, Miocene, and Oligocene material occupying most of San Jacinto, Polk, Tyler, and the northern halves of Jasper and Newton Counties."*

Several figures are constructed from a series of plates included in "Land Resources of Texas" produced by the Bureau of Economic Geology, The University of Texas at Austin. These include Figures 1-3 through 1-5 depicting the physiography, surface geology and structural geology of the region. Also included is Figure 1-6, showing mineral resources, and Figure 1-7, indicating energy resources.

General soil maps are available for each of the counties from the Soil Conservation Service, which produced these maps in cooperation with the Texas Agricultural Experiment Station. These are large scale maps and would not generally be readable on a scale sufficiently small to fit in this report. However, a smaller scale map produced by the Bureau of Economic Geology is included as Figure 1-8. If needed, it is recommended that all local efforts take advantage of these reports and maps during the preliminary planning phases for solid waste projects. Although most solid waste design activities would require a more detailed geotechnical investigation.

As can be noted in Figure 1-8, the soils of the DETCOG region, with the exception of small parts of San Jacinto, Polk, Trinity, and Houston Counties are described as light-colored, acid sandy loams, clay loams and sands, with some red soils and clays. The four counties noted above border the Trinity River where soils are described as light-brown to reddish brown, acid sandy loams, acid and calcareous clay loams and clays. Additionally, southwestern portions of Trinity and Houston Counties contain soils described as light-brown to dark gray, acid sandy loams, clay loams, and clays.

The design of solid waste facilities should be based upon thorough geotechnical investigations by qualified professional engineers.

**4. Hydrology** - Figure 1-9 illustrates the major drainage basins, streams, and reservoirs within the DETCOG region. Four different river authorities operate within the region. They are:

- (1) Sabine River Authority
- (2) Lower Neches Valley Authority
- (3) Angelina and Neches River Authority
- (4) Trinity River Authority

Surface runoff is normally slowed by the absorbing action of wooded areas, increasing in cleared areas, such as pasture land and in developed areas.

Of the major aquifers, the Wilcox and Carrizo-Wilcox outcrops in Nacogdoches and San Augustine Counties. The Gulf Coast Aquifer outcrops in the southern counties, including San Jacinto, Polk,

Tyler, Jasper and Newton Counties, and a small part of southern Trinity County. Lesser aquifers include the Sparta, which surfaces in Houston, Nacogdoches, Angelina, San Augustine and Sabine Counties. The Queen City Formation also shows up in part of Nacogdoches County. Figure 1-10, from the Bureau of Economic Geology, indicates the major aquifers of the region.

These formations can be significant in the determination of suitable sites for various solid waste activities. Many of the regulations of the Resource Conservation and Recovery Act and its amendments are intended for the protection of groundwater. Care must be exercised where solid waste and other potentially polluting activities are taking place in areas of aquifer outcropping. Deep East Texas still depends primarily on groundwater for its potable water supplies. The continued good quality of the groundwater is dependent upon protection from sources of pollution.

The scope of this study does not allow for detailed consideration, from a geologic perspective, of site selection for the various types of solid waste activities. However, the local plans and specific facility or site plans should address this issue in detail.

- 5. **Geography** - As shown in Table 1-1, ground elevations range from a low of 23 feet above mean sea level (MSL) in Newton County to a high of 700 feet MSL in Nacogdoches County.

The primary rivers of the region are the Sabine, the Neches and its tributary, the Angelina, the Attoyac Bayou, the Trinity, and the East Fork of the San Jacinto River. Topography is generally rolling to flat. Flows in streams are often limited in velocity by slight slopes, and sedimentation is quite common, with streams changing courses to address this blockage in low areas.

- 6. **Land Use** - As shown in Figure 1-11, approximately seventy percent of the area is forested. In the east, pines and hardwoods predominate, while toward the western edges, cedars and post oaks become more prevalent. Generally, the forests north, west, and south of the DETCOG region are less dense and contain more hardwoods.

Timber types range from longleaf pine in the far east to pines and oaks, hickory and other hardwoods through much of the region. In western Houston County, the growth is best described as oak and hickory forests. Some of the land throughout the DETCOG region has been converted to pasture and for agricultural usage.

Primary agricultural products, as shown in Figure 1-12, include timber products, poultry, and livestock. Livestock, poultry, dairy products, and cotton are the predominate agricultural products from the northern parts of Nacogdoches and Houston Counties and most of Shelby County. There are a number of small truck farm operations within the region, and some specialty farming operations, such as blueberries and Christmas trees, have also been implemented.

Portions of several State and National Forests, as well as a Federal Wildlife Preserve, cover large parts of the DETCOG region. Included are portions of the Davy Crockett, Sabine, Sam Houston and Angelina National Forests (which are indicated in Figure 1-13) and the E.O. Siecke and John Henry Kirby State Forests. Portions of the Big Thicket National Preserve are also located in the DETCOG regions. Large bodies of water also cover substantial portions of the region.

Table 1-3 shows the amount of land in each county affected by these large land holdings and by bodies of water.

**Table 1-3: SELECTED LAND USE BY COUNTY**

County Name	Total Area* (acres)	National Forest Land* (acres)	State Forest Land* (acres)	National Preserve** (acres)	Area Covered by Water (acres)	Total Remaining Area (acres)
Angelina	553,214	58,539	0	0	40,192	454,483
Houston	791,549	93,324	0	0	3,712	694,513
Jasper	620,542	21,077	519	6,774	20,544	571,628
Nacogdoches	628,029	9,238	0	0	22,080	596,712
Newton	601,278	1,781	1,722	0	4,288	593,487
Polk	710,269	0	0	18,291	33,536	658,442
Sabine	368,959	95,457	0	0	55,168	218,334
San Augustine	379,006	68,706	0	0	41,152	269,149
San Jacinto	401,854	60,639	0	0	36,608	304,608
Shelby	534,078	59,037	0	0	25,792	449,249
Trinity	456,894	67,329	0	0	13,440	376,125
Tyler	598,846	0	600	16,080	8,128	574,038
<b>DETCOG Region</b>	<b>6,644,517</b>	<b>535,127</b>	<b>2,841</b>	<b>41,145</b>	<b>304,639</b>	<b>5,760,766</b>

\* Based on information compiled in the 2002-2003 Texas Almanac.

\*\* Based on information obtained from the Big Thicket National Preserve.

Land use impacts a solid waste plan in a number of ways. The density of population affects both the total amount of waste generated, as well as the per capita amount, with smaller quantities generally being generated in rural areas and in multifamily housing. The types of agricultural and industrial efforts to which the land is put also influence the characteristic and the quantity of solid waste.

Density also plays a major role when consideration is given to the possibility of collection of solid waste. The less dense the population, i.e., the more scattered the people, the more difficult the task to provide efficient collection of solid waste.

Since the lands of the State and National woodlands are generally grouped together, they represent out-areas in the County. That is, generally, there are not a great number of residences interspersed throughout the National Forests.

The amount of land within these woodlands is significant in a number of counties. Sabine County has approximately 25.9% of its area covered by National Forest. Similarly, about 18.1% of San Augustine County and 15.1% of San Jacinto County are covered by National Forest. This affects the population density of these areas. On the other hand, counties such as Newton and Nacogdoches are only influenced slightly by the location of these Forests.

State Forests account for smaller portions of the DETCOG area. In addition, Jasper, Polk, and Tyler Counties contain sections of the Big Thicket National Preserve.



When the DETCOG region is considered as a whole, approximately 8.05% of its total area is occupied by National Forests, approximately 0.62% is occupied by the Big Thicket National Preserve, and approximately 0.04% is occupied by State Forests.

In addition, several reservoirs account for a number of surface acres including the following:

Sam Rayburn Reservoir	114,500 acres conservation surface area
B.A. Steinhagen Reservoir	13,700 acres conservation surface area
Toledo Bend Reservoir	181,600 acres conservation surface area
Lake Livingston	82,600 acres conservation surface area

All of Sam Rayburn and B.A. Steinhagen are located in the DETCOG region, while approximately half of Toledo Bend Reservoir and Lake Livingston are in the region. Based on the information supplied in the *2002-2003 Texas Almanac*, about 4.58% of the DETCOG region is covered by water. That information indicates that Sabine County is the most impacted by this situation, with almost 15% of its area being occupied by water surface.

Most of the land of Deep East Texas is dedicated to timber growth, although a substantial amount in the north and west is used for other agricultural efforts such as beef cattle, dairies, and chicken farming. Some mining operations are evident generally involving oil or natural gas. However, these are limited in scope and are generally located in the northern or southern parts of the region. Most of the solid waste generated from these activities are handled by the individual companies who are using the land.

- 7. Transportation** - The highway system within the DETCOG region includes the following primary north-south routes: U.S. Highway 59, U.S. Highway 69, U.S. Highway 96 and State Highway 87. Primary east-west routes include: State Highway 7, State Highway 21, State Highway 103, U.S. Highway 190 and U.S. Highway 287. All of the counties in the region are served by one or more of the primary highways. In addition, the proposed route of Interstate 69 passes through Angelina, Nacogdoches, Polk, San Jacinto, and Shelby Counties.

The rail system within the region includes the Southern Pacific, Missouri Pacific, Atchison, Topeka and Santa Fe railroads, as well as several short-line railroads, such as the Texas Southeastern and the Angelina-Neches Railroads.

**APPENDIX 5**  
**MISCELLANEOUS MAPS**

# **APPENDIX 6**

## **ACTION PLAN**

# APPENDIX 6

## DETCOG ACTION PLAN (2002-2022)

### SPECIFIC ACTIONS AND RESPONSIBILITIES

1. **SHORT TERM (ONE TO FIVE YEARS)** - There are a number of short term actions and responsibilities that the DETCOG will undertake and/or continue in the upcoming years. These actions include specific tasks relating to the planning and coordination functions, educational functions and technical functions.

#### a. MANAGEMENT METHODS

- **Encourage establishment of comprehensive composting and recycling programs.** Due to the scope of the State's recycling goals, DETCOG should work to consolidate information on developments in the recycling arena, marketing opportunities, and other areas in order to help entities within the region to attain the stated recycling goals.
- **Encourage the establishment and provide support for public education programs on all aspects of solid waste reduction and reuse.**
  - (i) **Publish a newsletter on a regular basis.** Publishing a newsletter could be an effective means of informing the region's elected officials of issues and developments relating to solid waste. This newsletter could include information on regulatory changes influencing the management of solid waste, recycling information, seminars and conferences available. It could also serve to highlight specific aspects of the solid waste issues, such as successful programs being utilized.
  - (ii) **Promote the Keep Texas Beautiful Program for the cities in the DETCOG region.** DETCOG will continue to actively support and provide assistance to all of the cities in the region to encourage participation in the Keep Texas Beautiful Program. The program offers many informational and educational opportunities to participants.
  - (iii) **Raise public awareness of solid waste issues.** Through news releases, seminars, conferences and workshops, DETCOG can increase the public awareness of the solid waste issues and problems facing the region.

#### b. FACILITIES AND PRACTICES

- **Encourage and Support the regional landfill concept.** DETCOG will take the lead in promoting the regional concept for solid waste facilities by an active participation in planning, the providing of information on various options available to the local planning units, and by giving technical assistance in the development of regional programs.
- **Encourage and Support the transfer and handling of solid waste in needed areas that are not in close proximity to regional landfills.** The regional landfill concept necessitates the transfer and handling of solid waste in those areas not in close proximity (15-20 miles) to the landfills. DETCOG will be an active participant in

the coordinating of this effort.

- **Establish siting criteria for solid waste facilities.** As future needs arise, DETCOG will provide siting criteria and recommendations for solid waste facilities. DETCOG can act as a clearinghouse in providing information on environmentally sensitive areas which can affect the location of these facilities. These criteria will complement and work in conjunction with applicable State and Federal guidelines.

**c. INTERGOVERNMENTAL COOPERATION** - The East Texas Council of Governments will act as a clearinghouse for information concerning all aspects of solid wastes.

- **Establish a regional information center on solid waste issues.** DETCOG will maintain an information center of information dealing with solid waste issues. This center will be available to local governments, schools and other groups within the region. The inventory of available information will be updated regularly and be categorized by topic to make information retrieval easy.
- **Provide information relating to financial and technical assistance to local governments.** DETCOG will maintain a complete listing of solid waste related grant and loan programs and technical assistance programs, as well as updates on legislative or regulatory changes, that may be useful to the entities of the region. Some of this information could be publicized through the solid waste newsletter.

**d. REGULATORY COMPLIANCE**

- **Continue the DETCOG Solid Waste Advisory Committee (SWAC) as a functioning committee.** The SWAC will continue to act as a sounding board through the state approval of this amendment to the regional plan and then through the formation and completion of the various local plans.

The SWAC should be the guiding force in the review and monitoring of the implementation of the recommended actions as they relate to the goals and objectives of the plan. The committee will also perform a similar function in the formation and completion of the local plans. The review of the local plans will include confirmation that the goals, objectives, recommended actions and timetables are consistent with the adopted regional plan.

- **Review all permit applications for solid waste facilities in the region.** DETCOG will review all permit applications for all solid waste facilities in the region to determine compatibility with the specified goals, objectives and recommendations adopted within the regional plan and with the local plans to be developed later. DETCOG will also contact the relevant local governments to determine consistency of the facility site with local land use and zoning.

**2. MID TERM (SIX TO TEN YEARS)** - Once the short term actions and recommendations are put in place, the following mid term recommendations will be established. These mid term actions will include the encouragement of the development of truly regional solid waste facilities.

- **Encourage and Support the development of new facilities based on the regional landfill concept.** DETCOG will take the lead in promoting the regional concept for solid waste facilities by an active participation in planning, the providing of information on various options available to the local planning units, and by giving technical assistance in the

development of regional programs.

- **Encourage and Support the construction of transfer stations in needed areas not in close proximity to proposed regional landfills.** The establishment of regional landfills will necessitate the construction of transfer stations in those areas not in close proximity to the landfills. DETCOG will be an active participant in the coordinating of the siting of these facilities.

**3. LONG TERM (ELEVEN TO TWENTY YEARS)** - Over the long term, in addition to the various actions and recommendations listed above, DETCOG will do the following:

- **Encourage the development of regional recycling centers.** The Deep East Texas Council of Governments will promote the development of regional recycling centers at the regional landfills. These centers will be able to remove a large quantity of recyclable goods from the waste stream prior to disposal.
- **Encourage the development of regional composting centers.** The Deep East Texas Council of Governments will promote the development of regional composting centers. These centers will focus on the composting of yard waste and municipal wastewater treatment sludges.
- **Encourage the use of advanced technologies which provide for greater protection of the public and environment.** The Deep East Texas Council of Governments will promote the use of advanced technologies, developed over the next 20 years, that provide for the protection of the public well being and which have minimum effects on the environment.