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Appalachian Regional Water Quality Plan



Draft
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SC Appalachian Council of Govts

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PLAN OVERVIEW

1.1 HISTORY OF WATER QUALITY PLANNING

The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. However, it did not actually prohibit water pollution. Instead, it dealt with polluted waters as a “menace to public health.”

Congress re-wrote the Federal Water Pollution Control Act in 1972. This new legislation provided monumental changes to the Federal Water Pollution Control Act, which created a national strategy for keeping the nation’s water clean while returning polluted water bodies to a sanitary level. In 1977, Congress amended the Act and changed its name from the “Federal Water Pollution Control Act” to the “Clean Water Act.” The Clean Water Act has been amended many times since 1977 in order to fine-tune issues regarding funding appropriations, pollution evaluation measures, water quality standards, and permits and licenses.

The Clean Water Act, along with its subsequent amendments, established goals and policies for water quality improvements on a national scale. It primarily focused on the incremental elimination of pollutants discharged into the surface waters of the United States. The water quality within the United States has improved significantly since the initiation and implementation of this Act.

The EPA’s role in planning for water pollution abatement on a nationwide level is extensive. Section 102 of the Clean Water Act directs the Administrator of the EPA to prepare comprehensive plans “for preventing, reducing, or eliminating the pollution of the navigable waters and groundwaters and improving the sanitary condition of surface and underground waters.” The planning process for these plans must include federal, state, interstate, and local agencies, along with private industries.

That process includes developing regional water quality management plans in each state. The authority for this directive is in Section 208 of the Clean Water Act. It establishes a framework for the reduction and elimination of wastewater pollution via developing and implementing regional wastewater management plans. State governors are required to identify areas with water quality problems and designate an entity to develop “area wide waste treatment management plans.” In 1975, the governor of South Carolina designated five Councils of Government (COGs) as planning agencies for five South Carolina regions. These five regions contained high levels of urban and industrial development, along with additional factors contributing to substantial water quality problems. The five regional planning agencies included:

1. Appalachian Council of Governments
2. Central Midlands Council of Governments
3. Lowcountry Council of Governments
4. Berkeley-Charleston-Dorchester Council of Governments
5. Waccamaw Regional Planning and Development Council

The designated planning areas within the boundaries of these five COGs accounted for 20 of the state’s 46 counties. The governor appointed the South Carolina Department of Health and Environmental Control (SCDHEC) as the planning agency for the remaining 26 counties, which are referred to as the “non-designated areas.” At that point in time, the non-designated areas were rural or consisted of small to medium sized urban areas, where significant water quality problems were not likely to exist.

By 1979, the six designated planning agencies (the five COGs and SCDHEC) had completed their respective Regional Water Quality Management Plans, i.e. 208 Plans. Each 208 Plan was certified by

the governor and approved by the EPA. These 208 Plans have guided the State's wastewater planning program ever since. Because the Clean Water Act mandates that 208 Plans be "updated as needed," the designated planning agencies have periodically revised and updated their 208 Plans in order to keep them current.

The Appalachian Council of Governments (ACOG) adopted its first Regional Water Quality Management Plan in 1978. The six-county region covered by this 208 Plan includes Cherokee, Spartanburg, Greenville, Pickens, Oconee, and Anderson County. The original 1978 Regional Water Quality Management Plan was updated in 1988, with amendments adopted as needed.

In 1994, all of the designated planning agencies in South Carolina agreed to update their respective 208 Plans at the same time. This allowed all regions to share some common elements while keeping each plan unique to each region. The revised plans provided a more comprehensive strategy for promoting orderly, effective water quality management and wastewater treatment services. The ACOG adopted its revised 208 Plan in October of 1997.

As South Carolina's population grew, an additional water quality planning agency was needed to manage an increasingly urban area between the coast and the central midlands. In 2004, the Santee-Lynch Council of Government became the sixth designated 208 planning agency.

In 2009, funding from the American Recovery and Revitalization Act (ARRA) was provided to each of South Carolina's six designated regional water quality planning agencies and to SCDHEC for the non-designated areas, in order to re-evaluate and update all of South Carolina's 208 Plans. Many of these plans had not been updated in 20+ years. The revised 208 Plan for the Appalachian Region completely replaces the previous Appalachian Regional Water Quality Management Plan for the six-county upstate region.

1.2 PURPOSE AND USE OF A WATER QUALITY MANAGEMENT PLAN

Water Quality Management Plans, or 208 Plans, are comprehensive regional water quality management plans, required by Section 208 of the Clean Water Act.

The purpose of a 208 Plan is to protect natural water resources and improve water quality while meeting the region's present and future sewer demands. In order to fulfill this purpose, the 208 Plan must:

1. Control water pollution from point sources and, to a lesser degree, non-point sources.
2. Plan for adequate sewer infrastructure to accommodate development over the next twenty (20) years.
3. Provide policies and programs intended to protect regional water quality.
4. Provide an inventory of point source pollution sites (NPDES discharge permit sites).
5. Identify the agencies needed to manage and carry out the 208 Plan.

The 208 Plan is used to guide decisions pertaining to the issuance of NPDES permits (National Pollution Discharge Elimination System permits). Therefore, the 208 Plan must identify the location, sizing, staging, service area, and level of treatment of all wastewater treatment facilities in the ACOG region that have (or plan to have) an NPDES permit. NPDES permits are the main implementation tool for controlling pollutant discharges from point sources. SCDHEC is the agency responsible for issuing NPDES permits. Each designated regional water quality planning agencies (i.e. the ACOG in the Upstate) must review each NPDES application to assure that it is in conformance with the respective 208 Plan as part of the SCDHEC permit issuance process. Federal regulations prohibit the issuance of NPDES permits to wastewater treatment facilities that are not consistent with the applicable 208 Plan (Federal Clean Water Act §208(e); 40CFR130.6 {f}). This includes prohibiting NPDES permit applications that have non-conformance issues concerning:

1. The construction of new wastewater treatment facilities (WWTFs),
2. The expansion of existing WWTFs,
3. The creation/expansion of small private wastewater treatment plants (“package plants”)

In order to obtain an NPDES for any of the above items, an amendment to the 208 Plan must be requested by the applicant and approved based on the entities amendment procedures.

Proper planning for wastewater treatment on a regional basis is important for the future development of any region. Therefore, an effective 208 Plan must address concerns about potential impacts to water quality while providing efficient and adequate sewer treatment infrastructure. Agencies charged with implementing a 208 Plan and reviewing NPDES permits must make decisions that are consistent with the predicted and desired community growth patterns, while respecting the protection of irreplaceable natural resources.

1.3 BASIN-BASED REGIONAL WATER QUALITY PLANNING

The southeastern United States has experienced unprecedented growth during the past twenty (20) years, and the Appalachian Region of South Carolina is presently one of the fastest growing areas in the southeast. Such growth, while stimulating to the economy, has placed a strain on the protection and preservation of natural resources. In particular, the process of land development coupled with increased demands for water and sewer service has heightened the competition for limited stream capacities.

In drought and seasonal dry weather conditions, streams carry less water and consequently have a lower assimilative capacity, which reduces the water quality. As a result, competition for limited assimilative stream capacities has increased the need for regional cooperation for water quality planning and implementation. Local land use policies and regulations influence patterns of stormwater runoff, which affects the natural and manufactured environment. In one manner or another, all local land use decisions influence water quality. If water resources were located within one single government jurisdiction, it would be fairly simple to adopt land use regulations protecting those resources. However, most rivers, streams, and lakes are not located within only one governmental jurisdiction; they pass through numerous cities, counties, and states. Additionally, water bodies are often used as the boundaries between jurisdictions. Extensive intergovernmental cooperation is required to ensure that surface waters are used and maintained in the most efficient and environmentally responsible manner.

As the designated 208 Planning Agency the Appalachian Council of Governments (ACOG) is responsible for water quality management planning within the six-county upstate region. The Appalachian Regional Water Quality Management Plan (208 Plan) is a compilation of regional and basin specific data, with analyses, findings, and water quality policies regarding the region’s present condition and future needs. The 208 Plan uses an watershed-based approach to delineate natural drainage basins as planning units, rather than using traditional county jurisdictions to delineate boundaries.

By definition, a drainage basin is a geographic area delineated by boundaries that extend along topographic ridgelines, into which all water bodies, sediments, and dissolved materials drain. A watershed is a smaller unit within a drainage basin. Basin-based management recognizes the interdependence of water quality related activities within a drainage basin. These activities include monitoring, water quality modeling, land use planning, permitting, issue identification and prioritization, along with other activities. SCDHEC delineates drainage basins and sub-basins, providing basin management plans that include implementation strategies. Similarly, the ACOG has organized this 208 Plan along SCDHEC’s delineated drainage basin and sub-basin boundaries, called “Basin Planning Areas,” in order to provide clarity and consistency. There are six (6) Basin Planning Areas within the Appalachian Region: Broad-Pacolet, Tyger, Enoree, Reedy, Saluda, and Savannah Basin Planning Areas.

1.4 GUIDING PRINCIPLES & GOALS

Few resources are more important to the future of the Appalachian Region than an adequate supply of clean water. Because this region contains the headwaters of several major drainage basins, it is fortunate to have ample amounts of high quality water. However, the streams and rivers within the region are relatively small, which means that they have fairly limited assimilative capacities for waste discharges. For many years the supply of water and its assimilative capacity was seldom a concern. However, high growth rates in the last 20 years has increased the demands on water quantity as well as the pressure on water quality. The increased pressure on our water resources has made the need for water quality planning crucial to protection of our valuable natural resources.

The primary purpose of the update of the regional water quality management plan is to develop a sound and workable plan for the abatement of water pollution within the Appalachian Region watersheds. More specifically, the planning program is intended to set forth a framework plan for the management of surface water for the region's watersheds incorporating measures to abate existing pollution problems and elements intended to prevent future pollution problems. It should be recognized that plan implementation will be dependent upon local actions including refinement and detailing of sanitary sewer service areas; the development of stormwater management plans and sewerage system facilities plans; and the integration of the plan recommendations into County land and water resource planning as a means for implementing the rural land management recommendations.

In order to meet the needs of this growing region and establish effective planning policies, guiding principles have been established to express the region's water quality vision. Goals have been set to establish the types of implementation tools needed to achieve the region's water quality vision.

Guiding Principles

1. Water quality is important to the health, safety, and welfare of the citizens of the region.
2. Water quality is vulnerable to the incremental and cumulative effects of development.
3. Water resources cannot be managed separately from the land resource - the two are intrinsically linked.
4. Clean water enhances the overall livability of the region and helps to attract economic development.
5. Fewer large point source discharges that are strategically placed are better than many small ones; they are generally more efficient and effective.
6. Regional public wastewater systems are preferred over small private systems.

Goals

The Appalachian Region will strive to accomplish the following primary goals in order to protect water bodies while providing a high level of water quality:

1. To develop water quality control facilities, programs, operational improvements, and policies, including land management and nonpoint pollution controls, which will effectively serve the existing and planned future regional development pattern and meet sanitary and industrial wastewater disposal, and stormwater runoff control needs.
2. To develop, adopt, and implement programs that encourage and promote coordinated and unified planning and development of water and sewer facilities in the urban and rural growth areas.
3. To explore alternative wastewater disposal techniques when considering new or expanded treatment systems as a means of reducing the need for additional pollutant discharges directly to water bodies.

4. Encourage all federal, state, and local agencies with water quality monitoring responsibilities to look at means of integrating their water quality monitoring programs in the region, in order to identify specific sources of existing and potential water quality problems.
5. Identify existing point source discharges that should be discontinued at such time as connection to a regional public wastewater treatment system is available and feasible for connection to the regional infrastructure.

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INSTITUTIONAL FRAMEWORK

2.1 AGENCY DESIGNATIONS & RESPONSIBILITIES

Water Quality Planning Agency (WQPA)

The Appalachian Council of Governments (ACOG) has served as the 208 Water Quality Planning Agency (WQPA), for the six-county Appalachian Region of South Carolina since 1978. The ACOG was designated to serve the region in such a capacity by the Governor of South Carolina and was approved by the U.S. Environmental Protection Agency (EPA). It is responsible for coordinating state and local planning programs in a manner that achieves the objectives of federal, state and local interests in achieving mutual clean water goals. The counties that fall under the jurisdiction of the ACOG include: Anderson, Cherokee, Greenville, Oconee, Pickens, and Spartanburg.

Per a 1986 Memorandum of Agreement (MOA) between the ACOG and SCDHEC, the ACOG is responsible for the following activities:

- To update, amend, and maintain the Appalachian Regional Water Quality Management Plan (ARWQMP) as needed;
- To review preliminary engineering reports, construction permit applications, plans and specifications, and applications for new or re-issued NPDES Permits, and to certify that such activity is in conformance with the ARWQMP;
- To evaluate conflicts between proposed projects and the ARWQMP and facilitate modifications to either the project or ARWQMP as necessary to meet the intent and goals of the 208 Plan; and
- To coordinate and facilitate public participation in the policy making process through public hearings and/or meetings.

To assist in achieving these objectives, the BCD COG established an Regional Water Quality Advisory Committee (RWQAC) to serve as a subcommittee to the Full COG Board. Changes to the 208 Water Quality Management Plan are presented to the RWQAC for their recommendation. This recommendation is then sent to the Full COG Board for a final decision. The RWQAC, which is appointed by the chairman of the Appalachian COG, reviews issues such as the updating of the 208 Water Quality Management Plan, Plan Amendments, and Wasteload Allocations Strategies.

In addition to the RWQAC, a Basin Planning Authority is established for each basin outlined through the plan. Basin Planning Authorities are established to provide technical assistance to the RWQAC. The BPAs are made up of representatives of local wastewater contributors who possess relevant technical backgrounds in water and wastewater management. These representatives are appointed by the chairman of the Appalachian COG. The BPAs review issues and makes recommendation to the RWQAC.

Water Quality Management Agency (WQMA)

The provisions of the Water Quality Management Plan are implemented by designated local water quality management agencies. Designated management agencies, as approved by SCDHEC and EPA are responsible for constructing, operating, and maintaining publicly owned wastewater treatment facilities and have the legal authority to implement their plans. A designated management agency must have the legal authority to:

- Carry out portions of the areawide wastewater treatment management plan.
- Effectively manage treatment facilities and related systems serving an area in conformance with the 208 Water Quality Management Plan in effect.

- Directly or by contract design, construct, operate, and maintain publicly owned wastewater treatment facilities and wastewater collection systems.
- Raise revenue, including the assessment of wastewater treatment charges, and accept grants or other funds for wastewater treatment purposes.
- Assure the implementation of an area-wide wastewater treatment management plan;
- Refuse to receive wastewater from any municipality or subdivision that does not comply with any provisions of an approved wastewater treatment management plan;
- Accept industrial wastewater for treatment and manage pre-treatment programs as necessary.

Entities that accept these and other responsibilities as assigned by the Clean Water Act may be designated as management agencies. This includes incorporated municipalities, counties, and special purpose districts that are legally capable of performing the duties of a designated management agency. Designation as a management agency is first certified by SCDHEC and submitted to the EPA by the Governor of South Carolina for approval.

Management Areas by Planning Basin

The following entities have been designated as WQMA's within the Appalachian Region. Please note that several of these agencies provide services in more than one Basin Planning Area.

Broad-Pacolet Basin Planning Area

- Town of Blacksburg
- Gaffney Board of Public Works (Gaffney BPW)
- Spartanburg Sanitary Sewer District
- City of Inman

- Pickens County Public Service Commission (Pickens County PSC)
- City of Belton
- Town of Pelzer
- Town of West Pelzer
- Town of Williamston

Tyger Basin Planning Area

- Greer Commission of Public Works (Greer CPW)
- Spartanburg Sanitary Sewer District
- Town of Lyman

Reedy Basin Planning Area

- Renewable Water Resources (ReWa)

Enoree Basin Planning Area

- Renewable Water Resources (ReWa)
- Greer Commission of Public Works (Greer CPW)
- City of Woodruff

Savannah Basin Planning Area

- Oconee County Sewer Authority
- Pickens County Public Service Commission (Pickens County PSC)
- City of Clemson
- Easley Combined Utility Systems
- City of Pickens
- Anderson County Sewer Department
- City of Anderson
- Town of Iva
- Town of Pendleton

Saluda Basin Planning Area

- Easley Combined Utility Systems
- Renewable Water Resources (ReWa)

2.2 THE BASIN PLANNING AREAS

Basin Delineation Via

This Region has been divided into three major drainage Basins, or Watersheds, by DHEC for planning purposes. The western portion of the Region including all of Oconee County and most of Pickens and Anderson County is included in the Savannah Basin. The Saluda Basin covers the eastern portions of Pickens and Anderson County as well as a large portion of Greenville County. The Broad River Basin includes a portion of Greenville County and all of Spartanburg and Cherokee County. For planning purposes some of these major drainage basins have been subdivided into smaller sub-basins. The Saluda Basin is further divided into the Reedy River and Saluda River basins. The Broad River basin is divided into the Enoree River, Tyger River, and Broad-Pacolet Basins.

Description of the Three (3) SCDHEC River Basins within the Appalachian Region

Savannah River Basin

In the western portion of the region, the SCDHEC Savannah River Basin coincides exactly with the boundaries of the USDA NRCS Savannah Basin, which has the 6-digit HUC of 030601. This river basin contains all of Oconee County and the western portions of Anderson and Pickens Counties. The Savannah River Basin is the **largest** of the three river basins, draining over **1,600 square miles** of the region, which is 42% of the region. There are 15 municipalities in this river basin, and they include Anderson, Clemson, Pickens, Seneca, and the western portion of Easley. The basin also contains several major lakes and rivers, including Lake Jocassee, Lake Keowee, Lake Hartwell, the Savannah River, and Eighteen Mile Creek.

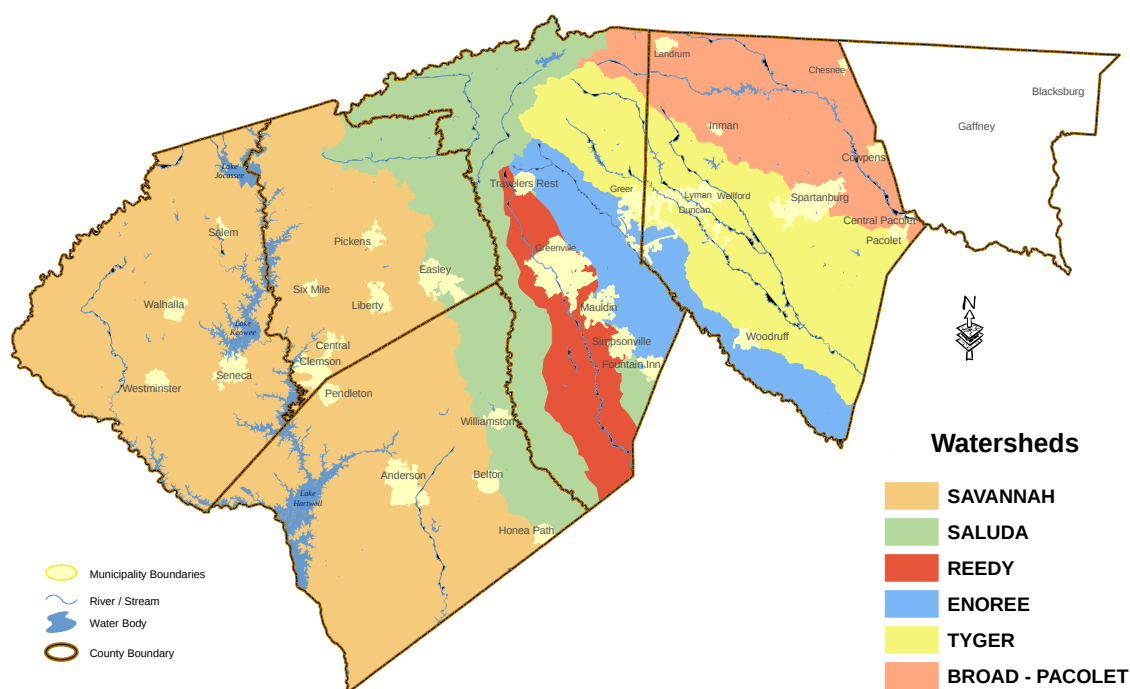
Broad River Basin

The SCDHEC Broad River Basin forms the eastern portion of the region. It is in the USDA NRCS Santee Basin, which has the 6-digit HUC of 030501. Both the Broad River Basin and the Saluda River Basin share this 6-digit HUC, for both are located within the USDA NRCS Santee Basin. The Broad River Basin contains all of Cherokee and Spartanburg Counties, plus the eastern half of Greenville County. This river basin drains approximately **1,500 square miles**, or 39%, of the region. It contains 19 municipalities, with the majority of these municipalities located in Spartanburg County, including the Cities of Greer, Spartanburg, and Gaffney. Additionally, parts of the Cities of Greenville, Mauldin, and Simpsonville are located within this River Basin. The Broad, Tyger, Enoree, and Pacolet Rivers are the major rivers contained within the Broad River Basin.

Saluda River Basin

The SCDHEC Saluda River Basin forms the center of the region. It is in the USDA NRCS Santee Basin and has the 6-digit HUC of 030501, which it shares with the Broad River Basin described above. The Saluda River Basin contains the western portion of Greenville County and the eastern portion of Anderson and Pickens Counties. It is the **smallest** of the three river basins, draining **almost 770 square miles**, which is 19% of the region. There are 11 municipalities located in the Saluda River Basin, which include some of the largest and fastest growing cities in the Upstate. This includes portions of the Cities of Greenville, Mauldin, Simpsonville, and the eastern portion of Easley. The two major rivers within this river basin are the Saluda and Reedy Rivers.

Appalachian Region Basin Planning Areas



Basin Planning Areas

The hydrologic units of evaluation for the 208 Plan are called “Basin Planning Areas,” and there are six (6) of them. The Basin Planning Areas include:

1. **Broad-Pacolet Basin Planning Area**
2. **Tyger Basin Planning Area**
3. **Enoree Basin Planning Area**
4. **Saluda Basin Planning Area**
5. **Reedy Basin Planning Area**
6. **Savannah Basin Planning Area.**

The **Broad-Pacolet Basin Planning Area** is a combination of two (2) SCDHEC sub-basins – the Broad Sub-basin and the Pacolet Sub-basin, which are located in the SCDHEC Broad River Basin.

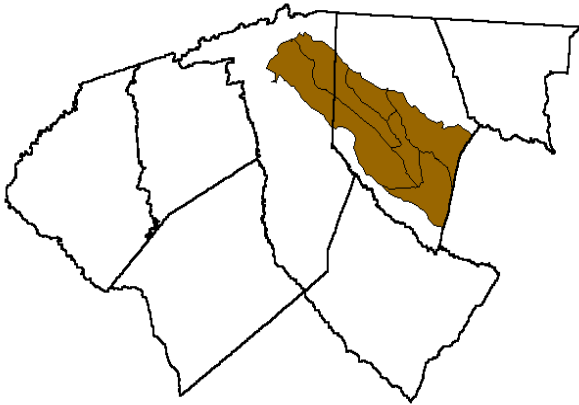
The **Tyger Basin Planning Area** and the **Enoree Basin Planning Area** are sub-basins within the SCDHEC Broad River Basin.

The **Saluda Basin Planning Area** and the **Reedy Basin Planning Areas** are sub-basins within the SCDHEC Saluda River Basin.

The **Savannah Basin Planning Area** is an SCDHEC basin – the Savannah River Basin.

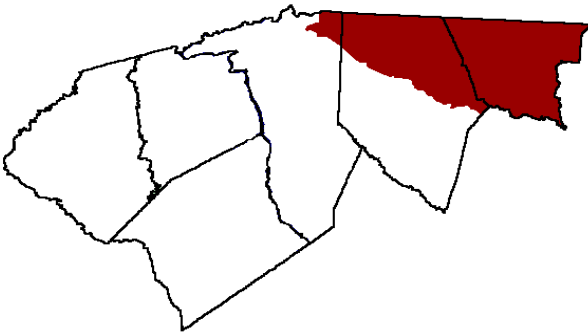
2.3 GENERAL DESCRIPTION OF BASIN PLANNING AREA

Broad-Pacolet



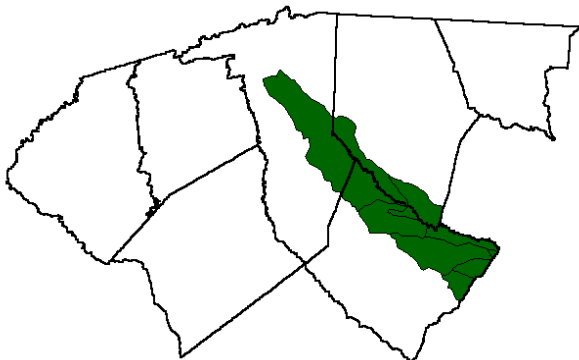
The Broad-Pacolet Basin Planning Area contains the eastern portion of the region. It is the second largest Basin Planning Area in the region, with the Savannah Basin Planning Area being the largest. The Broad-Pacolet Basin Planning Area contains all of Cherokee County, the northern portion of Spartanburg County, and the northeast corner of Greenville County. It drains a total of 886 square miles of land, which is 19% of the region. Major municipalities in the area include Blacksburg, Gaffney, Chesnee, and a portion of Spartanburg. The Basin contains several major lakes and rivers including the Broad River, Pacolet River, Providence Creek, and Lake Lanier.

Tyger



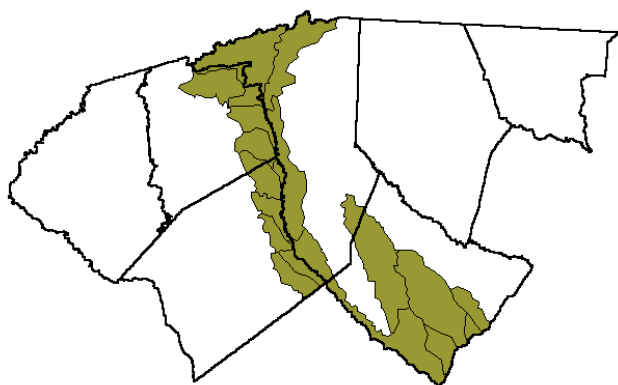
The Tyger Basin Planning Area comprises the east-central section of the region. The Basin Planning Area contains portions of Greenville and Spartanburg Counties, draining a total of 620 square miles of land, which is 14% of the region. Major municipalities in the area include Greer, Duncan, and portions of Spartanburg and Woodruff. The Basin contains several major lakes and rivers including the Tyger River, Fairforest Creek, and Maple Creek.

Enoree



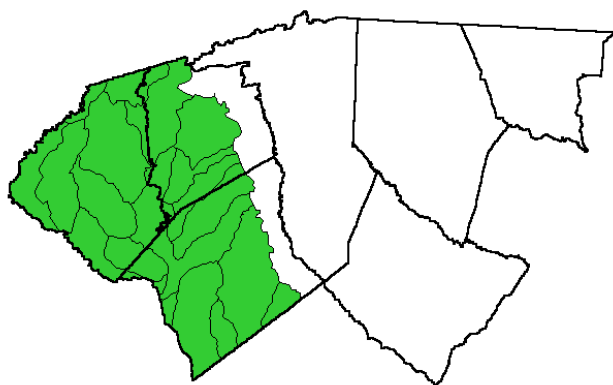
The Enoree Basin Planning Area is in the east-central portion of the region. The Basin Planning Area contains the southern portion of Spartanburg County and the east-central section of Greenville County. For planning purposes, the portion of the Basin Planning Area in Laurens County is also considered. This Basin drains 342 square miles of land, which is 7% of the region. Major municipalities in the area include portions of Greenville, Mauldin, Travelers Rest, and Woodruff. The primary surface water resource in the area is the Enoree River.

Reedy



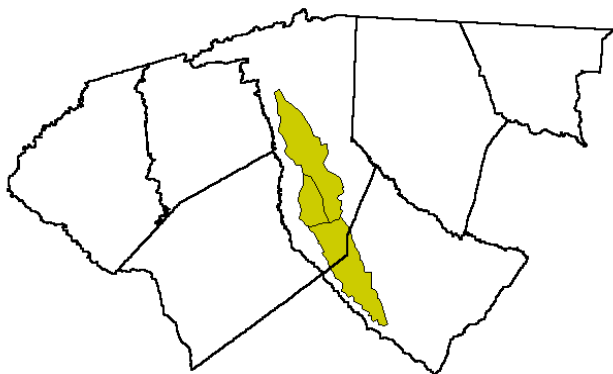
The Reedy Basin Planning Area is in the west-central portion of the region. In the Appalachian Region, the basin is completely contained within Greenville County. For planning purposes, the portion of the Basin Planning Area in Laurens County is also considered. The Reedy Basin Planning Area is the smallest Basin Planning Area, and it drains a total of 260 square miles of land, which is 6% of the region. Major municipalities in the area include Greenville, Mauldin, Simpsonville, and Travelers Rest. The major rivers and creeks in the Basin include the Reedy River and Rabon, Huff, Langston, Laurel, and Brushy Creeks.

Saluda



The Saluda Basin Planning Area is in the west-central portion of the region. It contains the eastern portions of Anderson and Pickens counties and the western portion of Greenville County. For planning purposes, the portion of the Basin Planning Area in Laurens County is also considered. The Saluda Basin Planning Area drains a total of 687 square miles of land, which is 15% of the region. Major municipalities in the area include Simpsonville, Honea Path, Belton, Laurens, Clinton and the eastern portion of Easley. The Basin also contains several major lakes and rivers including the Saluda River, Georges Creek, Brushy Creek, Lake Sudy and Pinnacle Lake.

Savannah



The Savannah Basin Planning Area is the largest basin in the region, and it comprises the entire western portion of the Appalachian Region. It includes all of Oconee County and the western portions of Anderson and Pickens Counties. It drains a total of 1,787 square miles of land, which is 39% of the region. The basin contains 3 sub-basins: the Chattooga, the Seneca, and the Rocky. Major municipalities in the area include Anderson, Pendleton, Clemson, Pickens, Seneca, Walhalla, and the western portion of Easley. The main lakes and rivers in the Basin include Lake Jocassee, Lake Keowee, Lake Hartwell, the Savannah River, and Eighteen Mile Creek.

THE APPALACHIAN REGION

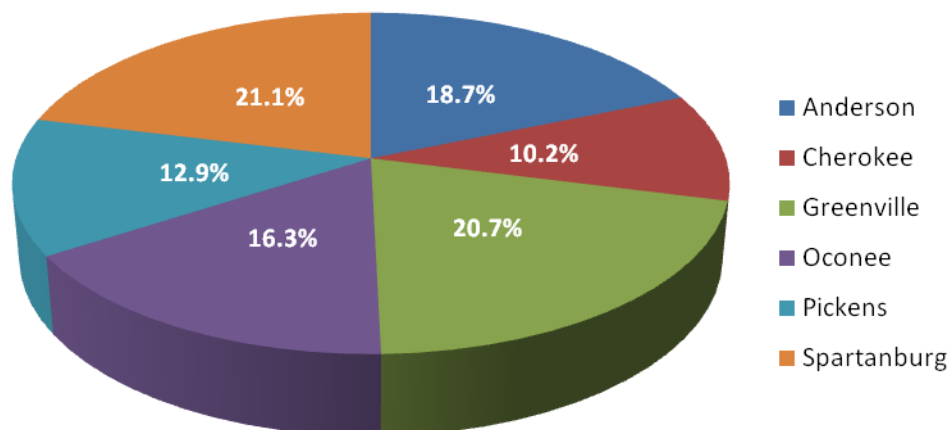
3.1 GENERAL DESCRIPTION OF THE REGION

The Appalachian Region, along with the Appalachian Council of Governments, is located within the northwestern corner of South Carolina and includes six (6) counties. These counties include: Anderson, Cherokee, Greenville, Pickens, Oconee, and Spartanburg. All six counties are part of the US Appalachian Regional Commission (ARC) Area, and are included in the US Environmental Protection Agency (EPA) Region 4.

The Appalachian Region, also called the Upstate, encompasses nearly 3,900 square miles of land area and accounts for 12.7% of the State's land area. Spartanburg County is the region's largest county, occupying over 21% of the region's land area. Cherokee County is the smallest county in the region, containing approximately 10% of the region's land area.

Interstate-85 bisects the region in a northeast to southwest direction. It connects the Upstate with Atlanta, GA and Charlotte, NC. Interstate 26 connects the region to Asheville, NC and Columbia, SC, as it runs north to south through the eastern portion of the region. There are three major cities in the Appalachian Region and they include: Anderson, Greenville, and Spartanburg. Most of the urban development occurs within and around these three cities, with the rural character of each county maintained at the fringes of these areas and beyond. Additionally, small towns and rural villages are scattered throughout the Upstate.

APPALACHIAN REGION LAND AREA (Source: 2000 S.C. Statistical Abstract)				
COUNTY	LAND AREA (square miles)	LAND AREA (acres)	% of Regional Land Area	% of State Land Area
Anderson	718	459,545	18.7	-
Cherokee	392	251,334	10.2	-
Greenville	792	506,937	30.7	-
Oconee	625	400,064	16.3	-
Pickens	496	318,028	12.9	-
Spartanburg	811	519,033	21.1	-
Region	3,835	2,454,944	100.0	12.7
State	30,111	19,271,123	-	100.0

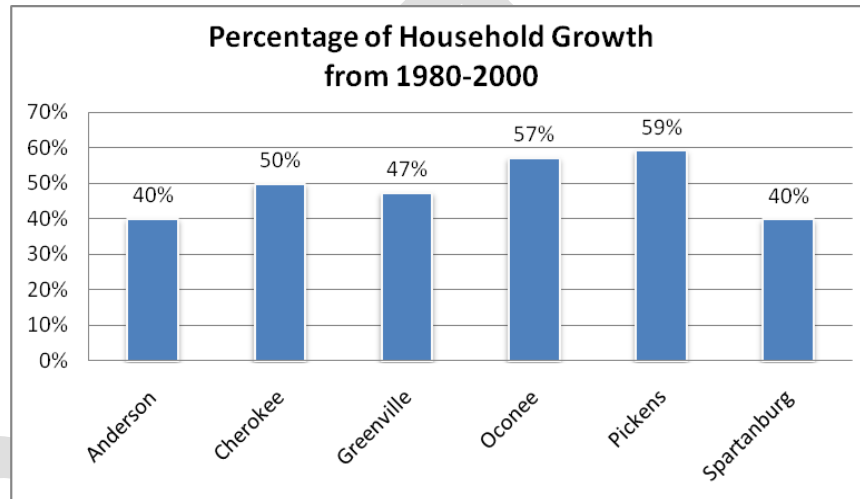


3.2 REGIONAL DEMOGRAPHICS AND DEVELOPMENT TRENDS

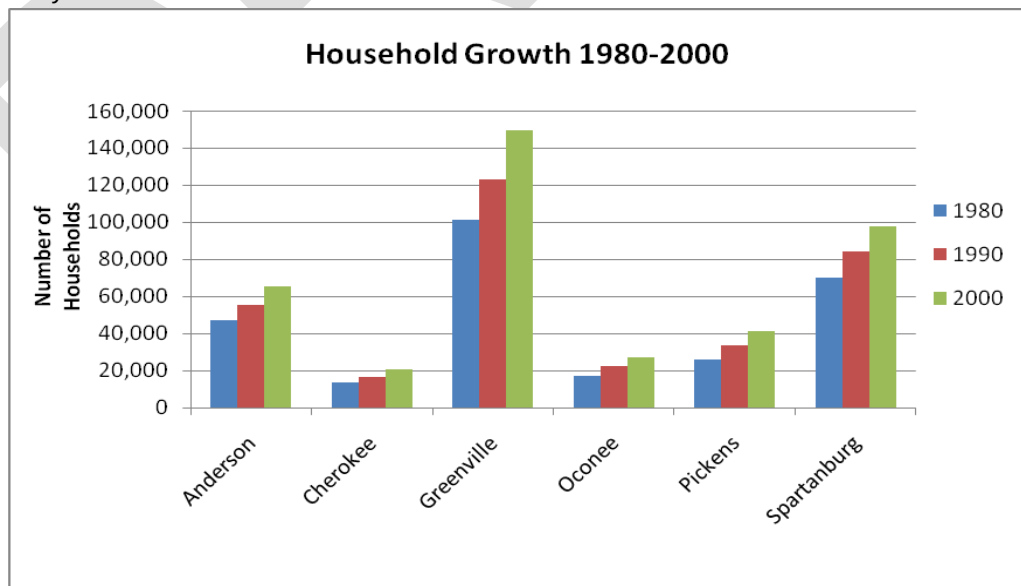
Household Growth

The Appalachian Region of South Carolina has been experiencing tremendous growth, with a population increase of over 125,000 (15%) between 1990 and 2000. With over one million people, the Appalachian Region is the most heavily populated of the ten COGs in the state. It includes the Greenville-Spartanburg-Anderson Metropolitan Statistical Area, which is the fifty-second largest in the country, with a population of 962,441 according to the 2000 Census.

Recent studies completed by the Strom Thurmond Institute at Clemson University and Upstate Forever conservatively estimated that the Upstate is consuming land at a rate nearly five times the rate of population growth. From 1990 to 2000, researchers found that for every 1% increase in population growth, the amount of developed land increased by 5%. By 2030, the Upstate's population is projected to reach 1,406,460, an increase of 35%. If current development trends continue, the amount of developed land will increase by 150% to nearly 1 million acres from the 422,000 acres of developed land in 2000. Accommodating this much growth will require significant new development for housing, jobs, and transportation.



The number of households has steadily increased within each Upstate county, growing by 40%-60% over the twenty-year period of 1980-2000. Greenville County contains the largest number of households, which is to be expected in such an urban county, yet its household growth is comparably low at 47%. Conversely, Pickens County, which is characteristically rural, experienced a tremendous amount of household growth, increasing its number of households by almost 60%.

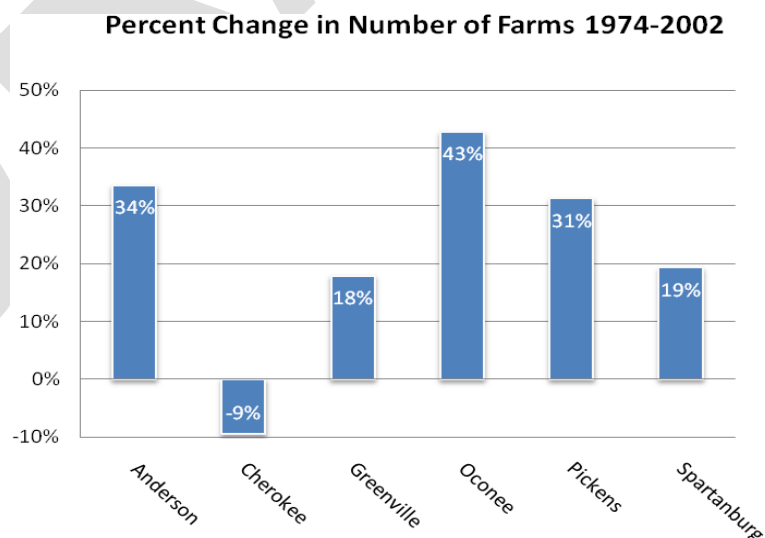
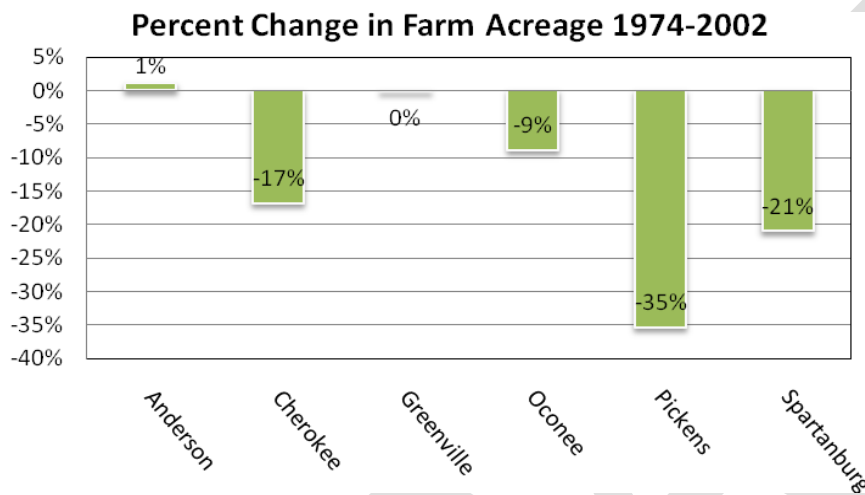


Farm Acreage

As the number of households increased in the region, the amount of farm acreage decreased. This inverse relationship demonstrates that the Appalachian Region is not concentrating its growth in urban cores; it is growing in areas usually occupied by agriculture. This type of growth often results in urban sprawl, which tends to over-extend existing infrastructure. The data studied spans the 28-year time period from 1974-2002.

Surprisingly, the number of farms in the region has increased as the acreage of farmland has decreased. Decreasing farm acreage may be the result of large agricultural operations disappearing when farmland is sold for development. However, that does not explain the increasing number of farms within the region.

The increased amount of farms may be due to historic farmland that is handed down through generations and divided between heirs, which creates many farms from one original farm. If some of that land is then sold for residential or other development, then fewer agricultural acres result. This explains both the increased number of farms and the decreased farm acreage. However, other factors may have contributed to this phenomenon.

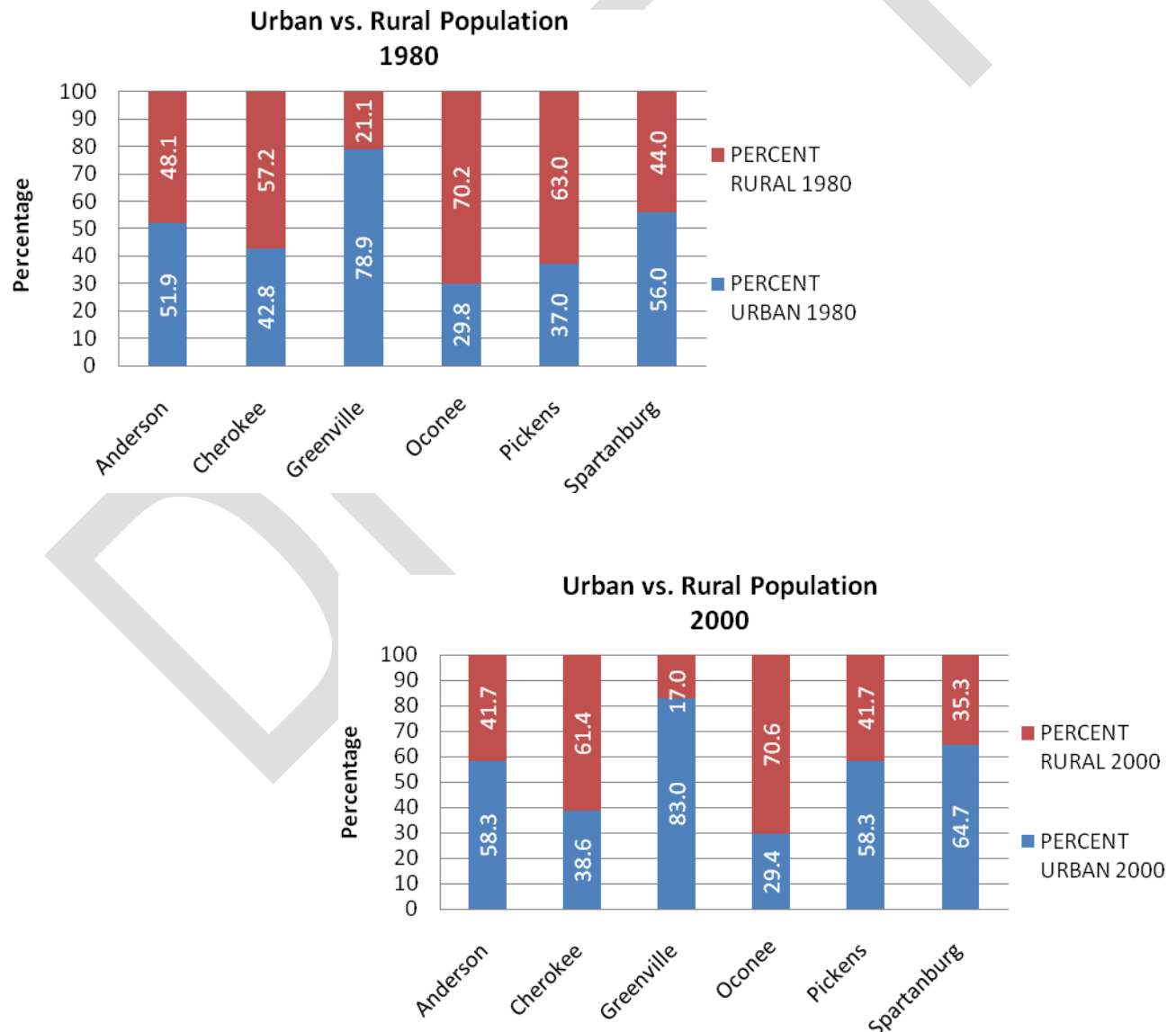


Urban vs. Rural Population

The Upstate is becoming increasingly more urban, as most counties in the region have increased their urban population over the 20-year time period of 1980-2000. Cherokee and Oconee Counties are the only two Upstate counties that have experienced a slight decrease in the amount of urban dwellers. Cherokee County has 4.2% fewer residents in urban areas, and Oconee County has 0.4% fewer residents in urban areas.

The increased urban population in the other four counties may be due to large portions of rural farmland being developed, as expressed in the prior section. On the other hand, it may be due to a higher concentration of people moving from the rural areas to the urban areas, or perhaps it is due to formerly rural areas being developed to such an extent that they are now considered urban areas.

However, the definition of “urban” was changed for the 2000 Census. “Urban” had been defined as “1000 people per square mile.” The 2000 Census re-defined “urban” to be “500 people per square mile.” As a result, many areas that had been considered “rural” were now considered “urban.” This “created” urban areas. Most likely, this re-definition explains the shift in the urban vs. rural Upstate population.



3.3 POPULATION GROWTH WITHIN THE BASIN PLANNING AREAS

Population growth is a key indicator of the level of future demand for all services, including sewer services. This data will help the basin planning authorities efficiently allocate infrastructure dollars by charting population growth areas for new lines and for the expansion of treatment capacity.

The 2000, 2009, and 2014 population figures for each basin planning area were generated by overlaying the basin boundaries with census block polygons. Three GIS calculations were used; those blocks completely within the basin, those blocks with their center in the basin, and those blocks which intersected with the basin. The numbers were then combined to calculate an average for each basin.

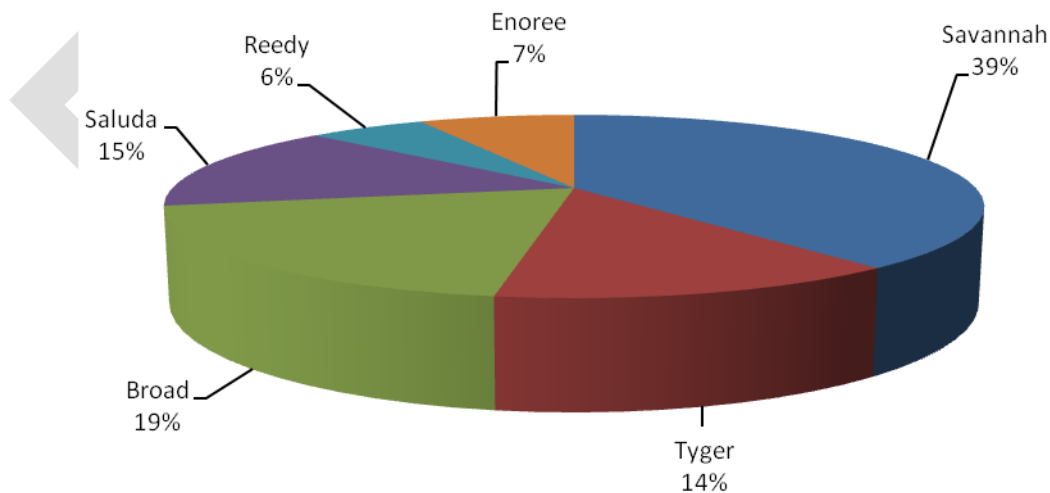
The land area of each Basin Planning Area varies greatly. Therefore, the population of each basin cannot be compared directly by the population estimates or the population projections alone. The *density* of each basin may provide a better view of population concentration and growth patterns. *Population densities* were calculated for each Basin Planning Area by dividing each basin's average population by its area (in square miles).

To make comparisons easier, the six (6) Basin Planning Areas are ranked (largest to smallest), for each demographic category studies.

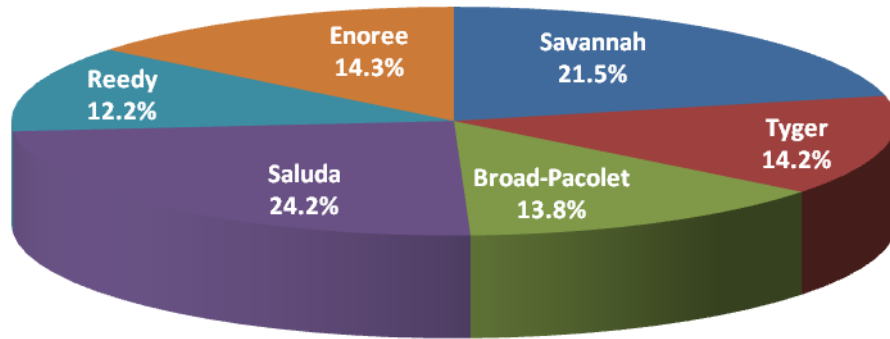
Land Area of each Basin Planning Area

Savannah	1,787 square miles
Broad-Pacolet	886 square miles
Saluda	687 square miles
Tyger	620 square miles
Enoree	342 square miles
Reedy	260 square miles

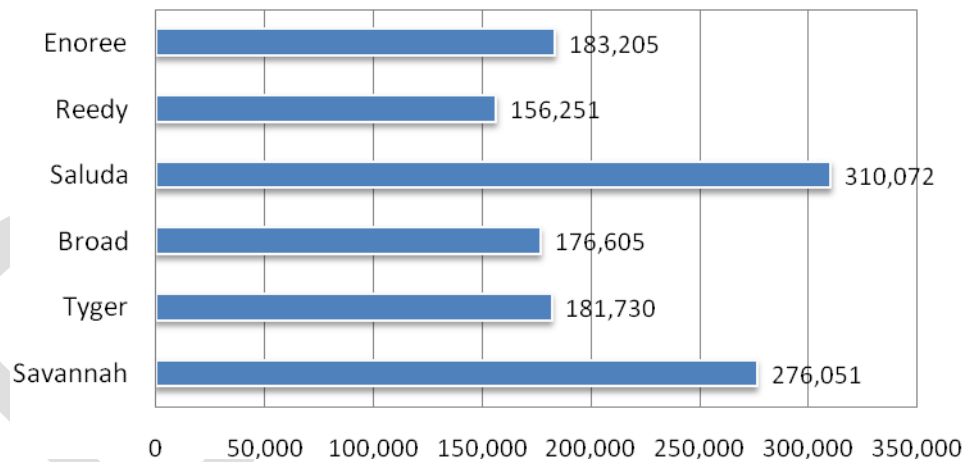
**Basin Planning Areas:
Land Area Within the Region**



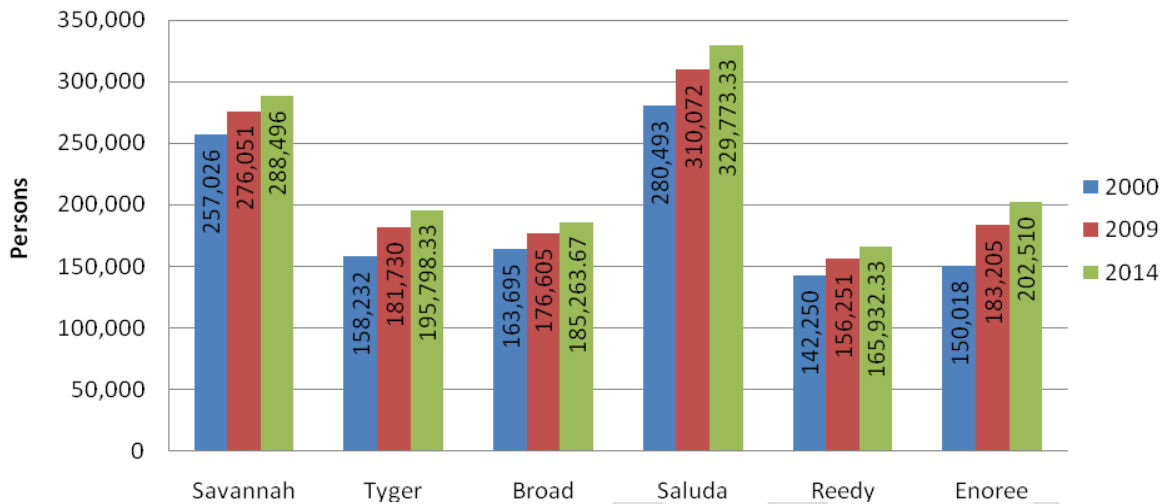
Percent of Regional Population Residing in Basin Planning Area, 2009



Basin Planning Areas 2009 Population



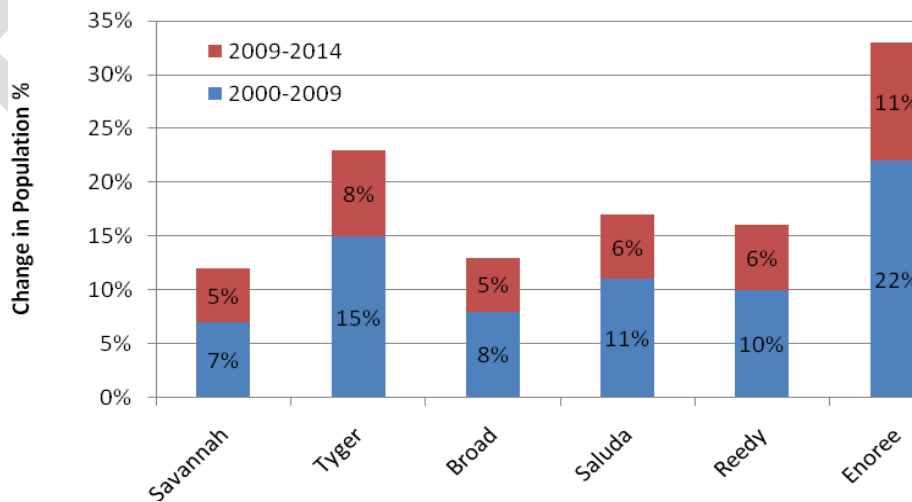
Basin Population Estimates and Projection for 2000, 2009, and 2014



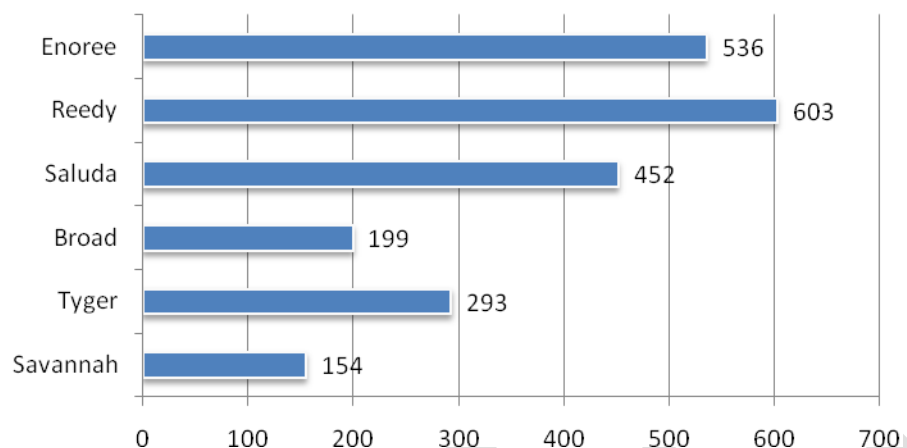
Projected Population Growth for each Basin Planning Area, 2000-2014

1. Enoree (33% increase)
2. Tyger (23% increase)
3. Saluda (17% increase)
4. Reedy (16% increase)
5. Broad-Pacolet (13% increase)
6. Savannah (12% increase)

Basin Population Growth



**Basin Planning Areas
2009 Population Density
(Persons per sq. mile)**



3.4 DEVELOPMENT WITHIN THE BASIN PLANNING AREAS

This section describes the areas of each basin where development is planned to occur, or is projected to occur, in the near future.

Broad-Pacolet Basin Planning Area

Growth within the Broad-Pacolet Basin Planning Area will mainly revolve around the I-85 corridor in both Cherokee and Spartanburg Counties. This interstate highway stretches diagonally across the basin from northeast to southwest.

In Cherokee County, steady commercial growth will continue to surround the I-85 interchanges, especially at the Gaffney/Highway 11 interchange, at the Blacksburg interchanges, and at the Highway 105 interchange leading to the outlet mall. Areas with a high potential for industrial growth exist along Highway 329 east of Gaffney near the two existing industrial parks. There is also pressure for industrial developmental along I-26, US Hwy 29, and US Hwy 221. Duke Power built a natural gas-fired power plant named the “Mill Creek Combustion Turbine Station” near the northern boundary of Cherokee County in 2003, and it is expected to bring growth to the surrounding area. Duke Power plans to purchase water from the Town of Blacksburg. Moderate residential growth is expected within the Town of Blacksburg and the City of Gaffney. The City of Gaffney is planning for new subdivision growth by considering new regional treatment facilities near the Cherokee Creek-Broad River area. Northwest and southern Cherokee County is not likely to experience much, if any, growth.

The Spartanburg County portion of the Broad-Pacolet Basin Planning Area is expected to grow more rapidly than the Cherokee County portion of the basin. There is a high potential for growth within the City of Spartanburg, which is partially in the Broad-Pacolet Basin Planning Area and partially in the Tyger Basin Planning Area. Moderate growth is expected within the Cities of Inman and Chesnee, along with the Town of Cowpens, which all have sewer infrastructure. The Towns of Landrum, Campobello, and Pacolet are expected to remain relatively stable with low amounts of growth. Development may occur around the I-26 interchanges, adjacent to Landrum, Campobello, and Inman.

Tyger Basin Planning Area

The Tyger River Basin includes portions of northeastern Greenville County and southern Spartanburg County within the ACOG region. Although the basin is predominantly rural, it has pockets of development scattered throughout, and has a high potential for growth in multiple locales. The northern and southern extremes of the basin contain little development and are expected to remain rural, while steady growth is projected the core of the region within the Cities of Greer and Spartanburg. Residential, commercial, and industrial infill projects will be prolific in these urban areas. Duncan, Lyman, and Wellford are quickly becoming “bedroom communities” for these two larger urban cities. Additionally, the City of Spartanburg is in the process of building regional wastewater treatment facilities, which will further enhance its growth potential. The small city of Woodruff is expected to experience low to moderate residential, commercial, and industrial growth, due to its key location along US Hwy 221.

Greenfield projects are also spurring growth. Industrial growth is expected along the I-85 and I-26 corridors, with commercial and industrial growth along the major roads containing interchanges with these two highways. There are also development pressures along SC Hwy 101, SC Hwy 290, US Hwy 29, and US Hwy 221. The widening of US Hwy 176 to four lanes has generated the development of an industrial park, which will further drive growth adjacent to the new industrial park. In addition, continuous growth is occurring along the US Hwy 176 Bypass. The location of the Greenville-Spartanburg International Airport (GSP) and BMW plant near the Tyger Basin Planning Area should also act to spur all types of development within the western portion of the basin.

Enoree Basin Planning Area

The majority of development within the Enoree Basin Planning Area is located in the Greenville County portion of the basin along the I-85 corridor, and between I-85 and US Highway 29 from the City of Greenville to the City of Greer. These areas will continue to grow steadily. There is considerable pressure for additional residential and industrial development along the I-385 corridor south of the City of Greenville, continuing past the Greenville County line. Less growth is predicted in the Spartanburg County portion of the basin, due in large part to the smaller area of the basin that it covers. The area north of the City of Greenville is effectively excluded from development, due to the preservation of land within the boundaries of the Paris Mountain State Park.

The GSP Airport expansion, the development of the BMW automotive plant, and highway improvements in the area around the BMW plant will stimulate continued industrial growth between SC Hwy 101, SC Hwy 417, and SC Hwy 14. Medium-density residential areas will continue to develop on both sides of the Enoree River from the City of Greer to the confluence of Durbin Creek with the Enoree River. The City of Woodruff in Spartanburg County will experience low to moderate industrial, commercial, and residential growth, due to its key location along US Hwy 221.

While the Enoree Basin ranks third in total population among the basin planning areas, it has the highest projected population growth and the second highest population density. The combination of having a small area, a high density, a high population, and a high growth rate indicate that if planned correctly, public resources can be efficiently distributed.

Reedy Basin Planning Area

Located within central Greenville County, the Reedy Basin Planning Area has the highest density and the lowest land area of all basins within the Appalachian Region. If planned appropriately for additional growth, this basin has the opportunity to efficiently use existing transportation lines, utility lines, and public services, while minimizing impacts to undeveloped areas. Even with the large amount of existing urban development, there are still abundant natural areas.

High amounts of growth will continue along the I-385 and I-85 corridors, with intensive development and re-development within the Cities of Greenville, Travelers Rest, Mauldin, and Simpsonville. Both the Reedy and the Enoree Basin Planning Areas will experience similar high amounts of growth along I-385. Existing industrial development, coupled with the Donaldson Center and multiple rail lines, will continue to encourage industrial growth in this area. The two Lower Reedy River Plant and Mauldin Road Plant have

considerable capacity to allow for future growth. The availability of this capacity will continue to attract industrial and commercial growth. The Clemson University International Center for Automotive Research (CU-ICAR) near I-85 and I-385 will also promote industrial growth. Residential subdivisions will likely increase in these areas, keeping the jobs/housing ratio relatively balanced.

Greenville County's zoning boundary is expected to extend southward to SC 418. This is expected to promote the growth of medium density residential subdivisions. South of SC 418, rural residential areas with homes on septic tank systems will continue to be common, and growth will be slow. Medium density residential areas are expected to increase along the Reedy River into Laurens County. Although Laurens County is outside of the Appalachian Region, protective measures may be needed to keep Lake Greenwood from the potentially harmful effects of development, considering watersheds do not end where political boundary lines end.

Saluda Basin Planning Area

Even though it contains the largest number and percentage of people (24%) compared to the other basin planning areas in the Appalachian Region, the Saluda Basin Planning Area contains only 4 percent of the urban development, making it the least developed basin in the region. The majority of developed land is located in small towns, which include Honea Path, Belton, Pelzer, West Pelzer, Williamston, and portions of Easley, Simpsonville, and Fountain Inn.

Significant growth is expected along both sides of the Saluda River from SC Hwy 183 to Williamston. The Town of Williamston is expected to experience low to moderate growth. A rail line crosses the watershed running from Williamston to the Town of Pelzer (en route to the City of Greenville) and contributes to growth in that area. The Southern Connector (I-185) combined with the availability of prime real estate at I-85 interchanges, added to the highway improvements on US Hwy 25 and SC Hwy 20, will continue to spur industrial and commercial growth.

The Saluda River bisects US 123, the high growth corridor between the Cities of Easley and Greenville. Both sides of US 123 are lined with shopping centers, fast food restaurants, and large parking lots, in and around the City of Easley. Residential and industrial developments are located adjacent to this line of fast-growing commercial development, and all use-types are projected to continue a high amount of growth. The area north and east of Easley extending to the Saluda River has been cited in the Appalachian Regional Development Plan as an infrastructure expansion area, and will be upgraded with water and sewer improvements to encourage development. These upgrades will provide municipal water and sewer service to the I-85 interchanges that presently lack such infrastructure. Additionally, regional wastewater facilities have already been upgraded to allow for growth.

There is a low potential for development or intensive agriculture within the mountainous region of this basin, which lies in northern Greenville County and northeastern Pickens County. Part of this area is protected by the City of Greenville and the Nature Conservancy as the "Greenville Water Commission Watershed." Three state parks add more conservation land in the form of protected parks and forests, including Jones Gap, Caesars Head, and Table Rock State Parks. The primary uses of the mountainous areas are for recreation and preservation; however, some relatively small clear-cut and selective-cut timber harvesting activities occur on private land holdings. The greatest potential for development within the mountainous region is along the Highway 11 corridor. Highway 11 is a designated Scenic Byway, and has the potential to attract low density residential subdivisions and tourist-oriented commercial developments. Several small residential subdivisions have been constructed in this area, and wastewater disposal for these new homes presently occurs via septic tank systems. There are no plans to extend sewer service to these residential areas. In the southern portion of the basin, limited growth will occur in Anderson County within and around Williamston, Belton, and Honea Path. Growth in these areas will be more intensive along the US 76 corridor.

Savannah Basin Planning Area

Although it has the highest land area and the second highest population among the six basins, the Savannah Basin Planning Area has the lowest overall population density. Only 4 percent of the basin contains urban development, which is the lowest percentage of the six basins.

The manufacturing industry is a mainstay in the Upstate, especially in the Savannah Basin. Growth of the manufacturing industry is dependent upon infrastructure expansion. Infrastructure expansion is dependent upon the capacity of existing wastewater treatment facilities to treat effluent, and also on the assimilative capacity of the surrounding streams that must absorb the effluent. Several regional wastewater treatment facilities in the Savannah Basin Planning Area, especially the City of Anderson's Rocky Creek and Generostee Plants that have expanded and are now able to support increases in industrial growth.

The development trends within the Savannah Basin Planning Area vary within each of the three counties that it covers. Although it is the most rural county in this basin, Oconee County has seen steady development in recent years, which is expected to continue. Duke Power has opened its land holdings around Lake Keowee for residential development. This has spurred rapid growth of upscale lake front homes, which are mainly on septic tank systems. Similarly, upscale residential growth will continue along the shore of Lake Hartwell, although most of this land is already developed. Residential, commercial, and industrial growth in Oconee County is expected to be moderate to high along the US Hwy 123 corridor, beginning with Westminster and extending through Seneca into Clemson, which is in Pickens County. This moderate to high growth will continue along the Hwy 28 corridor from Walhalla to Seneca to Clemson, as well as along the I-85 corridor, which crosses the southern portion of Oconee County at Fairplay.

Continued growth is expected throughout the southern half of Pickens County. Moderate growth will potentially occur within the Towns of Six Mile, Central, Norris, Liberty, and Pickens, with high growth expected in the Cities of Clemson and Easley. A residential development trend will continue to extend eastward from Clemson to Central, Liberty, and Easley along SC Hwy 93 and US Hwy 123. Residential growth is also expected along SC Hwy 133 from Clemson to Six Mile. Commercial growth will continue to expand between Easley and Pickens along SC Hwy 8. The City of Easley has the greatest potential for commercial growth within Pickens County, due to its proximity to SC 93, SC 153, and SC 8, along with US 123. The area surrounding the Town of Liberty, including the nearby Pickens County Commerce Park also has a high potential for industrial growth. There are several large tracts of land in this area that could support large scale industrial developments. However, this potential development will only be realized if additional sewage capacity at the existing or newly developed plants becomes available in the area. Construction of these new or expanded facilities will encourage growth along the US 123 corridor as well.

The I-85 corridor runs the length of northern Anderson County, and will continue to be a major catalyst for all types of development, especially within the area north of the City of Anderson. High amounts of growth are expected within the City of Anderson, with moderate growth expected in the Towns of Williamston, Belton, Honea Path, Starr, and Iva. Residential development will continue at a high level along the Anderson County shores of Lake Hartwell, via upscale homes on septic tank systems, although much of this land is already developed. Significant industrial growth is projected to occur along US Hwy 76 from Anderson to Pendleton, and from Honea Path to Belton to Williamston along both US Hwy 76 and SC Hwy 20. Additional industrial development is expected along SC Hwy 28 on the west side of the City of Anderson, along SC Hwy 81 from Anderson to Starr, and around the intersection of I-85 and SC Hwy 81, which is near Six and Twenty Creek. A rail line runs from Iva to Starr to Anderson, and from Pendleton to Seneca, which is in Oconee County. The presence of a rail line is a highly desirable factor when siting new industry; therefore, additional industrial growth is expected around this rail line.

There is a low potential for growth in the northern part of the Savannah Basin Planning Area, which contains portions of Oconee County and Pickens County. This area includes the Sumter National Forest and the Nantahala National Forest. Steep slopes in this region limit the establishment of infrastructure, which in turn stifles significant growth. However, the areas of less topographic relief, including the Lake Jocassee area adjacent to the mountain region, is projected to experience a high level of residential growth, despite the present low population base.

WATER RESOURCES, TREATMENT, AND PROVIDERS

4.1 SURFACE WATER RESOURCES, WATER QUALITY & WATER QUANTITY

Surface water is the major source of water supply within the Appalachian Region. This surface water flows through creeks, streams, lakes, ponds, and reservoirs. Since much of the region is bounded to the north by the Blue Ridge Mountains, many of the streams have their headwaters within the regional boundaries. This headwater location provides the region with some of the purest surface water in the Southeast.

Because many of the region's larger municipalities are located on relatively small rivers, proper management is necessary to ensure that *water quality* within and below these major urban areas is not reduced. Greenville is located on the Reedy River, Spartanburg on Fairforest Creek, and Anderson on the Rocky River. As a result of being located on small streams, coupled with the absence of large upstream reservoirs to augment flow, low sustained stream flow during the dry summer months can (and periodically does) severely limit the assimilative capacity of these waterways. Assimilative capacity, wasteload allocation, TMDLs, stream flow levels, and 7Q10 levels all affect water quality and each are detailed in the Regional Policies and Water Quality chapter.

According to the SC Department of Natural Resources (SCDNR) publication "*The 100 Largest Public Water Supplies in South Carolina – 2005*," South Carolina is using more water each year. Increases in water usage directly influence the need for wastewater treatment. Conversely, if water consumption is reduced, then there is a decreased demand for wastewater treatment services. In addition, increased water withdrawals for potable water usage results in lower baseline flows (less *water quantity*), which then reduces assimilative capacity within rivers, lowering *water quality*.

It is important to know the location of *water intake points and effluent discharge points* when reviewing an NPDES permit. Effluent discharge points reduce the assimilative capacity of the surrounding water. This affects the intake points, for that water will need to be more highly treated to allow it to meet potable water standards.

There are 27 public water systems in the Appalachian Region. Together, they pumped an average of 187.4 mgd of water in 2005. These public water systems are listed in the Appendix. Numerous large water impoundments (lakes) in the region serve as water resources for the region's municipalities. The largest water impoundments include Lake Hartwell, Lake Keowee, and Lake Jocassee, which total approximately 87,287 acres (136 square miles). There are over 115 other water impoundments in the region that are over ten (10) acres in size. Each Basin Planning Area contains a number of surface water resources, which are listed in the Appendix.

4.2 WASTEWATER TREATMENT PROVIDERS AND FACILITIES

Each Basin Planning Area contains public wastewater treatment providers, and most Basin Planning Areas are also served by Retail Service Providers (RSP). These RSPs collect, but do not treat, wastewater. Regardless, sewer service is only provided within a portion of each basin. Sewer service areas are expected to expand in the future, but are not likely to ever serve entire basin planning areas.

Future water quality standards will be more stringent than they are today. Additional requirements are expected for the removal of phosphorous, nitrogen, metals, pharmaceuticals, and personal care products. In order to meet these new or increased water quality standards, wastewater treatment facilities will need to be upgraded. All or most of the existing plant facilities will likely be utilized, but additional processes and equipment will be added to remove the substances needing further treatment. Providing additional processes for removing a pollutant is usually more expensive than handling it with an alternative method. An alternative method might include land application of treated water (effluent), or perhaps include using the "purple pipe" system, whereby treated water is repurposed for non-potable uses via a system of

purple pipes, instead of releasing the effluent into a river. These and other alternative methods will be discussed in the Policies chapter.

The following section details WWTPs current flows and build-out flows, capacity, improvements, upgrades, projected expansions, newly planned facilities, closures/consolidations, and other needs concerning WWTPs, along with the projected capital costs for growth.

Broad-Pacolet Basin Planning Area

The Broad-Pacolet Basin Planning Area is served by the following four (4) public wastewater treatment providers:

- Town of Blacksburg
- Gaffney Board of Public Works
- Spartanburg Sanitary Sewer District
- City of Inman

The area is also served by the following five (5) Retail Service Providers:

- City of Chesnee
- Town of Cowpens
- Town of Duncan
- City of Landrum
- Town of Pacolet
- City of Spartanburg

The Town of Blacksburg operates one WWTF, Canoe Creek. The facility has a capacity of 0.35 mgd and an average daily flow of 0.33 mgd. This is an aerated lagoon system, which presently discharges into Canoe Creek.

Gaffney B.P.W. operates three WWTF in the Gaffney area: Clary, Peoples Creek, and Providence Creek. The three have a combined capacity of 8.6 mgd and an average daily flow of 5.8 mgd. The Clary plant is an activated sludge facility, which discharges directly into Thicketty Creek. Peoples Creek is an activated sludge facility, which discharges directly into Peoples Creek. Providence Creek is an activated sludge facility, which discharges directly into Cherokee Creek.

Spartanburg Water operates twelve WWTF in the planning area. The 12 facilities have a combined capacity of 18.6 mgd and an average daily flow of 6.9 mgd. Lawson Fork discharges directly into Lawsons Fork Creek. Hillbrook Forest discharges directly into Cinder Branch. Idlewood discharges directly into Peters Creek. Salem Estates discharges directly into Mills Creek. Compark discharges directly into Cherokee Creek. Cinder discharges directly into Cinder Branch. Lakeview Manor discharges directly into Little Cherokee Creek. Pacolet Elementary discharges directly into Pacolet River. The Clifton Plant discharges directly into Pacolet River. The Pacolet Mills, Cowpens, and Cowpens/Pacolet River Plants discharge directly into the Pacolet River.

The City of Inman operates one WWTF, the Inman plant. The facility has a capacity of 0.477 mgd and an average daily flow of 0.371 mgd, which discharges directly into the Lawsons Fork Creek.

Spartanburg Water also operates the Page Creek WWTF in Landrum. The system has a capacity of 0.4 mgd and an average daily flow of 0.243 mgd and discharges directly into the Page Creek.

Spartanburg Water also operates the Chesnee Main WWTF. The plant has a capacity of 0.225 mgd and an average daily flow of 0.220 mgd, which discharges directly into Little Buck Creek.

Currently, 13.8 million gallons a day are treated by the 20 treatment plants in the Broad-Pacolet Basin, including all industrial flows. These plants have a current capacity of 28.7 mgd. Using the previous calculations to determine flows from residential, commercial, and I&I sources, flows for the entire basin would be 15.5 mgd. This does not include any of the existing industrial flows. This illustrates the difference in the flow from serviced areas and the potential flow from the entire basin. It is important to note that industrial flows are not included because existing and future industrial activities will contribute significantly to the overall flow and have serious impacts on the capacity of plants in the basin.

BROAD-PACOLET BASIN PLANNING AREA PUBLIC WASTEWATER TREATMENT FACILITIES			
WWTP Name	Current Flow* (mgd)	Current** Permitted Capacity (mgd)	Percent of Capacity Currently Used
Canoe Creek	0.330	.350	94
Clary	2.700	3.600	75
Peoples Creek	2.250	3.200	70
Providence Creek	0.880	1.800	49
Lawson Fork	5.900	15.500	38
Hillbrook Forest	0.075	.254	30
Salem Estates	0.060	.100	60
Compark	0.005	.025	20
Cinder Branch	0.002	.030	7
Lakeview Manor	0.033	.080	41
Pacolet Elementary	0.007	.035	20
Clifton	0.107	.290	37
Pacolet Mills	0.088	.300	29
Cowpens	0.257	1.500	17
Cowpens/Pacolet	0.312	.535	58
Inman	0.371	.477	78
Landrum Page	0.300	1.000	30
Chesnee Main Plant	0.220	.225	98
Total	13.856	28.78	48

With existing flows of 13.8 mgd and capacity of 28.8 mgd, it would seem that there would be ample capacity to serve continued residential and industrial growth in the basin. This is somewhat misleading, since more than half of the available capacity is accounted for by the **9.6** mgd available at Lawson Fork WWTF, which only serves a portion of Spartanburg County. The **2015** projected flows for Cherokee County are **5.6** mgd, which does not include industrial flows. The planned capacity is **8.9** mgd, which shows that Cherokee County would be much more limited if it attempted to serve the entire county.

Future planning for the Broad Pacolet Basin should rely on the results of the Spartanburg County Water & Sewer Advisory Committee study that should be completed within the year. This will provide a much more accurate assessment of the overall flow projections and treatment needs for the basin.

Tyger Basin Planning Area

The Tyger Basin Planning Area is served by the following three (3) public wastewater treatment providers:

- Greer C.P.W.
- Spartanburg Water
- Town of Lyman

The area is also served by the following two (2) Retail Service Providers:

- Town of Duncan
- City of Wellford

Greer C.P.W. operates two WWTF in the basin, Maple Creek and the South Tyger River facility. The two have a combined capacity of 4.7 mgd and an average daily flow of 2.05 mgd. Maple Creek is an activated sludge facility, which discharges directly into Maple Creek. The South Tyger River plant is an activated sludge facility, which discharges directly into the South Tyger River.

Spartanburg Water operates ten WWTF in the basin. The Fairforest Creek facility discharges directly into Fairforest Creek. The North Tyger facility discharges into North Tyger River. The Brookside Village facility discharges directly into the Middle Tyger River. The West View Elementary facility discharges directly into Cub Brook. The Marilyndale facility discharges directly into Fairforest Creek. The Forest Park facility discharges directly into Cub Brook. The Twin Lakes facility discharges directly into Middle Tyger River. The Shoresbrook facility discharges into Cub Brook. The Roebuck Middle facility discharges into Tims Creek. The Carolina Country Club facility discharges into Fairforest Creek. The Tims Creek facility discharges into Tims Creek.

The Town of Lyman operates one WWTF facility, which discharges into the Middle Tyger River.

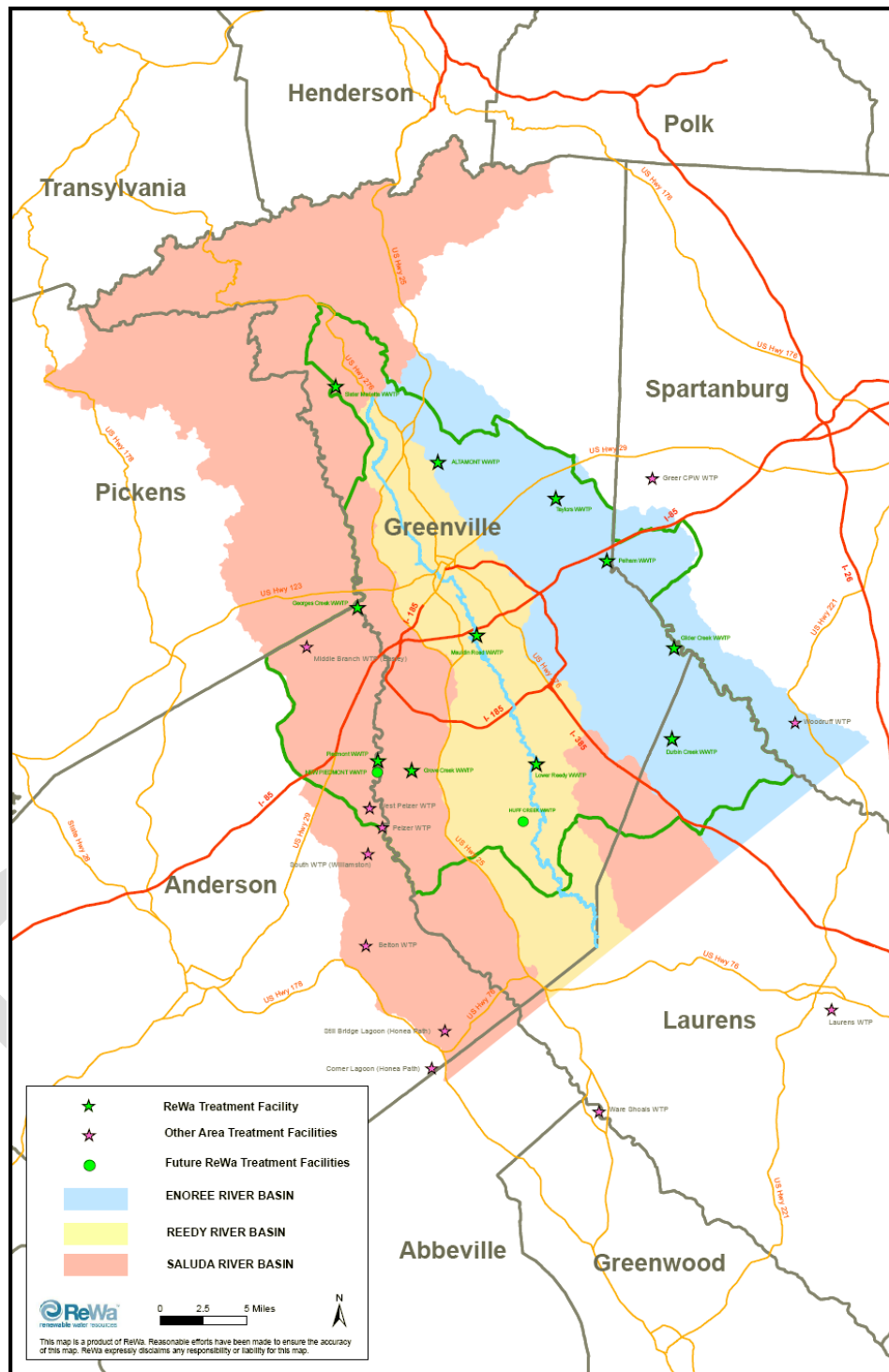
Currently, **11.4** mgd of wastewater are treated by the **14** treatment plants in the Tyger Basin, including all industrial flows. These plants have a current capacity of **26.6** mgd. Using the previous calculations to determine flows from residential, commercial, and I&I sources, flows for the entire basin would be **14.2** mgd. This does not include any of the existing industrial flows. This illustrates the difference in the flow from serviced areas and the potential flow from the entire basin. It is important to note that industrial flows are not included because existing and future industrial activities will contribute significantly to the overall flow and have serious impacts on the capacity of plants in the basin.

With projected flows of 16.2 mgd by the year 2015 and planned capacity of 27 mgd, it would seem that there would be ample capacity to not only serve the basin but also accept industrial flows. While these projections are valuable in assessing potential sewer needs for the basin, it is not likely to be feasible to sewer the entire basin, and therefore, do not accurately forecast what treatment needs will be. A more thorough analysis would be required to determine actual treatment needs in the future.

Future planning for the Tyger Basin should rely on the results of the Spartanburg County Water & Sewer Advisory Committee study that should be completed within the year. This will provide a much more accurate assessment of the overall flow projections and treatment needs for the basin.

TYGER BASIN PLANNING AREA PUBLIC WASTEWATER TREATMENT FACILITIES			
WWTP Name	Current Flow* (mgd)	Current** Permitted Capacity (mgd)	Percent of Capacity Currently Used
Maple Creek	1.200	3.000	40
S. Tyger River	0.850	1.700	50
Fairforest	6.556	14.100	47
North Tyger	0.256	1.000	25
Brookside Village	0.080	0.080	100
West View	0.005	0.012	42
Marilyndale	0.002	0.035	8
Forest Park	0.030	0.050	60
Twin Lakes	0.001	0.040	3
Shoresbrook	0.058	0.200	29
Roebuck Middle	0.003	0.022	14
Carolina Country Club	0.030	0.100	30
Tims Creek	0.016	0.030	53
Lyman	2.260	6.000	38
Total	11.45	26.644	43

**ENOREE, REEDY, AND SALUDA RIVER BASIN PLANNING AREAS,
PER THE UPSTATE ROUNDTABLE**



(Source: Upstate Roundtable Plan, 2009)

Enoree Basin Planning Area

The Enoree Basin Planning Area is served by two (2) public wastewater treatment providers:

- Renewable Water Resources (ReWa)
- City of Woodruff

The area is also served by the following Retail Service Providers:

- City of Fountain Inn
- City of Greenville
- Greer CPW
- Metropolitan Sewer District
- City of Simpsonville
- Taylors Fire & Sewer District
- City of Travelers Rest

ReWa operates four WWTF in the basin: Taylors, Pelham, Gilder Creek, and Durbin Creek (in Laurens County). The four have a combined permitted capacity of 46.5 mgd and an average daily flow of 13.9 mgd. Only 30% of the total permitted capacity is presently being used, so opportunity exists to increase the amount of effluent flow.

All of the ReWa plants are activated sludge facilities. The Durbin Creek facility, which, discharges into Durbin Creek, includes filtration and ultraviolet disinfection to produce tertiary water quality. Because of projected residential and industrial growth, ReWa is upgrading the plant's capacity to 5.2 mgd. The Taylors pump station was completed in 2009, resulting in the Taylors plant being taken out of service, diverting its flow to the Pelham Treatment Plant. The Pelham plants discharge directly into the Enoree River, while the Gilder Creek plant discharges into Gilder Creek. The Simpsonville "B" pump station, located at the south edge of the Gilder Creek basin, conveys wastewater out of the Gilder Creek basin into the Durbin Creek WWTP. Wastewater from Rocky Creek is currently conveyed to the Pelham WWTP.

ENOREE BASIN PLANNING AREA PUBLIC WASTEWATER TREATMENT FACILITIES, 2009			
WWTP Name	Current Flow* (mgd)	Current** Permitted Capacity (mgd)	Percent of Capacity Currently Used
ReWa's Taylors	2.6	7.5	35%
ReWa's Pelham	6.2	22.5	28%
ReWa's Gilder Creek	3.7	11.3	33%
ReWa's Durbin Creek	1.4	5.2	27%
Total	13.9	46.5	30%

C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007
(Source: Upstate Roundtable Plan)

Enoree Basin Planning Area**Projected Wastewater Flow (Mgd) Per WWTP, Through 2030**

WWTP Name	Current** Permitted Capacity (mgd)	Current* Flow (mgd)	Capacity Needed in MGD			
			Projected 2015	Projected 2020	Projected 2025	Projected 2030
ReWa's Taylors	7.5	2.6	C	C	C	C
ReWa's Pelham	22.5	6.2	22.5	22.5	22.5	27.5
ReWa's Gilder Creek	11.3	3.7	11.3	15.3	15.3	15.3
ReWa's Durbin Creek	5.2	1.4	5.2	5.2	5.2	8.2
Total	46.5	13.9	39.0	43.0	43.0	51.0

C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007
(Source: Upstate Roundtable Plan)

Projected Capital Costs For WWTP Capital Investment

WWTP Name	Permitted Capacity (MGD)		Additional Plant Capital Expenditures By: (\$ Millions)				Total
	Current**	Needed by 2030	2015	2020	2025	2030	
ReWa's - Taylors	7.5	C	C	C	C	C	-
ReWa's - Pelham	22.5	27.5	-	-	-	\$50	\$50 million
ReWa's - Gilder Creek	11.3	15.3	-	\$40	-	-	\$40 million
ReWa's - Durbin Creek	5.2	5.2	-	-	-	\$30	\$30 million
TOTAL	46.5	51.0	-	\$40	-	\$80	\$120 million

C = Consolidated/Closed P = Planned **Current capacity per 2009
(Source: Upstate Roundtable Plan)

Future Projections and Needs Identified in the Upstate Roundtable Plan

- By the year 2030, an estimated capacity of 51.0 mgd will be needed to serve the Enoree basin, according to ReWa's figures. Therefore, 37.1 mgd of additional flow may be generated within the Enoree Basin over the next 20 years.
- With a current permitted capacity of 46.5 mgd, permits will have to be obtained to add a minimum of 4.5 mgd of capacity to the existing WWTPs in this basin.
- The cost to build the plants and trunk lines to handle the projected volume is an estimated \$xxx million (2007 dollars).
- ReWa's Taylors WWTP will be closed in 2009/2010.
- ReWa's Pelham WWTP will likely need another 5 mgd by 2030, which is at the end of the planning period.
- ReWa's Gilder Creek WWTP may need another 4 mgd within the first half of the planning period (i.e. before 2020).
- ReWa's Durbin Creek WWTP may need to expand from 5.2 mgd to 8.2 mgd late in the planning period, between 2020 and 2030.

- Additional land may be needed for the Pelham and Gilder WWTPs, in order to allow for expansion of capacity.

Reedy Basin Planning Area

The Reedy Basin Planning Area is served by just one (1) public wastewater treatment provider, Renewable Water Resources (ReWa).

The area is also served by the following Retail Service Providers:

- City of Fountain Inn
- City of Greenville
- City of Mauldin
- Metropolitan sewer District
- Parker Sewer District
- City of Simpsonville
- Taylors Fire & Sewer District
- City of Travelers Rest

ReWa collects and treats wastewater from portions of Greenville County and from a small portion of the Enoree Basin at one of two wastewater treatment plants (WWTPs) in the Reedy River Basin: the Lower Reedy WWTP and the Mauldin Road WWTP. Each of these WWTPs services a particular area within the Reedy River Planning Area.

Both the Lower Reedy River plant and the Mauldin Road plant are activated sludge facilities, and both discharge effluent directly into the Reedy River. The two WWTPs have a combined permitted capacity of 81.5 mgd and an average daily flow of 21.2 mgd. In 2009, the Mauldin Road plant was upgraded to meet stricter SCDHEC requirements. The upgrades include new filters, the addition of ultraviolet disinfection, increased aeration capacity, and additional biosolids capacity. With less than 30% of the permitted capacity presently being used by these plants, there is much room for growth and development. Even so, additional land will be needed at the Lower Reedy facility to handle the permitted capacity flow, and 100 acres of land will be needed to construct the planned Huff Creek WWTP.

REEDY BASIN PLANNING AREA CAPACITY OF PUBLIC WASTEWATER TREATMENT FACILITIES, 2009			
WWTP Name	Current Flow* (mgd)	Current** Permitted Capacity (mgd)	Percent of Capacity Currently Used
ReWa's Mauldin Road	15.7	70	22.4%
ReWa's Lower Reedy	5.5	11.5	47.8%
ReWa's Huff Creek	P	P	-
Total	21.2	81.5	25.9%

C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007
(Source: Upstate Roundtable Plan)

**REEDY BASIN PLANNING AREA
PROJECTED WASTEWATER FLOW (MGD) PER WWTP, THROUGH 2030**

WWTP Name	Current** Permitted Capacity (mgd)	Current Flow* (mgd)	Capacity Needed in MGD			
			Projected 2015 Flow	Projected 2020 Flow	Projected 2025 Flow	Projected 2030 Flow
ReWa's Mauldin Road	70	15.7	70	70	70	70
ReWa's Lower Reedy	11.5	5.5	11.5	11.5	11.5	11.5
ReWa's Huff Creek	P	P	P	P	2.0	2.0
Total	81.5	21.2	81.5	81.5	83.5	83.5

C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007
(Source: Upstate Roundtable Plan)

**PROJECTED CAPITAL COSTS
REEDY BASIN PLANNING AREA THROUGH YEAR 2030, IN 2009 DOLLARS**

WWTP Name	Permitted Capacity		Additional Plant Capital Expenditures By Year: (Millions)				Total
	Current* *	Needed by 2030	2015	2020	2025	2030	
ReWa Mauldin Road	70	70	-	-	-	-	-
ReWa Lower Reedy	11.5	11.5	-	-	-	-	-
ReWa Huff Creek	P	P	P	P	\$20	-	\$20 million
TOTAL	46.5	51.0	-	-	\$20	-	\$20 million

C = Consolidated/Closed P = Planned *Flow as ADF = Average Daily Flow
(Source: Upstate Roundtable Plan)

Treatment Regulations

The Reedy River has been included in the South Carolina Department of Health and Environmental Control's (SCDHEC) 2008 Integrated Report, Part 1: Listing of Impaired Waters. The discharge locations of the Lower Reedy and Mauldin Road WWTPs are included on the list for elevated fecal coliform levels. Additionally, the discharge location for the Mauldin Road WWTP is included on the list for elevated copper concentrations.

It is anticipated that discharges from WWTPs on the Reedy River will be subject to additional nutrient limits in the future. SCDHEC is currently developing a total maximum daily load (TMDL) for phosphorus in the Reedy & Saluda River Planning Areas. It appears that this could require a significant reduction in total phosphorus loadings.

Future Projections and Needs

- By the year 2030, an estimated capacity of 83.5 mgd will be needed to serve the Reedy Basin Planning Area, according to ReWa's figures. Therefore, 2.0 mgd of additional flow may be generated within the Reedy Basin over the next 20 years.
- With a current permitted capacity of 81.5 mgd, permits will have to be obtained to add 2.0 mgd of capacity to the existing WWTPs within this basin.
- ReWa's Mauldin Road WWTP will reach its permitted capacity of 70 mgd by 2015, with no associated capacity upgrade costs. However, \$140 million will be needed for system upgrades, including additional gravity lines.

- ReWa's Lower Reedy WWTP will reach its permitted capacity of 11.5 mgd by 2015 and will not need to be increased during the planning period, but may need expansion shortly thereafter. A new *Conestee pump station and forcemain* is projected to be constructed by mid planning period. This pump station will transfer the flow (generated by the Hollingsworth Development and CU-ICAR in Greenville County) away from the Lower Reedy trunk system into the Mauldin Road WWTP. The cost for these improvements is estimated to be over \$10 million.
- A new Huff Creek WWTP near Fork Shoals is planned to be built later in the planning period, to be actively running by 2025. Its projected flow is 2.0 mgd. Land will be needed, and the project is estimated to cost \$20 million during the planning period.
- In order to handle the projected volume, \$90.48 million will be needed to build, expand, and upgrade the WWTPs and trunk lines in the Reedy Basin Planning Area by 2030.
- The 2008 Impaired status of the Reedy River and subsequent TMDL development *may require additional levels of treatment to reduce concentrations of phosphorous, nitrogen, fecal coliform, and copper*. These additional nutrient limits and new TMDLs may result in additional funding needs.

Saluda Basin Planning Area

The Saluda Basin Planning Area is served by the following six (6) public wastewater treatment providers:

- Easley Combined Utility Systems
- Renewable Water Resources (ReWa)
- City of Belton
- Town of Pelzer
- Town of West Pelzer
- Town of Williamston

Local residents are also served by the following three (3) Retail Service Providers:

- Anderson County Sewer Authority
- Town of Honea Path
- City of Simpsonville

Easley Combined Utility Systems operates two (2) WWTF in the basin: Easley's Georges Creek WWTF and Middle Branch WWTF. The two have a combined capacity of 3.32 mgd and an average daily flow of 2.41 mgd. The Georges Creek plant is an oxidation ditch facility, which discharges into Georges Creek. The Middle Branch plant is an extended air facility, which discharges into Middle Branch.

ReWa operates four (4) WWTF in the basin: ReWa's Georges Creek WWTP; Grove Creek WWTP; Piedmont WWTP; and Marietta WWTP. The four have a combined capacity of XXXX mgd and an average daily flow of XXXX mgd. The Piedmont WWTP is an activated sludge facility, which discharges into the Saluda River. Grove Creek WWTP is an extended air facility, which discharges into Saluda Creek. The Marietta WWTP is a xxxxxx facility, which discharges into the North Saluda River. The George's Creek WWTP is a xxx facility, which discharges into The new Piedmont Regional Treatment Plant will replace the existing Grove Creek and Piedmont Treatment plants, with construction scheduled to begin in fiscal year 2010.

The City of Belton operates three (3) WWTF, Duckworth, Marshall, and Breazeale. While Duckworth is the only plant physically located in the basin, the other two pipe their effluent through Duckworth where it

is discharged into the Saluda Basin. The three plants have a combined capacity of 2.045 mgd and an average daily flow of 0.867 mgd. Duckworth discharges into Broadmouth Creek. The Marshall and Breazeale facilities discharge into Broadmouth Creek through the Duckworth facility.

The Town of Pelzer operates one (1) WWTF in the basin, the Pelzer plant. This plant has a capacity of 0.2 mgd and an average daily flow of 0.15 mgd. Pelzer is a lagoon facility, which discharges into the Saluda River. This plant will be closed by 2015, and its flow will be transported to ReWa's new Piedmont Regional WWTF

The Town of West Pelzer operates one (1) WWTF in the basin, the West Pelzer plant. This plant has a capacity of 0.2 mgd and an average daily flow of 0.1 mgd. The plant is an activated sludge facility, which discharges into Saluda River. This plant will be closed by 2015, and its flow will be transported to ReWa's new Piedmont Regional WWTF

The Town of Williamston operates one WWTF in the basin, the Williamston plant. This plant has a capacity of 1.0 mgd and an average daily flow of 0.6 mgd. This plant is an aerated lagoon facility, which discharges into Big Creek. This plant will switch to land application only by 2015, eliminating all point-source discharges.

SALUDA BASIN PLANNING AREA
PROJECTED WASTEWATER FLOW (MGD) PER WWTP, THROUGH 2030

WWTP Name	Current** Permitted Capacity (mgd)	Current Flow* (mgd)	Capacity Needed			
			Projected 2015	Projected 2020	Projected 2025	Projected 2030
ReWa Marietta	0.7	0.28	0.7	0.7	1.0	1.0
ReWa Georges Creek	3.0	1.1	3.0	3.0	3.0	6.0
ReWa Piedmont	1.2	0.15	C	C	C	C
ReWa Piedmont Regional	P	P	4.0	4.0	4.0	4.0
ReWa Grove Creek	2.0	0.94	C	C	C	C
Easley Combined Utility Middle Branch	3.5	2.0	3.5	3.5	6.0	6.0
Easley Combined Utility Georges Creek	0.8	0.4	0.8	0.8	0.8	0.8
Town of West Pelzer	0.2	0.07	0.2	0.2	0.2	0.2
Town of Pelzer	0.2	0.09	0.2	0.2	0.2	0.2
City of Williamston	1.0	0.52	1.0	1.0	1.0	1.0
Valleybrook Subdivision (Utilities, Inc)	0.096					
Total	12.6	5.6	13.4	13.4	16.2	23.2

C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007
(Source: Upstate Roundtable Plan)

**PROJECTED CAPITAL COSTS FOR WWTPs IN THE
SALUDA RIVER BASIN PLANNING AREA THROUGH YEAR 2030, IN 2009 DOLLARS**

WWTP Name	Permitted Capacity		Additional Plant Capital Expenditures By Year (Millions)				Total
	Current**	Needed by 2030	2015	2020	2025	2030	
ReWa's Marietta	0.7	1.0	-	-	-	\$10	\$10
ReWa's Georges Creek	3.0	6.0	-	-	-	\$30	\$30
ReWa's Piedmont	1.2	C	-	-	-	-	-
ReWa's Piedmont Regional	P	8.0	\$40	-	-	\$40	\$80
ReWa's Grove Creek	2.0	C	-	-	-	-	-
Easley Combined Utility's Middle Branch	3.5	6.0	-	-	-	-	-
Easley Combined Utility's Georges Creek	0.8	0.8	-	-	-	-	-
Town of West Pelzer	0.2	0.2	-	-	-	-	-
Town of Pelzer	0.2	0.2	-	-	-	-	-
City of Williamston	1.0	1.0	-	-	-	-	-
	12.6	23.2	\$40	0	0	\$80	\$120

C = Consolidated/Closed P = Planned **Current capacity per 2009
(Source: Upstate Roundtable Plan)

**IDENTIFIED FUTURE REWA WWTP UPGRADES FOR THE
REEDY BASIN PLANNING AREA**

Treatment Plant	Year	Capacity Upgrade	Planning Cost
ReWa's Piedmont Regional	2010	4 mgd	\$40 million
ReWa's Georges Creek	2020	2 mgd	\$30 million
ReWa's Marietta	2015	1 mgd	\$13.3 million
ReWa's Piedmont Regional (Technology Upgrade)	2025	Tech Upgrade	\$8 million
Total Cost			\$91.3 million

(Source: Upstate Roundtable Plan)

Treatment Regulations

Concerns have been raised concerning the level of nutrients in the Saluda River and their impact on the Saluda Arm of Lake Greenwood and the river itself. During the most recent NDPES permit renewal process for facilities along the Saluda River an assessment of the river's assimilative capacity was made. The results of that review were that the current discharge flows were not leading to detrimental nutrient levels in the river. It was noted however that when all facilities reach capacity there was the potential for problems from the discharge of phosphorus based on existing permits.

The result of this analysis was the acknowledgement that a cumulative loading of total of 272 pounds per day of phosphorus to the Saluda River would lead to detrimental impacts to the River. DHEC subsequently proposed individual limits for each facility as well as a group limit not to exceed 272 pounds

per day for the collective facilities. The permittees worked to reach an agreement with DHEC by which they would apply to allow for a group-loading total approach that allowed partners to trade phosphorus discharge credits. The final agreement allows exceedances by an individual NPDES permit holders as long as the group-loading total for phosphorus is not exceeded.

Future Projections and Needs

- The Marietta WWTP may be upgraded late in the planning period from a lagoon process to a 1.0 mgd advanced secondary or tertiary process plant. This plant will also greatly increase in physical size, from 6.3 acres to 100 acres.
- The Georges Creek WWTP may expand from 3 to 6 mgd late in the planning period and has the potential for industrial growth.
- The Piedmont Regional WWTP may begin construction soon as a tertiary process plant at 4 mgd and expand late in the planning period to 8 mgd. It has the potential for industrial growth, also.
- The cities of Pelzer and West Pelzer have the opportunity to be pumped to Piedmont Regional.
- Williamston may continue to treat its wastewater.
- Easley Combined Utilities may continue to treat its wastewater; however, Pickens County will direct some flow to Georges Creek.
- ReWa's existing Piedmont and Grove Creek Plants will be closed by 2015.
- Capital costs for ReWa's WWTPs will total \$120 million by 2030.
- Capital costs for ReWa's collections system upgrades will total \$35.04 million by 2030
- Capacity upgrades for ReWa's facilities will equal \$91.3 million by 2030.
- Additional nutrient limits and new TMDLs for phosphorous and nitrogen may result in additional funding needs. Emerging contaminants may also need mitigating measures.

Savannah Basin Planning Area

The Savannah Basin Planning Area is served by the following nine (9) municipal wastewater treatment providers:

- | | |
|--|---------------------|
| • Oconee County Sewer Authority | • City of Pickens |
| • Easley Combined Utility Systems | • City of Anderson |
| • Anderson County Sewer Department | • Town of Iva |
| • Pickens County Public Service Commission | • Town of Central |
| • City of Clemson | • Town of Pendleton |

Local residents are also served by the following eleven (11) Retail Service Providers:

- | | |
|--------------------------------------|--|
| • Town of Central | • Big Creek Water and Sewer District |
| • City of Liberty | • Homeland Park Water and Sewer District |
| • City of Seneca | • West Anderson Water and Sewer District |
| • City of Walhalla | • Hammond Water and Sewer Company |
| • City of Westminster | • Highway 88 Water and Sewer District |
| • Starr-Iva Water and Sewer District | |

The Oconee County Sewer Authority operates one WWTF in the basin, Coneross Creek. The system has a capacity of 7.8 mgd and an average daily flow of 3.2 mgd. Coneross Creek is an activated sludge facility, which discharges into Coneross Creek.

Pickens County Public Service Commission operates seven WWTF in the basin. The seven have a combined capacity of 1.41 mgd and an average daily flow of 0.85 mgd. The Central-North plant is an activated sludge plant, which discharges into Twelve Mile Creek. The Central-South plant is an activated sludge plant, which discharges into Eighteen Mile Creek. Liberty/Cramer plant is an oxidation pond facility, which discharges into Murphee Brook (Twelve Mile Creek). Liberty/Lusk plant is an oxidation pond facility, which discharges into Woodside Brook (Eighteen Mile Creek). Liberty/Owens plant is an oxidation pond facility, which discharges into Mohasco Brook (Eighteen Mile Creek). Liberty/Roper plant is an oxidation pond facility, which discharges into Golden Creek. The Whispering Pines plant is an oxidation pond facility, which discharges into Eighteen Mile Creek.

The City of Clemson operates one WWTF, the Cochran Road plant, and jointly operates another one with the Town of Pendleton, the Clemson-Pendleton WWTF. Clemson's allocated capacity is 1.73 mgd with an average daily flow of 1.17 mgd. The Cochran Road facility is an extended air plant, which discharges into Lake Hartwell. The Clemson-Pendleton plant is an extended air plant, which discharges into Eighteen Mile Creek.

The Town of Pendleton jointly operates one WWTF with the City of Clemson, the Clemson-Pendleton WWTF. Pendleton's allocated capacity is 0.72 mgd with an average daily flow of 0.528 mgd. The Clemson-Pendleton WWTF is an extended air plant, which discharges into Eighteen Mile Creek.

Easley Combined Utility Systems operates one WWTF in the Savannah Basin, Golden Creek. The plant has a capacity of 0.58 mgd and an average daily flow of 0.26 mgd. The Golden Creek WWTF is an oxidation ditch facility, which discharges into Golden Creek.

The City of Pickens operates two WWTF in the basin, Town Creek WWTF and Wolf Creek WWTF. The two facilities have a combined capacity of 0.8 mgd and an average daily flow of 0.46 mgd. Town Creek WWTF is an oxidation pond facility, which discharges into Town Creek. Wolf Creek WWTF is an oxidation pond facility, which discharges into Wolf Creek. The City of Pickens is currently in the process of planning and designing a new facility with a capacity of 1.0 mgd that will discharge into 12 Mile Creek. The new facility will replace the Town Creek and Wolf Creek WWTFs that are currently in place.

The Anderson County Sewer Authority operates one WWTF in the basin, the 6&20 WWTF. The plant has a capacity of 0.5 mgd and an average daily flow of 0.10 mgd. The 6&20 WWTF is an activated sludge facility, which discharges into Six and Twenty Creek.

The City of Anderson operates two WWTF in the basin, Rocky River WWTF and Generostee Creek WWTF. The two have a combined capacity of 12.3 mgd and an average daily flow of 6.822 mgd. Rocky River plant is combination facility using trickling filters, anaerobic digesters and rotating biological contactors, which discharges into Rocky River. Generostee Creek is a combination facility using trickling filters and anaerobic digesters, which discharges into Generostee Creek.

The Town of Iva operates two WWTF in the basin, the Westside WWTF and the Eastside WWTF. The two have a combined capacity of 0.623 mgd and an average daily flow of 0.123 mgd. The Westside plant is an aerated lagoon facility, which discharges into East Prong Creek. The Eastside plant is an aerated lagoon facility, which discharges into East Beards Creek.

SAVANNAH BASIN PLANNING AREA PUBLIC WASTEWATER TREATMENT FACILITIES			
WWTP Name	Current* Flow (mgd)	Current** Permitted Capacity (mgd)	Percent of Capacity Currently Used
Coneross Creek	3.20	7.80	41
Pickens Co. PSC's Central-North	0.08	0.15	53
Pickens Co. PSC's Central-South	0.32	0.35	91
Pickens Co. PSC's Liberty/Cramer	0.08	0.16	51
Pickens Co. PSC's Liberty/Lusk	0.11	0.28	39
Pickens Co. PSC's Liberty/Owens	0.04	0.07	56
Pickens Co. PSC's Liberty/Roper	0.13	0.28	47
Whispering Pines	0.09	0.12	75
Cochran Road	0.75	1.15	65
Clemson/Pendleton (Clemson)	0.42	0.58	72
Clemson-Pendleton (Cochran)	0.53	0.72	73
Golden Creek	0.26	0.58	45
Town Creek	0.27	0.60	45
Wolf Creek	0.19	0.20	95
6&20	0.10	0.50	20
Rocky River	3.91	6.20	63
Generostee	2.92	6.10	48
Corner	0.40	0.45	89
Westside	0.06	0.38	16
Eastside	0.06	0.25	25
Total	13.92	26.67	52
C = Consolidated/Closed P = Planned **Current capacity per 2009 *Flow as Average Daily Flow 2007 (Source: Upstate Roundtable Plan)			

Currently, 13.9 million gallons a day are treated by the 19 plants in the Savannah Basin, including all of the industrial flows. These plants have a capacity of 26.9 mgd. Based on the projections of residential, commercial, and I&I flows for the entire basin, current flows (not including existing industrial flows) are 24.8 mgd. This illustrates the difference between the flow from serviced areas and the potential flow from the entire basin. It is important to note that industrial flows are not included because existing and future industrial activities will contribute significantly to the overall flow and have serious impacts on the capacity of plants in the basin.

With projected flows of 28.3 mgd by the year 2015 and planned capacity of 29.5 mgd, it illustrates how limited the facilities would be if they attempted to serve the entire basin. While these projections are valuable in assessing potential sewer needs for the basin, it is not likely to be feasible to provide sewer service to the entire basin and, therefore, the projections do not accurately forecast what treatment needs will be. A more thorough analysis would be required to determine actual treatment needs in the future.

ADMINISTRATIVE PROCEDURES

5.1 OVERVIEW

In order to facilitate the effective implementation of policies set forth in the Appalachian Region-Water Quality Management Plan, there are a number of administrative policies that have been established. Specifically, policies have been developed to serve as guidelines for:

- Public Participation
- NPDES Conformance Review Procedures
- Plan Updates & Amendments
- Grievances & Appeals Procedures

5.2 PUBLIC PARTICIPATION

It is the keen desire of the Appalachian Council of Governments to ensure that the public of the Appalachian Region has the opportunity to participate fully in decisions that may affect water quality within the region. Additionally, Section 208 of the Federal Clean Water Act requires that a public participation process be established and carried out in the development of 208 Water Quality Policies.

Ever since the start of the Appalachian Region 208 project in mid-1975, the ACOG has conducted a public participation program intended to familiarize local citizens and public officials with water quality needs in their area (basin) and to involve them in the development of solutions. As much as possible, two-way communications have been maintained throughout the planning process.

In order to carry out its public participation responsibilities, the ACOG has employed a variety of public information and participation techniques, including:

- Creation of a Regional Water Quality Advisory Committee
- Creation of individual Basin Planning Authorities
- Publication of the Viewpoint - Quarterly Newsletter
- Periodic news releases
- Public meetings and hearings
- Use of multi-media presentations for groups and organizations in the region and state.
- Regular reports to the ACOG Board of Directors

5.3 NPDES CONFORMANCE REVIEW PROCEDURES

As a component of the agency's contract with SCDHEC, the ACOG is responsible for conducting conformance reviews for NPDES permits in the Appalachian Region. The ACOG serves in an advisory capacity to SCDHEC in this permitting process. After reviewing the project, the ACOG must make a recommendation to approve or deny the project, then forward the recommendation to SCDHEC. Because SCDHEC is the NPDES permitting entity for the State, SCDHEC has the final say on whether or not a project shall receive an NPDES permit. The ACOG conformance review process applies to all wastewater treatment plant projects and sewer projects. Projects found to be in non-conformance with the 208 Plan may apply for a Plan Amendment, as specified later in this chapter.

The purpose of the ACOG review process is to allow SCDHEC to concentrate solely on the technical aspects of permitting, while allowing the ACOG to facilitate the determination of local or regional issues,

such as facility ownership, location, sizing, type etc. The ACOG uses the policies and plans established herein to review sewer projects.

Activities requiring NPDES permits with reviews by both the ACOG and SCDHEC include:

1. Preliminary Engineering Reports;
2. Permit requests or plans & specifications for new and/or reissued NPDES permits;
3. Construction permits;
4. Wastewater treatment facilities (new or expanded);
5. Sewer lines;
6. Pump stations;
7. Force mains;
8. Outfall lines;
9. Wasteload allocations.

To ensure protection of water quality, NPDES permits contain: (FROM SCDHEC WEB SITE)

1. Flow limits for WWTF's design flow and permitted capacity;
2. Effluent limitations on pollutants of concern;
3. Pollutant monitoring frequencies;
4. Reporting requirements;
5. Schedules of compliance, when appropriate;
6. Operating conditions;
7. Best management practices, when appropriate;
8. Administrative requirements.

Conformance Review Procedures

1. The ACOG will endeavor to review and issue a determination of conformance within five (5) **business** days of the receipt of a conformance request from SCDHEC, with the following exceptions:
 - ACOG staff may seek the input of the RWQAC or BPA in the determination of conformance on any project.
 - Additional time may be required when determination of conformance requires additional research and involvement by RWQAC or BPA.
 - A delay will result when required information and/or fee assessments have not been submitted.

- If a review will take more than five (5) business days, the applicant will be notified of the delay.
1. Proposed projects shall be subject to one or both of two levels of review:
 - a. ACOG staff review; **and/or**
 - b. Basing Planning Authority (BPA) review.
 2. Initial project review shall be made by the ACOG staff to determine which level of review is necessary. Such determination shall be made in the following manner:
 - **Delegated Review Project (DRP)** – Shall be tied to an existing WWTF with available capacity. May be reviewed and approved by the ACOG staff. Such a project must be served by the WWTF with service responsibilities for that area, or an intergovernmental/agency agreement must be enacted.
 - **Non-DRP Project** – Shall involve collection system expansion or upgrade and shall be tied to an existing WWTF with available capacity. May be reviewed and approved by ACOG staff. Such a project must be served by the WWTF with service responsibilities for that area, or an intergovernmental/ agency agreement must be enacted.
 - **New WWTF or existing WWTF expansion, as described in the 208 Plan** – Shall conform in all parameters to the 208 Plan. May be reviewed and approved by ACOG staff. In such a case, the applicant may seek a plan amendment, as described in Section 3.4 of this document.
 - **New WWTF or existing WWTF expansion** - Proposal not specifically identified in the 208 Plan. May be reviewed and denied conformance by the ACOG staff. In such a case, the applicant may seek a plan amendment, as described in Section 3.4 of this document, and have the request reviewed by the Basin Planning Authority and the Regional Water Quality Advisory Committee.
 - **Upgrades to existing WWTF** – If they are made to meet more stringent regulations or to improve efficiency, but which do not increase plant capacity, may be reviewed and approved by ACOG Staff.

5.4 PLAN UPDATES & AMENDMENTS

The planning process is an ongoing process. Therefore, there are provisions for updating and/or amending the Appalachian Regional Water Quality Management Plan, as conditions and needs change over time. The ACOG planning process provides for 208 Plan updates as needed to accommodate changing conditions and needs.

Plan Updates

The 208 Plan shall be reviewed in its entirety at least once every five years, and updated at least once every ten (10) years. Additionally, each year, the ACOG planning staff shall prepare an annual 208 Plan summary containing the following information:

1. A listing of all surface waters which have been reclassified since the last update, if any
2. A listing of all TMDL's which may have changed from the existing TMDL's reported in the Plan, if any
3. Any significant changes in Point Source Regulatory Programs.

4. A current inventory of all NPDES *Discharge* Permits in the Region
5. A summary of Designated Management Agency activities including
 - Changes in agency designations
 - Changes in designated facility planning areas
 - Changes in designated service areas
 - Intergovernmental/agency agreements
 - Other significant changes to the 208 Plan
6. A listing of all conformance reviews conducted by the ACOG during the past year.
7. A summary of all amendments to the 208 Plan, which were approved by the ACOG Board of Directors during the past year, including the following information for each:
 - Key provisions of the amendment
 - Copy of any text changes
 - Map of an service area or planning area changes

Plan Amendments

The Water Quality Management Plan may be amended at any time during the year at the discretion of the ACOG Board of Directors. The ACOG Board has the responsibility to approve or deny proposed plan amendments. In order to request an amendment, an applicant must fully complete an official ACOG Plan Amendment Form which is available during regular business hours at the ACOG office.

All amendment proposals will be considered with respect to the principles, goals, and intent as set forth by this plan. No amendment that is in conflict with the aforementioned items shall be granted.

Plan amendments may be considered for the following proposals:

1. New discharges, which are not already approved in the existing 208 plan;
2. Increased discharges, or other changes to existing permitted discharges, which are not already approved in the existing 208 Plan;
3. Changes in the allocation of TMDL for Water Quality Limited Stream Segments, which are not already approved in the existing 208 Plan;
4. Modifications to designated sewer service areas or sewer planning areas of two or more designated water quality management agencies (WQMA), which do not include appropriate agreements between those agencies;
5. Text changes within the 208 Plan.

Major And Minor Plan Amendments

Major Amendments are defined as proposed 208 Plan Amendments for the following types of activities:

1. Proposals for new, increased, or any other changes to existing permitted discharges into Water Quality Limited stream segments not already identified in the plan;
2. Proposals involving the allocation of Total Maximum Daily Loadings for Water Quality Limited stream segments;
3. Any new Wastewater Treatment Facility requesting a permitted flow of 1.0 million gallons per day, or more, or defined to be a major facility by EPA or DHEC;

4. Existing Wastewater Treatment Facilities that will be expanded by at least 50% of the current permitted capacity, with respect to flow not already identified within the plan;
5. An expansion of an existing Wastewater Treatment Facility which involves an increase in the presently permitted wasteload, expressed as Ultimate Oxygen Demand (UOD), which could be discharged to a receiving stream;
6. Proposals effecting the Service Areas of two or more Designated Management Agencies, which do not include appropriate agreements between those Management Agencies;
7. Proposed projects that conflict with the goals of the ACOG 208 Water Quality Management Plan, or established 208 policy, such as:
 - a. Goals/Objectives to improve or maintain the quality of surface and ground waters in the Region;
 - b. The consolidation of wastewater treatment facilities into larger regional systems owned and operated by Designated 208 Management Agencies; and,
 - c. To encourage that central sewer be used wherever possible, to provide an acceptable method of wastewater treatment and effluent disposal for projected residential, commercial, or industrial growth.

Minor Amendments are defined as proposed wastewater facility plan amendments for:

1. A new wastewater treatment facility requesting a permitted flow of less than 1.0 million gallons per day and defined to be a minor facility by EPA or DHEC;
2. Improvements to an existing Wastewater Treatment Plant which are necessary to meet NPDES Permit Conditions requiring increased levels of treatment;
3. An existing Wastewater Treatment Facility which would be expanded by less than 50% of the current permitted capacity, with respect to flow;
4. An existing Wastewater Treatment Facility which would be "rerated" to handle a higher permitted flow, but would not result in an increased permitted UOD loading to the receiving stream;
5. A proposed change in the current effluent disposal method, discharge point, or service area for an existing Wastewater Treatment Plant that would be consistent with the goals and other provisions of the ACOG 208 Plan. Agreements between Designated Management Agencies involving these same considerations would also be considered as Minor Amendments.

Major Amendments would require a Public Meeting, advertised by a two-week notice in a newspaper distributed in the area affected by the proposed amendment, to receive public comments. The hearing record would remain open for ten working days following the meeting to receive written comments on the proposed amendment. A responsiveness summary would then be prepared to address all comments received on the proposed amendment. The ACOG Regional Water Quality Advisory Committee will then be asked to review the proposal and make a recommendation to the ACOG regarding its adoption as an amendment to the 208 Plan. For major amendments, and at the request of the chair of the Regional Water Quality Advisory Committee for minor amendments, prior to being reviewed by the ACOG Regional Water Quality Advisory Committee the Basin Planning Authority will review the proposed amendment. Recommendations from the Basin Planning Authority will be sent to the Regional Water Quality Advisory Committee for review. The Regional Water Quality Advisory Committee may either send the recommendation back to the Basin Planning Authority for further review or accept the recommendations for consideration before the Regional Water Quality Advisory Committee. Once accepted, the recommendation shall be subject to public review and comment prior to any formal action being taken by the Regional Water Quality Advisory Committee. After review, the Regional Water Quality Advisory Committee may either refer back to the Basin Planning Authority with comments for further review, or, pass recommendations on to the Board of Directors the COG, with or without comments, recommending action by the ACOG Board.

The Council of Governments and the applicant for the Plan Amendment must agree to a time, date and place for the public meeting required to obtain public comments on the proposed amendment. The applicant is responsible for placing advertisements in local newspapers, arranging for the physical accommodations for the meeting, and, for developing a record of the proceedings of the meeting. An Affidavit of Publication from the newspaper, and a responsiveness summary to the comments received at the Public Meeting, need to be provided to the Council of Governments before the requested amendment can be acted upon by the COG.

Public Meetings would not be mandatory for proposed *Minor Amendments*. Instead, a public notice would be sent to interested parties and posted on the COG website, to receive comments on the proposed amendment. If no significant comments are received within two weeks of the date of the notice, the proposed amendment will be presented to the ACOG Regional Water Quality Advisory Committee for consideration of approval. If significant comments are received the COG could elect to treat the Proposal as a Major Amendment.

Plan Amendment Procedures

The following amendment procedures shall be followed:

1. The applicant shall fully complete an official ACOG Plan amendment application;
2. Plan amendments may be accomplished with a preliminary engineering report, provided that the appropriate issues are addressed in the report. The report content will be the same for industrial and public wastewater treatment facilities except that industrial facilities need not address those issues pertaining to the COG's 20-year planning goals.
3. The ACOG planning staff shall review the application and issue a staff report and recommendation within ten *business* (10) days of receipt of the application;
4. Basin specific amendments shall be placed on the agenda of the appropriate Basin Planning Authority (BPA) for review at the next suitable meeting. The BPA shall issue a recommendation to the RWQAC. The amendment shall then be placed on the agenda of the RWQAC for review at the next suitable meeting. The RWQAC shall review the recommendation and submit a final recommendation to the ACOG Board of Directors for action;
5. Regional policy amendments shall be placed on the agenda of the RWQAC for review at the next suitable meeting. The RWQAC shall review the recommendation and submit a final recommendation to the ACOG Board of Directors for action;
6. A public meeting, advertised by a 15-day notice in a newspaper of regional distribution, shall be conducted at a time and location agreed upon in advance by the ACOG staff and the applicant. If advertised as described above, the RWQAC meeting or the ACOG Board meeting may serve as the public meeting
7. The ACOG Board of Directors shall review the proposal and take appropriate action with respect to the staff report and committee recommendations, as well as the principles, goals, and intent set forth in this plan.

5.5 GRIEVANCES & APPEALS PROCEDURES

The Appalachian Council of Governments serves in an advisory capacity to the South Carolina Department of Health and Environmental Control (SCDHEC). DHEC by agreement, will not permit a project in this region that is not in conformance with the Appalachian Region - Water Quality Management Plan (WQMP). Any and all decisions made with respect to conformance with the WQMP may be appealed to DHEC as the permitting agency.

REGIONAL POLICIES AND WATER QUALITY ISSUES

6.1 FORECASTING TREATMENT NEEDS VIA POPULATION PROJECTIONS

The foundation of water quality planning is the forecast of expected wastewater treatment needs. Such forecasts are tied to a number of variables such as future population, business and industrial growth, land use policies, as well as infrastructure location. Forecasting wastewater treatment needs is the main component in determining wastewater flow rates and the flow capacity needed to treat the projected amount of wastewater.

Population projections by basin are critical in determining forecasted treatment needs in each basin. Population projections are “soft” numbers – they are “educated guesses” about future growth. They are made by using past growth trends and local land use planning policies. Population projections are subject to change over time as a result of a number of community and market factors. Thus, the accuracy of population projections is somewhat limited.

The following policies are established for determining population projections:

1. The ACOG shall establish 20-year population projections for the six-county Appalachian region - by county and by drainage basin. Those population projections shall be used as the control total for all water quality planning activities that are dependant upon future populations.
2. The 20-year population projections shall be determined using the most recent U.S. Census data coupled with state and local projections.
3. All population projections used in basin planning and facility design shall be consistent with the ACOG regional and basin forecasts.
4. The regional and basin population projections shall be updated and incorporated into the ARWQMP, as needed.
5. Overall population projections for each wastewater service area shall not exceed the basin or regional forecasts concerning that area.

6.2 PRE-TREATMENT PROGRAMS

Pre-treatment programs have been established by many sewer authorities in the Upstate. The program has led to a reduction in the number of industrial facilities discharging untreated wastewater to publicly owned treatment works (POTWs). Pre-treatment programs require industries to treat their effluent before sending it to a POTW. Industrial effluent includes more than just sewer water – it includes water used for cooling machinery, washing equipment, laundry and cleaning uses, along with other industrial needs.

Pre-treatment by industrial facilities is vital, for some pollutants may interfere with the biological operation of a WWTF, resulting in violations of effluent limits. Since most municipal wastewater treatment systems are not designed to handle high strength wastewater (i.e. high BOD₅) and toxic pollutants (i.e. metals), the pre-treatment program compensates for this limitation.

Research shows a direct link between the implementation of pre-treatment programs and the resulting improved “in-stream” water quality. Pre-treatment programs reduce the amount of polluted wastewater that POTWs must treat, which results in reduced treatment costs for POTWs due to the water entering the system containing lower concentrations of contaminants. With cleaner water entering the system, cleaner water can then exit the system, which results in better water quality within streams and lower costs to users and service providers.

The following policies have been established regarding pre-treatment programs:

1. All industrial facilities with access to a pre-treatment program shall utilize the pre-treatment program.
2. If an industrial facility has access to a pre-treatment program and refuses to participate in the program, the affected POTW shall have the right to charge a fee to that industrial facility in order to recover the costs associated with treating that facility's industrial wastewater.

There are pre-treatment programs implemented by 18 sewer providers in the Appalachian Region. The sewer authorities with pre-treatment programs are listed in the table below.

SEWER AUTHORITIES WITH PRE-TREATMENT PROGRAMS		
Basin	County	Sewer Authority
Broad-Pacolet	Cherokee	Gaffney BPW
		Town of Blacksburg
	Spartanburg	Spartanburg Water
		Town of Inman
Tyger	Spartanburg	Greer CPW
		Spartanburg Water
		Town of Lyman
Enoree	Spartanburg	Greer CPW
		Spartanburg Water
	Greenville	ReWa
Reedy	Greenville	ReWa
Saluda	Greenville	ReWa
	Anderson	Anderson County Sewer Division
		Town of Williamston
		Town of Belton
		Town of Honea Path
	Pickens	Easley CUS
Savannah	Anderson	Anderson County Sewer Division
		City of Anderson
		Town of Belton
		Town of Honea Path
		Pendleton-Clemson WWTF
	Pickens	Easley CUS
		Pickens County Env Services
		City of Pickens
	Oconee	Oconee County Sewer Commission

6.3 COORDINATION OF SERVICES

Intensified urbanization within South Carolina's Upstate region has resulted in the need for expanded utility services. The administration of utility services is complex and the costs of providing these services increases every year. Because of this, many political subdivisions are looking to coordinate utility services with other governments.

At the time of the adoption of the Home Rule amendments to the South Carolina Constitution, the electors of the State of South Carolina voted in favor of permitting counties, municipalities and other political subdivisions to join together in constructing and operating public utility systems. The pertinent provision of Section 13 of Article VIII of the Constitution reads as follows:

"Any county, incorporated municipality, or other political subdivision may agree with the State or with any other political subdivision for the joint administration of any function and exercise of powers in the sharing of the cost thereof."

During the 1992 session of the General Assembly, Act No. 319 was adopted, which provides the following in its first paragraph:

"Any county, incorporated municipality, special purpose district, or other political subdivision may provide for joint administration of any function and exercise of powers as authorized by Section 13 of Article VIII of the South Carolina Constitution."

Thus, both the provisions of Section 13 of Article VIII of the South Carolina Constitution, adopted in 1973, and the provisions of Act No. 319 of the South Carolina Code of Law, adopted in 1992, authorize the political subdivisions of the State of South Carolina to join together in providing the services and functions each is individually authorized to provide.

In accordance with the above quoted provisions of the South Carolina Constitution and the South Carolina Code of Law, numerous areas in South Carolina are receiving water and sewer utilities via the coordination of services of several political subdivisions. One example is the Bull Creek Water Treatment Plant jointly constructed by the Grand Strand Water and Sewer Authority, the City of Conway, and the Town of Surfside Beach. Another example is the joint construction of a water treatment plant by the Lancaster County Water and Sewer Authority and Union County, North Carolina. Each of these projects was constructed and is presently being operated pursuant the terms of an inter-governmental agreement between and/or among the various participants.

The RWQAC endorses efforts by various political subdivisions that seek to develop solutions on a regional basis. Fostering cooperation, open communication, and less competition among all utility providers should be actively pursued so that regional solutions are explored at all planning stages. During such planning stages, the following factors should be considered in determining whether a project should be jointly or individually constructed and operated:

- The control of the operation, use and expansion of the facility
- The cost of the project and the financial feasibility of raising the necessary monies
- The benefits to each of the participants by constructing a regional facility
- The division of the cost of construction and operation, along with the benefits to each governmental entity

The following **policies** have been established to guide the coordination of efforts between service providers:

1. Future demand for wastewater treatment may require the construction of new or expanded wastewater treatment facilities by more than one government or political subdivision. The

construction and operating costs shall be divided among the entities based on capacity requirements.

2. In order to determine the size of a new facility, each entity must establish the amount of capacity needed to meet its projected growth over the next 20 years, coupled with its ability to pay for that capacity. If future needs exceed the initial allocation of capacity to a particular entity, then that entity is allowed to buy capacity from another participant at replacement cost, or participate in the cost of a plant expansion.
3. The cost of upgrading a facility due to state, federal, or other regulatory requirements, shall be shared by all users and entities on an allocated capacity basis.
4. Variable operations and maintenance costs shall be charged to each user. Fixed costs shall be charged to both users and those holding capacity commitments.

6.4 INTER-GOVERNMENTAL AGREEMENTS

The most practical way to achieve common goals and common ends is for governments, political subdivisions, regional utilities, and utility sub-districts to enter into inter-governmental agreements (within their boundaries). These agreements would leave the responsibilities and liabilities in place with the local districts, but would gain the benefit of a united, regional approach to common problems. The contracts, by their terms, would set forth responsibilities among the parties and provide for the funding, management, and operation of the systems, without the need to obtain legislative or county approval, in most cases.

When governments and/or political subdivisions share common goals, it is often beneficial for them to consolidate utility services. However, it is important to note that each is a separate and sovereign political unit. Each government, special purpose district, and utility will retain its own separate revenue sources to pay for the cost of the operation and maintenance of its own and/or shared facilities, along with the cost of necessary improvements for the repair and expansion of those facilities. The funding for each of these entities varies from ad valorem taxes to tap fees and service charges. The debt structure and legal structure of each is different, along with its present and future responsibilities. Some systems are virtually built out and have little room for expansion, while newer ones may have tremendous capital needs. Within its respective boundaries, each has the power to determine when and how its facilities will be expanded, and each is responsible for the billing and collection of its services.

A major concern is that many of the facilities owned by these entities will have to be replaced or extensively repaired, and in some instances, relocated. Some facilities are older than others. Some have been well maintained, while others may require a great deal of deferred maintenance.

In addition, there are legal barriers to consolidation. There is no legal statute under which a governmental agency may force another entity to turn over its facilities. Since the passage of the Home Rule Act, the General assembly no longer has jurisdiction over local affairs and does not have the power of jurisdiction to adopt an act which would bring about a consolidation of particular systems. In 1974, the General Assembly passed Act No. 926, which provides a procedure whereby a county council may merge special purpose districts under certain circumstances. Furthermore, the Constitution and statutory enactments specifically provide a savings provision permitting local governmental units to continue to function in the same manner as they did prior to Home Rule, unless a change is made in a general law passed by the General Assembly. One of the statutes clearly states that the Home Rule Act is not to be construed as authorization to hand any of the functions of these separate political units to county councils. In addition, county councils have no authority to provide water or sewer services, unless approved by referendum.

Thus, for effective consolidation of services to be achieved, the consent and approval of the governing boards of each of the political units must be obtained. Other prohibitions, some statutory, inhibit the transfer of facilities from one political subdivision to another. In some instances, a referendum may be

required, and with others, a condition of a bond may prevent the transfer of assets until the bonds have been paid.

The following **policies** have been established to facilitate the development of inter-governmental agreements between political units, in order to promote efficient wastewater treatment strategies:

1. Inter-governmental agreements are the most practical way for political subdivisions to solve common problems. Such agreements essentially leave local responsibilities in place with the local districts, while regional problems can be addressed through cooperative effort. Changes to service areas or service agreements between management agencies that require amendments to the plan will require a copy of the intergovernmental agreement as part of the amendment process. The agreements or contracts, by their terms, would set forth the responsibilities among the parties and provide for smooth transition as the plan is amended.

6.5 ALTERNATIVE STRATEGIES FOR INCREASING PLANT CAPACITY & FOR EFFLUENT DISPOSAL

As the Upstate continues to grow, water usage and effluent disposal will also increase, which will cause the assimilative capacity of Upstate streams to reach their limits. At that point, wastewater disposal into waterways will either be prohibited or will be required to meet standards approaching potable water quality standards. Communities may be able to defer these conditions by instituting conventional water conservation measures. However, urban growth and development will eventually exceed conservation measures and plant upgrades will ultimately be necessary - unless alternative wastewater disposal methods are employed.

Several alternative strategies are potentially available to sewer entities. These strategies would not only maintain water quality while better utilizing the capacity of small streams, but would also allow facilities to expand for future growth. These strategies include:

- Alternative effluent uses, including land application and wastewater re-use (for non-potable purposes)
- Controlled effluent releases based on river flow
- Using Best Management Practices (BMP's)
- Employing new technology

The following policies have been established to guide the development of alternative methods for increasing the capacity of wastewater treatment facilities:

1. Alternative strategies for treatment and discharge should be considered and evaluated for each treatment plant within a basin.
2. The individual plant strategies should be evaluated together in a Regional Best Management Practices Plan, which not only optimizes the capacity of individual treatment plants, but also considers the needs of the entire basin.
3. Each Basin Planning Authority shall work closely with the various stormwater management entities to ensure protection and best use of rivers, via appropriate BMP's.
4. Technology is ever-evolving. Therefore, new technology shall be considered whenever possible. Such technology is needed in order to reduce pollutants from effluent discharge, reduce costs to users and service providers, increase plant efficiency, decrease the need for plant expansions, allow for safe and effective self-contained sewerage, and to increase options and alternatives for sewer treatment and disposal in general.
5. Wastewater Re-use is the use of treated, non-potable effluent for uses which do not require high-grade water, such as industrial processing and cooling, landscape and golf course irrigation, toilet flushing,

etc. Water re-use is an effective means of preserving water resources in areas where those resources need to be protected, and where the assimilative capacity of streams is low. Water supply and wastewater disposal are functions that are currently managed separately and are highly fragmented. Wastewater re-use can be beneficial to both, but it requires cooperation to be effective. The following **policies** have been established to guide **wastewater re-use** in this region:

- a. Wastewater re-use (i.e. reclaimed water usage) shall be encourage, via purple pipe system or other method approved by the ACOG.
 - b. Reclaimed water shall be utilized in a manner that reduces the need for high-grade potable water for non-potable uses.
 - c. Reclaimed water shall be used in a manner that reduces the demand for assimilative capacity in streams.
 - d. Reclaimed water shall receive treatment to adequately safeguard against potential health hazards, risks to groundwater, and downstream water supplies.
6. Land application, also known as “land treatment,” is the process of applying pre-treated wastewater to areas of land, rather than discharging it into surface waters. Land application can also be used to further treat wastewater before it enters the water table and/or surface waters. Land application can have several advantages over conventional wastewater treatment systems. Advantages of land application include:
- Promoting increased crop production via nutrients in the wastewater
 - Retaining water in watersheds
 - Reducing the need for sludge disposal

The land-applied wastewater eventually becomes part of the water resources of a drainage basin. For this reason, land-treated wastewater must meet the criteria established for receiving waters. Groundwater recharge must meet drinking water quality criteria, while surface runoff must meet surface water quality criteria.

The following **policies** have been established to guide the use of **land application/land treatment of wastewater**:

- a. The method or technique of land application shall be reviewed by DHEC. It shall be approved if it meets DHEC's criteria.
- b. Land application of wastewater shall not violate the entity's discharge permit.
- c. Land application of wastewater shall not be in conflict with the overall intent and purpose of this 208 Plan, nor with state or federal laws.
- d. Land application of wastewater shall comply with all water quality standards, and shall not result in any environmental or public health degradation.
- e. Land application of wastewater shall be reviewed and approved by the local governing body of the jurisdiction in which the land application is proposed. If it is not approved by the governing body, then a different method shall be proposed.

6.6 ALLOCATION OF CAPACITY AT REGIONAL WASTEWATER TREATMENT FACILITIES

Historically, wastewater treatment plant capacity has been permitted on a first come, first serve basis with no time restrictions stipulated for the use of the permit. Consequently, large users, such as industries and developers, have accumulated substantial permitted capacity in excess of their actual need. This results in a loss of realized capacity and revenue to the service provider. For example, if a plant has 5 MGD of capacity tied up in industrial permits, but none of those industries are using that capacity, then that

capacity cannot be allocated to other uses. This can result in a loss of capacity that can cause hardships to other users and service providers.

The South Carolina Department of Health and Environmental Control (SCDHEC) requires that planning for the expansion of treatment plants must be undertaken when permitted capacity reaches 80 percent of design capacity. Construction must begin when permitted capacity reaches 90 percent of design capacity. This requirement ensures that capacity is available for future growth. Hence, it may unnecessarily trigger plant enlargements before expansion is actually necessary.

The following **policies** have been established for optimal use of plant capacity:

1. Regional sewer utilities should continue the current policy of allocating capacity on a first-come, first-served basis.
2. Future permitting and planning efforts must examine basing permitted flows on actual average discharges, with provisions for short-term peak flows.
3. Allocated capacity for existing industrial users shall be based on actual average discharge, with provisions for short-term peak flows.
4. The Regional Water Quality Advisory Committee supports the general concept of an access fee. Most sewer service providers in the Upstate presently charge a fee for new connections. The proposed fee would apply to new connections.
5. Existing users should pay an access/reservation fee if they desire to reserve capacity beyond that permitted. The reservation fee should be based on fixed costs plus debt service.

6.7 MINIMUM STREAM FLOW REQUIREMENTS AND 7Q10 LEVELS

Minimum Stream Flow Requirements

Water quality maintenance in rivers and streams of the region requires minimum stream flows to meet water supply needs, as well as in-stream needs of a variety of users and uses including:

- Waste assimilation
- Recreation
- Habitat protection
- Downstream navigation requirements

Water providers play an important role in determining the amount of effluent that can be assimilated into various water bodies, especially in areas where water flow is controlled by a reservoir system. Drought conditions, the amount of water removed from a water body for water supply, and the water level maintained in a reservoir, all affect river levels, stream flow, and the “7Q10 flow.” When a waterbody contains less water than expected, it becomes difficult for wastewater treatment providers to meet permit limitations. This is an important reason why minimum stream flow must be maintained.

7Q10 Levels

The “7Q10 level”, or “7Q10 flow”, refers to the capacity of a river to accept treated wastewater. 7Q10 levels are directly related to stream flow, as they are based on the lowest predicted seven-day stream flow over a ten-year period (the seven days must be consecutive). The federal government bases water quality standards on the 7Q10 level.

The 7Q10 level in a river:

- Is the capacity of a river to assimilate treated wastewater.

- Determines whether the river can handle any additional wastewater discharges.
- Determines the treatment levels required at a WWTF.
- Is reduced during low stream flows and drought conditions, per less assimilative capacity via less water in a river.

The following policies have been established to assure minimum stream flows in order to keep streams at or above the 7Q10 levels:

1. The Appalachian Regional Water Quality Advisory Committee actively encourages state-wide basin planning. In order to be effective, state-wide basin planning would require the cooperation of all South Carolina COGs, DHEC, and the water quality management bodies of neighboring states that share our region's basins.
2. Desired stream flow amounts and minimum stream flow limits shall be established by the Appalachian Regional Water Quality Advisory Committee. These standards shall be enacted to protect water quality during periods of low stream flow.

6.8 TOTAL MAXIMUM DAILY LOAD (TMDL)

A TMDL, or Total Maximum Daily Load, is the amount of a single pollutant (such as bacteria, nutrients, or metals) that can enter a waterbody on daily basis and still allow that water body to meet water quality standards, as set forth by the State. All waterbodies can assimilate a certain amount of a pollutants, but once that limit (or total maximum daily load) is reached, no additional pollutants can be accepted by that waterbody without violating water quality standards. In South Carolina, TMDLs are determined by SCDHEC, then forwarded to EPA Region 4 for final approval.

A TMDL has two components: the wasteload allocation (point source load), and the non-point source allocation (also called the load allocation). When a TMDL has been developed for a waterbody, permit limits for discharges to that waterbody will be based on the wasteload allocation portion of the TMDL. If a waterbody is impaired, but a TMDL has not been finalized, permit limits will be developed such that there is no net increase in loading of the pollutants that caused the impairment.

The purpose of a TMDL is to restore water quality to a waterbody that exceeds the allowed amount of a pollutant. The goal of a TMDL is to identify potential pollution sources, calculate the reduction of those sources, and provide implementation information to help the waterbody meet water quality standards. Once a TMDL is approved, an implementation plan must be developed to reach the goals of the TMDL document. Implementation of a TMDL must reduce sources of pollution within a watershed, improve water quality, and restore the full use of the waterbody.

TMDLs are a requirement found in Section 303(d) of the Clean Water Act. SCDHEC's 303(d) list, which is updated every two (2) years, contains a list of water quality limited segments within South Carolina. If a site is included in the 303(d) list of impaired waters, a TMDL must be developed within two to thirteen years of initial listing. Hence, the Clean Water Act requires development of a TMDL for all waters included on the 303(d) list.

TMDLs are calculated by adding all the point and non-point sources for the pollutant causing the impairment, plus a margin of safety.

$$\text{TMDL} = \sum \text{Wasteload Allocations} + \sum \text{Load Allocations} + \text{Margin of Safety}$$

After a TMDL is calculated, the amount of pollutant load entering from point and non-point sources is compared to the water quality standards for that waterbody. Then, this total loading is reduced to the level that allows water quality standards to be met. Finally, the reduced loading is divided among all the point and non-point sources discharging to the waterbody.

The following policies have been established to guide the use and development of TMDL's:

1. TMDL's are recognized as highly effective water quality planning and management tools. Therefore, TMDL's shall be developed and used wherever appropriate.
2. The Basin Planning Authorities (BPA's) may undertake stream studies when necessary for the purpose of providing SCDHEC with more accurate or more recent stream data to use in the development of TMDL's.
3. Efforts shall be made to include non-point source contributions in the TMDL process.

6.9 WASTELOAD ALLOCATIONS

A wasteload allocation is the amount of pollutant that a receiving waterbody can assimilate or dilute for a given pollutant, which will be discharged by an existing or future point source. Discharges from existing or future non-point sources are limited by load allocations.

Wastewater treatment providers use wasteload allocations to plan and complete WWTF designs., and SCDHEC uses wasteload allocations in developing permit effluent limits. SCDHEC allocates pollutant wasteloads for each effluent discharger in pounds and/or concentration levels. These wasteload allocations allow effluent to be discharged into a waterbody without causing a violation of water quality standards. However, if stream flows are decreased for any reason, it negatively affects the diluting capacity of the waterbody. If the wasteload allocation is not reduced in this situation, a water quality standard violation is likely to occur.

Wasteloads are calculated using a computerized mathematical model of a receiving stream. For each effluent discharger, SCDHEC starts with the maximum wasteload allowed per EPA limitations. The model is then run to determine whether or not the effluent can be discharged without causing a violation of water quality standards. SCDHEC has historically allocated wasteloads via the NPDES permitting process; however, as competition for wasteload allocations has increased in the Appalachian Region, SCDHEC is looking to the ACOG to take on greater responsibility in the wasteload allocation process.

The following policies have been established to guide the wasteload allocation process:

1. The ACOG shall ensure equitable distribution of wasteload allocations for discharges within the Appalachian Region.
2. The individual Basin Planning Authorities shall be responsible for determining wasteload allocations within their respective basins; therefore, each Basin Planning Authority must develop a Wasteload Allocation Plan that outlines a decision making process. Such Plan shall allow for a timely decision making method and shall include a prescribed allocation process based on consensus building.
3. Costs of implementing wasteload allocation strategies must be fair to the affected dischargers, while taking into consideration:
 - a. The costs of increasing treatment levels;
 - b. The proportion of pollutants originating from any one discharger; and
 - c. The discharger's history of compliance with permit conditions.
4. The ACOG may choose not to allocate capacity to a new, or expanded, discharge if alternatives to the discharge are reasonably available, or if the discharger has a poor history of compliance with permit conditions

5. If necessary, basin-wide reallocations of TMDL's will be accomplished on a five-year cycle, to match the State Basin Planning Process. Interim reallocations will be considered; however, it is anticipated that interim reallocations would not need to be basin-wide in scope.
6. Permitted discharges that significantly exceed actual discharges may be considered as a means for reducing permitted loadings for short periods of time. The long-term capacities of these treatment systems, however, need to be recognized and accounted for in long-term basin plans for wasteload allocations.
7. When water quality limited segments are identified, and/or TMDL's are implemented, the 208 Plan must be amended to provide for a wasteload allocation for that stream segment, which must be shared among current and future dischargers.

6.10 SEPTIC TANKS AND INDIVIDUAL DISPOSAL SYSTEMS

Septic tanks and individual disposal systems are an approved means of wastewater disposal in areas of the region not served by public sewer, as long as they meet all SCDHEC and local regulations. These disposal tanks and systems are the responsibility of state and local health departments, rather than designated management agencies. They are to be designed, operated, inspected and maintained according to SCDHEC Regulation 61-56 and local criteria. A well-engineered and maintained septic or individual disposal system must be operated in a manner that protects ground and surface water resources. However, poorly designed or failed systems frequently contribute to the contamination of both ground and surface waters.

While many areas of the Upstate have access to sewer collector lines, some of these lines were installed after the developments had septic systems in place and they continue to utilize these systems for their wastewater disposal. Other areas of the region do not have access to sewer service. Septic systems are the most viable option for new and existing development in these locales.

Septage disposal practices are of significant concern for both environmental and health reasons. Frequently, such waste is left in a septic tank for extended periods, where accumulation, decomposition, and the formation of pathogenic bacteria occurs. Thus, compared with wastes found in a typical sewage system, septage contains larger quantities of grit, grease, solids, organic matter, nitrogen, phosphorus, heavy metals and pathogens.

Due to the significant environmental and health risks it poses, septage must be disposed at approved NPDES wastewater treatment facilities only, and disposal must be in accordance with SCDHEC and local regulations. Because septage has high concentrations of waste materials, many treatment facilities do not have adequate capabilities to treat septage. The solids and grease commonly found in septage can prematurely wear and clog plant machinery, while septage processed through these facilities can cause plants to exceed the water quality standards set for their effluent discharges. Therefore, processing septage at WWTF would require an upgrade of the plants' treatment process and an overall increase in the cost of treatment. Costs would further rise when septage processing causes the plants to exceed their allowed pollutant loads, resulting in water quality violation fines.

The following policies have been established to guide septic tank and individual disposal system permitting:

1. In accordance with DHEC regulations, permits for new septic tanks or individual sewage treatment and disposal systems shall not be issued where public sewer is accessible for connection.
2. Homeowners and businesses are required to connect to local sewer systems if and when the infrastructure for sewer is available in the general vicinity of the development.
3. Repairs to existing individual sewage treatment and disposal systems shall not be permitted where public sewer is accessible for connection.

4. In remote areas not served by sewer systems, septic systems may be approved for use in new developments, as long as water quality will not be affected by such systems and as long as the site is large enough to adequately handle the waste generated by the septic system.
5. No septic tank effluent or filter effluent shall be discharged any stream or body of water in South Carolina.
6. Land disposal of septage waste is expressly prohibited, with no exceptions.
7. All septage must be disposed at approved NPDES treatment facilities in accordance with DHEC regulations and local criteria.
8. Solids and grease commonly found in septage can prematurely wear and clog plant machinery; therefore, such facilities may reject or require pre-treatment of such waste.
9. Local sewer authorities should accept septage from areas where local sewer service is not available. The costs of this service may reflect the capital and operating costs of providing service, plus any convenience fees.
10. The region's communities shall require the installation of sewer systems in new developments in place of septic systems, where ever new sewer systems can tie into existing sewer lines.
11. Local governments shall periodically review existing septic system standards and revise them when and where it is appropriate, in order to ensure that they are adequately protecting the region's water resources. SCDHEC is advised to seek input from local officials when reviewing and revising their septic system standards.

6.11 BIO-SOLIDS

Biosolids (treated sludges) are the by-product of municipal wastewater treatment. They contain nitrogen, phosphorus and alkaline materials, with some mulch-like material called "humus." Federal 503 regulations encourage using biosolids as fertilizers and soil supplements instead of disposing them in landfills. Due to the large volume of biosolids generated by WWTFs and the tighter restrictions placed on landfills, recycling opportunities can effectively reduce the volume of biosolids going to landfills.

The following policies have been established to guide the management of biosolids from wastewater treatment facilities:

1. Regional sewer providers must actively research alternative approaches to treating and handling biosolids, with a primary focus on recycling and re-purposing the biosolids. Such alternatives might include land application, composting, and use as a soil amendment or fertilizer. All options shall be safe and viable in all weather conditions.
2. At least two alternatives shall be available to control the entire biosolids flow from each WWTF. This provides regional sewer utilities with their own pre-determined choices: If one biosolids disposal method (land-filling or incineration, for example) encounters regulatory problems, then the other method (such as land application) would then be permitted and ready to be applied.
3. Regional and/or basin-wide biosolids management programs shall be encouraged.

6.12 OIL AND GREASE

Oil and grease are a constant problem for sewer utilities. Commercial and industrial operations that place oil and grease or similar by-products in sewer lines can cause line backups, overflows, and equipment failures. Pre-treatment permits limit the amount of industrial oil and grease allowed into WWTFs, but other commercial sources are unregulated.

The following policies are set out to control the disposal of oil and grease by wastewater treatment and other facilities:

1. A policy shall be developed and implemented to prohibit direct discharge of non-industrial sources of heavy oils and grease into sewer lines, require the installation and regular cleaning of

grease traps wherever excessive grease is produced, and establish fees to cover the cost of inspection and disposal.

2. Regional sewer authorities should consider privatizing the handling and disposal of oil and grease.

6.13 LOCATION, SIZING, STAGING, LEVEL OF TREATMENT, AND FACILITY ELIMINATION/CONSOLIDATION

The 208 Plan identifies wastewater treatment facilities (WWTF) that have been issued a discharge (or no-discharge) NPDES permit through SCDHEC. Each WWTF's location, sizing, and level of treatment are also included. The Water Quality Management Agencies (WQMA), which are the sewer providers themselves, determine the location and sizing of their own WWTFs, along with their accompanying sewer collection lines. Each management agency directs its own wastewater treatment program and discerns its need to expand, consolidate, upgrade technology, and other associated issues. All of these determinations must be included in the 208 Plan.

Location is a vital consideration when planning a new wastewater treatment plant. The effluent from WWTFs consumes a specific amount of oxygen in a river, regardless of where the effluent is discharged along the river's length. The most advantageous place to discharge treated wastewater is where there is an increase in oxygen and assimilative capacity, which usually occurs immediately downstream from the confluence of a tributary and a river. Because this is where the assimilative capacity of any river is the greatest, it is a key location for effluent discharge.

The *size* of a WWTF is an important consideration. A large number of NPDES permits currently issued in the region are allocated to various small dischargers, typically package plants or wastewater treatment lagoons. Most are privately owned and operated, as a result of being located in areas of the region unserved by public sewer systems. These facilities are not as economically or environmentally efficient as the larger, state-of-the-art treatment facilities. Larger regional facilities can frequently provide service with a higher degree of treatment and at a lower cost than smaller facilities. This is due to their strategic locations along rivers and their ability to create economies of scale from their large capacities.

As the region grows and larger public sewer systems expand their service areas, the opportunity arises to *eliminate and/or consolidate* smaller and less efficient discharges (both public and private), by tying into new or expanded regional plants. However, new wastewater treatment facilities will generally not be approved if a service area can be served by an existing treatment facility. The 208 Plan may recommend that existing treatment plants be eliminated if their continued operation threatens water quality, or threatens the systematic planned growth of a regional sewer system. NPDES permits may be issued or renewed with conditions requiring this type of facility to be eliminated within a certain time period. Factors such as location of a treatment facility, water quality benefits, and economics will guide the decision to approve or deny a request for a new wastewater facility or the elimination of an existing facility.

The minimum *level of treatment* (i.e. the quality of the treated wastewater) is determined by SCDHEC. At the request of a permittee (i.e. sewer provider), SCDHEC will evaluate the location, size, and other technical information in order to make a decision concerning the quality of treated wastewater required to maintain the State's water quality standards. The results of the technical evaluation will become a part of the 208 Plan and will be included in that permittee's NPDES discharge permit, as issued by SCDHEC. The results of the evaluation may also become part of a Total Maximum Daily Load (TMDL), if one is needed.

Wastewater treatment facilities are divided into the following categories, depending on their size or function, as specified by SCDHEC:

1. MAJOR (REGIONAL) FACILITIES:

Major (regional) facilities are generally limited to major municipal systems which treat 1.0 mgd or more of wastewater effluent. As a result of sheer volume, these facilities have the greatest potential to degrade receiving water quality. However, they also have the ability to take advantage of economies of scale and strategic stream location, which can lower costs and improve water quality. These facilities generally have a large customer base and may be more financially capable of handling expensive upgrades. Major facilities must be identified in the 208 Plan, with information regarding location, sizing, and level of treatment.

Large regional treatment plants (50 mgd or more) can treat wastewater as efficiently as small to mid-size regional plants (2.0 mgd to less than 50 mgd). However, compared to a mid-size plant, a large plant discharges a proportionally larger quantity of contaminants into the receiving stream at its discharge point. If the receiving stream is small, as is usually the case in the Upstate, the large plant's effluent discharge can cause noticeable oxygen depletion, whereas several mid-size plants located along the river at strategic points may have no noticeable effect on oxygen levels.

2. MINOR (LOCAL) FACILITIES:

Minor (local) wastewater treatment facilities are those that treat less than 1.0 mgd of wastewater effluent. Minor facilities must be identified in the 208 Plan, with information regarding location, sizing, and level of treatment.

3. TEMPORARY FACILITIES:

Temporary facilities include package treatment plants, waste lagoons, and similar facilities that are used in the absence of local or regional sewer service. Such facilities may only be used in the event that regional or local sewer facilities are unavailable, and cannot be expanded without BPA and ARWQ Board approval. Once regional or local sewer service becomes available, temporary facilities must be removed from service within a reasonable time period, as determined by the sewer provider, with flows diverted to a permanent facility.

4. INDUSTRIAL AND COMMERCIAL FACILITIES

Industrial and commercial effluent dischargers are regulated by the 208 Plan. Effluent from these facilities can significantly harm receiving waters, especially if pre-treatment programs are not utilized.

5. NO-DISCHARGE FACILITIES

The 208 Plan recognizes those facilities that are permitted as "No-Discharge" facilities. These facilities do not discharge effluent to a surface water body. However, no-discharge facilities can negatively affect groundwater.

The following **policies** have been established to guide the **location, size, staging, level of treatment, and elimination or consolidation of WWTFs**:

1. Population projections, local land use plans and regulations, and employment trends shall be used by WQMAs to forecast wastewater treatment needs. Size and numbers of facilities shall be a function of forecasted treatment needs.
2. Future planning shall not revolve around one large regional wastewater treatment complex. Instead, future planning shall be based on strategically placing mid-sized regional facilities.
3. New WWTFs (preferably mid-size regional plants) shall be strategically located to take advantage of points of greatest assimilative capacity in streams and rivers (i.e. locating downstream of the confluence of one or more streams, or a tributary and a stream, so that water volume is greatest).

4. Wasteload allocations shall be used to guide WWTF design.
5. Effluent quality and level of treatment at wastewater treatment facilities shall be based on stream standards set forth by the EPA.
6. A comprehensive and continuing program of maintenance and rehabilitation of sewer lines shall be implemented throughout the region and within each basin.
7. The elimination and/or consolidation of WWTFs into mid-size regional treatment plants shall be accomplished, whenever possible and feasible, and shall be based on economics, operational efficiency, water quality impacts, physical constraints, and water rights. Opportunities for the elimination of discharges and/or the consolidation of facilities must be identified in the 208 Plan; otherwise, an amendment will be required, pending BPA and ARWQ Board approval.
8. Any changes to the location, sizing, staging, level of treatment, or any other planning information regarding major and minor facilities, shall be indicated in the 208 Plan. If not indicated in the 208 Plan, such changes shall require an amendment, pending BPA and ARWQ Board approval.
9. Temporary facilities:
 - Shall only be requested when regional and local sewer facilities are unavailable.
 - Shall not be expanded without BPA and ARWQ Board approval.
10. Small, temporary, and older facilities:
 - Shall be removed from service and tie into new or expanded regional sewer facilities when regional or local sewer service becomes available. This shall be accomplished within a reasonable time period, as determined by the WQMA. Effluent flows shall then be diverted to the WWTF. This shall be a condition of the facility's new or re-issued NPDES discharge permit.
 - However, older wastewater treatment plants that are well-maintained and well-sited shall be upgraded into mid-size regional facilities, particularly if open land is available for expansion.
 - Interim solutions for the continued operation of plants that are designated to connect to regional facilities shall be accepted in the short term, until such time that the economics of closing a plant and connecting to a regional facility is feasible. Interim solutions shall be determined through the Basin Planning Authority's review process, taking into consideration the interim costs and the long-term regional strategies involved.
11. Industrial and commercial facilities:
 - Shall divert effluent flows to regional or local WWTFs, whenever possible, in order to reduce the number of overall dischargers in a basin.
12. Shall utilize pre-treatment programs if available.

6.14 Non-Point Source Pollution: Stormwater Management, Inflow & Infiltration, and MS4 Regulations

Stormwater

As the conversion of previously natural areas has occurred across the region, the impact of stormwater runoff on waterbodies has increased substantially. Urban runoff is accelerated by the concentration of impervious surfaces in both urban and suburban areas, which include rooftops, sidewalks, parking lots, and roadways that carry pollutants directly into water bodies. These discharges can lead to the pollution of rivers and lakes, especially if there are no control measures to limit the stormwater runoff. In addition,

the destruction of natural vegetative buffers adjacent to rivers and lakes eliminate natural filtration processes.

When natural areas are converted to residential yards and agricultural areas, they become less pervious. This results in high concentrations of fertilizers, herbicides, and pesticides enter the stormwater leaving these non-point source sites. Finally, land clearing activities due to rapid growth and development results in substantial amounts of runoff from construction sites, which increases the amount of sedimentation and turbidity in waterways. The combination of increased pollutants, decreased pervious surfaces, and increased stormwater volume is causing runoff to be a serious water quality management issue in the region.

Several governmental agencies have responsibilities for stormwater management in South Carolina:

- SCDHEC regulates runoff from industrial facilities.
- The Department of Agriculture and the EPA regulate stormwater runoff as it relates to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).
- Runoff from urban areas is typically managed by the counties.

Historically, these programs have not always coordinated activities to achieve the best results. Greenville County has formed a partnership with the seven cities within Greenville County to monitor and manage stormwater. Solutions will require long-term coordination between all levels of government and industry to develop effective non-point source control and prevention programs.

Inflow and Infiltration (I&I)

Inflow and infiltration (I&I) is the flow of groundwater into sanitary sewers through leaks. Infiltration occurs when water enters the sewer lines through cracks and loose joints in the lines. Inflow primarily results from manhole covers being placed lower than the elevation of the surrounding road pavement, which allows stormwater to flow into the manhole. I&I is particularly important during rainstorms. The additional flow from I&I is detrimental since it must travel through the sewers and be processed at wastewater treatment plants (WWTF). The additional water may hydraulically overload the sewer, which can cause sewage to back up in residences and can reduce the efficiency of the WWTF.

Many of the sewer lines within the basins are old and deteriorating. Some were constructed as early as 1927. Over the years, these lines have cracked in places or their joints have loosened. This causes I&I problems for many WWTFs, due to the cracks facilitating water infiltration. For example, the peak load on the Mauldin Road Plant can reach 160 mgd during a rain event, compared to a normal flow of 25 mgd. This increased burden hinders a WWTFs ability to adequately treat water, which in turn is harmful to the water bodies of the region.

I&I causes fewer issues now than it did 10 years ago. Rehabilitation and upgrades to sewer lines have greatly reduced the amount of water infiltrating the system. However, there are still sewer lines in the region that have not been rehabilitated and need upgrading.

Sub-districts in the Upstate have initiated a major sewer system improvement project to alleviate the current I&I problem. The total anticipated cost of this state-required project for the Mauldin Road Plant trunk sewers will be approximately \$35-40 million over the next 5 to 10 years. Other service providers in the region also have serious I&I problems which must be addressed within the near future.

MS4 Regulations

In November 1990, the US Congress amended the National Pollutant Discharge Elimination System (NPDES) to include stormwater discharge regulations [Federal Register, Volume 55, No. 22]. Through these regulations, the EPA established a stormwater management program that consisted of two categories: Phase I MS4 and Phase II MS4. The Phase I program began in 1990 with permits issued in 1991, and the Phase II program began in 1999 with permits issued in 2003. Both phases require National Pollutant Discharge Elimination System (NPDES) permits.

An MS4, or Municipal Separate Storm Sewer System, is a publicly owned system of transporting stormwater, more commonly known as a “storm sewer system.” It is used to collect and transport stormwater only. MS4s are never allowed to combine storm sewer systems with wastewater sewer systems and, therefore, these systems should never contain sewage or wastewater. MS4s are not part of a POTW (Publicly Owned Treatment Works). The collection and transport system can be comprised of underground storm drains and pipes, or it can include above ground roads with systems, ditches, and gutters. The endpoint for these systems is always a water body, i.e. stream, river, lake, ocean. Discharges from MS4s are considered “point source discharges,” because the storm water enters through a system of pipes, then exits the system via a pipe at a certain “point” in a water body. Consequently, these storm sewer systems transport untreated stormwater and other runoff into waterways of the U.S.

Phase I and Phase II MS4 Permits

Phase I MS4 permits are issued to manage storm sewer discharges from *medium and large MS4s*, including both incorporated and unincorporated urbanized areas (as defined by the US Census Bureau). Medium MS4s serve populations of 100,000 – 249,000. Large MS4s contain populations of 250,000 or greater. Additionally, both large and medium MS4s includes 11 categories of industrial activities, construction activities disturbing more than 5 acres, and certain “other systems” with extremely large discharges, such as discharges from the Departments of Transportation (DOT). Phase I MS4s and are covered by individual NPDES permits.

Greenville County is the only Phase I MS4 in the Upstate, and it is a medium size MS4. In South Carolina, there are a total of four (4) medium size MS4s, which include Greenville County, Lexington County, Richland County, and the City of Columbia. The only large MS4 in the state is the South Carolina Department of Transportation (DOT).

Phase II MS4 permits are issued to regulated small MS4s in urbanized areas (as defined by the 2000 Census) serving a population of less than 100,000, construction sites of 1 acre or more, along with industries and facilities with less intensive activities than those requiring Phase I permits, such as school districts. Additionally, areas outside an urbanized area having a population of 10,000 or more and a density of 1,000 people/square mile or more may be included in the Phase II MS4 program, along with areas that contribute substantially to the pollutant loading of a physically interconnected MS4, unless those areas receive waivers from Phase II requirements. Areas receiving these waivers are called “unregulated small MS4s.” Regulated Phase II MS4s are usually issued a general NPDES permit, as a co-permittee under a Phase I MS4. They do not usually receive individual permits.

There are seventy (70) regulated small MS4s in South Carolina. The Upstate contains twenty-one (21) of these Phase II MS4s, which include: Anderson County, the City of Anderson, the Town of Belton, the City of Easley, the City of Greenville, the City of Greer, the City of Fountain Inn, the City of Travelers Rest, the City of Mauldin, the City of Simpsonville, the Town of Liberty, the City of Pickens, Pickens County, Spartanburg County, the City of Spartanburg, Cherokee County, the Town of Cowpens, the Town of Duncan, the Town of Inman, the Town of Lyman, and the Town of Wellford.

Storm Water Management Plan

Phase I and Phase II MS4 permits require “Operators” (people/departments/entities who manage and maintain MS4s) to design a set of procedures for managing and maintaining MS4 areas and/or facilities. This set of procedures is referred as an MS4 Program, and must be detailed in a Storm Water Management Plan (SWMP).

A Storm Water Management Plan must:

1. Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
2. Protect water quality;

3. Satisfy the appropriate water quality requirements of the Clean Water Act.

Phase I MS4s must implement a storm water management plan (SWMP) addressing eleven (11) elements. These elements include:

1. Structural control maintenance
2. Areas of significant development or redevelopment
3. Roadway runoff management
4. Flood control related to water quality issues
5. Municipal owned operations such as landfills, wastewater treatment plants, etc.
6. Hazardous waste treatment, storage or disposal sites, etc.
7. Application of pesticides, herbicides, and fertilizers
8. Illicit discharge detection and elimination
9. Regulation of sites as classified as associated with industrial activity
10. Construction and post-construction site runoff control
11. Public education and outreach.

Phase I and Phase II MS4s must include these six (6) minimum control measures (MCMs) in their SWMP. These MCMs include:

1. Public Education and Outreach on Storm Water Impacts
2. Public Involvement/Participation,
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development and Redevelopment
6. Pollution Prevention/Good House keeping for Municipal Operations

Small MS4 Operators have options for meeting their Phase II permit obligations. For example, small MS4 operators can choose to:

1. Share responsibility for MS4 Program development with a nearby Small MS4,
2. Use existing local or state MS4 Programs that are offered specifically for assisting MS4 areas or Operators. Such programs may be offered by professional organizations, like the Water Environment Association of South Carolina.
3. Participate in the implementation of an existing Phase I MS4 Program as a “co-permittee.”

These three options are intended to promote a regional approach to storm water management, coordinated on a watershed basis.

The following policies have been established to help reduce the amount of stormwater entering the region's waterways and to keep stormwater from becoming polluted as it travels to waterways:

1. Local governments with Phase I and Phase II NPDES permits are encouraged to work together to create and implement Best Management Practices (BMPs) for non-point source pollution abatement.
2. The ACOG recognizes the importance of maintaining stormwater quality and reducing non-point source pollution as part of a comprehensive water quality management plan. Therefore, the ACOG shall facilitate local government coordination on various stormwater permitting issues as they arise. The ACOG shall also work with all interested local governments to develop and coordinate regional public outreach and education programs concerning stormwater pollution prevention.
3. Issuance of NPDES discharge permits to Phase I and Phase II MS4 operators shall be consistent with the 208 Plan.
4. Local governments shall be encouraged to adopt policies concerning landscaping, vegetation, tree preservation and stream buffer protection/preservation in order to reduce the effects of stormwater runoff.
5. Local governments shall be encouraged to adopt policies concerning Low Impact Development (LID) practices for site design. Developers shall be encouraged to use these techniques for new developments and to retrofit existing developments, in order to reduce impervious surfaces while advantageously providing vegetated areas. These practices reduce stormwater runoff, reduce the amount of pollutants the runoff carries, and ultimately result in higher water quality and lower water quantity entering streams and rivers.
6. Local governments shall be encouraged to adopt policies concerning building practices that affect stormwater. Certified building practices, such as LEED, shall be incorporated into building codes and other ordinances in order to reduce runoff.
7. Local governments, with and without MS4 designations, will be encouraged to provide education and outreach programs to residents and businesses in order to inform and assist them with reducing stormwater runoff. MS4s are required to provide education and outreach programs via their Storm Water Management Plans, which fulfill requirements of their NPDES permit. Programs and projects may include the following examples, along with any other innovative program ideas:
 - a. Xeriscaping shall be encouraged, for it reduces the amount of water used for irrigation, thereby reducing runoff initiated by watering landscaping.
 - b. Using vegetation native to South Carolina shall be encouraged, for it requires less water to thrive, thereby reducing runoff initiated by watering landscaping.
 - c. Watering landscaping and washing cars (at residences) during the months of April through October shall be limited to early morning hours (prior to 9:00 am) and late evening hours (after 7:00 pm). This avoids water evaporation due to higher ambient temperatures, which reduces the amount of water used for each activity, thereby reducing runoff caused by each activity.
 - d. Rain barrel usage shall be encouraged, for rain barrels accumulate and store rain water while reducing stormwater runoff.
 - e. Rain gardens and bioswales shall be encouraged for on-site storm water management on residential lots.
 - f. Regional collaboration on programs to educate home owners in using these LID practices shall be encouraged.

6.15 WATER SUPPLY & CONSERVATION

As the population of the Appalachian Region continues to rapidly grow, water needs will continue to increase. Water needs may exceed water supply, especially if water is not used wisely or supplied adequately.

The cost of providing safe drinking water is steadily rising due to multiple factors. These factors include:

- a. Increasing water demand for residential, commercial, recreational, industrial, and agricultural uses, due to the increasing population;
- b. A diminishing supply of water in streams, lakes, and reservoirs, due to dry weather/droughts conditions;
- c. Lack of water conservation education and practices, which leads to wasteful water usage;
- d. Increasingly stringent water quality regulations, which often require technology upgrades.

The increasing price of water may or may not motivate consumers to reduce their water usage. Ideally, water conservation efforts will result in a reduced demand for potable water. This, in turn, will reduce the amount of water entering sewer systems, which then reduces wastewater treatment needs. However, if consumers do not reduce their water usage, then conservation efforts may need to be mandated.

The **Comprehensive National Energy Act of 1992** requires new construction to include water-saving devices. This law governs the maximum amount of water that runs through a building or residential plumbing system. For example, any faucet or showerhead manufactured or sold after January 1, 1994 must have a maximum flow of 2.5 gallons of water per minute. The law also restricts the flow of water in new toilets to 1.6 gallons per flush, compared to 3.5 gallons in older models.

Additionally, Energy Star products are certified by the federal government as being 30% or more efficient in water usage (and energy usage). These Energy Star appliances can assist in water conservation efforts. The Water Efficiency, Conservation, and Adaptation Act of 2009 established a WaterSense program within the EPA. This program is used to “identify and promote water efficient products, buildings, landscapes, facilities, processes, and services.” Appliances that use water efficiently may bear both the WaterSense label and the Energy Star label.

The following policies have been established to help conserve water and to assure that there is an adequate supply of water in the Upstate:

1. Regional water supply and demand information shall be incorporated into the 208 Plan for use as a management tool.
2. Local governments shall be encouraged to promote the Energy Star and WaterSense programs and should only purchase appliances and products that bear the seal of these programs when purchasing new appliances, products, or equipment for government personnel or visitor use.
3. The providers of water and wastewater treatment services, along with local governments (with and without MS4 designations), should develop and implement programs to educate the communities they serve concerning water conservation practices, water conservation methods, water reuse techniques, and ways to effectively and efficiently use water to avoid wasting it.
 - a. Xeriscaping shall be encouraged, for it reduces the amount of water used for irrigation.
 - b. The use of vegetation native to South Carolina shall be encouraged, for it requires less water to thrive, thereby conserving water.

- c. Watering landscaping and washing cars (at residences) during the months of April through October shall be limited to early morning hours (prior to 9:00 am) and late evening hours (after 7:00 pm). This provision excludes commercial car wash facilities. By observing this practice, water evaporation due to higher ambient temperatures is avoided, thereby reducing the amount of water used for each activity.
- d. Rain barrel usage shall be encouraged, for rain barrels accumulate and store rainwater, reducing the need to use potable water for non-potable uses.
- e. Rain gardens and bioswales shall be encouraged for on-site storm water management on residential lots. Regional collaboration on programs to educate homeowners in using these LID practices shall be encouraged, for these LID practices improve water quality of streams and lakes while eliminating lawn area that would require water for irrigation. Additionally, rain garden and bioswales vegetation is quite drought tolerant, and therefore conserves water via lowering/eliminating irrigation needs.

FINANCING OPTIONS

7.1 FUNDING SOURCES

Planning where and when infrastructure will be developed is a key element of orderly and efficient growth. Interagency cooperation and the coordination of resources will be vital for successful planning of regional growth.

Future capital needs include three primary areas:

1. Remediation of infiltration and inflow (I & I) problems of current systems,
2. Construction of new plants or expansion of existing plants to serve the growth of the region,
3. System upgrades to meet mandated improvements in water quality.

Anticipated costs for regional treatment facilities will be phased in as growth in the basins brings infrastructure needs into sharper focus. If the Upstate experiences the growth in demand identified in the 208 Plan, the increase in customer base will be just one of several funding sources needed to recover the capital expenditure required to fund the regional wastewater treatment system. Additional funds must be obtained in order to adequately fund projects, because customer revenue often falls short of needed funding. Several of the most readily available funding sources include:

- State Revolving Fund (loans)
- Grants from various governmental agencies
- Federal funds (grants and loans)
- Traditional revenue bond financing
- Privately-placed debt financing
- Interagency financing vehicles
- Commercial Bank Loans (short-term only)

Some of the traditional sources of funding for smaller projects are not available for larger regional projects. Larger regional projects exceed the amount those programs are able to provide. Therefore, the region will need to work to promote incentives for large regional projects, while finding ways to overcome the barriers that funding these projects may present.

The following **policies** are set out to guide the development of funding sources for the improvement and expansion of wastewater treatment infrastructure:

1. Political entities in the region should undertake a comprehensive effort to find funding for the strategic planning and construction of wastewater treatment infrastructure. Such an effort should consider costs of plan development to be included in federal appropriations.
2. The region's communities should be encouraged to adopt a long-range commitment to quality development by creating "Priority Development Areas," which are areas designated for growth.
3. State and Federal funding sources shall be encouraged to prioritize the funding of regional projects and remove the barriers to implementing regional projects and plans. In addition, they should look to regional projects as demonstration projects and assist with securing funding through state and federal sources to implement the projects.

7.2. FINANCIAL RESOURCES

There are a number of resources available to local governments to assist in the financing of public facilities projects. Seven (7) financing programs are detailed below:

1. State Community Development Block Grant (CDBG) Program - Administered through the SC Department of Commerce, this grant program may address a public facilities project if the project is designed to accomplish one of the following:
 - a. To improve, preserve or develop areas of a community in which the population is predominantly low to moderate income.
 - b. To improve community services to a predominantly low- to moderate-income population.
 - c. To alleviate documented threats to the public health or welfare of the community.

This grant program has been designed to give maximum priority to activities that will benefit low- and moderate-income (LMI) persons. The State defines low to moderate income as 80% or less of the median family income for a particular area. Each public facility project must be designed to provide a minimum of 51% benefit to LMI persons. Economic development projects funded under this program must result in the creation of jobs, with at least 51% of the jobs created being filled by persons who are LMI.

2. USDA Rural Development - Water and Environmental Programs (WEP) – Loans, grants, and loan guarantees are available to local governments, special purpose districts, and non-profit organizations serving rural areas (populations of less than 10,000). Qualifying projects include sanitary sewer, drinking water, solid waste, and storm drainage facilities. Interest rates for loans are based on a community's median family income. Grants may be provided to cover up to 75% of a project's cost. Grants are often given as "gap funding" to supplement a loan and are limited to the amount necessary to result in reasonable user rates. Additional WEP grants are available to non-profit organizations that provide technical assistance and training to rural communities in order to assist those communities with water, wastewater, and solid waste problems.
3. Office of Local Government (OLG) - State Budget and Control Board Grant Programs – South Carolina's Budget and Control Board Grant Program provides grants to local governments for the construction of publicly owned water and sewer infrastructure and related projects. These grants are usually in the form of "gap funding" to supplement a loan.
4. Economic Development Administration (EDA) - Public Works Grants Program – The EDA's Public Works Grants Program provides funding to assist the nation's most distressed communities revitalize and expand their physical and economic infrastructure, while supporting the creation and retention of jobs. Public Works Grants are available to fund up to 50% of a project's cost. These funds must be used for public works and economic development projects that create or retain permanent private sector jobs. Projects must be included in the annual CEDS (Comprehensive Economic Development Strategy) report in order to be considered for funding.
5. State Water Pollution Control Revolving Fund / Clean Water State Revolving Fund (CWSRF) – The State Water Pollution Control Revolving Fund is a long-term debt-financing program. It is a type of State Revolving Fund (SRF) that is authorized under the Clean Water Act, and is commonly referred to as the Clean Water State Revolving Fund (CWSRF). This program provides municipalities, counties, and special purpose districts with long-term, low-interest loans at below market rates. Up to 100% of all eligible costs can be financed through this loan program, including 20-year reserve capacity. Loans used for wastewater projects can include wastewater treatment plants, interceptors, collection systems, and related construction activities (like relocating sewer lines). Loans can also be used for non-point source pollution projects, including stormwater initiatives. In order to receive funds, projects must be included on the SCDHEC CWSRF Priority List and a dedicated repayment source must be established.
6. Appalachian Regional Commission (ARC) – The Appalachian Regional Commission (ARC) is a regional economic development agency that represents a partnership of the federal government, thirteen (13) states, and local governments within those thirteen (13) states. Funds appropriated

by Congress allow ARC to provide grants for various projects within the Appalachian Region. Eligible grant applicants include state and local agencies, governmental entities (such as economic development authorities), local governing boards (such as county councils), and non-profit organizations (such as schools and organizations that build low-cost housing). One type of grant offered by ARC is the Community Infrastructure Grant. This grant funds infrastructure projects that focus primarily on water and wastewater services. Such projects must also support business and community development projects while alleviating public and environmental health hazards.

7. AdvanceSC – AdvanceSC was established by Duke Energy to support economic growth within Duke Energy's South Carolina service area. Although AdvanceSC offers four (4) grant programs, only two (2) of them may apply to water quality initiatives that contain economic development elements. One grant program, the Manufacturing Competitiveness Fund (MCF), focuses on financial assistance to manufacturers investing in projects that improve productivity, boost efficiency, increase reliability, and/or improve the environmental impact of existing facilities. The other applicable grant program, the Economic Development Initiative, focuses on economic development projects that create new permanent manufacturing and manufacturing-related jobs in Duke Energy's service district.