WASHINGTON COUNTY

LAND USE

AND

TRANSPORTATION POLICY PLAN

Adopted: August 5, 2008

WASHINGTON COUNTY

LAND USE AND TRANSPORTATION POLICY PLAN

Washington County, Tennessee

2008-2028

Prepared for the

Washington County Regional Planning Commission

Cleates Murray, Chairman
Kelly Wolfe, Vice-Chairman
Fred Chase
Scott Buckingham
Mark Larkey
Ted Lynch
Chuck Mason
Joe McCoy
Wayne Rupert
Johnny Shadden
Gerald Sparks
Darren Thompson
Joe Wilson

Prepared by the

Tennessee Department of Economic and Community Development
Local Planning Assistance Office
207 North Boone Street, Suite 1200
Johnson City, Tennessee 37604

TABLE OF CONTENTS

TABLES AND GRAPHS — PAGE

ILLUSTRATIONS — PAGE

CHAPTER 1
INTRODUCTION

PURPOSE OF PLAN

The purpose of this document is to provide Washington County, Tennessee, with a policy plan for decisions regarding future land use and transportation. A Land Use and Transportation Policy Plan should have as its purpose the producing of information, the formulation of an overall development plan, and the identification methods for the implementation of such a plan. The objective of such a plan as outlined in Section 13-3-302 of the Tennessee Code Annotated is to serve as a guide in "accomplishing a coordinated, adjusted, efficient and economic development of the region which will, in accordance with present and future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and welfare of the inhabitants, as well as efficiency and economy in the process of development including, among other things, such distribution of population and the uses of the land for urbanization, trade, industry, habitation, recreation, agriculture, forestry and other uses as will tend to create conditions favorable to transportation, health, safety, civic activities and educational and cultural opportunities, reduce the wastes of financial and human resources."

The Washington County Land Use and Transportation Policy Plan covers a 20-year planning period from 2008-2028. The information presented in this plan can be used as a framework to guide local officials, community leaders and others as they make decisions which affect the future growth and development of Washington County. The plan is not intended to supercede the responsibility or authority of local officials and department heads. Instead, it is designed to give the public and private sectors a basis to constructively use the interdependencies which exist between the various elements and organizations in the community. The development goals and objectives and the implementation strategies presented in this plan should be periodically reviewed and updated as necessary to reflect more recent data and unanticipated occurrences or trends.

SCOPE OF PLAN

This Land Use and Transportation Policy Plan is designed to formulate a coordinated, long-term development program for Washington County and its municipalities. This plan recognizes the importance of Johnson City, the largest city and Jonesborough, the county seat, as centers for development and

providers for urban services. Each of these municipalities has their own separate long-range plans, which provide more detailed plans for their expected growth.

The preparation of this plan requires the gathering and analysis of a vast amount of data. History, governmental structure, natural factors and socio-economic structures are examined herein. These are studied to determine how they have and will continue to affect land use and transportation facilities. Existing land use and transportation facilities are analyzed to identify characteristics, relationships, patterns and trends. From these observations, needs and issues relative to land use and transportation in Washington County are identified.

This information along with future expected needs will result in the formulation of a Land Use and Transportation Policy Plan. Planning being a local process, a compilation of community goals, objectives and policies (strategies) will be developed. These goals and policies when balanced with the existing patterns and conditions should result in the development of a plan which visually illustrates the goals, objectives and policies. In order to achieve these goals and objectives, methods and tools for plan implementation will be presented.

COMMUNITY GOALS, PROCESS AND METHODOLOGIES

The policy plan is a result of planning commission and departmental participation. Policies and goals must be tempered within the parameters of what is possible given the restraints of budgets, the environment and the public's willingness to participate. Education is of course paramount to making sound and attainable goals. Methodologies included in this plan were presentations and interviews.

CHAPTER 2

BACKGROUND FOR PLANNING

INTRODUCTION

Background information relates to community planning in that a certain amount of background information gathered, evaluated and presented will relate directly to a community's propensity to grow and prosper. The size and location of a community enable the planner to categorize potential growth factors. Information on a community's early settlement and political history often reveals the atmosphere in which the task of planning will occur. Background data for Washington County is presented in this chapter.

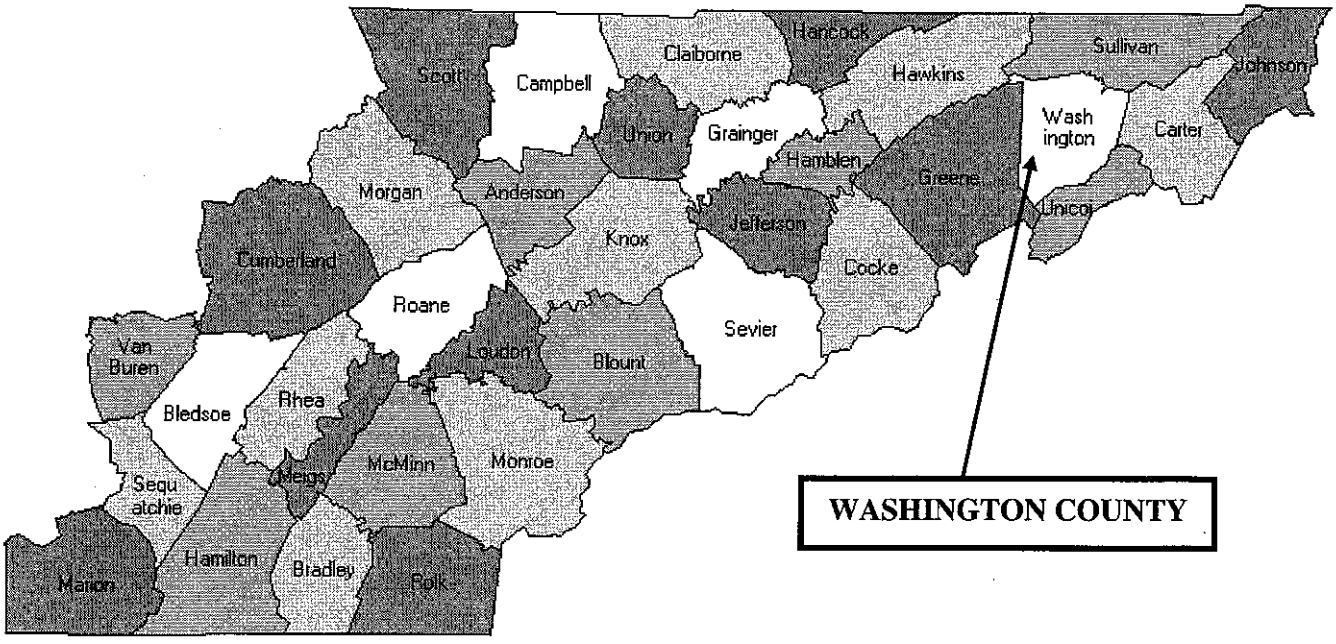
LOCATION AND SIZE

Washington County is located in northeastern Tennessee, and is bordered on the north by Sullivan County, on the east by Carter County, on the south by Unicoi County, and on the west by Greene County. The county is approximately 23 miles east to west and 26 miles north to south at its widest point. Illustration 1 shows the regional setting of the County in East Tennessee.

ILLUSTRATION 1

WASHINGTON COUNTY, TENNESSEE

LOCATION MAP



The total land area of the county is approximately 210,943 acres or 329.6 square miles. Johnson City is the principle trade area for most of the county and is located in the northeast section of the county. The city had a population of 56,616 persons based on the 2007 certified population as of July 1, 2007. Johnson City is located about 85 miles northeast of Knoxville; 25 miles southeast of Bristol; and about 62 miles north of Asheville, North Carolina. Jonesborough is the county seat of Washington County and is approximately seven miles west of Johnson City. Jonesborough, the oldest town in the state, had a population of 4,314 based on the 2007 certified population as of July 1, 2007. Washington County had a population of 107,198 based on the 2000 U.S. Census, and 114,316 based on the 2006 estimates by the U.S. Census Bureau.

HISTORY

The county was established in 1777 as Washington County, North Carolina and was named in honor of General George Washington while the Revolutionary War was underway. At that time, "Washington County" included the geographic area that later became the entire State of Tennessee. The County also was part of the "State of Franklin" from 1784 through 1788 (an attempt to create the fourteenth state) prior to Tennessee becoming a state in 1796. The "Washington District" was the first political jurisdiction in the U.S. named for George Washington.

Jonesborough, Tennessee's oldest Town, has been carefully restored as one of the nation's most authentic historic districts from the period 1790 - 1870 and is home to the International Storytelling Center. Johnson City, originally known as Johnson's Depot, was a major railway center for the southeastern states and was the headquarters for the Carolina, Clinchfield, and Ohio (Clinchfield) and East Tennessee and Western North Carolina (Tweetsie) Railroads.

GOVERNMENTAL STRUCTURE

The purpose of this section is to provide a general examination of the governmental structure of Washington County, to briefly describe its functions and to assess its potential influence on future development.

Washington County is governed by a 25 member Board of County Commissioners and elected chief executive officer, the county mayor. The County Mayor is chairman of the County Commission and chief financial officer of the county. He has care and custody of all county property. He has the power to appoint department heads, subject to confirmation by the County Commission. Commissioners serve on

various standing and task oriented committees, which include E-911; Commercial, Industrial and Agricultural; Budget; Jail Expansion; Public Safety; Rules; Zoning Office; Archive; General Health and Welfare; Public Works and Planning; Work Release; Education; Ethics; State Property Tax Relief; Agriculture Extension; Legislative Liaison; Purchasing; Records; Investment; Solid Waste; EMS; County-Owned Property; Planning; Library; and Water Task Force. Other standing boards include the Beer Board, Economic Development Board, and City-County Liaison Board.

Elected offices include sheriff, tax assessor, trustee, circuit court clerk, register of deeds, and county clerk, and each operate their offices independently and receive funding from either fees, state-shared revenues or local tax revenues allocated by the county commission.

The county's schools and most of the recreation facilities are under the operational control of an elected school board, which is directed by a local nine-member, popularly elected board, which then hires a director as chief executive officer. The county commission must levy taxes and provide funds for education administered by the board and director.

Comprehensive planning is more difficult to achieve for counties. Traditional governmental functions such as water, sanitary sewers and solid waste pickup are not provided by Washington County. Fire protection is provided by volunteer fire departments partially funded by the county, but not directly controlled by the county. The county has solid waste collection and recycling sites strategically located throughout the county. Most of the public water in the county is supplied by the Johnson City and Jonesborough water systems.

Planning Commission

The Washington County Regional Planning Commission (WCRPC) has been meeting on a regular basis since May of 1979. The planning commission is charged by state law to develop a comprehensive plan for the county to guide all elements of its future growth and development. The population and economic base and land use elements of the original comprehensive plan were completed by the planning commission in May of 1981. The planning commission adopted subdivision regulations in March of 1981, and zoning regulations prepared by the planning commission and adopted by the county commission in August of 1984.

CHAPTER 3
NATURAL FACTORS AFFECTING DEVELOPMENT

INTRODUCTION

The factors which are often most influential and the most difficult to change are the ones which occur naturally. The climate, air and water quality, topography, drainage and flooding, and soils are significant natural factors affecting development.

Failure to recognize these factors and design accordingly can be extremely costly to property owners as well as the entire community. Natural factors will be paramount and the basis for most plans. The type and limits of land use will be responsive to these conditions. Through increased knowledge of these natural factors, a wiser use of the available resources will result in avoiding costly mistakes. The purpose of this chapter is to review and evaluate these natural factors and their influence on land use patterns in Washington County.

Climate

Washington County has a humid temperate climate. The short moderate winters, long warm summers, and moderate range in temperature make this a desirable climate for living and for continuous construction and development. In addition, the uniformly distributed, moderately high annual precipitation, the lack of prolonged drought, and the relatively long growing season are well suited for general farming. The climate is mainly influenced by warm, moist air-masses moving northward from the Gulf of Mexico and by cool, dry, continental air-masses from regions to the north and west of the State. Frequent displacement of one of these air-masses by the other in winter and early in spring, and less frequent displacement during the other seasons, provides invigorating changes in the weather.

Precipitation is generally well distributed throughout the year. Precipitation is fairly evenly distributed throughout the year. The normal annual precipitation for Washington County is 44 inches. Precipitation is usually heaviest in late winter and early spring, as a result of frequent low-pressure systems. Precipitation is generally lightest late in summer and early in fall, when high-pressure systems are most frequent at this time of year. Thus, while there are periods of dry weather, there are also periods of plentiful rainfall in all seasons. The mean annual rainfall, which is fairly well distributed throughout the year, averages approximately 43.8 inches. The maximum amount of rainfall occurs during the spring and summer, which insures ample moisture for staple crops. The normally drier autumn, on the other hand,

benefits harvesting operations. Thunderstorms occur on about 47 days each year, and most occur in spring.

Severe storms are rare, and winters are generally mild and clear. Nightly freezes followed by daily thaws are common during cooler periods. The winter weather usually includes a short warm period, a subsequent short period of rain, some occasional snowfall, and then a few days of low temperature. According to information obtained from the Washington County Economic Commission, the seasonal average snowfall is about 16 inches. On an average of 7 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year. Snowfall seldom occurs during November and rarely remains on the ground for more than a few days. The mountainous areas of the county are usually blanketed with snow for a much longer period of time. Except for a few extreme cold days, outdoor work can be performed during the winter. Hailstorms in the area average about two a year, commonly in spring.

Relative humidity throughout the day usually varies inversely with the temperature. The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 60 percent of the time in summer and 45 percent in winter.

The annual average temperature is 55.6 degrees Fahrenheit. January is the coldest month with an average low temperature of 26 degrees Fahrenheit and an average high temperature of 46 degrees Fahrenheit, and July is the warmest month with an average low temperature of 64.2 degrees Fahrenheit and an average high temperature of 85.7 degrees Fahrenheit. The mean length of freeze free period is 96 days. Average annual precipitation is 44 inches which includes about sixteen inches of snow. Rainfall is fairly evenly distributed throughout the year with slightly higher rainfall in the spring and slightly lower rainfall in the summer. Most of the rainfall comes in the form of light to medium heavy showers. Destructive hailstorms and tornadoes occasionally occur. The climate is favorable for growing practically all the common crops. The frost free season is long enough for annual summer crops to mature. Perennial, biennial, and winter crops are grown successfully.

Air Quality

Currently, Washington County is classified as meeting attainment for ground-level ozone. On July 18, 1997, the U.S. Environmental Protection Agency (EPA) revised the national standard for ground-level ozone from a 0.12 ppm (parts per million) 1-hour "peak" standard to a 0.08 ppm 8-hour "average" standard. This new standard is commonly referred to as the 8-hour ozone standard. Currently, all areas of Tennessee attain (meet) all national ambient air quality

standards (NAAQS), including the 1-hour ozone standard. However, when implemented, the 8-hour ozone standard could result in a number of areas of the State being determined not to meet the 8-hour standard and being designated as non-attainment for ground-level ozone. When the non-attainment designation occurs, the State must recommend to EPA the boundaries of the areas that are not in compliance with the ground-level ozone standard, and must submit a plan to EPA that demonstrates how the State will bring those areas back into attainment. Also, when non-attainment designations occur, areas are subject to General and Transportation Conformity and non-attainment New Source Review requirements.

Water Quality and Stormwater Pollution Prevention

In December 2000, the U.S. Environmental Protection Agency (EPA) under the Clean Water Act published a rule that requires certain small municipal separate storm sewer systems (MS4) to participate in the National Pollutant Discharge Elimination System (NPDES) program and obtain a storm water permit. This rule, commonly referred to as NPDES Phase II, extends the current NPDES permitting program to communities with a population of 10,000 or more and/or areas with a population density of more than 1000 people per square mile. Washington County is one of a number of northeast Tennessee communities required to comply with the Phase II regulations (predominantly water quality based).

In 2003, Washington County obtained their NPDES Phase II permit to be authorized "to discharge storm water runoff...to waters of the State of Tennessee." Compliance is mandatory under State and Federal law and the Tennessee Department of Environment and Conservation (TDEC) is the NPDES Phase II permitting authority in the State of Tennessee. The Phase II regulations require that Washington County reduce the discharge of pollutants to the "maximum extent possible." Phase II regulation targets dirty storm water runoff (e.g., muddy runoff from construction sites, oily runoff from parking lots, etc.); non-storm water discharges that are "plumbed in" to the County storm water system; and non-storm water discharges that are dumped in the County storm water system. The regulations require that any person, agent, owner, operator, etc... "potentially" disturbing one (1) acre of land or greater must submit a Storm Water Pollution Prevention Plan (SWPPP) to TDEC and the County prior to any grading and/or construction activity, which includes residential, commercial, industrial, and transportation developments. The County is responsible for adopting regulations, which address storm water runoff, erosion/sedimentation control, illicit discharge detection/elimination, and post-construction stormwater management.

Another important aspect of the Phase II program is the protection of impacted waters of Washington County and abroad, commonly referred to as the 303(d) list of impacted streams. The 303(d) list is a compilation of the streams and lakes in Tennessee that are "water quality limited" or are expected to exceed water quality standards in the next (2) two years and need additional pollution controls. Such 303(d) list and accompanying report is prepared annually by TDEC. Water quality limited streams are those that have one or more attributes that violate water quality standards. Once a stream has been placed on the 303(d) list, it is considered a priority for water quality improvement efforts. If a stream is on the list, TDEC cannot authorize additional loadings of the same pollutant(s). In extreme cases, it may specify that dischargers will not be allowed to expand or locate on 303(d) listed streams until the sources of pollution have been controlled. Impacted waterbodies for Washington County include: Horse Creek (unnamed tributary to Horse Creek), Boone Reservoir, Cedar Creek, Watauga Embayment of Boone Reservoir, Carroll Creek, Boones Creek, Brush Creek, Sinking Creek, Reedy Creek, Cash Hollow Creek, Cobb Creek, Knob Creek, Snapp Branch, Asbury Creek, Knave Branch, Keplinger Creek, Lebanon Branch, Nolichucky River, Carson Creek, Clear Fork, Blackley Creek, Unnamed Tributary to Clear Fork, Muddy Creek, Leesburg Branch, Big Limestone Creek, Clear Creek, Brown Branch, Bacon Branch, Feist Branch, Hominy Creek, Onion Creek, Little Limestone Creek, and Little Cherokee Creek. Detailed pollutant sources for these waterbodies may be found by contacting TDEC located in the Johnson City Field Office; however a general review of sources indicate that they range from land development, pasture grazing, failing septic systems, animal feeding operations, and contaminated sediment.

Non-compliance on the part of the County to enforce stormwater regulations or non-compliance on the part of owners/operators/developers may result in financial penalties and/or misdemeanor and felony charges. Washington County Zoning Office staff has worked diligently in preparing regulations in accordance with the Phase II Program, which required formal adoption by the County Commission. These regulations are included in the Zoning Resolution; in addition, the Subdivision Regulations will be reviewed and updated to compliment the zoning codes in response to the Phase II rule. The NPDES Phase II is a federally non-funded mandate placed on the County; therefore more monies may be needed by the County to enforce Phase II to the level deemed necessary for compliance with State mandates. Currently, Washington County is fully compliant with the Phase II Program.

Continued Planning Coordination Between and Among the Cities and County

There are several activities under way the county Zoning Office has initiated to carry out the goals of the stormwater program. First the County should continue to work with the local cities on projects that cross over planning boundaries such as joint city/county staff meetings. Second, the zoning office should

continue to develop new projects involving other departments and agencies that result in better water quality protection, such as illicit discharge elimination projects.

Due to the fact that nature knows no corporate arbitrary line when considering the flow of natural water bodies, it is imperative that the local planners, county/city engineers, and road superintendents continue to make every effort to coordinate throughout the planning process – from plan development through enforcement. That is to say, regulations imposed in a regional planning commission's subdivision regulations shall be comparable, if not the same, as those adopted in the county's zoning code to ensure that the proper enforcement of erosion and sediment control measures take place. The EPA's ruling on the NPDES program under the Phase II Stormwater rule did not take into consideration that the State of Tennessee allows for regional planning boundaries, now known as Urban Growth Boundaries and their associated approved Planning Regions. Within Washington County, Johnson City and Jonesborough each have regional planning commissions with regional planning jurisdiction within their Urban Growth Boundaries. This means that those two cities each have control over all new subdivision developments, even if they are outside of their city limits, but within their planning regions. The appropriate Phase II Stormwater regulations have been adopted; however until such future time of annexation, the county's Stormwater Admininstrator shall be responsible for enforcing any and all approved erosion and sediment control measures and other best management practices for the life of the construction project. For this very reason alone, it is crucial that all three governmental entities and TDEC representatives continue to hold joint-staff meetings on upcoming projects, as well as, long-range best management practice planning. Undoubtedly if the same or similar regulations, dealing with stormwater planning and pollution protection are in place, it can only make it more user-friendly and acceptable to the development community as opposed to learning several different codes on the matter. Washington County should also continue planning meetings involving the local TDEC office to ensure access to the most up-to-date information, expectations, State support and assistance throughout the implementation of the 5-Year Phase II Stormwater Pollution Prevention Plan.

The Washington County Zoning Office, under the direction of the Zoning Administrator, who also serves as the Stormwater Administrator, has become the lead coordinating agency dealing with the stormwater program on behalf of the County. For details on current and proposed water quality planning and projects, refer to the *2006-2007 Stormwater Prevention Pollution Plan Annual Report* for Washington County, available at the Washington County Zoning Office. A Storm Water Outfalls Survey and Assessment Map based on TDEC's 2006 303(d) list of impacted streams is available at the Zoning Office.

Topography

Physiographically, most of Washington County is in the Great Valley part of the Ridge and Valley Province. Some of the county is in the mountains of the Blue Ridge Province. The entire county is within the Appalachian Highland.

Buffalo Mountain, a part of the Blue Ridge Province, is a massive ridge, with a few lateral spurs, in the southeastern part of the county. This steep-sided, narrow-crested ridge is underlain by quartzite, shale, slate, and conglomerate.

The Great Valley part of the county is a lowland belt characterized by numerous parallel low ridges and valleys that lie in a general northeast-southwest direction. Limestone predominates among the underlying rocks, but shale also is present. The character of both the limestone and shale varies considerably from place to place. Most of the limestone is dolomitic and somewhat clayey. The limestone also may contain sand or chert, or both. Some of the shales are high in lime (calcium carbonate); the others contain no lime and are generally acid. In most places the thin widely spaced layers of limestone are interbedded by acid shales. In a small area the rocks consist of interbedded calcareous sandstone and shale. In a very small area in the extreme northwestern part of the county, acid sandstones are at the surface.

That part of the county in the Great Valley is prevailing rolling to hilly, though it ranges from nearly level to steep. The differences in elevation between the stream bottoms and adjacent ridge crests range from 50 to 300 feet, but in some places the difference is greater. Sinkholes are prevalent, and a karst relief is characteristic of some of the area underlain by limestone.

The county is drained by the Watauga and Nolichucky Rivers and their many tributaries. Small streams, many of them intermittent, are abundant nearly everywhere. Areas underlain by limestone generally do not have well-defined surface drainage because the drainage is underground. Areas underlain by shale, however, usually have fairly well defined drainage ways on the surface.

The maximum difference in elevation between the highest and lowest places in the county is about 1,900 feet. Buffalo Mountain, having an elevation of 3,224 feet, is the highest point in the county. Chimney Top, in the northwestern part of the county, is 3,097 feet high. Jonesborough and Johnson City are about 1,700 feet above sea level. The lowest part of the county is in the northwestern part, near the headwaters of Lick Creek; the elevation is between 1,200 and 1,300 feet.

There is a direct relationship between degree of slope and development capability. The steeper the slope, the more problems that must be addressed to facilitate sound development. Steep slopes create large cuts and fills which are scars on the landscape when roads and parking areas are developed. During construction, steep slopes present serious erosion problems which may continue after development has taken place, if proper mitigation measures are not installed. The extra run-off that is created when these areas are developed can adversely affect property at lower elevations with sediment and flooding. Development cost increases to the point that it may be prohibitive, and even if these initial costs are overcome, the cost borne by the county to maintain services will be substantially higher in areas of steep slopes. Due to the swift movement of runoff, roads will be constantly undermined and repairs more difficult and expensive. Maintaining water pressure is more difficult due to the varying elevations. Soils suitable for subsurface sewer disposal fields are often scarce and public sanitary sewer is cost prohibitive in most of these areas. For these reasons, it is strongly recommended that development be discouraged on slopes exceeding 25%. Slopes exceeding 25% are of no value for agricultural row cropping and of marginal value for pasture. Consequently, for these extreme slopes the agricultural value lies in the production of timber using selective cutting techniques. Timber stands on steep slopes prevent erosion and protect the watershed area from excessive and damaging runoff. These areas provide scenic vistas and magnificent views which characterize the area for its beauty.

Slopes between 15% and 25% also offer severe limitations for various types of suburban development. These areas can, however, accommodate limited development with careful mitigation measures. Intensive urban types of development are definitely limited due to the erosion and runoff potential thereof and the cost to maintain facilities once constructed such as roads. These areas are more suited to the agricultural uses of pastureland, livestock, hay cropping and forestry production than the road work, driveways and parking areas needed by residential development. Farm units, rural, low-density residential dwellings, and their associated outbuildings can also be accommodated within this range of topographic slopes.

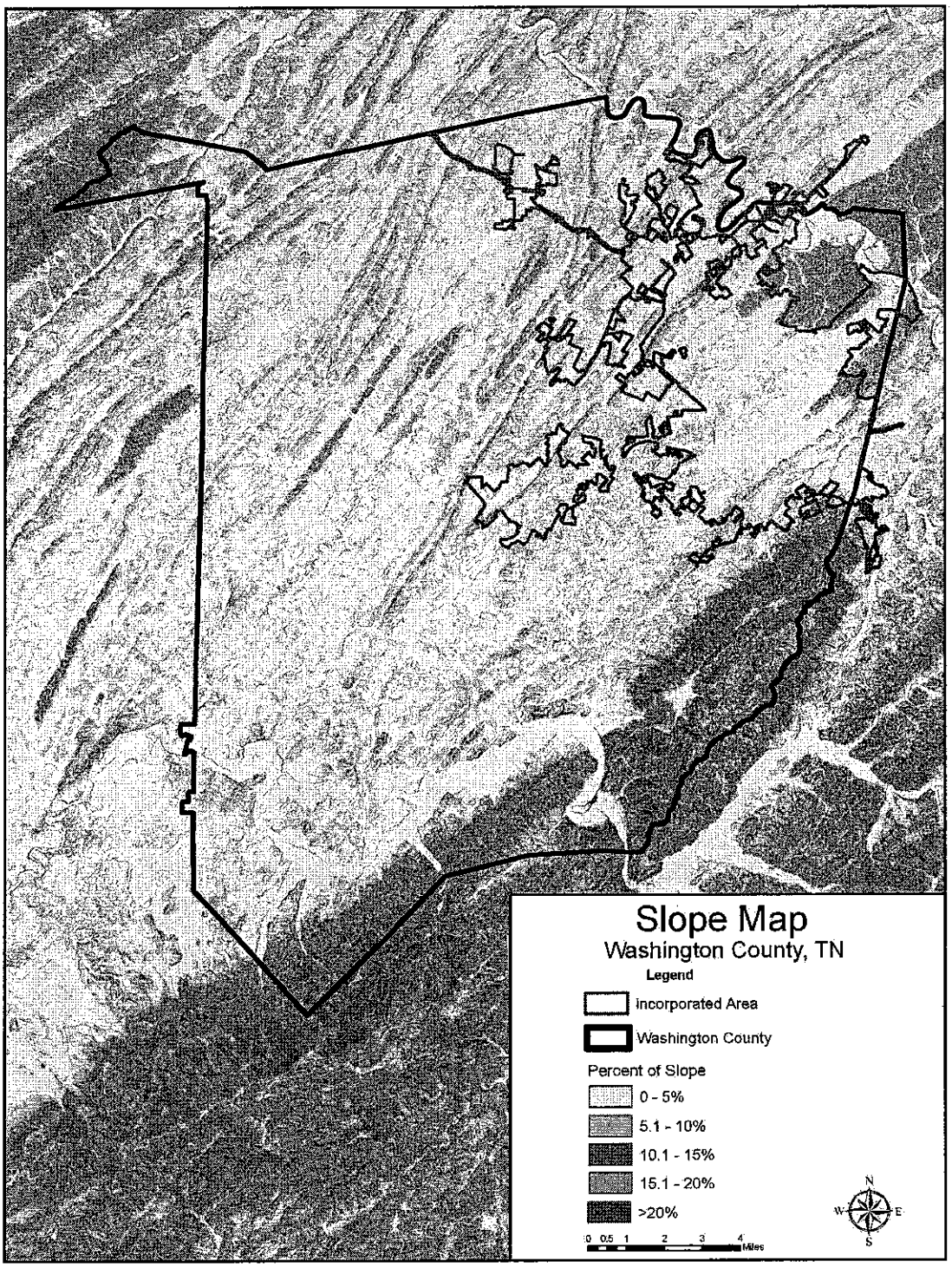
Slopes of less than 15% can accommodate more intense residential and light commercial types of development with care taken to adequately construct and maintain supporting public facilities. It is however recommended that intense commercial and industrial development be directed to areas of 5% slope or less, due to the need for large, level foundations, parking areas and access roads. These areas are more easily developed and infrastructure can be more easily maintained. These areas are also more suited for intense types of agricultural cropping. As is expected, there is a definite correlation between the propensity of various soils associations to satisfactorily accommodate and sustain development at suburban and urban intensities with the topographic characteristics of the land. Though not conclusively,

there is a definite tendency for areas containing extreme topographic slopes to also contain soil associations that poorly accommodate such types of development in terms of slippage, shrink-swell potential, poor permeability, etc. Illustration 2 conveys the topographic constraints to development as present themselves to us in Washington County.

ILLUSTRATION 2

SLOPE MAP

WASHINGTON COUNTY, TN



Drainage

Washington County is divided into two river basins. The northeast portion of Washington County lies in the Holston River Basin and is drained by the Watauga River and its tributaries. The southwestern portion of the county lies in the French Broad River Basin and is drained by the Nolichucky River and its tributaries. Small streams, many of them intermittent, are located almost everywhere. Areas underlain by limestone generally do not have well defined surface drainage because most of the drainage is underground. Areas underlain by shale usually have fairly well defined drainageways on the surface.

Flooding

TVA has established recognized watershed boundaries and has an established watershed alliance. There are three watersheds for Washington County, which include:

- Watauga River
- Nolichucky River
- South Fork Holston River

In addition to the above, the Boone Watershed Partnership was organized to identify and address water resource issues in the Boone Watershed. The Boone Watershed Partnership is a unique alliance among local residents, recreational users, governmental entities, educators, industrial contributors, and other interested parties who are dedicated to improving and protecting the water quality and habitat of Boone Lake and its tributaries in northeastern Tennessee. Through various efforts the participants of the Partnership have restored a once polluted and unsafe recreational area/water source, as well as continued to work together to identify pollution problems and solutions within the watershed area.

Washington County is divided into two river basins. The northeast portion of the county lies in the Holston River Basin and is drained by the Watauga River and its tributaries. The southwestern portion of the county lies in the French Broad River Basin and is drained by the Nolichucky River and its tributaries. Small streams, many of them intermittent, are located almost everywhere. Areas underlain by limestone generally do not have well defined surface drainage because most of the drainage is underground. Areas underlain by shale usually have fairly well defined drainage ways on the surface.

There has been periodic flooding in Washington County, including the municipalities of Johnson City and Jonesborough. They all participate in the National Flood Insurance Program (NFIP). The Federal Emergency Management Agency (FEMA) accepted the county into the flood plain management program in 1980. This made county residents eligible to purchase flood insurance through local insurance agents.

This program controls development in areas subject to flooding. The flood plain management program sets standards so that new construction will be above the 100 year flood or be flood-proofed.

According to the latest (September 29, 2006) Federal Emergency Management Agency's Flood Insurance Study, the principal sources of flooding in Washington County are Cobb Creek, Knob Creek, Cedar Creek, Sinking Creek, Brush Creek, Boones Creek, Little Limestone Creek, and King Creek. A copy of the detailed study is available through FEMA and the Local Planning Assistance Office in Johnson City, Tennessee. For the purpose of this plan, basic past flooding information for each source of flooding problems in the county are provided below.

Cobb Creek

The available flood water-surface elevation profiles are limited to the floods of June 22, 1974, and December 10, 1972. The highest of these was the June 1974 flood, reaching an elevation of 1,598.2 feet NAVD, with an estimated recurrence interval of 10 years. On December 10, 1972, the highest elevation reached was 1,532 feet NAVD, with an estimated recurrence interval of less than 10 years.

Knob Creek

The available flood water-surface elevation profiles area limited to the floods of November 6, 1977, and June 22, 1979. The highest of these was the June 1979 flood, which reached an elevation of 1,452.1 feet NAVD, with an estimated recurrence interval of 100 years. The November 6, 1977 flood reached an elevation of 1,436.4 feet NAVD, with an estimated recurrence interval of approximately 10 years.

Cedar Creek

The available flood water-surface elevation profile is limited to the flood of June 22, 1970. It reached an elevation of 1,452.5 feet NAVD, with an estimated recurrence interval of approximately 10 years.

Sinking Creek

The available flood water-surface elevation profiles for Sinking Creek are limited to the floods of November 7, 1977, the most recent, and April 28, 1970. The highest of these was the November 1977 flood, which reached an elevation of 1,570.9 feet NAVD, and had a recurrence interval of less than 10 years.

Brush Creek

All flooding in the City of Johnson City is caused by rainstorms. The largest flood known to have occurred on Brush Creek since 1875 was that of May 29, 1908. Floodmarks are unavailable from that

flood; however, damages were incurred. The next three largest known floods on Brush Creek occurred on August 9, 1938, August 17, 1962, and June 22, 1974. Except for localized differences, the water-surface elevation profiles are approximately the same. At Elm Street, the 3 crest elevations were 1609.9, 1610.2, and 1610.3 NAVD, respectively. The recurrence interval for each of the 3 floods is approximately 15 years. The development of Johnson City has created many constrictions to Brush Creek's flow. There are buildings in the floodplain, bridges over the stream, and a large portion of Brush Creek in the downtown area is covered. These encroachments have reduced the flow capacity of the stream and increased stages for high flows.

Little Limestone Creek

The principle sources of flooding in the Town of Jonesborough are Little Limestone Creek and Tributary of Little Limestone Creek. The largest flood known to have occurred on Little Limestone Creek since May 1901 was that of June 1928. The flood reached an elevation of 1,691.6 feet NAVD with a recurrence interval of approximately 110 years. The flood of May 1958 was the highest flood in recent years. It reached an elevation of 1,680.6 feet NAVD with a recurrence interval of approximately 100 years. On Unnamed Tributary to Little Limestone Creek with the Town of Jonesborough, the August 17, 1977 flood reached an elevation of 1,698.7 feet NAVD with a recurrence interval of approximately 50 years.

King Creek

Available water-surface elevation profiles for King Creek are limited to the floods of August 4, 1968, June 22, 1974, and August 17, 1977. The August 1977 flood was relatively minor. The August 1968 and June 1974 flood water-surface elevation profiles are approximately the same, reaching an elevation of 1,626.0 feet NAVD with a recurrence interval of approximately 30 years. Another large flood occurred in the City of Johnson City on July 3, 1962. Although a flood water-surface elevation profile is unavailable, a flood area map shows that King Creek was partly responsible for flooding the business district. The drainage basin of King Creek within Johnson City is highly developed, with a large percentage covered by paved streets and buildings. During intense storms, the channel capacity is exceeded, and water flows down West Market and West King Streets and floods the business district.

There has been periodic flooding in Washington, Johnson City and Jonesborough. They all participate in the National Flood Insurance Program (NFIP). The Federal Emergency Management Agency (FEMA) accepted the county into the flood plain management program in 1980. This made county residents eligible to purchase flood insurance through local insurance agents. This program controls development in areas subject to flooding. The flood plain management program sets standards so that new construction

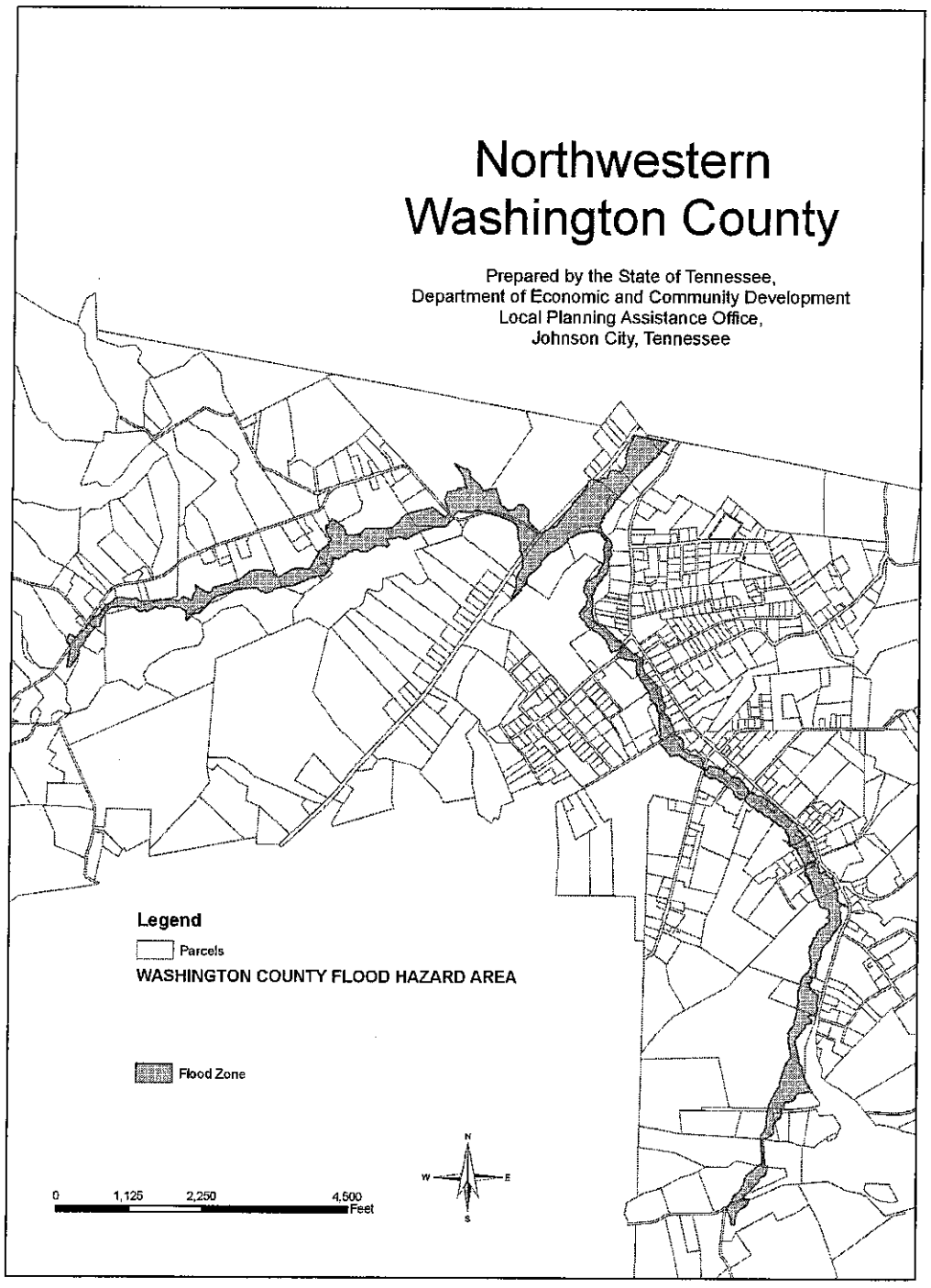
will be above the 100 year flood or be flood-proofed. This ordinance is enforced and implemented by the Washington County Zoning office.

Detailed flood boundaries and flood elevations may be obtained from the Flood Boundary and Floodway Maps, and Flood Insurance Rate Maps prepared for Washington County and incorporated places by FEMA. Of significance relating to flood mapping in Tennessee, including Washington County, is the Map Modernization Program being initiated throughout the State. FEMA in FY-2003 entered a renewed effort through its Flood Hazard Mapping Initiative to develop a modernized flood map inventory on a national basis. This initiative proposed to update the nation's flood risk identification maps to a digital format and streamline FEMA's map operations in response to improved technologies and more sophisticated state and local systems. In March of 2004, the State of Tennessee through the Local Planning Assistance Office of the Department of Economic and Community Development prepared and submitted to FEMA its Business Case for the implementation of the Map Modernization Program. Washington County provided representatives with a list of priority areas in need of restudying and/or at minimum, providing base flood elevation information. This digitized information overlay used in conjunction with the Tennessee Base Mapping Program will provide more accurate flood information on a parcel by parcel basis. The new maps were effective September 29, 2006. The County Commission adopted these maps and accompanying Flood Damage Prevention Resolution in June 26, 2006. Illustration 3 provides an example of flood zone mapping for the northwestern corner of the county. Further information relative to the Map Modernization Program may be obtained through FEMA and the Local Planning Assistance Office in Johnson City, Tennessee.

ILLUSTRATION 3

FLOOD MAP – NORTHWESTERN AREA

WASHINGTON COUNTY, TN



Soil Associations

The composition and capability of an area's soils greatly affects its land use and development potential. When analyzing land use and development decisions, relying on factors such as the soil's permeability and drainage qualities, flood potential, depth to water table, soil depth and depth to bedrock, load bearing strength and stability, and shrink or swell potential, increases chances of a successful project.

The *Soil Survey, Washington County, Tennessee, Series 1948, No. 5*, published by the United States Department of Agriculture, contains information regarding soil content, types, drainage, and suitable uses. This publication also provides a Soils Association map at a scale of 1 inch to 5 miles, and 41 individual map sheets at a scale of 1:15,840 listing the various soils. This survey indicates the general nature of Washington County's soil varies greatly in color, texture, fertility and acidity. The County's relief also varies from nearly level to very steep, but consists of mainly rolling and hilly. Erosion varies throughout the county, as well as drainage capabilities, but most of the soils drain well, with only a few small areas draining poorly.

This study lists 133 different soil types for Washington County. In the following summary, the soils have been placed into four physiographic groups based on their landscape position, these groups being:
1) soils of the uplands, 2) soils of the terrace lands, 3) soils of the colluvial lands, and 4) soils of the bottom lands. The first group, soils of the uplands, developed from weathering of the underlying rock, which consisted mainly of limestone, shale and quartzite. The upland soils are severely leached and acidic. These soils prevail mainly at the southeastern portion of the County, but can be found at the northwestern tip and northeastern edge. The second group, terrace land soils, is remnants of old, high floodplains, where gravel, sand and clay were deposited. The different soils which make up this group consist of the alluvium from limestone, quartzite, shale, sandstone and granite. These different soils are well drained and occur in areas adjacent to the upland soils. At the bases of slopes in the County you find the third group, the soils of the colluvial lands. These soils consist of materials and rock fragments from adjacent slopes and can be found along small drainage ways, the base of upland slopes and where small streams deposited sediment over floodplains of larger streams. These soils are well drained and in areas of undulating to steep terrain. They lie in the middle section and sections adjacent to the uplands areas. The final soils category, soils of the bottom lands, lie in floodplain areas or nearly level areas along streams where flooding is likely to occur. These are the "young soils" and they vary in the drainage qualities from well drained to poorly drained.

The *Soil Survey* is highly useful in gaining broad understanding of landscapes, but does not remove the need for on-site investigation in determining suitability of soils for development or other similarly

intensive land uses. Files related to the Soil Survey are dated and users are responsible for obtaining the latest version of the data. For technical information, contact the Tennessee Department of Environment and Conservation, Johnson City Field Office, (423) 854-5400, or the U. S. Department of Agriculture, Natural Resources Conservation Service, State Soil Scientist, U. S. Courthouse, Suite 675801 Broadway, Nashville, TN 37203, Phone: (615) 277-2556, Fax: (615) 277-2577.

The Zoning Office staff, county contracted engineer, and the State of Tennessee Local Planning Assistance Office review development plans, which include subdivisions and site plans for proposed residential, commercial and industrial developments, to ensure that the project is either approved for public sewer through the municipalities of Johnson City or Jonesborough, or the project is approved for subsurface sewage disposal systems (septic systems) through the Tennessee Department of Environment and Conservation. This information is then provided to the Washington County Regional Planning Commission as part of the preliminary and/or final approval process.

SUMMARY OF FINDINGS

- Like many counties in northeast Tennessee, the pattern of land use or development in the County has been affected by natural factors. A combination of flooding, extreme slope, and topographic constraints have significantly restricted some areas for growth and development in the County. Awareness of the limitations for each factor is useful in recommending the capabilities of a parcel of land for development. Natural factors limiting development for a particular use do not necessarily mean that the land cannot be developed for said use. It does mean that the limitations should be analyzed and then steps taken to overcome them in the best possible manner.
- The climate of Washington County and its effect on development can best be described as moderate. In general, climate has no great effect on development in the County as attested by the fact that the number of building permits varies little by month to month.

- Currently, Washington County has been designated by the State and EPA as an "attainment" county relative to air quality.

- Washington County has been mandated by the State of Tennessee under the NPDES Phase II Program to reduce the amount of water pollution within the County. Water quality within Washington County should improve under the mandatory program, which requires a yearly report to be submitted to the State addressing their compliance or deficiencies with Phase II. A plan to improve deficiencies must be submitted with the yearly report. The County continues to adopt

regulations to meet the requirements of the Program, and at present is compliant with said Program.

- Slopes in Washington County range from below 5 percent to nearly 50 percent. In areas greater than 20 percent slope, limitations to development are severe; however careful planning and special engineering design standards may overcome such limitations. Despite this, major portions of land may be only suitable for natural recreation or designated as open space as part of overall development plans.

- Development within specified flood hazard areas is analyzed by planning staff and must meet the provisions of the County Flood Damage and Prevention Regulations. Of significance is the Map Modernization Program, which has updated the nations flood risk identification maps to digital format. The County submitted a list of priority areas in need of restudying and/or at minimum, providing base flood elevation information. This mapping provided more accurate flood information on a parcel by parcel basis, thus improving technical flood information relative to proposed development within flood hazard areas.

- Soil limitations are significant relative to natural factors affecting development. The pressure to convert farmland to urban uses continues to rise, regardless of the limitations of the soils. Prior to development, limitations should be analyzed and careful planning and special design practices must be initiated, which may be costly to developers, however minimizes the impact on other potentially affected residents. While the Soil Survey is highly useful in gaining broad understanding of landscapes, having such a survey in hand does not remove the need for on-site investigation in determining suitability of soils for septic systems or other similarly intensive land uses.

- Within the unincorporated areas of Washington County, new residential growth will continue to be mainly single family residential on individual lots in areas where soils are suitable for septic systems. Multi-family, commercial and industrial development will continue to be limited to areas of the county where public sewer is available through the municipalities of Johnson City and Jonesborough.
- Areas for future development in Washington County that are not negatively affected by natural factors are available. Vacant land in the County with constraints of flooding, extreme slope, and

topography can be costly in many cases; however this type of land has not been the predominant focus of development except in the cases of individual home sites are large tracts of land.

CHAPTER 4

SOCIO-ECONOMIC FACTORS AFFECTING DEVELOPMENT

INTRODUCTION

This chapter will present a brief summary of population and employment trends pertinent to the preparation of the Land Use and Transportation Plan for Washington County. Strategies for community development, projections of land use needs, discussions of land use issues and the relevance of the land use plan to future planning documents, will be discussed. This information when reviewed should provide insight into future trends and facilitate the generation of reasonably accurate forecasts.

POPULATION

According to U.S. Census information, Washington County has continually grown (as shown in Table 1 and Graph 1) from 22,604 persons in 1900 to 107,198 in 2000 or an increase of 84,594 persons. Growth has been constant since 1900, with the two largest growth periods being from 1990-2000 with an increase in population of 14,883 persons, and the next largest growth period being from 1970-1980 with an increase in population of 14,831 persons. Based on the 2000 U.S. Census Bureau, the county's population based on the unincorporated area is 48,939 persons. Table 2 and Graph 1 show population characteristics and projections for incorporated places, Washington County and Tennessee from 1990-2025.

Table 2, Population Projections to 2025, reflects an anticipated growth to 120,236 persons by the year 2010, and an increase to 133,790 persons by the year 2020, and an increase to 140,467 by the year 2025. This rate is depicted in Graph 2. These figures represent a growth rate of 24.6 percent from 2005-2025 or a twenty year period.

This growth rate for the county is accompanied by anticipated growth for all the incorporated municipalities. Johnson City, the largest city in the county, is projected to continue to grow at a rate similar to the county, and is expected to constantly contain approximately 50% of the county's population. Jonesborough, the county seat, is projected to grow at a similar rate to the county as well. All these figures are based on the assumption that the county will continue to be attractive as a place to live, work and retire. National trends as well as regional ones indicate Washington County will continue to be attractive on all counts.

TABLE 1

HISTORY OF POPULATION CHANGES FROM 1900-2000

WASHINGTON COUNTY

1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
22,604	28,968	34,052	45,805	51,631	59,971	64,832	73,924	88,755	92,315	107,198

TABLE 2

POPULATION CHARACTERISTICS AND PROJECTIONS FOR INCORPORATED PLACES,

WASHINGTON COUNTY AND TENNESSEE

Incorporated Place/County/ Region/State	1990	% Change 1990-2000	Census 2000	% Change 2000-2010	Projected 2010	% Change 2010-2020	Projected 2020	Projected 2025
Johnson City*	49,381	12.3	54,091	13.2	61,224	11.6	68,340	71,848
Jonesborough	3,091	3.5	4,168	15.4	4,809	12.4	5,405	5,703
Washington Co.	92,315	16.1	107,198	12.2	120,236	11.3	133,790	140,467
Tennessee	4,877,105	16.7	5,689,283	6.6	6,062,695	8.8	6,593,194	7,173,395

SOURCE: Tennessee Advisory Commission on Intergovernmental Relations & The University of Tennessee Center for Business and Economic Research, December 2003. http://tennessee.gov/tacir/PDF_FILES/Other_Issues/pop%20project.pdf

*Johnson City corporate limits extend within Carter and Washington Counties – the numbers presented herein are based on Washington County population numbers only.

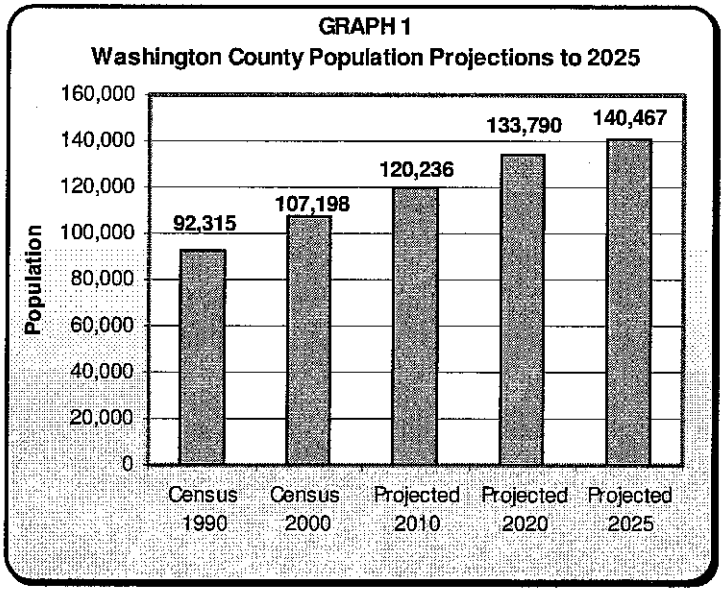


TABLE 3

HOUSEHOLD CHARACTERISTICS

WASHINGTON COUNTY 1960-2000

YEAR	TOTAL HOUSEHOLDS	PERSONS PER HOUSEHOLD
1960	17,496	3.51
1970	22,533	3.12
1980	31,308	2.65
1990	35,823	2.45
2000	44,195	2.33

Source: U.S. Census Bureau

Washington County's household characteristics continue to show an increase in the total number of households as population increases. However, the number of persons per household has steadily decreased from 3.51 in 1960 to 2.33 in 2000. This decrease was slight when compared to the 1990 figure of 2.45 persons per household. This reflects an aging population with a larger percentage in non-childbearing years. Also contributing to this small family size is university population often housed as single person households. The decreases in number of persons of 1.18 persons per household from 1960 to 2000 reflect the nationwide trend of smaller family size.

Other characteristics of the population indicate the median age has increased from 34.7 years in 1990 to 37.1 years in 2000. Graph 2, Washington County Age Distribution indicates age groups as a portion of the total population. As can be seen there has been a dramatic increase in the age 5-24 cohort of the population indicating an increased school age population. The other category with an above normal increase is the 45-64 year age group as the baby boomers reach this age. The over 65 age group has shown an increase but the percentage of the population increase is not significant. However, as the 45-64 age category survive to this category within the next decade, it is expected to precipitate a need for increased services primarily medical and care for the elderly. Table 4 provides population data relative to the age distribution reflected in Graph 2.

Graph 2

Washington County Age Distribution

1990-2000

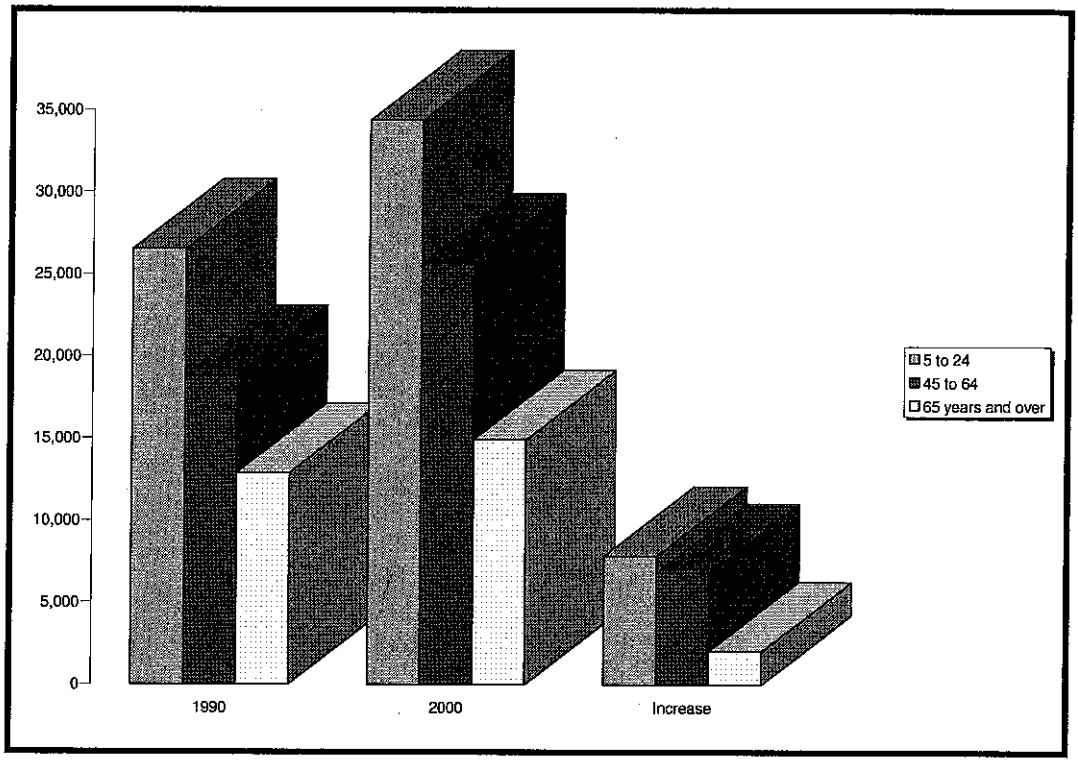


TABLE 4

WASHINGTON COUNTY AGE DISTRIBUTION

1990-2000

Age	1990	2000	Population Increase 1990 to 2000
5-24	26,552	34,399	+7,847
45-64	18,864	25,689	+6,825
65 years and over	12,893	14,925	+2,032

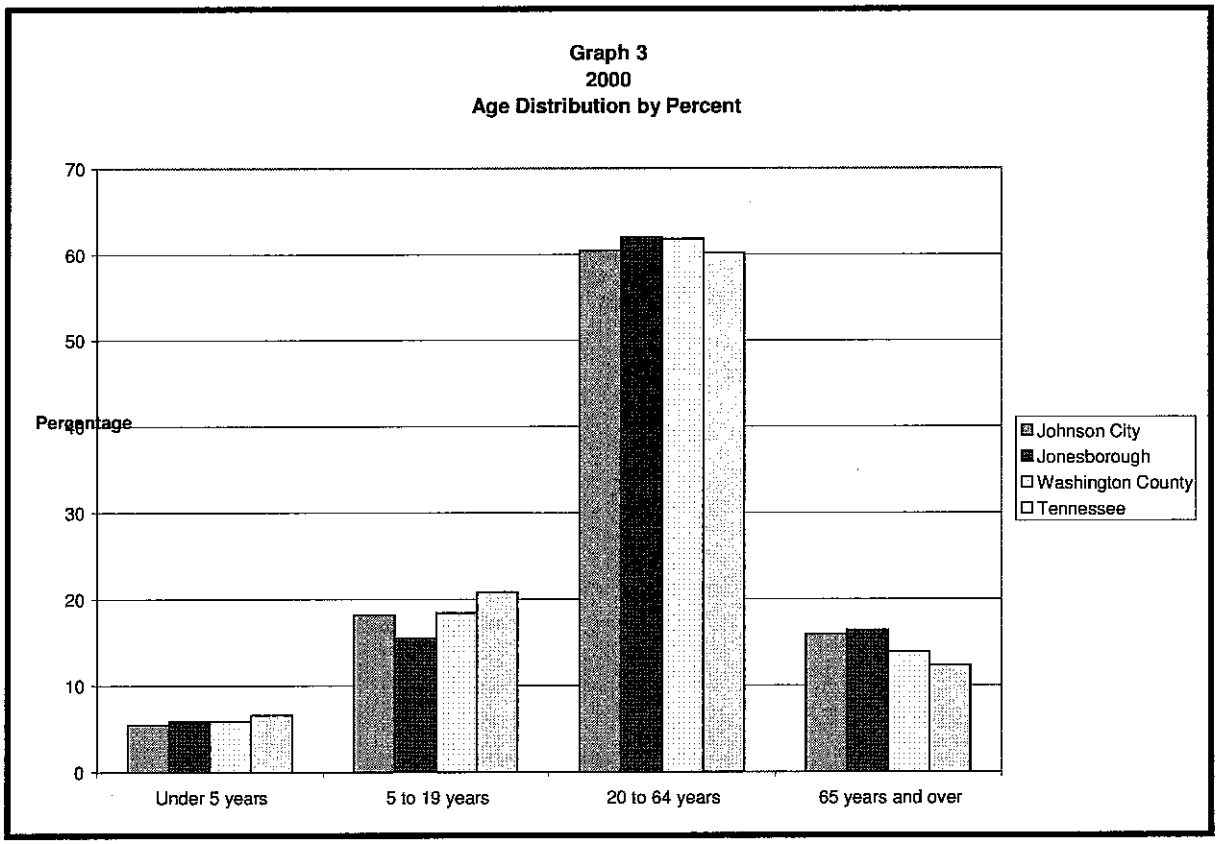
Table 5 and Graph 4 provide a breakdown of the population for the county and its incorporated places based on the 2000 U.S. Census.

TABLE 5

AGE DISTRIBUTION FOR WASHINGTON COUNTY AND ITS INCORPORATED PLACES

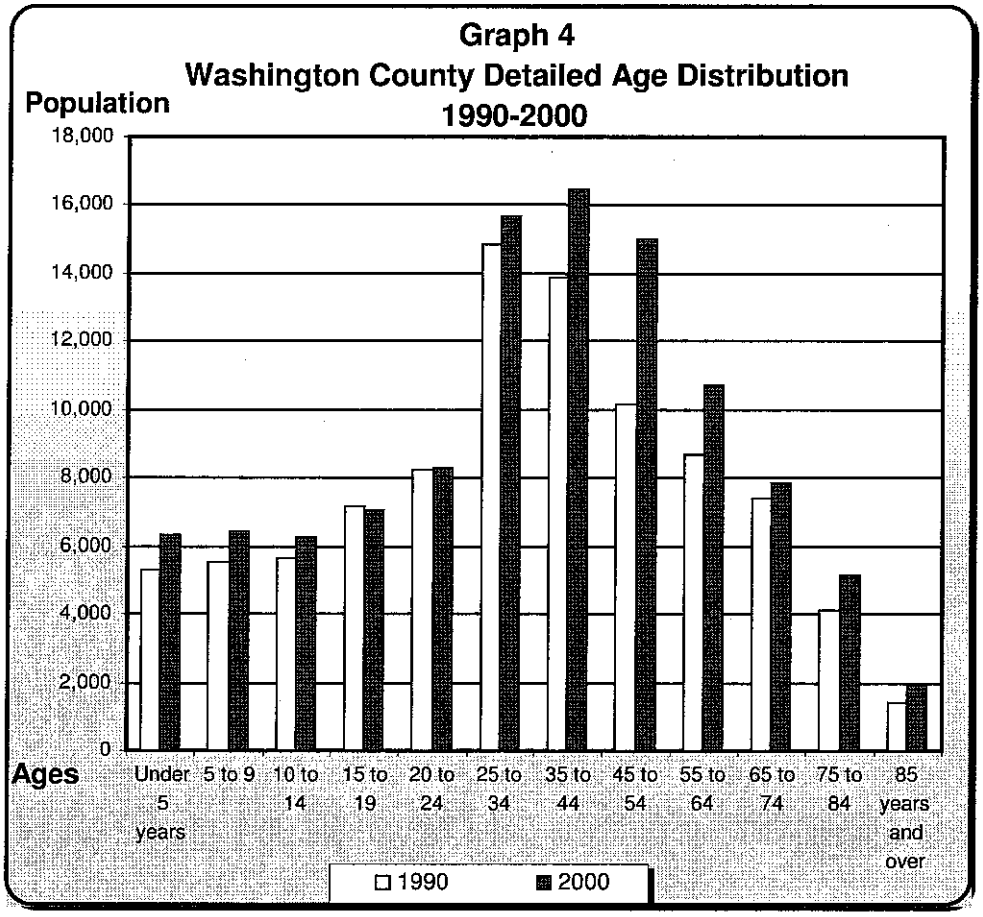
2000

	Johnson City	Jonesborough	Washington County	Tennessee
Under 5 years	5.5	5.9	5.9	6.6
5 to 19 years	18.2	15.5	18.4	20.8
20 to 64 years	60.4	62	61.8	60.2
65 years and over	15.9	16.4	13.9	12.3



Graph 4 below provides a more detailed breakdown of the entire county's population ranges. This graph shows that the age ranges 25-34 and 35-44 have the highest concentration of population; however the population range 45-54 experienced the greatest and most significant population increase from 1990 to 2000, with a total population increase of 4,842 or 47.7 percent increase. The 45-54 age range is strongly associated with the "baby boomer" population. Baby Boomer is a term used to describe a person who

was born during the Post-World War II baby boom between 1946 and 1964, whereby several countries, including the United States, experienced an unusual spike in birth rates, a phenomenon commonly referred to as the baby boom. Washington County, Tennessee is one of several counties across the state that has experienced spikes in population increases for ages 45 to 64. Washington County, including the incorporated places of Johnson City and Jonesborough, continue to experience a growth in single-level type developments with homeowners associations providing more "maintenance-free" living, which is associated with some of the needs and desires of the more aged baby boomers.



Further analysis of ages 5 through 18, which includes kindergarten through 12th grade between 1990 and 2000 is reflected in Table 5.

TABLE 6

WASHINGTON COUNTY SCHOOL AGE POPULATION

AGES 5 THROUGH 18*

(KINDERGARTEN THROUGH GRADE 12)*

1990-2000

Age	1990	Percentage	2000	Percentage	Population Increase 1990-2000
5 to 18	16,307	17.7%	17,986	16.8%	1,679

*For the purpose of this study, ages 5 through 18 were selected to best reflect the age of the population attending grades K-12.

Washington County--Growth Distribution

Comparison of 1990 and 2000 census block numbering areas indicate, as per previous planning documents, that the central portion of Washington County running north to south continues to show dramatic population increases.

This positive growth pattern can be attributed to the availability of good roads, public water, public sewer (where available) and land that is suitable for development. Also, the attractiveness of being close to the City of Johnson City for shopping and employment plays a role in this pattern. Also noteworthy is the increase in population in the extreme western and southern ends of Washington County. Although these areas are not suitable for extensive development due to their severe topography and their relative lack of public water, some growth has occurred as persons migrate into these areas to purchase farms or small acreage tracts as home sites.

It is expected that the central-northern portion of the county, particularly the Boones Creek and Gray areas, will continue to develop at a faster rate than all other areas within the county, based on its topography, facilities, and proximity to services.

EMPLOYMENT

Employment in Washington County has fluctuated over time. There are eleven (11) categories evaluated by sector and are ranked in order from highest to lowest. The categories are (1) education and health services; (2) trade, transportation, and Utilities; (3) manufacturing; (4) leisure and hospitality; (5) professional and business services; (6) financial activities; (7) public administration; (8) construction; (9) other services; (10) information; and (11) mining. Table 6 depicts employment by sector from 2002 to 2006.

TABLE 7

EMPLOYMENT BY SECTOR

2000 TO 2006

	2002	2003	2004	2005	2006
Education and Health Services	14,466	14,889	15,186	15,400	16,086
Trade, Transportation, and Utilities	10,284	10,612	10,726	10,978	10,912
Manufacturing	8,514	8,214	7,923	7,780	7,760
Leisure and Hospitality	5,767	6,220	6,293	6,661	6,353
Professional and Business Services	4,432	4,377	5,084	5,399	6,031
Financial Activities	3,290	3,636	3,695	3,674	3,760
Public Administration	2,250	1,937	2,009	2,057	2,080
Construction	2,018	1,931	2,559	2,683	2,225
Other Services	1,710	1,820	2,095	2,229	2,052
Information	1,364	2,104	2,334	2,404	2,254
Natural Resources and Mining	34	39	39	36	35
Totals	**54,129**	**55,779**	**57,943**	**59,301**	**59,548**

Source: Tennessee Department of Labor & Workforce Development

From Table 6 it can be determined that only two categories experienced continued increases each year from 2002 through 2006 or 6 years, which includes Education and Health Services; and Trade, Transportation and Utilities. All other categories experienced an increase when comparing year 2002 to

2006, except for manufacturing which was the only category to experience a decrease each year from 2002 through 2006. Of significance is the 58 percent increase or 21,827 more employed workers ages 16 years old and over from 1980 (37,721 workers) to 2006 (59,548 workers). The number of employed workers in Washington County is projected to continue to increase in relation to the projected increase in population as shown earlier in Table 2A from 107,198 in 2000 to 140,467 in 2025.

Per Capita Income

Per capita income is the mean income computed for every man, woman, and child in a geographic area. It is derived by dividing the total income of all people 15 years and older in a geographic area by the total population in that area. Table 7 reflects the per capita income for Washington County from 1985 to 2003.

TABLE 8

WASHINGTON COUNTY PER CAPITA INCOME

1985-2003

1985	Percentage Increase 1985-1990	1990	Percentage Increase 1990-1995	1995	Percentage Increase 1995-2000	2000	Percentage Increase 2000-2003	2003
$11,842	37.1%	$16,231	20.8%	$19,611	16.2%	$22,786	9.2%	$24,886

Source: Regional Economic Information System, Bureau of Economic Analysis, Table CA1-3. April 2005

Washington County has experienced a steady increase in per capita income for close to twenty years with the most significant percentage increase of 37.1 percent from 1985 to 1990.

Chapter Summary Findings

- Washington County is the second largest county in the Northeast Tennessee Region and the 10th largest county in the state with a population of 107,198 in 2000. It contains municipalities: Johnson City and Jonesborough with populations of 54,091 and 4,168 respectively. The projected population increase indicates both sustainable growth that is not so overwhelming as to be difficult to manage with public services and other needs.

- Employment within the county is much like that of the entire state following the same cycle of up's and down's.
  - Washington County experienced an 8.9 percent decrease in manufacturing from 2002 to 2006.

- The county experienced a 36 percent growth in the professional and business services sector.
- The county experienced an 11 percent growth in the education and health services sector.
- Other than manufacturing and public administration, all other sectors experienced growth when comparing the years 2002 and 2006.

♦ The per capita income for Washington County has continued to increase from 1985 to 2003. The per capita income for Washington County rose 9.2 percent between 2000 and 2003 while the State had an increase of 7.5 percent. The increase is a reflection of the economic stability.

CHAPTER 5

COUNTY-WIDE PUBLIC FACILITIES AND SERVICES

Analysis of County-Wide Public Services

The analysis is intended to provide a brief summary of the public services currently being provided in the county. This emphasis of this analysis is on significant operational characteristics that will aid in estimating costs of the various services based on projected population growth. Favorable economic factors including a strong tax base growth, a substantial job base dominated by medical, educational and a variety of industrial employers supports average employment rate of 3.9 percent as of October 2007, verses a 5.1 percent rate for the state.

Utilities

At present, Washington County provides no utility services. Where such services are available they are provided either by one of the municipalities or by public or quasi-public utility. The following is a brief summation of the major utilities and growth-related issues associated with each of the various services.

Water Service

Water service is provided by the following organizations:

1. The City of Johnson City;
2. The Town of Jonesborough;
3. The Fall Branch Utility District (operated by the City of Kingsport);
4. The Chucky Utility District;

Johnson City and Jonesborough provide most of the water throughout the County. The Fall Branch Utility District serves a small part of the northwestern corner of the county. The City of Kingsport administers this entire utility district. The Chucky Utility District serves a small portion in the southwestern corner of the county. Many rural homes and subdivisions in the county are served by private water supplies (wells). See Map 3 for water service areas.

Sewer Service

The City of Johnson City and the Town of Jonesborough are the only providers of sewer service in the county. Johnson City operates a regional water system in the corridor between Johnson City and Jonesborough. See Map 4 for sewer service areas.

Electric Service

The Johnson City Power Board provides electric service throughout the county.

Natural Gas

United Cities Gas Company provides natural gas service to Washington County. This agency provides service to both commercial and residential customers.

Emergency Services

Fire Protection

Within the unincorporated portions of Washington County fire protection is provided by volunteer fire departments. The following table provides information as to names and locations of these facilities.

TABLE 9

FIRE DEPARTMENTS IN WASHINGTON COUNTY

Volunteer Fire Departments (VFD)	Principal Location	EMS station	Estimated Population*
Embreeville VFD	State Route 81	No	4,725
Fall Branch VFD	State Route 93	Yes	3,552
Gray VFD	Gray Station Road	Yes	13,178
Jonesborough Fire District	Highway 11E	No	12,652
Limestone VFD	Old State Route 34	Yes	4,628
Nolichuckey VFD	State Route 107	Yes	3,068
Sulphur Springs VFD	State Route 75	No	5,202

*Estimates based on 2000 Census Block Population Data.

Each station is equipped with at least one pumper truck, a water tanker and one equipment truck. The firemen are all volunteers. The County is currently evaluating the possibility of having paid day-time fire fighters to cover for volunteers during the typical working hours. These agencies provide automatic mutual aid to one another. Washington County supplements the budgets of each of these stations $75,000 per year. Many of these stations also serve as EMS stations. In Jonesborough, EMS is available at a separate station west of the Fire Station on Highway 11E.

Ambulance Service

The Johnson City Emergency Rescue Squad and the Johnson City Ambulance Authority merged to form the Washington County Emergency Medical Service. Service is provided from East Main Street in Johnson City. The County contributes $900,000 to this agency's budget.

Police Services

The Washington County Sheriff provides the following policing services:

1. Process serving to all incorporated and unincorporated areas within the entire county.
2. Operation of the current county jail designed to house approximately 425 prisoners.
3. Court security for all courts operating in the county.
4. Patrol services throughout the unincorporated portions of Washington County.

There are 173 deputies working in Washington County. There are nine deputies working per shift and they have an eight minute response time. All emergency services are dispatched centrally. The budget for the Sheriff's office (including the jail) stood at approximately $9.2 million dollars for the last fiscal year.

Detention Center and Justice Center

Funded by a bond issue in the amount of $21,000,000, construction is underway for an expansion of the current Detention Center and a new justice center. According to state regulations, the Detention Center inmate holding capacity will increase to a total of 574 individuals. The justice center will provide office space for all Washington County state and local courts. With the opening of a new justice center, courts will consolidate to the new facility from the current courthouses in Jonesborough and Johnson City. Consolidation will result in the need for fewer deputies to maintain courthouse security and to transport inmates. Vehicles and equipment to transport inmates will become unnecessary. The consolidation of all court clerks' offices will result in a reduction in clerk positions and benefits.

Industrial

Washington County Board of Commissioners is currently negotiating the purchase of nine-two (92) additional acres of land for the Industrial Park. This would be a joint venture with the Economic Development Board and Johnson City Power Board. Cost to the County would be approximately $500,000.

Waste Management

Solid Waste Services of Johnson City-Washington County provides residential, commercial and industrial collection services. This agency also picks up construction debris. These services are provided as a part of the Johnson City Regional Solid Waste System. Washington County has five solid waste collections "Convenience Centers" for Washington County residents only, and recycling sites strategically located throughout the county. There are restrictions on the amount of waste that can be brought to these locations at one time; therefore residents are encouraged to speak to a convenience center attendant. Solid waste sites are located in Cash Hollow, Gray, Washington College, Lamar and Locust Mount. The waste collected is hauled to Iris Glen Landfill in Johnson City. Each household pays $13 for curbside service. Collection personnel also provide refuse pick up from customers' porch for $20 per month.

Education

Residents of Washington County are served by two school systems--City of Johnson City and Washington County. Currently, the Washington County School System has nine elementary schools, two middle schools, two comprehensive high schools, plus one County high school on the campus of East Tennessee State University. The Washington County system serves approximately 8,748 students at fourteen (14) schools. All existing county schools at the end of the 2007-2008 fiscal year are listed as follows:

- Boones Creek Elementary
- Fall Branch Elementary
- Gray Elementary
- Jonesborough Elementary
- Lamar Elementary
- South Central Elementary
- Sulphur Springs Elementary
- West View Elementary
- Grandview Elementary
- Boones Creek Middle School
- Jonesborough Middle School
- Daniel Boone High School
- David Crockett High School
- University High School (K-12)

On January 23, 2007 Washington County Board of Commissioners issued Bonds at par, in the amount of $130,360,000 with a reoffering premium of $4,262,687 and transfer from prior issue debt service funds of $128,347. The proceeds were used to finance the construction of two (2) new K-8 schools (Grandview School on Hwy 11-E and Ridgeview School on Sam Jenkins Road; and improvements to two (2) high schools (Daniel Boone and David Crockett). After completion of the two new K-8 schools, the total number of county schools will be sixteen (16).

Road Construction and Maintenance

The unincorporated portions of Washington County contain approximately 800+ miles of local county roads—all of which is maintained by the county. The Washington County Highway Department also makes low-cost paving available to the Town of Jonesborough and the county school system. Washington County is one of only three counties in Tennessee with its own asphalt plant. Twenty to forty-five miles of streets are resurfaced per year depending on cost of materials. The annual budget for resurfacing is approximately $1.5 million; however with higher oil prices, it is costing the county much more to pave roads because higher oil prices equal higher asphalt prices, which will result in fewer resurfacing projects based on the $1.5 million budgeted. The county averaged 29 miles of road resurfacing from fiscal year 2004-2005 to 2007-2008, with the greatest number of miles in 2004-2005 (50.8 miles), and the least number of miles in 2007-2008 (18 miles). It could cost the county from $25,000 to $35,000, or greater per mile depending on the cost of asphalt at the time of the resurfacing project. The highway department has 100 employees and an annual budget of approximately $8 million. Also, every driveway entrance onto a county road must be approved by the Washington County Highway Department. Currently, there is no charge for driveway permits; however if tile is needed to be installed, it will be put in at cost of material.

The Washington County Highway Department statistics for 2006 are as follows:

- 25.155 miles of county roads paved.
- 69.93 miles of county roads striped.
- 36,366 tons of hot mix asphalt on roadway.
- $15,467 spent on sign installation.
- $13,799.60 spent on guard rail installation, totaling 786.60 feet.
- 2 paving projects for EMS (Gray and Fall Branch locations), and paving projects for Johnson City Parks and Recreation, Jonesborough Walking Trail, and Harmony Convenience Center.
- 6 paving projects for Town of Jonesborough.

Planning and Zoning

Planning and zoning functions are accomplished within Washington County by three separate governmental agencies that function more or less independently. The City of Johnson City and the Town of Jonesborough each have a planning commission, as does Washington County. Within the incorporated cities both planning and zoning functions are accomplished by the respective planning commissions.

Within the unincorporated portions of the county the issue is somewhat more complex. As the matter presently stands, both the City of Johnson City and the Town of Jonesborough exercises control over the subdivisions of the property that take place within the "planning regions" that surround each city. The Washington County Planning Commission exercises control over subdivisions within all portions of the county beyond the bounds of these "planning regions" and exercises zoning control outside the corporate limits of both cities. However, rezoning requests within either the City of Johnson City of Town of Jonesborough's planning region are presented to the respective Planning Commissions and then to the Washington County Board of Commissioners (rather than the City/Town Commissions) for final approval.

CHAPTER 6

EXISTING AND PROPOSED LAND USE AND TRANSPORTATION SYSTEM

INTRODUCTION

Prior to the preparation of a land use plan, a comprehensive survey and inventory of existing land uses should be completed. This information coupled with existing infrastructure, natural factors affecting development, population and economic factors is vital in determining what areas are best suited for, and most likely to, develop into the various land uses and transportation facilities. Also, a thorough analysis of existing land use will enable more accurate forecasting of future land use needs. For the purpose of this Chapter, only the unincorporated areas of Washington County will be described and analyzed.

Trends in land use have generally followed those projected in former plans. Existing land use inventories for the 1981 Washington County Land Use and Transportation and the land use inventory completed in 2008 indicate the central/northern portions of Washington County has consistently and continually led other sections in the development of property for uses other than agricultural or forestry.

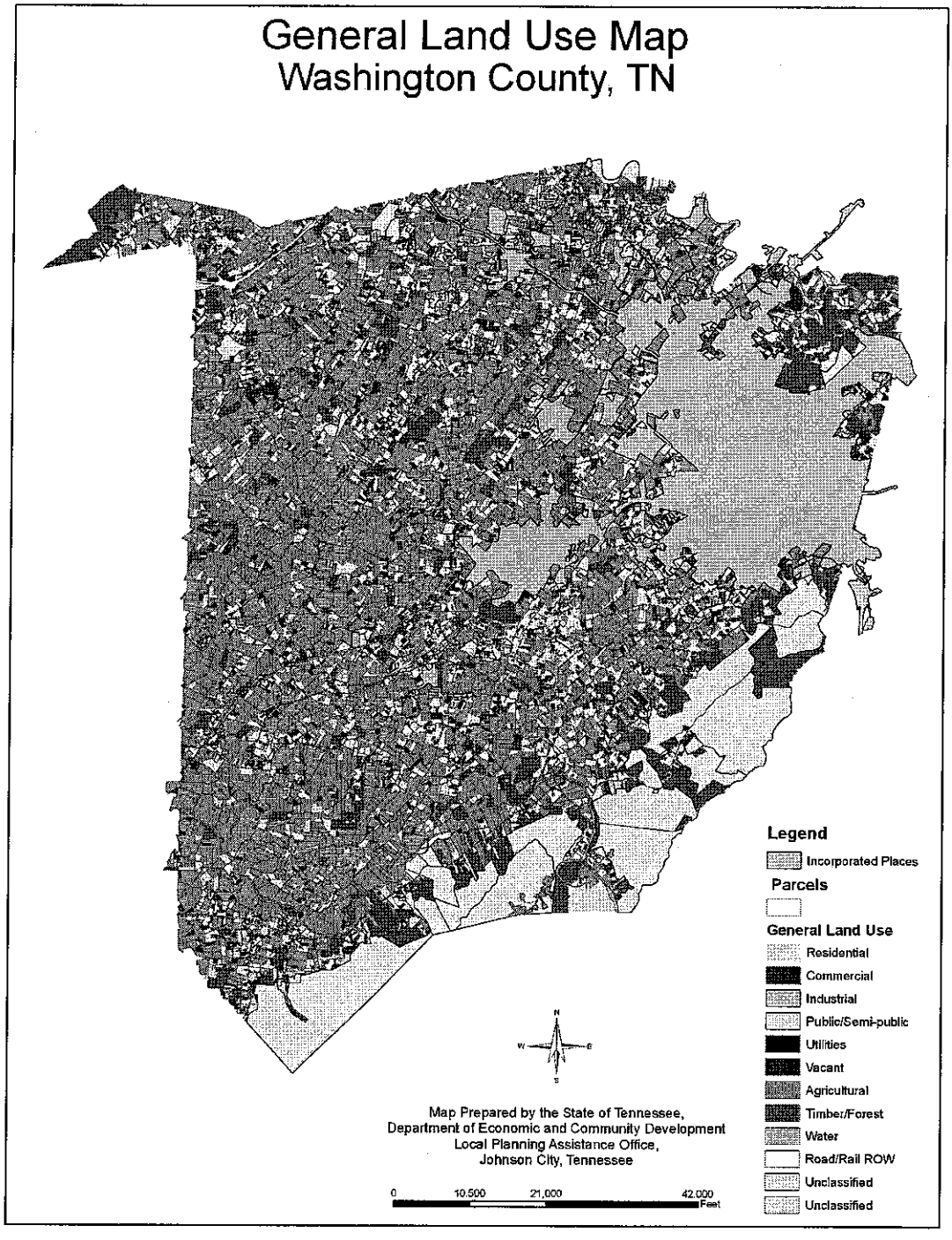
Existing Land Use Inventory Methods

In early 2008, the Local Planning Assistance Office developed a land use model to automate the process of coding the land use of parcels in an effort to standardize and improve the efficiency of deriving land use maps for counties/cities, which utilizes data from the Tennessee Base Mapping Program (TNBMP) and the Comptroller's Computer Aided Assessment System (CAAS). The results of this survey are depicted on Illustration 4.

ILLUSTRATION 4

GENERAL LAND USE MAP

WASHINGTON COUNTY, TN



LAND USE CATEGORIES

Each parcel has been assigned a general land use category for analysis in this study. Table 10 and Graph 5 depict the land use by category for the unincorporated area of Washington County. The land use categories are as follows:

Residential: Land on which one or more dwelling units are located. This includes single family and multi family residences, and mobile homes.

Commercial: Land on which retail and wholesale trade activities occur including vacant floor space. Also, land on which an array of private firms providing special services are located. This includes hospitals, churches, cemeteries, professional offices, banks, personal services, repair services, etc.

Industrial: Land on which activities of processing or fabricating raw materials, or producing commodities takes place, including manufacturing uses.

Public and Semi-Public: Land on which educational facilities, and all federal, state, and local government uses are located. This category also includes land on which museums, libraries, parks, schools, and similar uses are located.

Utilities: Land occupied by the offices, equipment, and storage facilities of various utility providers.

Transportation: Land on which there is highway, road right, or rail right-of-way.

Undeveloped Land: Land on which there is a vacant lot (less than 5 acres) or a vacant tract (5 acres or larger).

Water: Land on which there is a river, lake, or pond.

Agricultural: Land whereby there is an agricultural tract which is unimproved, with a single family residence, with a mobile home, with a single family and mobile residence, or multi-family residence.

Timber/Forest: Land which is a timber tract unimproved (no single family residence).

Unclassified: This category includes parcels of land where CAAS data was unavailable or the parcel was uncoded.

TABLE 10
EXISTING COUNTY ACREAGE
AS A PERCENT OF TOTAL UNINCORPORATED ACREAGE
IN WASHINGTON COUNTY (2008)

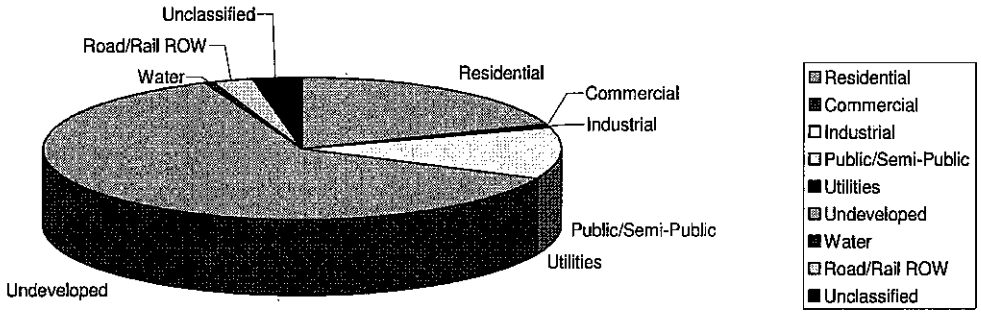
Land Use Category	Acreage	Percent of Total Acreage
Residential	35,339.1	19.5%
Commercial	828.5	0.5%
Industrial	750.7	0.4%
Public / Semi-Public	21,314.1	11.7%
Utilities	16.5	0.0%
Undeveloped Acres	112,245.1	61.8%
Water	1,056.9	0.6%
Road / Rail Right-of-Way	4,805.9	2.6%
Unclassified	5,319.6	2.9%
Total	**181,676**	**100.0%**

Source: Tennessee Department of Economic and Community Development, Local Planning Assistance Office, Upper East Tennessee Region.

GRAPH 5

LAND USE BY CATEGORY

WASHINGTON COUNTY (UNINCORPORATED AREA)



ANALYSIS OF EXISTING LAND USE PATTERN

The total acreage for Washington County, including the incorporated places of Johnson City and Jonesborough is 210,943. The total acreage of Johnson City and Jonesborough is 26,038 or 12.4 percent and 3,229 or 1.5 percent respectively. The total acreage of the unincorporated area of Washington County is 181,676 or 86.1 percent of the entire county. According to the City of Johnson City, the city is expected to continue to grow due to its moderate annexation policy and infill opportunities. Because of its annexation policy in recent decades, the city has been able to keep pace with new development on its fringe and expand its tax base. During the last five years, numerous approved site plans for commercial development of lands within the jurisdiction of the Washington County Regional Planning Commission soon after are annexed by Johnson City as the city provides public sewer as a necessary infrastructure component for those developments.

Table 11 offers a more detailed breakdown of land use by category, according to data derived from the land use model for Washington County.

TABLE 11

DETAILED LAND USE BY CATEGORIES (2008)

WASHINGTON COUNTY (UNINCORPORATED AREA)

Land Use Category	Acreage	Percent of Total Acreage
Residential		
Single Family Residential (SFR) >5 Acres	13,688	7.5%
SFR 5 Acres or Larger	12,699	7.0%
Duplex	66	0.0%
Multi-Family Residential (MFR)	252	0.1%
Mobile Home (MH)	8,495	4.7%
Mobile Home Park	139	0.1%
Commercial		
General Commercial	450	0.2%
Office (Professional/Medical/General)	216	0.1%
General Commercial – Residential Split	2.4	0.0%
Golf Course	154	0.1%
Nursing Home	6.2	0.0%
Industrial		
Light Industrial/Warehousing	692	0.4%
Heavy Industrial	59	0.0%
Public / Semi-Public		
Public	20,246	11.1%
Semi-Public	1,068	0.6%
Utilities		
Utilities	16.5	0.0%
Vacant		
Vacant Lot >5 Acres	5,754	3.2%
Vacant Tract 5 Acres or Larger	8,485	4.7%

Agricultural		
Agricultural Tract Unimproved (No SFR)	26,045	14.3%
Agricultural Tract w/SFR	43,549	24.0%
Agricultural Tract w/MH	4,647	2.6%
Agricultural Tract w/SFR & MH	2,419	1.3%
Agricultural Tract w/MFR	2,886	1.6%
Timber / Forest		
Timber Tract Unimproved (No SFR)	10,321	5.7%
Timber Tract w/SFR	7,217	4.0%
Timber Tract w/MH	923.8	0.5%
Water		
River	993	0.6%
Lake or Pond	63.9	0.0%
Transportation		
Hwy/Road Right-of-Way	4,462	2.5%
Railroad Right-of-Way	343.4	0.2%
Unclassified		
Unclassified (CAAS Data Unavailable)	1,044	0.6%
Unclassified (Uncoded by Land Use Model)	4,186	2.3%

As can be ascertained from Table 11 the predominant land use in Washington County remains agricultural land at 43.8 percent. The second dominant land use in the county is residential at 19.5 percent. As can be derived from Table 10, which offers a more general breakdown of land use by category, is the undeveloped acreage in the county at 61.8 percent. This acreage is concentrated in areas of more challenged topography, which is used for agricultural operations, consist of forested areas (light to dense), or are large undeveloped tracts of land where population migration has not occurred. It is expected that the majority of these areas will remain privately held throughout the planning period; however much of the rolling open space landscape will be converted to residential uses as population growth is expected.

EXISTING AND FUTURE TRANSPORTATION SYSTEM

Introduction

There are numerous man-made elements found within a rural environment but few more important than a sound, efficient, and functional transportation network. A community's growth hinges on the movement of its people and goods. The welfare of the social environment and economic is dependent on the speed and efficiency with which people can interact on a day-to-day basis. The development of a strategic transportation plan is essential for successfully moving people and goods in the rural environment.

Transportation networks must keep pace with the changing world around it. As land use patterns shift, the original design of an established transportation network may become outdated. Improvements are mandatory; otherwise, an inefficient and disproportionate transportation system will exist that cannot maneuver people from residences and employment functions in the desired time frame thus stifling commercial and residential growth while increasing safety and emergency concerns.

A good transportation network can spur commercial growth, assist the average employee and employer in achieving employment goals, provide the residents a more convenient means of getting to and from home, facilitate the movement of goods, and generally provide all travelers with a safe and convenient means of getting from one location to another. The transportation network in Washington County consists of interstates, federally designated routes, state highways, and the local county road system. Collectively, these networks consist of approximately 1,202 miles.

Commissioner of Highways

The county highway system was analyzed in the transportation element of the study. The road system was classified and the major road plan was updated, problems were identified, and improvements recommended. This section focuses on the road resurfacing cycle for the unincorporated areas of the county. According to the Washington County Highway Department, the county maintains about 800 miles of public roads. This does not include federal and state roads maintained by the State of Tennessee or state street aid routes. As of July 1, 2008, Washington County has a total of 1,452 local county roads. The county annually resurfaces about 25-45 miles of roads, and spent $1.5 million on resurfacing last year. The Washington County Highway Superintendent reported recently that the county should average 45 miles per year in resurfacing to stay on a 15 year cycle; however increasing oil prices has increased asphalt costs, thus decreasing the projected number of miles to be paved for fiscal year 2008-2009.

During the 2004-2005 fiscal year, 50.8 miles were resurfaced as compared to 2008-2009 with only 18 miles of resurfacing. With oil prices remaining the same or increasing in the future, the county will continue to show lower miles of resurfacing as compared to earlier years.

Thoroughfare Classification

The primary or intended use of a thoroughfare varies from that of providing access to residential and other structures, to providing uninterrupted movement of high-speed traffic. The Washington County Highway Department classifies their local roads per TCA 54-10-104, whereby roads are classified into four classes, which include First, Second, Third, and Fourth Class. To clarify the usage, a classification and number of each is provided below:

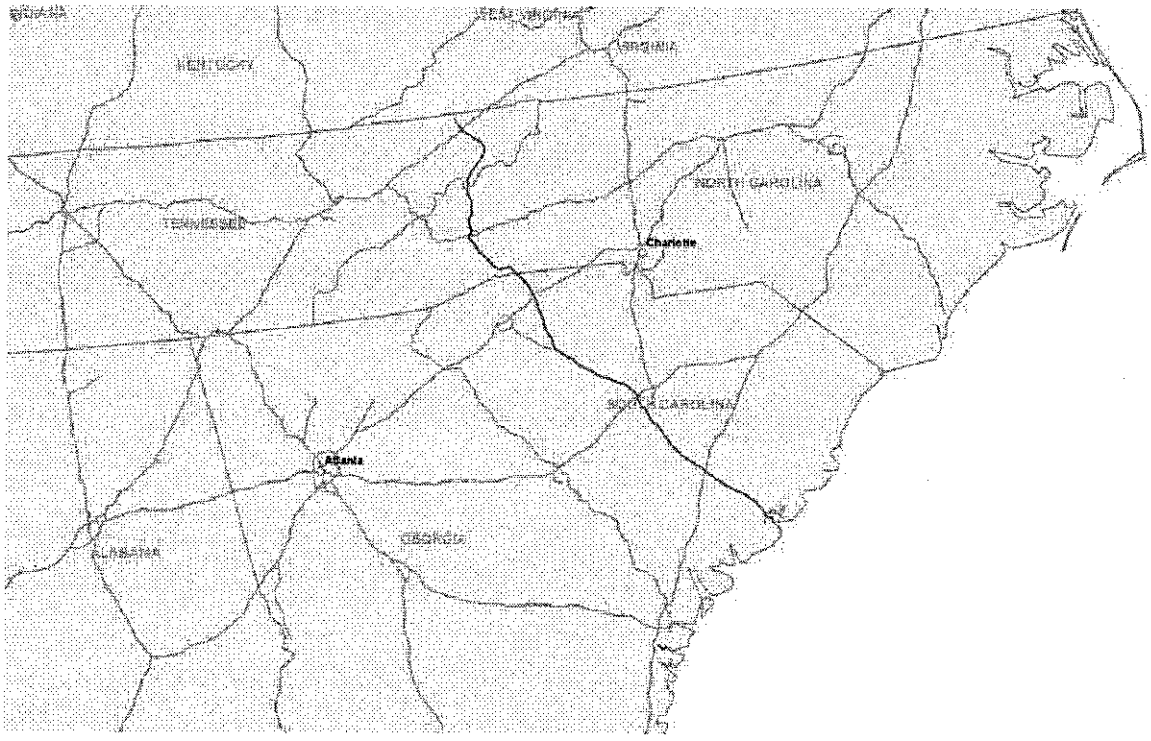
Classification	Right-of-Way Width (Feet)	Roadbed Width (Feet)	Total Number of Roads For Each Classification
First Class	24-100	20 or greater	418
Second Class	18-40	16 or greater	771
Third Class	14-30	12 or greater	238
Fourth Class	10-20	8 or greater	25

In 1981, the Washington County Regional Planning Commission adopted Subdivision Regulations, which regulated the width of new county roads built for new subdivisions, as well as right-of-way width requirements for subdividing land in the county. With these regulations in place, almost all new subdivision roads average 40 to 50 feet in right-of-way, and average 20 to 26 feet in roadbed width (paved surface); therefore increasing the number of First Class and Second Class roads. Unfortunately, many older roads do not have established right-of-way widths, nor do they have adequate roadbed widths to accommodate years of predominantly residential growth along these roads. Also, the county can choose to accept dedication of once private roads or driveways serving a certain number of existing dwellings and place that road onto the official county road list. These roads are typically inadequate based on both right-of-way and roadbed widths. Subsequently, once accepted as a public road, subdivision of land abutting said road can be undertaken by the owner, thus increasing vehicle capacity on inadequate roads. The Washington County Zoning Administrator and Local Planning Assistance

Office staff often refer road condition issues to the county's Public Works Committee where multiple lots are being subdivided off roads with inadequate roadbed widths. Although the parcels being subdivided meet minimum lot size and minimum road frontage requirements, they contain older roads with roadbed widths of 10 to 12 feet. A typical example would be an auction plat with 30 lots which abut a road with only 10 feet of paved roadbed, which can be equated to a possible 30 new homes and an increase of approximately 210 to 300 vehicle trips per day.

Interstate Highway: Access controlled roadway connecting major population centers devoted to serving high traffic volumes and long distance trips. Washington County has access to two major interstates, 26 and 81.

Interstate 26 is a nominally east/west (but physically more south/north) main route of the Interstate Highway System in the Southeastern United States. I-26 runs from the junction of U.S. Route 11-W and U.S. Route 23 in Kingsport, Tennessee, generally south and southeast to U.S. Route 17 in Charleston, South Carolina. I-26 enters Washington County from the southwestern portion of Carter County, Tennessee. I-26 contains 55 miles in Tennessee, 71 miles in North Carolina, and 221 miles in South Carolina.



Interstate 81 begins in Tennessee at Interstate 40 near Dandridge. I-81 parallels the Appalachian Mountains for most of Tennessee and Virginia. At mile marker 8, I-81 meets the eastern half of U.S. Route 25; U.S. Route 25-E south of Morristown. I-81 enters Washington County from Greene County, Tennessee to the east, traverses through the northwestern portion of the county in Fall Branch, and continues to Washington County, Tennessee to the north.

Arterial Street: Roadways that link population centers often lack controlled access and traffic-flow separation. Usually these are numbered U.S. Highways/State Routes (Primary and Secondary). Washington County consists of U.S. Highways 321, 23, 11-E, and 19-W. The Primary Highway System includes State Routes 81, 107, 93, 34, 381, 385, and 400. The Secondary Highway System includes State Routes 36, 75, 67, 353, 354, and 91.

Major Collector: Roadways that link arterial streets and distribute traffic onto minor streets. These links also provide direct access to major traffic generators. There are several major collectors located throughout Washington County; however many of the major collectors need to be evaluated based on traffic counts, which could indicated that some collectors need widening to accommodate the economic and population growth the county has experienced for over two decades.

Minor Collector: Roadways that link and provide access to and between local roads and minor streets. Ideally these are internal to or abutting neighborhoods. There are numerous minor collectors in Washington County.

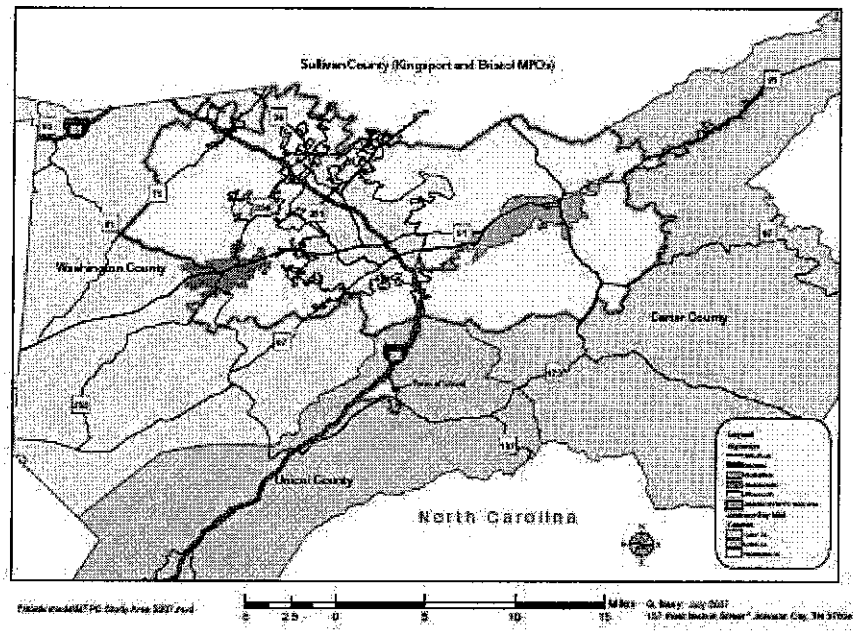
Local Road/Minor Street: Roadways that function primarily as the means for accessing individual properties. Most often minor streets are intended for limited capacities, carrying traffic for short distances, and serving residential uses. The majority of Washington County's roads are of this classification.

Metropolitan Planning Organizations

There are eleven (11) Metropolitan Planning Organizations (MPO) in the State of Tennessee, also referenced as Metropolitan Transportation Planning Organizations (MTPO), and out of those, one exists within Washington County, which is the Johnson City Metropolitan Planning Organization (JCMPO). The JCMPO is responsible for the urban areas of Johnson City, Elizabethton, and a small portion of the Town of Unicoi boundaries extending beyond the limits of these respective cities. One of the requirements by federal legislation of the MPO is the development and maintenance of a Long Range

Transportation Plan (LRTP) for its region every five years. The JCMPO recently updated their 2001 to 2026 Long Range Transportation Plan to reflect current and future transportation conditions from 2007 to 2030 for the Johnson City MPO Region. A copy of the 2007-2030 Plan is available through the JCMPO. The JCMTO study area is found below:

Johnson City MTPO Study Area



Johnson City: The Johnson City Urbanized Area has grown tremendously as a regional educational, health, and employment center. The 20-year plan continues to study sustainable growth and provide support for the area's future transportation system. The completion of Interstate 26 corridor is providing significant improvements on travel demands and travel times as it improves the connectivity between the Interstate 81 and Interstate 40 Highway Systems.

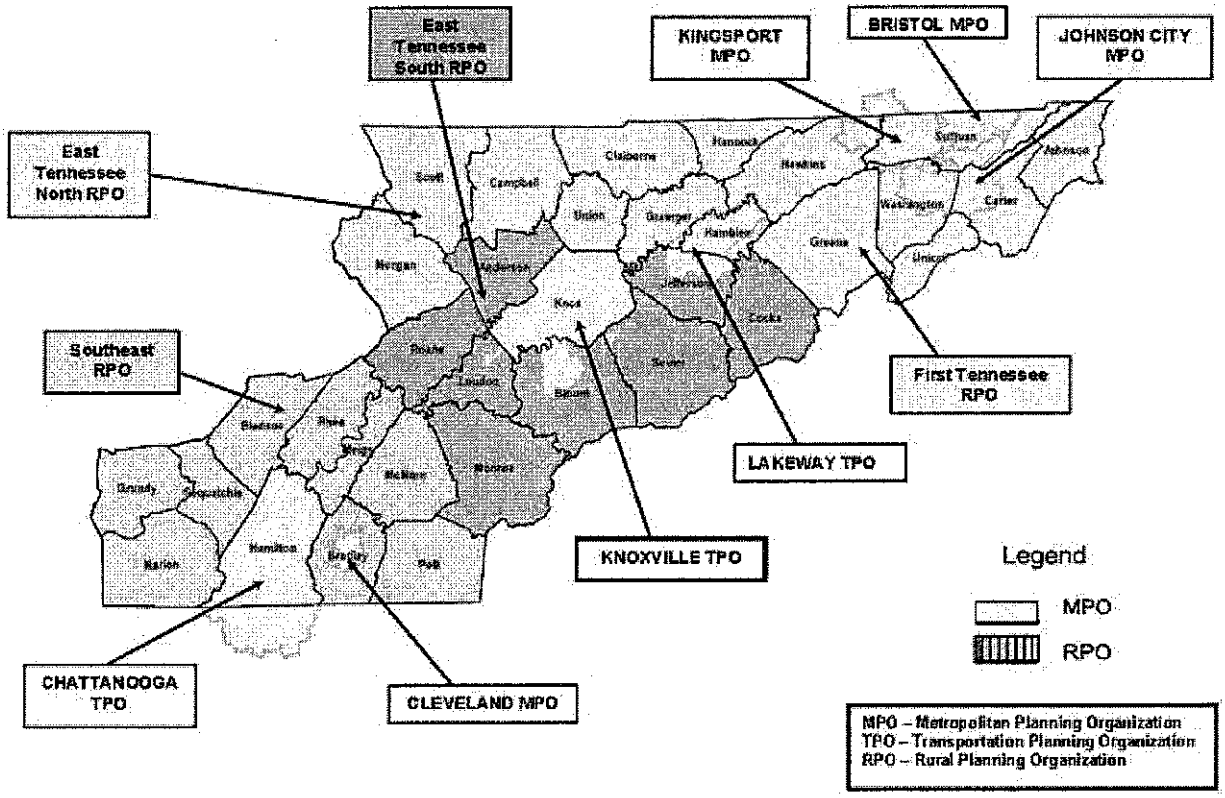
Rural Planning Organizations (RPO)

The Federal Highway Administration (FHWA) passed regulations requiring representation of rural areas in the transportation planning process. To comply with these regulations, the Tennessee Department of Transportation (TDOT) has created the Rural Planning Organization (RPO). The RPOs represent all areas not currently included in a Metropolitan Transportation Planning Organization (MTPO). Areas in Washington County not served by an MTPO are served by the First Tennessee Planning Organization (FTPO). The purpose of the FTPO is to involve local officials in multi-modal transportation planning. The goal is to allow local officials and citizens to have input into the transportation process and to

promote unified regional transportation goals. A map is provided below detailing transportation planning areas in Eastern Tennessee.

TRANSPORTATION PLANNING AREAS

EASTERN TENNESSEE



Traffic Circulation Patterns

The traffic circulation pattern in Washington County is good, relying heavily on Interstate 26 to move up to 39,155 vehicles a day according to TDOT's 2007 Average Daily Traffic (ADT) publication. TDOT's ADT reports are prepared by the TDOT Planning Division in cooperation with the U.S. Department of Transportation Federal Highway Administration. Interstate 81 is a major commercial route averaging 28,136 vehicles per day in 2007 with the majority being commercial trucks. State Route 11-E is a major thoroughfare averaging 24,000 thousand vehicles per day linking Carter County and Washington County with Bristol Tennessee/Virginia.

State Highways 36 and 75 are heavy traveled roads, predominantly handling commuter traffic throughout Washington County. TDOT reports 2007 ADT for Highways 36 and 75 at 10,988 and 42,550 respectively. Highway 36 widening has helped traffic circulation; however traffic patterns begin to experience congestion in the unimproved sections of Highway 36 north of Boones Creek Road to Airport Road.

Traffic Generators

Traffic generators are focal points of activity, which are origin and destination of numerous automobile trips during certain times of the day. Having an awareness of the location of these generators is necessary in planning the traffic circulation system, and in preparing plans for improvements.

The Tennessee Department of Transportation has recorded the average daily traffic counts for Washington County. These records over the past ten years reflect an increase in most areas. Interstate 26 from the intersection of Interstate 81 south to Washington County, Tennessee had an average traffic count of 25,920 in 1993. In 2003 the traffic count was 42,170 for this same area, an increase of 16,250. Traffic will increase significantly in the near future due to the completion of the interstate, creating a direct route from South Carolina to New York. Interstate 81 increased traffic flow southward to Washington County by 12,090. This interstate system is heavily populated with large truck traffic. Interstate 181 from the intersection of Interstate 81 north to Highway 93 had an increase of 13,900 from 14,010 in 1993 to 37,910 in 2003 and from Scott County, Virginia south to US 11W showed an increase of 3,120 from 5,150 in 1993 to 8,270 in 2003. These increases can be contributed to commuter traffic to four of Kingsport's largest employers as well as a direct route to the central business district. US 11W had an increase in traffic at mid point between Interstate 181 and Highway 37 of 650, from 15,220 in 1993 to 15,870 in 2003. This is a result of the residential developments in this area. US 11E traffic count of 31,920 on 1993 to 29,400 in 2003 reflected a decrease of 2,520 leading into and out of Bristol. This decrease is associated with the growing number of plant closings in this area. US 11E has shown an increase of 5,730, from 19,640 in 1993 to 25,370 in 2003. This increase is contributed to the Tri-County Industrial Park and the growing retail sales in this area. A combination of truck and commuter traffic will increase significantly with the opening of the Home Shopping Network (HSN) distribution center, the largest employer in this park.

County-Wide Long Range 20 Year Transportation Study

In 2005, the Washington County Highway Superintendent consulted Wilbur Smith Associates relative to the study projected referred to as the "Washington County Roadway Needs and Economic Development Study". The estimated cost of the study, which will begin late 2008, is $200,000, and is cost-shared between the Johnson City Metropolitan Planning Organization ($160,000) and Washington County ($40,000). The study would require review and approval by the Tennessee Department of Transportation. The purpose of the study is to improve state routes, provide better east-west connectors, especially in the Boone and Gray areas, and provide adequate roads so that residential development occurs and is in the most appropriate locations so as not to be impediments to traffic flow.

The state routes in which there is concern are SR 75 from the reserve curve near Hugh Cox Road southwest to US 11-E, all of SR 81, and the unimproved section of SR 107. Better east-west connectors might include a new road between SR 354 and SR 75 that would be located northeast of Shadden Road, an extension to Free Hill Road, improvements to Hog Hollow Road, and a new road from Roscoe Fitz to Gray Station Road parallel to I-26 interchange. Wilbur Smith Associates (WSA) carefully considered the county's roadway and economic development needs, and proposed a study that has two distinct components. First, was the suggestion that a small area transportation network evaluation be undertaken in the high growth Boone and Gray areas of Washington County. Second, state routes and key county roads in the balance of Washington County would be evaluated. The primary differences in the two study components are the geographic areas to be studied and the amount of detail that would be included. For the small area network study in the Boone and Gray areas (Boone/Gray Network Study), some new data would be collected by WSA. For the balance of Washington County (Large Area Study), traffic analysis would be based on existing collected data. High growth areas in Jonesborough and its Urban Growth Boundary would be evaluated as a part of the Jonesborough Transportation, Infrastructure, and Economic Development Study. The other principal roads in that high growth area would be assessed as part of the Large Area Study.

More details of this long range transportation study can be obtained by contacting the Washington County Highway Superintendent. A brief summary of the roadway needs in the Boone/Gray Network Study is as follows:

- Improvements to Free Hill Road;
- A new road extending from Free Hill Road southwest to SR 75;
- A new road from Roscoe Fitz Road to Gray Station Road parallel to I-26 interchange;
- Improvements to the reverse curve on SR 75 near Hugh Cox Road;

- Improvements to Hog Hollow Road;
- Providing a better connection between SR 75 and SR 354 in the Boone area either via a new alignment or by making improvements to the Shadden Road and Highland Church Road Corridor; and
- Realigning Highland Church Road at SR 354 to a point opposite Knob Creek Road.

A brief summary of the roadway needs in the Large Area Study is as follows:

- Improvements to SR 75 from the reverse curve near Hugh Cox Road to U.S. 11-E;
- Improvements to all of SR 81 and the intersection of SR 81 and I-81;
- A new north-south route, possibly tied to the Bush Hog Industrial Park, from I-81 to SR 107 or SR 75 to I-81;
- Improvements t the unimproved segments of SR 107;
- Improvements to Hairetown Road; and
- Improvements to Enhance Greenwood Drive safety.

Another specific review may be undertaken regarding the Limestone Industrial Area to assist Washington County in their efforts to continue to enhance this park as a location for business and industry. A review of existing standards governing development within the park would be reviewed; as well as infrastructure capacities, and to identify opportunities or challenges that could impact the future development of this park. Also provided would be suggestions that could enhance the selection of this park by businesses in the future.

Air/Rail/Port

Air: There is one airport facility serving Washington County, Tri-Cities Regional Airport, located in Sullivan County, and serving the entire area. The facility is jointly owned by Johnson City, Kingsport, Bristol Tennessee/Virginia, Washington and Washington County with the percentage of ownership determined by their investment. The airport is centrally located to accommodate the Tri-Cities.

American Airlines pioneered commercial airline service in 1937 and expanded serviced in the early 1940's, with two daily flights to Los Angeles and another two to New York. About 30,000 passengers used Tri-Cities Regional Airport in 1948. This more than doubled to about 66,000 in 1952 and just over 446,000 in 1999. It decreased to just over 391,000 in 2003. The airport has recently expanded to better serve the Tri-Cities with passenger, charters, and air cargo activity. It has an asphalt surface runway to the length of 4,447 with Airlines servicing the Tri-Cities area; American Connection, Delta Connection,

Northwest Airlink and US Airways Express. Tri-Cities airport has approximately 28 flights per day that depart and approximately 31 arrivals.

Air cargo volumes have been on a roller coaster ride over the years, going from less than 200,000 pounds in 1948 to a high of about 10.3 million pounds in 1987, another low of roughly 3 million pounds in 1990, and back up to just over 5.5 million pounds in 1999 to just below 4 million pounds in 2003. Changes in the scheduled air freight business, including reliance on cheaper ground transportation, using more reliable trucks on expanded interstate highways to consolidation airports have provided traditional air cargo carriers with ever-increasing alternatives to use of aircraft for smaller communities. This trend had been somewhat offset by manufacturing companies use of "just-in-time" (JIT) deliveries of parts and components for the auto industries and others. The reduction in size of airline aircraft over the past 20 years and the decrease in "belly" cargo capacities have significantly shifted the emphasis towards scheduled and nonscheduled air cargo carriers. The combination of smaller airline aircraft and faster/cheaper truck transportation has also contributed to a downward trend in airmail processed through the Airport over the last two decades. A number of air cargo carriers, expediters, freight forwarders and contract carriers have used the Airport over the years. Familiar names such as Airborne, Burlington Northern, DHL, Emery Worldwide, Federal Express and UPS are only a few of the companies that have operated on a scheduled basis.

Rail: At the present time, there are no passenger rail services in the Johnson City MTPO study area. However, there are currently two Class I and one short-line railroads that serve the Johnson City region. CSX and Norfolk Southern are the two major railroads that provide service to the MTPO region with the East Tennessee Railway (ETRW) providing switching service for CSX. The CSX line runs from the northwest corner to the southeast corner of Washington County. Norfolk Southern runs from east Washington County through Johnson City and into Carter County where it takes a northerly turn to the rail yard in Bristol, Tennessee. From this point, the rail line has access to the port of Norfolk in Virginia and other markets in the Northeast.

Before examining the two Class I rail lines, it is important to review the short-line railroad that "connects" the two larger rail lines. The ETRW system operates a short-line railroad and serves as a switching yard for the CSX and Norfolk Southern railroads. This service provides access to local companies including Johnson City Chemical, General Shale Corporation, and other local companies. ETRW provides a vital service to Johnson City and the MTPO encourages its continued operation.

Prior to 1983, this line operated under the name of the East Tennessee and Western North Carolina Railroad. Previously, the railway owned and operated 11.2 miles of track providing freight service to Elizabethton, Tennessee. In 1999, the company had 20 railcars and 2 locomotives. The short line carried 575 annual carloads and employed three people. The track is a Federal Railroad Administration "excepted track," with a maximum operating speed of 10 mph for freight service only. This section of track was sold to Genesee & Wyoming and, in 2003, the company ceased operation to Elizabethton due to a decline in business. The remainder of the track still services as a local connection for Norfolk Southern and CSX, providing vital switching service to local companies. Since June 2005, the line has been owned by Genesee & Wyoming and operated under Rail Link.

In response to the cancellation of service, the City of Elizabethton has received a grant from the Tennessee Department of Transportation for a rail corridor study evaluating the different uses of the rail corridor between Johnson City and Elizabethton. The results from the study will assist in determining the future use of this corridor. All possibilities, from restoration of freight service to public transportation possibilities, will be examined in the study.

CSX operates 1,137 miles of track in Tennessee and employs approximately 2,100 Tennessee residents. Furthermore, CSX operates a major rail yard in Erwin, Tennessee, just south of the MTPO study area. There is a rail-to-truck metals distribution facility in Johnson City. The nearest rail-to-truck transloading facility is in Knoxville. The nearest intermodal terminal is in Kingsport, Tennessee (source: www.csx.com). With recent changes at Tennessee Eastman Corporation, the future of the intermodal facility in Kingsport is uncertain. Tennessee Eastman was the major user of this facility and is now looking at other methods, primarily trucks, to ship its goods. If this occurs and the intermodal facility shuts down, the Johnson City MTPO would explore the possibility of locating an intermodal facility in its study region.

Norfolk Southern operates 850 miles of track in the state and has about 1,900 employees. The Norfolk Southern lines in East Tennessee are part of a larger north-south route serving as a NAFTA (North American Free Trade Agreement) route between the Northeastern region of the United States and Mexico (source: Tennessee Rail System Plan). Norfolk Southern operates on a Class 4 track, with maximum speeds of 60 mph for freight and 80 mph for passenger. The Norfolk Southern rail corridor in East Tennessee is part of the Strategic Rail Corridor Network (STRACNET) for the Department of Defense. "The corridor concept was developed from analyses of mobilization/deployment needs, peacetime traffic, and combat tank shipments as an indicator of oversize/overweight movements." (source: Tennessee Rail System Plan).

There are currently no capacity restraints on any Class I railroads in Tennessee. CSX has reported no problems with bridge clearance; however, the portion of the Norfolk Southern track between Knoxville, Tennessee and Ashville, North Carolina has not been cleared for double stacking.

Beginning in late 2004, the Memphis-to-Bristol Rail Connection Proposal gathered momentum as several cities and towns across Tennessee joined together to bring attention to the project. The project would create a railroad corridor across the entire length of Tennessee, potentially reducing traffic and congestion along Interstates 40 and 81. The Commonwealth of Virginia is considering a similar railroad plan that, when connected to Tennessee's East-West rail-line, would create a 739 mile long rail corridor.

Port: Since 1944, the Tri-Cities Regional Airport has served as the U.S. Customs Port 2082, which is federally staffed and functions as a full service U.S. Customs Port-of-Entry. These officers monitor an average of 208 shipments per month through the port. This equates to a substantial savings for businesses.

Highway Performance Monitoring System

The Highway Performance Monitoring System (HPMS) is a nationwide Federal Highway Administration (FHWA) inventory system that includes data for the entire Nation's public road mileage as certified by the State's Governors on an annual basis. It provides data that reflects the extent, condition, performance, use, and operating characteristics of Tennessee highways. HPMS calculates the Vehicle Miles Traveled (VMT), which is equal to the Average Annual Daily Traffic (AADT) multiplied by the total miles of the system. VMT reports include:

- VMT by Administrative System gives the Total Vehicle Miles Traveled as calculated by the Administrative Systems mileage multiplied by the AADT of each Administrative System.
- VMT by Functional Classification gives the Total Vehicle Miles Traveled as calculated by the Functional Systems mileage multiplied by the AADT of each Functional Classification.
- VMT by County gives the Total Vehicle Miles Traveled as broken out by county functional class mileages multiplied by the county AADT.

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional

classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network. Rural areas comprise the areas outside the boundaries of small urban and urbanized areas, and Urbanized areas are designated as such by the Bureau of the Census.

Functional Systems for Rural Areas

Rural roads consist of those facilities that are outside of small urban and urbanized areas, as previously defined. They are classified into four major systems: Principal arterials, minor arterial roads, major and minor collector roads, and local roads.

Rural Principal Arterial System

The rural principal arterial system consists of a connected rural network of continuous routes having the following characteristics:

1. Serve corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel.

2. Serve all, or virtually all, urban areas of 50,000 and over population and a large majority of those with population of 25,000 and over.

3. Provide an integrated network without stub connections except where unusual geographic or traffic flow conditions dictate otherwise (e.g., international boundary connections and connections to coastal cities).

The principal arterial system is stratified into the following two subsystems:

Interstate System.--The Interstate System consists of all presently designated routes of the Interstate System.

Other principal arterials.--This system consists of all non-Interstate principal arterials.

Rural Minor Arterial Road System

The rural minor arterial road system should, in conjunction with the principal arterial system, form a rural network having the following characteristics:

1. Link cities and larger towns (and other traffic generators, such as major resort areas, that are capable of attracting travel over similarly long distances) and form an integrated network providing interstate and intercounty service.

2. Be spaced at such intervals, consistent with population density, so that all developed areas of the State are within a reasonable distance of an arterial highway.

3. Provide (because of the two characteristics defined immediately above) service to corridors with trip lengths and travel density greater than those predominantly served by rural collector or local systems. Minor arterials therefore constitute routes whose design should be expected to provide for relatively high overall travel speeds, with minimum interference to-through movement.

Rural Collector Road System

The rural collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which (regardless of traffic volume) predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical, on the average.

In order to define more clearly the characteristics of rural collectors, this system should be subclassified according to the following criteria:

Major collector roads.--These routes should: (1) Provide service to any county seat not on an arterial route, to the larger towns not directly served by the higher systems, and to other traffic generators of equivalent intra-county importance, such as consolidated schools, shipping points, county parks, important mining and agricultural areas, etc. ; (2) link these places with nearby larger towns or cities, or with routes of higher classification; and (3) serve the more important intra-county travel corridors.

Minor collector roads.--These routes should: (1) Be spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road; (2) provide service to the remaining smaller communities; and (3) link the locally important traffic generators with their rural hinterland.

Rural Local Road System

The rural local road system should have the following characteristics: (1) Serve primarily to provide access to adjacent land; and (2) provide service to travel over relatively short distances as compared to collectors or other higher systems. Local roads will, of course, constitute the rural mileage not classified as part of the principal arterial, minor arterial, or collector systems.

Extent of Rural Systems

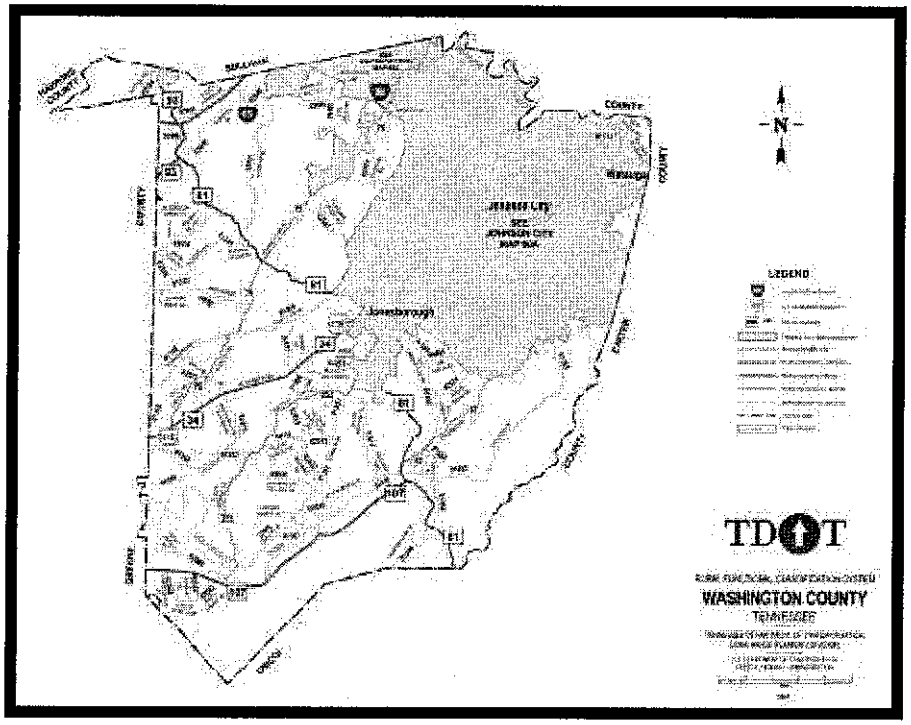
The systems criteria above have been expressed primarily in qualitative, rather than quantitative terms. Because of varying geographic conditions (population density, spacing and size of cities, density and pattern of road network) it is not feasible to define uniform nationwide criteria on size of population centers, on trip length and traffic volume, or on spacing of routes, that would apply to all systems in all States. The results of classification studies conducted in many States throughout the country do, however, show considerable consistency in the relative extent of each system, expressed as a percentage of total rural road mileage.

Illustration 5 shows the 2007 Rural Functional Classification Map for Washington County, Tennessee. A more definable larger scaled map can be obtained through the Tennessee Department of Transportation, Long Range Planning Division. This map is provided for illustration purposes only.

ILLUSTRATION 5

TDOT RURAL FUNCTIONAL CLASSIFICATION SYSTEM

WASHINGTON COUNTY



The map legend provides a breakdown of the classification system assigned by TDOT's System's Planning Section as follows:

Interstate Highway	Rural Interstate
U.S. Numbered Highway	Rural Principal Arterial
State Highway	Rural Minor Arterial
Federal Aid Urban Boundary	Rural Major Collector
	Rural Minor Collector

The chart provided below provides the Highway Performance Monitoring System's (HPMS) Daily Vehicle Miles of Travel for rural classifications for Washington County for the years 2005 to 2007.

HPMS DAILY VEHICLE MILES OF TRAVEL

RURAL CLASSIFICATION

2005-2007

Year	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	County Total
2005	134,048	131,216	118,468	63,432	90,060	90,758	627,982
2006	133,453	125,627	112,776	60,874	88,933	89,587	611,250
2007	132,277	128,864	117,888	63,680	92,204	91,818	626,731

The information provided above indicates that Washington County rural road classifications have remained rather steady from 2005 to 2007, with the highest miles traveled via roads designed for heavier travel such as interstate, principal arterial, and minor arterial. The lowest number of miles traveled is via major collectors, which indicates the need for the county to address improvements to existing major collectors and/or plans for new major collectors to lessen traffic generators from other less equipped feeder roads, i.e. minor collector and local roads. Efforts are underway by Washington County through the county's Highway Department to address long-time transportation issues, which are projected to continue as population growth throughout the county has been steady for decades, in particular 1980 to present.

Chapter Summary Findings

Land Use

Topography and other natural factors, particularly soils, affect development in Washington County. These limitations can be overcome with good infrastructure design.

- An estimated 72 percent of the 48,939 persons living in the unincorporated portions of Washington County reside in low density residential developments on about 14.5 percent of the total land area. The remaining 28 percent of the unincorporated population live in medium to high density residential developments, which include mobile home parks, duplexes, and multi-family type uses (apartments/condominiums).

- The majority of apartments or condominiums are located in Johnson City's Urban Growth Boundary, outside the city's corporate limits, where public sewer is more likely to be located.

- Traditional single-family subdivisions are located throughout the county; however, most are located in close proximity of Johnson City and Jonesborough.

- Washington County has approximately 112,000 acres of land classified as vacant, agricultural, or timber/forest.

- Concentrated commercial developments are located near highways 11-E and 36 with the greatest future potential for commercial development along the corridors of Boone and Gray.

- Washington County has a large number of public, cultural and recreational facilities precisely placed thought the county. Schools and churches are located within residential communities. Libraries and government facilities are located throughout the county for easy access to the public. Many recreational sites in the county are natural areas such as Boone and Watauga Lakes. These sites welcome activities as picnicking, boating, fishing and swimming.

- Washington County is the second largest counties based on total population in the Upper East Tennessee Region with a large portion being designated agricultural, forest and open space. Some of the land has moderate to severe limitations for development due to natural topographic constraints.

Transportation

A community's growth hinges on the movement of its people and goods. A good transportation network can spur commercial growth, assist the average employee and employer in achieving employment goals, provide the residents a more convenient means of getting to and from home, facilitate the movement of goods, and generally provide all travelers with a safe and convenient means of getting from one location to another.

- The traffic circulation pattern in Washington County is good relying heavily on Interstate 26 and 81. Most of this traffic is commuter traffic with Interstate 81 being a major commercial trucking route. State Route 11-E, and Highways 36 and 75 are major thoroughfares linking Washington to other surrounding counties in the Upper East Tennessee area.

- The Tri-Cities Regional Airport is jointly owned by Johnson City, Kingsport, Bristol Tennessee/Virginia, Washington and Washington County's and is centrally located to accommodate the Tri-Cities. Commercial airline service began in 1937 and has continued with airlines such as American Connection, Delta Connection, Northwest Airlink and US Airway Express serving the Tri-Cities today. In 1948 air cargo was put in place shipping approximately 200,000 pounds. Over the years volumes have been on a roller coaster ride and in 2003 shipments were just below 4 million pounds, 2004 was just over 4 million pounds, and in 2005 was well over 5 million pounds. Volumes of shipments have been volatile. Changes in the scheduled air freight business, including reliance on cheaper ground transportation and reliable trucks on expanded interstates are alternatives to using aircraft for smaller communities. All major integrated express carriers operate at the airport, including FedEx, UPS, DHL, and BAX Global.

- There are currently two Class I and one short-line railroads that serve the Washington County/Johnson City region. CSX and Norfolk Southern are the two major railroads that provide service to the MTPO region with the East Tennessee Railway (ETRW) providing switching service for CSX. The CSX line runs from the northwest corner to the southeast corner of Washington County. Norfolk Southern runs from east Washington County through Johnson City and into Carter County where it takes a northerly turn to the rail yard in Bristol, Tennessee. From this point, the rail line has access to the port of Norfolk in Virginia and other markets in the Northeast.

CHAPTER 7
THE DEVELOPMENT PLAN

INTRODUCTION

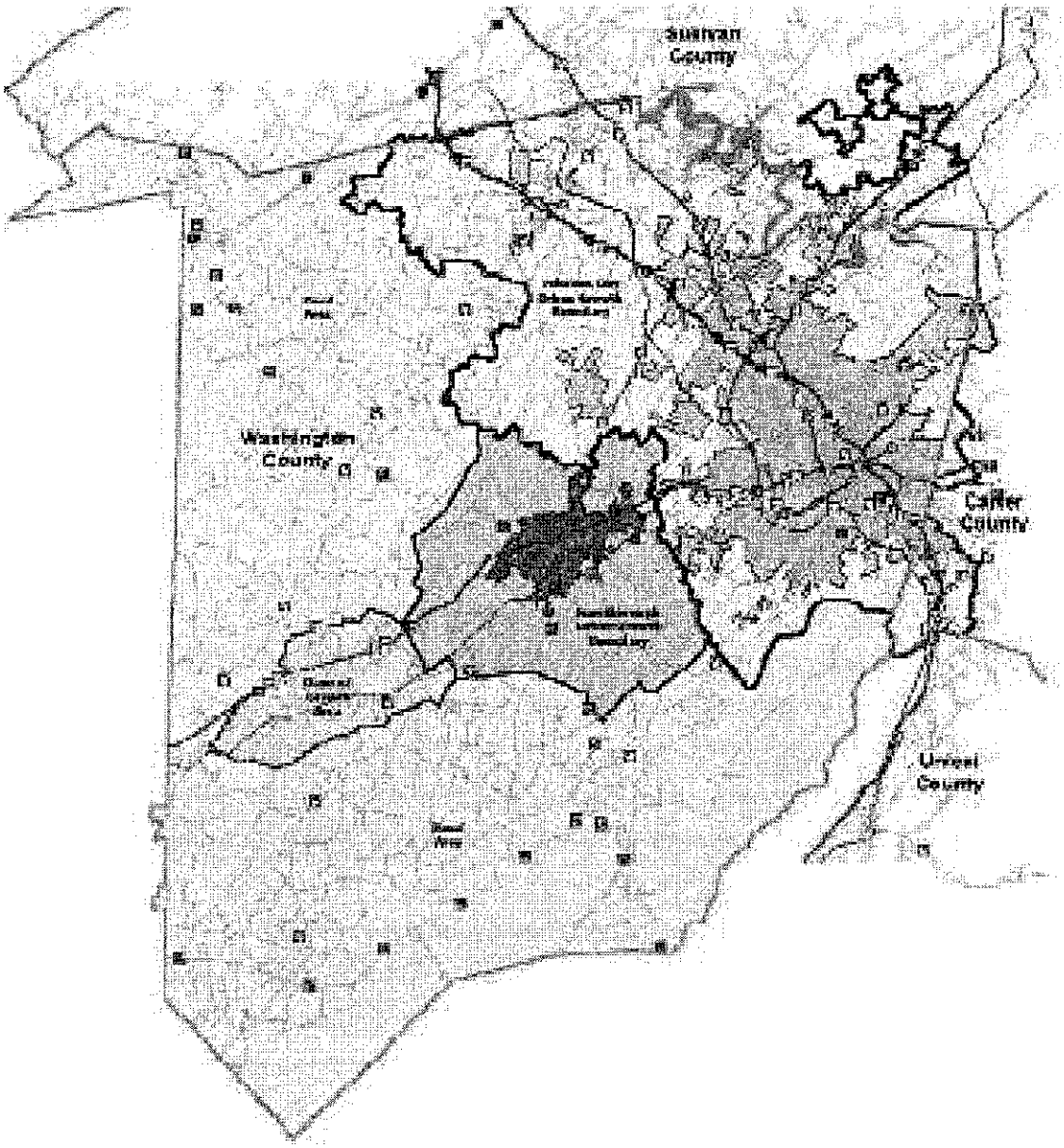
The Development Plan or Land Use Plan should present methods by which Washington County will be able to guide and provide for its expected growth and development throughout the planning period. The development plan should serve as a general guide, amendable from time to time, as events or circumstances present need for change. It is derived from an analysis of past events affecting development, governmental structure, natural factors, socio-economic factors, existing land use and existing transportation system. It is also based on several major assumptions, factors, issues and trends derived from the best available data.

Generalized community goals as cited in this chapter express widely perceived ideals that should guide all that subsequently occurs within the county. Accordingly, developmental objectives are also listed that enumerate various means through which these envisioned goals can be furthered. Finally, quantifiable policies or activities are delineated to supply clearly defined developmental tasks that when pursued will lead to the achievement of all desired program objectives. These goals, objectives, and policies are reflected in the Washington County Growth Plan of 1999 and the contents of this plan for Washington County. It is anticipated that the specific policies outlined herein will be utilized to provide definite guidance in the "day-to-day" administration of local land use controls, i.e., zoning and subdivision regulations, as well as in the preparation of a 20-year long range county-wide transportation plan, which will be completed by the Washington County Highway Department late 2009.

Illustration 6 depicts the growth boundaries established throughout Washington County, as an element of the Washington County Growth Plan adopted in 1999. This plan was prepared under the auspices of Public Chapter 1101 which was enacted by the Tennessee General Assembly in 1998. The primary intent of this legislation is to more favorably manage and control urban expansion in Tennessee via the processes of incorporation and annexation. Within these established urban growth boundaries, the respective municipalities are expected to efficiently and effectively provide various necessary urban services, as well as to control and manage urban expansion over a twenty year period of time. Accordingly, planned growth areas that are not readily subject to subsequent incorporation have also been designated within the county to establish areas wherein moderate to high density developments are likely to occur. As Public Chapter 1101 mandates that all local land use decisions be consistent with adopted county growth plans, every effort has been made to draft developmental policies in conjunction with a

long range developmental concept plan that furthers adopted growth planning objectives. Comprehensive planning within the established urban growth boundaries of the communities of Johnson City and Jonesborough are not considered within the scope of this development plan, as these areas are in effect the long range planning regions of these municipalities.

ILLUSTRATION 6
GROWTH BOUNDARIES
WASHINGTON COUNTY, TN



Major Assumptions, Factors, Issues and Trends

The major assumptions, factors, issues and trends identified in the preparation of this plan are presented below. These form the basis for the goals, objectives, and policies that follow.

1. Local County, city and town governments will continue to support economic and community development, and the county and its municipalities will continue to support strong planning programs.
2. Natural factors, primarily topography and soil conditions will continue to limit development in some areas and naturally direct it to more naturally suited areas.
3. Continued moderate to rapid population growth is expected especially in the central-northern portion of the county, and the urban fringe areas of both Johnson City and Jonesborough.
4. The rural portions of the county are expected to continue to develop primarily as homesites where the land is suitably developed and adequate utilities are available.
5. Municipalities will be depended on to provide services for more intense and heavier uses such as commercial and industrial, therefore, these uses should be encouraged to locate therein or adjacent to.
6. Manufacturing, retail, and professional services are projected to be the primary sources of employment for county residents.
7. Washington County will remain attractive as a retirement location thus in-migration is expected to continue.
8. Johnson City/Washington County will continue to be a regional center for employment, services and retail trade, and Jonesborough will continue to attract tourism dollars due to its historic value and significance.
9. Washington County's location and highway transportation network, I-26, I-81, Highways 36 and 75, and State Route 11-E will continue to influence economic development.
10. The primary transportation problems are the lack of continuous east/west routes north and south of Interstate 40 and local collector routes which are becoming inadequate due to increased traffic.
11. Utilities will continue to be upgraded to meet expected development needs.
12. Washington County has sufficient developable land available to accommodate the future land use needs.

DEVELOPMENT GOALS

In order to adequately plan and allocate for its future land use, it is necessary that a county establish general development goals. In the context of a future land use plan, a goal is a general statement from which desired objectives in the areas of land development, transportation, and service delivery may be derived. The overall goal of this land use plan for Washington County is to provide a quality living and working environment for all county residents.

The following goals are general statements that the Washington County Zoning Administrator and Washington County Regional Planning Commission believes are representative of the desires of the citizens regarding the future development of the County.

1. That it is essential to preserve, protect and enhance the quality of life in Washington County while encouraging a more harmonious and higher standard of development.

2. That it is essential to maintain the environment and preserve the natural aesthetics of the County.

3. That it is essential to provide for adequate housing to meet the needs of all residents while ensuring that all residential developments provide pleasant and harmonious living environments, are served by an adequate transportation system and infrastructure, and are properly related to other county land uses.

4. That it is essential to retain and expand the industrial development base to provide for the essential employment of needs of the County and its municipalities.

5. That it is essential to promote and support those activities that are designed to maintain the County as an important public and private service center for the Upper East Tennessee Region.

6. That it is essential to provide adequate and efficient public facilities and services, and to provide a diversity of cultural and recreational opportunities.

7. That it is essential to promote the provision of utility services which meet and anticipate the needs of the County.

8. That it is essential to provide an efficient and effective transportation system with appropriate linkages and capacities.

9. That it is essential to encourage the development of open land which has few natural limitations and restrictions, and which has the necessary infrastructure.

OBJECTIVES AND DEVELOPMENT POLICIES

Both objectives and policies are utilized to achieve the goals established in this plan. Objectives are more specific, measurable statements of the desired goals. Policies represent highly defined courses of action and/or specific techniques that may be employed to indicate how the goals and objectives of the plan will be realized.

The objectives and policies contained in this document represent the official public policy guidelines concerning land use and transportation matters for decision-making by Washington County. The policies are presented as guidelines to be followed by developers, builders, neighborhood groups, civic organizations, and other private and public interests engaged in and concerned about growth and development in the County. The policies are also presented so that interested individuals and groups can better anticipate the County's decisions on future matters.

In the following section, general growth management objectives and policies are presented. This section is followed by objectives and policies for each of the specified land use categories.

GENERAL DEVELOPMENT AND GROWTH MANAGEMENT

Growth has always been viewed as an inherent component of counties. Most counties understand that growth is necessary for long-term viability, and most encourage growth to varying extents. However in more and more counties, the cost and benefits of continued growth have emerged as public issues. There is often hesitation over accommodating further development with its consequences of greater numbers and higher densities of residents, economic expansion, rapid consumption of land, and an alteration of the natural environment.

Washington County fully anticipates growth, and understands its importance as a part of those forces that beneficially affect the County's quality of life. At the other end of the spectrum, the policy of growth at any cost has long-term detrimental impacts and is not supported by the County. The approach taken by Washington County will be that of managed growth. To guide general growth and development, the following objectives and policies are adopted.

A. Objective – Assure the protection and integrity of the natural environment, by implementing measures to minimize the adverse impacts of development to soils, slopes, vegetation, wetlands, and other natural features.

Policies

1. Ensure that areas less suitable for development, due to the limitation of certain natural factors, are developed only when appropriate remedial measures are taken.

2. Decisions on development proposals should be based on an analysis of soils, slope, depth to bedrock, and location relative to floodable areas.

3. Where the condition of the land is in doubt, and it appears that an unsuitable condition might exist, the developer shall be responsible for undertaking the necessary studies to prove the feasibility of the land to support the proposed development.

4. All development proposals should be assessed for the appropriateness of engineering designs and installation.

5. In each drainage basin, the effect of future development on drainage and flooding should assist in the formulation of land use decisions within that basin.

6. Areas located in a designated floodplain should be developed only in conformance with the Natural Flood Insurance Program requirements.

7. Major natural drainageways, which are a part of the natural system of dispensing normal flood run-off, shall not be altered unless such alteration is in accordance with the provisions of Washington County's Flood Damage and Prevention Regulations, and appropriate state and federal regulations.

8. Ground water shall be protected by restricting the use of septic tanks to appropriate soil types and rock formations as determined by the Tennessee Department of Environment and Conservation.

9. Development proposals involving soil disturbance shall be in conformance with appropriate sediment and erosion control measures.

10. Areas with slopes in excess of 15 percent should only be developed where engineering documentation is available to prove that no adverse affects will occur to housing construction, road stability, drainage, and erosion.

11. Mature vegetation, particularly trees, should be protected, and replanting should be required where existing vegetation is removed or disturbed during construction, with particular attention to areas with established waterbodies.

12. Vegetation should be used as an alternative to man-made devices for buffering, insulation, erosion control, and water quality protection, whenever practical.

13. The County should continue to protect environmentally sensitive lands and other valuable areas through adequate regulations.

14. All future land use decisions made in the unincorporated portions of the county should be in conformance with the Development Concept Plan and policies cited within this document, as well as with the findings of the Washington County Growth Plan.

B. Objective – Public services should be made available within the county commensurate with the infrastructure demands associated with various types and densities of development.

Policies

1. All new development, whether public or private shall have appropriate infrastructure which shall be properly installed at the expense of the developer.

2. Development Plan policies as cited herein should be used as tools to direct or limit development in specific portions of the county.

3. The availability and capacity of existing services and utilities should be used as a criteria in determining the location of higher intensity types of uses, i.e. commercial, industrial, multi-family residential uses, and mobile home parks.

4. To aid developers in determining those areas that are most conducive to development, status reports on the infrastructure system should be routinely prepared.

5. Developments with requirements beyond existing levels of fire protective services should only be allowed to develop when such services can be adequately provided and maintained.

6. Inventories of existing public and private recreational facilities and community facilities should be used as input for planning future facilities and prioritizing the upgrading of existing recreation areas.

7. Appropriate infill development should be encouraged to enhance existing development and to make a more efficient and cost effective use of existing services and utilities, whenever possible.

C. Objective – The protection and enhancement of present and future livability is paramount to the maintenance of a superior quality of life within the county.

Policies

1. The County should establish livability standards or criteria for assessing the impacts of various types of development projects on its residents. For growth management these standards or criteria should assess:

   a. Environmental impacts such as water quality degradation, destruction of wetlands, etc.

   b. Social impacts such as public safety, availability of community services, etc.

   c. Economical and fiscal impacts such as budget constraints, job creation or loss, etc.

   d. Impacts to transportation systems and public services and facilities, such as traffic volumes, water production, and treatment capacities, etc.

2. Land use and site planning should be utilized to promote harmonious and functional relationships between various categories of land use.

3. Planning for county facilities and services should be based on the principal of maintaining or increasing the current levels of service provision.

4. County development should concentrate on ways to encourage young people to remain in Washington County to live and work.

RESIDENTIAL

In order to ensure the most appropriate development of existing and future residential areas in Washington County, the following developmental objectives and policies are adopted:

A. Objective – Provide for a variety of housing types and densities for a wide-range of family incomes, sizes, and lifestyles, while protecting and maintaining the quality of life and property values in existing residential areas.

Policies

1. The County should promote the location of new residential developments in areas least affected by natural factors.

2. The County should allow for a broad range of housing types including single-family structures, two family structures, multi-family developments, and mobile homes located on individual lots and in mobile home parks.

3. Residential developments of varying types and densities should be encouraged in locations which are compatible with surrounding residential densities.

4. Land use controls should be used to foster a variety of housing types compatible with the natural landscape.

5. The County should encourage and concentrate high intensity types of development in the planned growth area and urban growth boundaries, and along major traffic corridors, with access to retail businesses, cultural activities, schools, and parks.

6. The County should encourage low-density housing along roads adjacent to agricultural areas, which are buffered from excessive noise, traffic, and conflicting development.

7. The county should encourage low-density housing to locate in rural, agricultural areas.

8. In response to erosion and drainage considerations, steep hillside developments with slopes of 15 percent or greater should be developed at densities that minimize negative impacts, regardless of the servicing infrastructure.

9. The County should encourage the rehabilitation of existing residential areas.

10. The County should encourage sound development in suitable areas by maintaining and improving transportation facilities.

11. New residential developments should be designed to encourage the neighborhood concept and should be situated to be readily accessible to various types of emergency services vehicles.

A. Objective – Ensure that all new residential developments meet appropriate planning and design standards and guidelines.

Policies

1. All residential subdivisions should be designed in compliance with appropriate site development standards, as cited in the county's adopted land use controls.

2. New residential developments should be encouraged in those areas where there is adequate fire flow, water pressure, and fire hydrants to support such developments.

3. New residential developments should be designed so as to enhance the aesthetics of nearby pre-existing subdivisions.

4. Residential developments occurring in floodprone areas should comply with all adopted flood hazard prevention requirements.

COMMERCIAL

There are three general divisions of commercial and private service activities in Washington County. These include: the commercial and private service activities located within the municipalities, those located along the major highways often near the municipalities, and those that are situated in the more rural areas of the County. These commercial activities should be protected and enhanced in order to strengthen the economy of the entire County. In order to guide the continuation and expansion of these essential activities, the following objectives and policies are adopted:

A. Objective – Appropriate measures should be taken to ensure that Washington County and its municipalities remains a regional hub for commercial and private service land uses in the Upper East Tennessee Region.

Policies

1. In cooperation with the municipalities and Chamber of Commerce, the County should strive to recruit and retain business and service enterprises that fulfill local market demands.

2. The County should promote areas of the county with adequate infrastructure for commercial and private service activity.

B. Objective – Ensure that new commercial developments meet appropriate planning and design standards and guidelines.

Policies

1. All commercial development should be designed in compliance with appropriate site development standards as specified in the Zoning Resolution for the county.

2. Commercial development should be approved only in those areas where adequate infrastructure is available to support such development.

3. Commercial development should be designed so as to minimize potential negative impacts to the existing transportation system.

4. Clustering of commercial developments should be encouraged, with limited entrance and exit points.

5. Commercial uses which are high intensity traffic generators should be located on major collector or arterial roads.

6. All new commercial shopping centers should be located on frontage or access roads with controlled ingress or egress points.

7. All commercial and private service developments shall be provided with adequate access aisles and an adequate number of off-street parking spaces, as per the Zoning Resolution of the county.

8. Commercial developments should be designed so as to minimize negative impacts to residential developments via planted buffers and/or berms in order to enhance the aesthetics and property values of such developments.

INDUSTRIAL

Johnson City/Washington County are projected to remain the primary locations for manufacturing and industrial uses. There is a need of additional land for industrial uses in the unincorporated and incorporated portions of the County for future industrial expansion and growth. Efforts should also be taken to ensure that existing industries are retained and that suitable land is made available to accommodate the potential expansion of these industries.

In order to guide the continuation and expansion of the County's industrial activities, the following objectives and policies are adopted:

A. Objective – It is essential that the county retain and maintain its existing industrial base.

Policies

1. The County should support all practical efforts, both public and private, to maintain and improve existing industrial site locations.

2. Existing industrial sites should be provided adequate transportation, electric and digital services, as well as water and sewer services, with additional services being provided as needed.

3. The County Commission and Planning Commission should support appropriate highway and road improvements at locations suitable for the expansion of the County's existing industrial base.

4. Coordination should be strongly fostered between all public officials, various industrial boards, and the Chamber of Commerce to attract industrial prospects to the area, and to retain and promote the expansion of existing industries.

B. Objective – Appropriate standards and guidelines should be effectuated to generate new industrial development within the county.

Policies

1. All new industrial developments should be designed in compliance with appropriate planning and site design development standards.

2. Industrial uses should locate near major highways and roads that offer the access needed by the industry. Such uses should not exceed the capacity of the existing road network.

3. Industrial development should locate only in those areas where adequate infrastructures, such as water, sewer and transportation facilities already exist.

4. If at all possible, landscaping or other type of screening should be provided between industrial uses and other land uses to reduce the potential conflicts between such uses.

PUBLIC AND SEMI-PUBLIC

Public and semi-public facilities are crucial to the well-being of the county. The location of these uses is dictated by the county's land use development pattern. They should enhance the County's appearance, yet at the same time cause the least possible conflict with adjacent land uses. During the site design process for public and semi-public facilities, attention should be paid to the location of buildings in relation to service and parking areas, the relationship of buildings to existing and proposed highways and roads, and the natural beauty of the surrounding landscape. The objectives and policies to be used as guidelines for public and semi-pubic uses are as follows:

A. Objective – Provide adequate and efficient public services and facilities which meet accepted national and regional planning standards and guidelines.

Policies

1. The County should prepare and adopt an abbreviated Community Facilities Study based on accepted national and regional planning standards and locational criteria, in order to determine the adequacy or level of service provision of existing facilities and services.

2 Public facilities and services should be improved and expanded in accordance with an adopted Public Improvements Program and Capital Budget.

B. Objective – Provide a diversity of quality cultural and recreational opportunities.

Policies

1. Decisions concerning the provision of recreational facilities should be guided by accepted national and regional planning standards.

2. The County should promote the joint use of educational and recreational facilities.

3. The County should enhance the opportunities for passive recreation through the expansion of greenway systems already existing with the municipalities, which includes hiking and biking trails.

4. Regional parks, playfields, and pocket parks should be encouraged to be located within the County.

5. The County should encourage the development of public recreation land through coordination with federal, state, and local officials.

6. The County should promote efforts to document, preserve, and protect historic sites and structures.

7. The County should recognize the cultural contributions of religious, ethnic, and educational institutions, and coordinate their efforts with publicly supported cultural institutions, events, and performances.

8. The County should support and encourage the promotion of various types of cultural festivals in order to bring the arts to the public.

UTILITIES

Land development without the extension of adequate utilities fosters a number of significant health and safety problems, and is costly to the general public. In order to achieve proper development and efficiently expend public funds, it is extremely important to coordinate the extension of utilities with the County's Concept Development Plan. Therefore, the following objectives and policies should be adopted by all agencies responsible for the operation or extension of public utilities:

A. Objective - Provide adequate and efficient public utility facilities to as many county citizens as is possible.

Policies

1. To meet future needs and provide for future growth, long range plans for expansion and enhancement of public utility facilities should be encouraged by each of the responsible agencies.

2. All new developments of 1 dwelling unit or more per acre should have adequate water lines capable of providing fire protection, which shall be properly installed at the expense of the developer.

3. All new developments of more than 2 dwelling units per acre or more should be served by public sewers.

4. The County should ensure that the water, electric, and natural gas systems serving the unincorporated areas are adequate to meet current and future needs.

5. The health of residents shall be protected through the production of State approved potable water.

B. Objective - Provide appropriate locational and design standards and guidelines for utility facility improvements and extensions.

Policies

1. Adequate utilities should be extended into various areas of the county on a priority basis, with such extensions meeting optimum health and safety standards.

2. Water lines of no less than 6" in size and location shall be required in all new developments and redevelopments.

3. Stormwater management plans should be prepared for all new developments and redevelopments as per the Zoning Resolution of the County.

4. The use of underground electrical, telephone and cable television utilities should be encouraged in new residential developments, whenever feasible.

5. The location of utility structures for storage of equipment, pump stations or similar structures should be adequately buffered and landscaped, so as not to detract from the surrounding area.

6. The water distribution system should be periodically evaluated to ensure that water lines are of adequate size to provide adequate pressure for fire fighting, and that a suitable number of fire hydrants are present in all developed areas.

7. The County should require appropriate maintenance and repair of any privately controlled drainage facilities or appurtenances which tie into any portion of the public or other existing natural drainage systems. On-site maintenance contracts for private retention and detention panels should be studied by the Washington County Zoning Office and possible regulations being made as a part of the subdivision review process.

UNDEVELOPED LAND/OPEN SPACE

Most of the land in the unincorporated areas of Washington County is designated as undeveloped space. As the county grows, a significant amount of this land will be pressed into urban development. Unfortunately, as of the present time, some of this land either cannot be developed, or is cost prohibitive to develop due to various natural factors. In addition, some of this land is best utilized as open space. To guide the future development of undeveloped land in the County and its projected growth areas, the following objectives and policies are adopted:

A. Objective - Ensure that adequate open space is provided in the County to enhance its aesthetic quality.

Policies

1. Appropriately located public open spaces and general recreational uses should be provided to serve county residents as well as visitors. These areas should be readily available and designed to serve all age groups.

2. The County should ensure that adequate amounts of open space areas are available for future populations through researching best management practices relative to the establishment of conservation easements, as well as through the reservation of open spaces directed by the Development Concept Plan of the county.

3. Minimum open space requirements should be included as part of existing land use control regulations within cluster development projects and major subdivision developments.

4. Places of rare natural beauty and areas of historic interest should be preserved and maintained.

5. All publicly-owned land should be examined for its potential open space or recreational use before being sold or disposed of by the County.

B. Objective - Ensure that appropriate planning and locational standards and guidelines are followed for the development of open land and for the provisions of open space.

Policies

1. Support and approval of development proposals that result in the conversion of prime farmlands should be reserved for those developments consistent with the Development Concept Plan and be required for growth and development.

2. Areas of excessive slope should be conserved as open space, if development would cause significant soil and/or water degradation, or cause problems on the delivery of public services, especially for emergency services.

3. Vegetation should be used as an alternative to man-made devices for buffering, insulation, erosion control, and water quality protection.

4. Filling and excavation in floodplains shall only be allowed subsequent to the filing of development permits, consistent with National Flood Insurance Program Regulations, and allowed only after careful engineering review of appropriate alternatives.

5. Mature vegetation, especially along stream banks should be protected from indiscriminate removal, in order to enhance the aesthetic value of the landscape as well as to control erosion.

6. Consistent with National Flood Insurance Program regulations, the County should regulate any development in areas that have been officially designated as flood hazard areas.

7. The County should strive to ensure the protection and enhancement of wetlands and other environmentally sensitive areas by requiring aquatic resource alteration permits be filed as required by the Tennessee Department of Environment and Conservation when streams or wetlands are disturbed.

8. All property within the county should be protected from undue stormwater runoff and soil erosion through the county's adopted Stormwater Regulations, as well as through the promotion of the Tennessee General NPDES Permit, as applies to all excavation and grading activities of one acre or more.

TRANSPORTATION

The future transportation system in Washington County and its projected growth areas will be affected by a number of factors. These factors include existing highway and road patterns, impediments to traffic, the location of major traffic generators, growth trends, the construction of new thoroughfares, and the location preferences of new developments. Although the County cannot control all the factors that will influence its future transportation system, it can provide some direction. The following objectives and policies are presented as a guide to achieving an adequate and efficient future transportation system:

A. Objective - Provide a transportation system that will adequately meet the future needs of the county for growth and development.

Policies

1. All new development, whether public or private, should have an adequate transportation system, as stipulated within the county's subdivision regulations which should be properly installed at the expense of the developer.

2. All new highways and roads should be located in a manner that will minimize disruption to residential areas or open space-recreational areas.

3. All segments of the transportation system should be designed and located to meet future as well as present demands on development.

4. Wherever possible, off-street parking shall be required for existing land uses. All new land uses shall be required to provide off-street parking as cited in the county zoning resolution.

5. Roads should be upgraded or improved through coordination with the county's Highway Department.

B. Objective - Provide appropriate planning and design standards and guidelines for the construction of new roads and other transportation facilities.

Policies

1. Highways and roads should be related to the topography and designed to minimize the points of traffic conflict and turning movements.

2. All new highways and roads shall be designed to incorporate storm water drainage systems that are adequate in size to handle the runoff from anticipated developments within the immediate area.

3. All highways and roads shall be designed so as to provide the least interference to natural drainage ways.

4. All new highways and roads shall be designed and located in a manner that offers the maximum protection from potential flood hazards and erosion damages.

5. Road signage and other safety features which are in accordance with the Tennessee Department of Highways Standard Specifications, should be required at the time of development.

6. All subdivision developments containing between 100 and 300 dwelling units (carrying 1000 to 3000 average daily vehicles) should be served by a public street(s) constructed to a collector street standard, as enumerated within the county's subdivision regulations.

7. All public streets serving new subdivisions should be designed according to the specifications cited within the county's subdivision regulations.

8. All new highways and streets shall be constructed to an elevation of no less than the regulatory base flood elevation (the 100 year flood).

CHAPTER 8

PLAN IMPLEMENTATION

Introduction

In this chapter several methods for implementation of the objectives and policies developed in this plan are reviewed. Many of these methods for implementation are already being utilized in Washington County. The Planning Commission and the County Commission may need to examine the effectiveness of current practices or regulations in achieving the stated objectives and policies. Where the identified methods are not currently being used, the county should consider taking the appropriate steps to do so.

Also, in this chapter an implementation schedule is presented. It is intended to provide specific strategies for implementing the objectives and policies recommended in this plan. The implementation schedule proposes individual strategies for each of the specific land use categories, establishes time frames for completion, and identifies those responsible for implementation.

Methods for Implementation

There have been ten methods of plan implementation identified for Washington County to utilize in the execution of this plan. Each of these is reviewed within this section.

Planning Commission Project Review

Under *Tennessee Code Annotated,* Section 13-3-104, after the adoption of a plan, no public improvement project can be authorized or constructed in the county until and unless the location and extent of the project have been submitted to the Planning Commission for its review. This review authority enables the Planning Commission to ensure that all public improvement projects are in compliance with the plan. Therefore, the planning commission should continue to review road projects and make an effort to review utility district proposals to expand water and sewer lines.

Zoning

Zoning is a legal mechanism that can assist the county in implementing this Plan. Zoning regulations are designed to regulate the type and intensity of land use. It divides the county into specific districts corresponding to the intended use of the land as guided by the policies of the land use plan. For each district, zoning regulates the location, height, bulk, and size of buildings and other structures, the percentage of the lot that may be occupied, the sizes of yards, courts and other open spaces, and the density of population. Zoning can assure the proper location of residential, commercial, and industrial uses. It can protect street rights-of-way so that future widening is feasible. It can also prevent

overcrowding of building lots. In addition, zoning can help stabilize property values and can help prevent the deterioration of neighborhoods. Zoning regulations were first adopted by Washington County in 1984, with subsequent text amendments throughout the years. These regulations are currently up-to-date. Future map amendments should reflect the objectives and policies outlined within this plan.

Conservation Subdivisions – Traditional Neighborhoods – Sustainable Developments

- How can cities and counties encourage sustainable and integrated communities and still comply with the principals of "Smart Growth" laws, or in the case of Tennessee the Public Chapter 1101 law of mandated Growth Plans?
- How can cities and counties develop or encourage development that offers places to shop, dine, recreate and work near the home utilizing existing zoning codes that require separation of land uses (Euclidian Zoning)?

The answer will take you back to your roots, or maybe your grandparent's town.

Euclidian or modern zoning principles coincide with the philosophy behind the State of Tennessee's passage of PC 1101 – Growth Planning. That is, complete separation of land uses to protect property values from one incompatible land use from another. It's the easy way out for planners – keep rural, rural and urban, urban. However, such policies and codes to enforce those State laws make it difficult to develop the landscape in an ecologically safe and sustainable manner.

There is another way - conservation subdivisions or rather planned communities. Such development technique may take us back to how historic cities and towns were originally laid out, such as Savannah, Georgia. With the onset of the automobile, our landscape had drastically changed but with an inevitable steep price tag. Conservation subdivisions can offer solutions that can preserve sensitive lands for open space, offer pedestrian-friendly neighborhoods through trails and sidewalks, integrate neighborhoods to each other and create neighborhood-scaled commercial centers and public places. A city or county comprehensive land use plan should encourage such planning, as well as offer incentives to the developers for such. Unfortunately the land use codes, such as zoning and subdivision regulations, typically restrict developments to the contrary. Current land use codes now have to comply with the State-mandated Growth Plans. Such growth plans may have polarized land use objectives to that of the also State-required comprehensive or general plan. The philosophy behind the growth plan was to control sprawl by encouraging development near urban areas and limiting growth in the rural areas. Three designations were established throughout the counties: urban growth boundaries- those that can be annexed by the municipalities at any time; planned growth areas – those areas that should allow for commercial growth for the county adjacent to urban growth boundaries; and rural areas – those that

should remain agricultural and low-density single-family residential. The main issue facing Washington County with this public policy is that rural landscapes are quickly becoming residential subdivisions, which are miles apart from essential services, work, and public places. In many cases throughout the unincorporated areas of the county, children are too far away from public schools and parks to walk and therefore time and fuel are spent driving them to these destinations.

The growth plan encourages counties to develop policies that limit sprawl. Moreover, cities generally hold the trump card of offering public sewer. Without public sewer, county developments rely upon State approved subsurface sewage disposal systems (septic systems), which ultimately reserve more land that becomes unbuildable through field beds and duplicate reserve areas. Municipalities, through the adoption of growth plans and annexation agreements, have been encouraged not to extend public services outside of these boundaries, in order to curb sprawl. Public sewer, then, would promote higher densities farther away from urban centers, based upon Euclidian zoning codes. It has become difficult with modern zoning codes to offer rural residents the qualities of life afforded to city residents, wherein shopping, schools, and work are near their homes.

A balance approach, one that complies with PC 1101 growth plans and promotes self-sufficient and ecologically safe, sustainable communities, are those that apply land use harmoniously with the landscape, as opposed to fitting the land with the highest and best land use. Planned and sustainable communities offer such solution. It's just a reinstitution of an old method to planning. The sort of town centers, upon which our nation's larger communities were settled -the places that we now visit and are part of our heritage and historic landmarks. Such traditional neighborhoods were created with sidewalks, park centers, open spaces, walkable schools and public spaces. These neighborhoods were then designed around urban centers, larger public assembly spaces, and public transit. Some of these historic districts and traditional town centers are struggling as new modern developments have shifted residents away from those downtowns. Zoning codes which offer mixed use is the proactive method for sustainable growth.

One type of sustainable design includes the concept of Open Space Residential Development or OSRD. This concept can offer lower costs to the developer, as streets are narrower and shorter, lots are clustered, while drainage, septic, wells, and unsuitable lands are then reserved for common open space, light recreation, trails, or even agricultural land uses. Such plans result in more marketable and valuable lots; less stress upon the public infrastructure in maintenance costs, decreases pollution and encourages healthier and more livable communities. OSRD plans can offer places for residents to congregate, recreate and network resulting in safer neighborhoods. The open spaces can then link to other open spaces via trails, parks and public spaces. OSRD plans should be encouraged by regional and local

planners as a means of creating a neighborhood scale of trails, greenways, sidewalks, open spaces, and public spaces that are well planned. Moreover, such a network is paid for by the developer and users as they occur rather than burdening the entire local government through taxation, grants or loans.

More and more communities are getting on board with varying types of conservation planning. While an OSRD plan would comply with the growth management laws to curb the sprawling of public infrastructure, traditional neighborhood developments (TNDs) offer a more comprehensive solution. Some of the key concepts included in both types of developments are as follows:

OSRD (Conservation Subdivisions)	**VERSUS**	**TNDs – Mixed Use Neighborhoods**
Cluster housing – smaller lots		Smaller lots
25% min. open space Unsuitable/sensitive lands reserved in open space		Pocket parks and urban park centers Unsuitable lands reserved as agricultural
Same density as standard or "cookie cutter" subdivisions		Mixed densities
Typically land uses left as low to medium density residential		Mixed land uses from low to high density residential, neighborhood and general commercial centers
Network of sidewalks, trails linked to open space and other neighborhoods		All blocks linked by sidewalks – total walkable neighborhood that also links to other neighborhoods and town centers
Cheaper to construct as shorter length of roads, water lines, etc		Cheaper to maintain as it discourages the sprawling of urban services to rural areas
Can be utilized in any district (Urban growth boundary, planned growth area or rural area		Typically limited to areas served by public sewer (UGBs and PGAs)

Source: Haines and Arendt

For further reading of sustainable approaches to planning, search on-line using key words as conservation subdivisions or smart growth. The US Center for Disease Control also offers valuable results of public research illustrating how our public health has deteriorated due to consequences of sprawling cities. Background research for this subsection was taken from the following: ACIP, Practicing Planner – *"The New Wave: Technical Assistance for Smart Growth"* by Ilana Preuss; The Land Use Tracker, Volume 2,

Issue 1, 2002, *"An Innovative Tool for Managing Rural Residential Development: A Look at Conservation Subdivisions"* by Anna Haines, Ph.D.; and *"Growing Greener: Putting Conservation into Local Plans and Ordinances"* by Randall Arendt.

Subdivision Regulations

Subdivision Regulations, used in a coordinated manner with zoning, are another legal mechanism to carry out the recommendations of this Plan. Like zoning, these regulations control private development. They serve as guidelines for the conversion of raw land into building sites. Subdivision regulations provide the guide by which a Planning Commission can review all proposed plats for subdivision in an equitable manner. These controls are necessary if sound, economical development is to be achieved. Through enforcement of these regulations, the design and quality of subdivisions will be improved, resulting in better living conditions and greater stability of property values for the individual property owner. Such controls over land subdivision ensure the installation of adequate utilities that may be economically serviced and maintained. These controls are also used to provide a coordinated street system and to ensure sufficient open space for recreation and other public services.

The Washington County Regional Planning Commission first adopted subdivision regulations in 1981, with subsequent text amendments throughout the years. These regulations are currently up-to-date. These regulations should be reviewed for consistency with the objectives and policies outlined through this plan. Furthermore, any new changes should be made in coordination with Johnson City and Jonesborough.

Storm Water Regulations

In December 2000, the U.S. Environmental Protection Agency (EPA) under the Clean Water Act published a rule that requires certain small municipal separate storm sewer systems to participate in the National Pollutant Discharge Elimination System (NPDES) commonly referred to as Phase II. Mandated by the EPA and directed by Tennessee Department of Environment and Conservation, Washington County is one of many communities required to comply with the regulations of the Phase II Program to reduce the amount of water pollution entering into the waters of the State. The Washington County Zoning Administrator is charged with administering and enforcing the Phase II Program, and currently, the county is fully compliant.

Codes Enforcement

There are various types of codes that counties can adopt to ensure that construction standards are sufficient to protect the health and safety of occupants. The housing code is designed to ensure that

existing dwellings are safe, sanitary, and fit for human habitation. Other codes, such as building, electrical, fire, and plumbing codes, provide minimum standards for the construction of new buildings and facilities, and the alteration of existing structures and facilities. These codes are uniform in character and are applied to the county as a whole.

A system of codes functions only if accompanied by an inspection system. Code enforcement ensures the adequacy of new residential, commercial and industrial structures while also detecting and preventing the deterioration of existing facilities through periodic inspection. By reducing blight, property values become more stable and tax bases protected. Washington County currently has no construction or housing codes in order to fully implement these objectives and policies within this plan. The county should consider researching housing and construction codes.

Utility Extension Policies

Another significant tool for effective land use planning is the control over the extension of publicly owned and operated utility services. Utility extension policies can be used for controlling the location and timing of development in a rational, coherent and efficient fashion. Since utility services, such as water and sewer, are so important to any major development, the refusal to extend such services into an area generally assures that only limited development can occur.

Within Washington County, the extension of utilities is generally the responsibility of the developer. As land is subdivided it is the responsibility of the developer to pay for utility extensions in his development and to pass the cost on to the lot buyers.

In strategic areas where Washington County is seeking growth, the county should consider cost sharing utility extensions to achieve the objectives and policies outlined within this plan.

Infill Development

Utilization of existing, developable, vacant land within a county is a much-overlooked mechanism to implement a land use plan. In most cases, these areas tend to be served by existing infrastructure such as streets, water, sewer, electric and gas; thereby eliminating normal costs associated with additional development. An abundance of vacant developable land is a costly luxury to a community. It results in under utilization of infrastructure due to low-density development. Infill development of serviced areas will expand the local tax base while better utilizing the infrastructure system. This was the intent behind PC 1101. It is a goal of this plan that most new development in Washington County be in the form of infill development to meet the objectives and policies of this plan.

Citizen Participation

Citizen participation is an important factor in determining the success of the Comprehensive Plan. An informed citizenry and development community, that is willing to work to achieve the goals, objectives, and policies set forth in this plan, can be a tremendous asset. Citizens and developers can offer support for programs designed to achieve community goals. Successful citizen participation can be achieved through a public education program designed to inform the community of the various purposes and reasons for the actions of both the Planning Commission and the County Commission. Specific efforts should be taken to obtain input from the general public and developers through organizational public meetings, public hearings, and surveys. News articles should also be utilized to educate the public regarding the objectives and policies detailed within this plan.

Local Leadership

The Washington County Regional Planning Commission bears most of the responsibility for implementation of this Regional Plan through its Subdivision Regulations. The County Commission has the responsibility for plan implementation through zoning. As the policy-makers, both entities have the authority to adopt appropriate implementation strategies that will fulfill the goals, objectives and policies developed in this plan. It is important that County Commission, Planning Commission and Zoning Administrator maintain a close working relationship so that the planning process is properly coordinated to assure the implementation of the objectives and goals within this plan.

Implementation Schedule

The Washington County Land Use and Transportation Policy Plan is an advisory document intended to serve as a guide for the development of the county over the next twenty years and beyond. Specific strategies for policy implementation are necessary if the goals and objectives of this Plan are to be achieved. The implementation schedule provides an outline of the methods for achieving the goals and objectives and implementing the policies established in the Development Plan. It presents individual strategies for each of the specific land use categories, establishes time frames for completion, and identifies those with primary responsibility for plan implementation.

- Planning Commission – Review/adopt plan (2008)
  - Highway/road improvement review (on-going)
  - Utility improvements (on-going)
- Zoning – Map amendments based on plan (on going)
- Subdivision Regulations – Text review (2008)
- Storm Water Regulations – Implement (2008/on-going)

- Codes Enforcement – Education (2008)
- Utility Extension Policies – System review (2008)
- Infill Development – Through zoning/subdivision regulations (on-going)
- Citizen Participation – Public meetings (2009)
- Local Leadership – Education/training (2008/on-going)

Summary of Recommendations

Based on plan findings and goals of the county, the following summary of plan recommendations is provided to serve as a guide for Washington County Leaders and developers in making future decisions regarding land use, transportation and community facilities important to the economic development of Washington County.

- Seek to obtain sewer service to PC 1101 designated "Planned Growth Area".

- Encourage new residential, commercial, and industrial growth in Washington County.

- Seek to improve the fire insurance rating for Washington County. Work with the Insurance Services Office to determine the fire equipment and hydrant needs required for the improved rating.

- Seek to include the Zoning Administrator and some members of the Planning Commission in the Highway Department's 20 Year County-Wide Transportation Plan.

- Obtain additional land for expansion of Industrial Park facilities and for future industrial growth areas.

- Maintain, through planning and land use regulations, the spacious open character of Washington County as it grows residentially, commercially, and industrially.

- Maintain an active planning commission to make formal land use recommendations to the county commission.

- Work with land developers and sub-dividers for the construction of marginal access roads in developments.

- Promote infill development on vacant lands with infrastructure currently in place.

- The expansion of sewer collection lines.

- Revisit the adoption of local housing and construction codes.

- Remain in compliance with storm water requirements of the Phase II Program of the Clean Water Act and the county permit requirements.

- Work with all county departments in the development of a five-year capital budget program.

- Review all local regulations for compliance with the objectives and policies established within this plan.

- Consider requiring stub-outs for fire hydrants to be installed by developers.