

3.0 EXISTING ROCKINGHAM COUNTY CONDITIONS

3.1 Population

Rockingham County experienced a steady increase in population during the past several decades. In particular, the County population increased nearly seven percent between 1990 and 2000 (see *Table 6* below). It is estimated that the County population reached 92,614 persons in 2005, and this resulted in less than a one percent increase in population in the five years since 2000. This seems to project a more modest increase in County population by the end of this current decade (assuming the estimated trend remains constant).

Table 6 – Rockingham County Population Growth (1980-2005)

Year	Population	Numeric Change	Percent Change
1980	83,426	n/a	n/a
1990	86,064	2,638	3.16%
2000	91,928	5,864	6.81%
2005	92,614	686	0.75%

Source: US Census Bureau, 2006

In terms of population change within specific geographic areas of Rockingham County, *Table 7* below depicts the County’s municipal growth trends between 1990 and 2000. Reidsville and Eden were the only municipalities that experienced population growth during this period, and Reidsville had the highest increase—nearly 20%. However, Reidsville’s population increase was due in part to an annexation that occurred in 1990. The town of Wentworth is not included in *Table 7* because it was not incorporated until 1998.

Table 7 – Rockingham County Municipal Population Growth (1990-2000)

Municipality	1990 Population	2000 Population	Numeric Change	Percent Change
Eden	15,238	15,908	670	4.40%
Madison	2,371	2,262	-109	-4.60%
Mayodan	2,471	2,417	-54	-2.19%
Reidsville	12,183	14,485	2,302	18.90%
Stoneville	1,109	1,002	-107	-9.65%

Source: US Census Bureau, 2005

Table 8 below reveals each municipality’s estimated growth since 2000. Mayodan and Reidsville are estimated to have increased in population over the five-year time span. However, these gains have slightly offset total municipal population losses resulting in an overall net increase of only 0.27%. The overall trend in the number of municipalities with declining population growth (from 1990 to 2000) remains unchanged.

Table 8 – Rockingham County Municipal Population Growth Estimate (2000-2005)

Municipality	2000 Population	2005 Population	Numeric Change	Percent Change
Eden	15,908	15,679	-229	-1.44%
Madison	2,262	2,239	-23	-1.02%
Mayodan	2,417	2,497	80	3.31%
Reidsville	14,485	14,778	293	2.02%
Stoneville	1,002	988	-14	-1.40%
Wentworth	2,779	2,777	-2	-0.07%

Source: US Census Bureau, 2006

Table 9 below compares population changes for each of Rockingham County's eleven townships. Townships are mostly uniform geographic regions countywide, and the US Census Bureau typically includes any municipal incorporated areas when compiling township demographic statistics (see Map 9 for a geographic orientation of Rockingham County's township and municipal boundaries). However, municipal population was not included in Table 9 in order to draw a growth comparison between the incorporated and unincorporated areas of Rockingham County. Unlike the municipalities, the majority of the County's townships showed significant population growth between 1990 and 2000. In particular, Huntsville, New Bethel, and Williamsburg Townships had the highest population increase during this ten-year period. All three of these townships are located along Rockingham County's southern border adjacent to Guilford County. It should be noted that the Town of Wentworth's incorporation in 1998 produced an "artificially" high population decline for Wentworth Township.

Table 9 – Rockingham Townships (Unincorporated Areas) Population Growth (1990-2000)

Township	1990 Population	2000 Population	Numeric Change	Percent Change
Huntsville	4,110	5,364	1,254	30.51%
Leaksville	6,729	5,603	-1,126	-16.73%
Madison	3,425	3,459	34	0.99%
Mayo	4,879	6,306	1,427	29.25%
New Bethel	4,154	5,755	1,601	38.54%
Price	1,481	1,591	110	7.43%
Reidsville	5,884	5,298	-586	-9.96%
Ruffin	5,284	5,669	385	7.29%
Simpsonville	4,889	3,728	-1,161	-23.75%
Wentworth	7,891	5,755	-2,136	-27.07%
Williamsburg	3,966	4,547	581	14.65%

Source:

e: US Census Bureau, 2005

Recent population growth can be compared between Rockingham County's

incorporated and unincorporated areas. *Table 10* below shows that from 2000 to 2005 the unincorporated areas (townships not including municipal populations) gained slightly more in population than incorporated areas. This seems to be reversing the trend that occurred between the years 1990 and 2000 when the County's incorporated areas experienced nearly 17% in population growth compared to less than 1% for the unincorporated areas. However, if the Town of Wentworth's 1998 incorporation is not included, then the growth comparison between the incorporated and unincorporated areas is much closer-8.10% and 6.00% respectively-during this decade.

Table 10 – Rockingham County Incorporated and Unincorporated Area Population Growth Comparison (2000-2005)

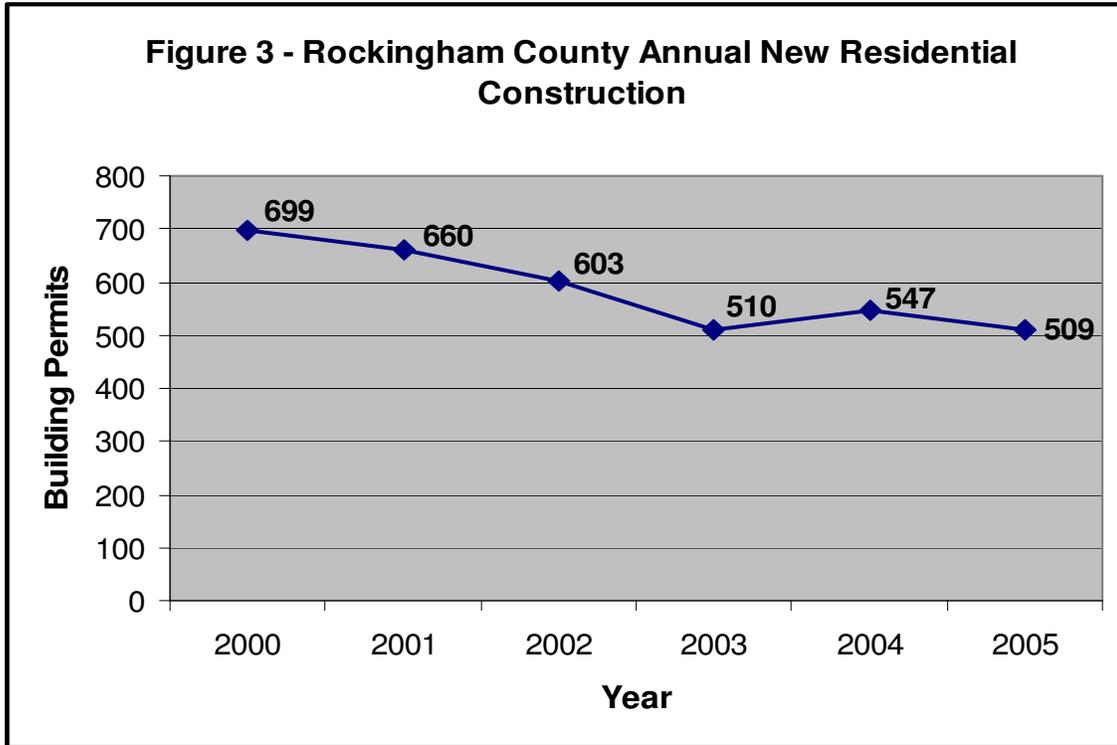
	2000 Population	2005 Population	Percent Change	% Change 1990-2000	% Change no Wentworth
Incorporated	38,853	38,958	0.27%	16.42%	8.10%
Unincorporated	53,075	53,656	1.09%	0.73%	6.00%

Source: US Census Bureau, 2006

3.2 Housing Construction

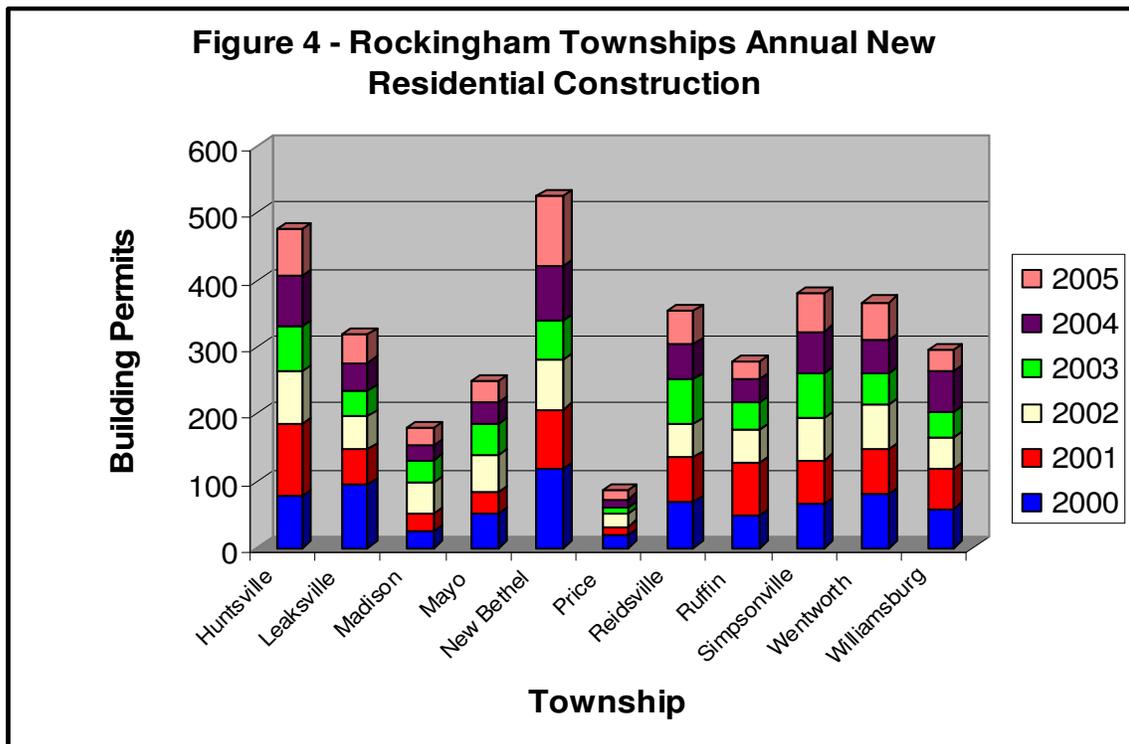
Over the past six years, Rockingham County has experienced an overall declining trend in new housing construction. This overall trend can be largely attributed to the recent downturn in the regional and national economies. However, in 2004 the County experienced its first increase in housing development since 2000 with the issuance of 547 residential building permits countywide (see *Figure 3* below). Permits for residential construction include four major categories: traditional “stick” built, modular, double-wide manufactured homes, and single-wide manufactured homes. Multi-family construction (i.e., apartment units) is not included due to the low number of permits that have been issued for this type of residential development in recent years. Residential permits issued annually in municipal areas are also included in *Figure 3*.

In terms of where this housing development is occurring, *Figure 4* below breaks down housing construction among Rockingham County's eleven



townships. Each township's number of residential building permits issued for new residential construction is "stacked" upward by year. Municipal incorporated areas are also included with the townships in *Figure 4*. Over the past five years, most new residential development has occurred in Huntsville and New Bethel Townships. Both townships are located along the County's southwestern border with Guilford County. In general, Rockingham County's southern townships are experiencing higher levels of new residential growth than the northwestern townships of Madison, Mayo, and Price. As previously discussed, proximity and accessibility to Guilford County (i.e., the greater metropolitan area of the City of Greensboro), and Rockingham County's relatively lower tax rates, land prices, and development densities likely plays a major role in this general development pattern, and increases the desirability of land use conversion to residential subdivisions.

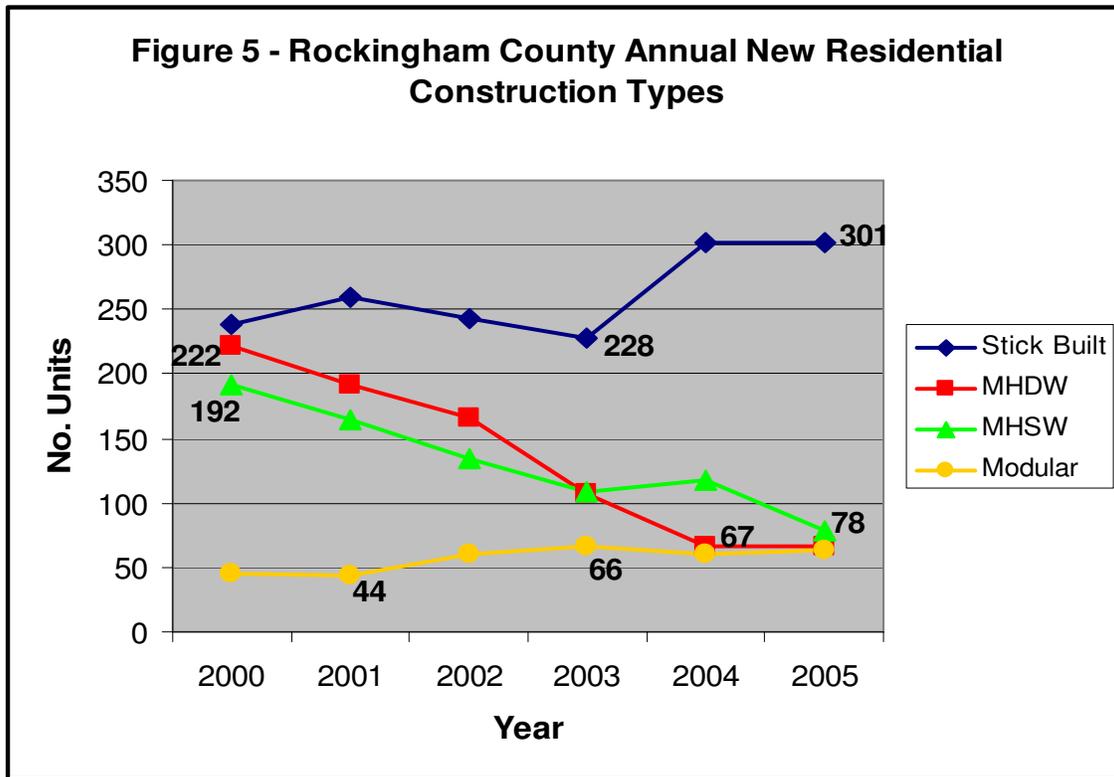
Source: Rockingham County Planning & Tax Departments, 2006



Source: Rockingham County Planning & Tax Departments, 2006

Map 10 – Rockingham County Township Permits 2000-2005 depicts each township’s respective number of building permits issued for new residential development between the years 2000 to 2004. In other words, the building permit information shown in *Figure 4* above is illustrated geographically in *Map 10*.

Rockingham County has experienced a dramatic shift in the type of residential development constructed since 2000 (see *Figure 5* below). It is evident that the overall decline in residential construction is largely attributed to the strong reduction in manufactured housing units between 2000 and 2005 (i.e., double-wide manufactured home is labeled MHDW and single-wide manufactured home is labeled MHSW). This is the result, in part, of stricter County zoning requirements for manufactured homes implemented in the late 1990s. *Figure 5* also reveals a “spike” upward in new stick built housing units constructed in 2004 when 301 building permits were issued. This is the most new homes built during the past 13 years (since accurate records have been kept). It remains to be seen, however, if this upward trend continues. The highest and lowest number of building permits issued for each residential category is labeled in bold numerals in *Figure 5*. For the purpose of definition, modular residential units are taxed (i.e., real property) and regulated by State building code similar to conventional stick built homes.



Source: Rockingham County Planning & Tax Departments, 2006

Map 11 – Rockingham County Major Subdivisions shows the location of major subdivisions developed over the past ten years. A major subdivision typically involves a planned residential site development containing seven or more lots, requires zoning and technical review approvals, and requires the proper design and construction of necessary public infrastructure that may include dedicated roads, storm water management facilities, and public water supply. Each subdivision depicted in *Map 11* is represented by a triangle and a corresponding table lists the subdivision name and the number of total lots proposed for “build-out.” This means that many of the subdivisions are in various stages (or phases) of development, and the total number of lots proposed may not be currently developed. The subdivisions are also color coded to indicate their size relative to the number of total proposed lots. Not surprisingly, *Map 11* reveals most of the major subdivision developments have occurred in the southwestern quadrant of Rockingham County.

3.3 Existing Land Use

Land uses were mapped and analyzed to identify existing land development patterns within Rockingham County. An existing land use map was developed using data from the County Tax Department’s records obtained in the Fall of 2005 (see *Map 12 - Rockingham County Existing Land Use*). *Table 11* below shows the acreage and share totals for each major land use category within this Plan’s study area. Municipal ETJ areas are shown on *Map 12* for reference and

planning analysis purposes, but are not included in the acreage totals below. Acreage and percentage numbers are based on the land area within tax parcels, and do not include land area within road and railroad rights-of-way. The Residential land use category contains only site built homes and manufactured homes on parcels of less than 5 acres. Additional existing land use categories include: Commercial, Industrial, Agricultural, Institutional, and Recreational.

Table 11 – Acreage & Share Totals for Existing Land Use Categories

Existing Land Use	Acres	Share (%)
Commercial	368	0.11
Recreational	963	0.30
Industrial	2,797	0.88
Institutional	2,939	0.92
Residential	43,445	13.70
Agricultural	244,845	77.22

Source: Rockingham County Tax & GIS Departments, 2005

The following sub-section provides a more detailed description of the approximate amounts and general patterns of existing residential and non-residential land uses throughout the County’s planning jurisdiction.

Agricultural Land Uses

Agriculture – About 80 percent of the land within the County’s jurisdiction (244,845 acres) is categorized as being used for agricultural and other related purposes. This primarily consists of traditional farming practices such as crop production, horticulture, viticulture, and dairying and animal husbandry. In order to minimize the number of land use categories and simplify the acreage calculations process, open land that is not currently farmed was also included in this category. The production of agricultural acreage varies considerably throughout the County. A more thorough analysis of agricultural production is discussed below.

Residential Land Uses

Residential – About 14 percent of the land within the County study area (43,445 acres) is occupied by site-built and manufactured single-family homes on parcels 5 acres or less. The majority of these residences are located along primary roads in the County and also near the six existing municipalities. An examination of recent subdivision activity over the past ten years reveals that the southwestern corner of the County is receiving much of the new residential subdivision growth (see *Map 11 – Rockingham County Major Subdivisions*). This is largely in response to this area’s proximity and accessibility to Guilford County (i.e., the greater metropolitan area of the City of Greensboro).

Non-Residential Land Uses

Table 12 below presents the main types of buildings or facilities included in each major non-residential land use category. The primary factor used in determining an existing land use designation was the County Tax Department's current land classification records.

Table 12 – Facilities Included in Major Non-Residential Land Use Categories

Commercial - retail services, restaurants, automobile dealers, automobile service facilities, and convenience stores
Institutional – schools, churches and church-owned facilities, governmental properties, and cemeteries
Industrial – manufacturing, saw mills, gas and oil storage, mining and quarrying, public utilities, landfills, and airports

Commercial – The predominate commercial development pattern in the County study area consists of stand alone convenience stores, gas stations and small, locally-owned business establishments. Most commercial uses within the County are scattered along primary roads. Approximately 0.1% of the land within the study area is being used for commercial purposes (368 acres).

Institutional – There are about 2,939 acres of institutional uses within the study area. Some of the institutional land uses include Camp Carefree along US 220, the Episcopal Church Conference Center, and the North Carolina State Research Station. A variety of church facilities and schools are the most prevalent institutional uses found in the study area.

Industrial – Approximately 2,797 acres of industrial land uses lie within the study area. The Pine Hall Brick Company quarry on Lindsey Bridge Road, the Rockingham County Landfill, the Rockingham County Airport, and the National Textile and Plastics Recycling Center northeast of Eden are some of the largest industrial sites within the County. A variety of other smaller industrial uses are scattered throughout the County.

Recreational and Open Space – The recreational land use category contains land that is currently being used for golf courses and campgrounds (963 acres). Rockingham County's planning jurisdiction contains multiple golf courses that provide much of the County's recreational acreage. Current efforts are underway to increase the amount of recreational land within Rockingham County through the creation of two new State parks (Mayo River State Park and Haw River State Park).

Agricultural Production Analysis

This subsection presents a more accurate picture of agricultural uses and their production in Rockingham County. Table 13 below compares farms in the County between 1992 and 2002. Interestingly, the number of farms rose nearly 12% in the

Table 13 – Rockingham County Farm Comparison (1992-2002)

	1992	1997	2002	% Change 1997-2002	% Change 1992-2002
Total Farms	902	780	871	11.67%	-3.44%
Total Farm Acreage	130,879	133,842	136,120	1.70%	4.00%
Avg. Farm Acreage	145	172	156	-9.30%	7.59%
Market Value of Ag. Products Sold (\$1,000)	\$31,169	\$37,172	\$28,555	-23.18%	-8.39%

Source: USDA, 2002 US Census of Agriculture

period between 1997 and 2002, but total farms remained almost 3.5% below the 1992 total. The average farm size fell over 9% between 1997 and 2002, but this average has risen over 7.5% since 1992. The market value of agricultural products sold has maintained a negative trend since 1992. Based upon *Table 13*, 37% of the total land within Rockingham County was farm use in 2002. This increased nearly 1.5% since 1992. It is evident that the number of farms has fallen overall since 1992, but total farm acreage has increased over this same span.

Table 14 below compares major agricultural products raised in Rockingham County between 1992 and 2002. The acreage totals for tobacco, corn, and wheat have consistently fallen since 1992. On the other hand, livestock numbers have significantly increased, and in particular, horses, hogs, and sheep.

Table 14 – Rockingham County Major Agricultural Products (1992-2002)

	1992	1997	2002	% Change 1997-2002	% Change 1992-2002
Number Horses/Ponies	613	660	1,241	88.03%	102.45%
Number Cattle/Calves	9,882	11,086	10,140	-8.53%	2.61%
Number Hogs/Pigs	2,716	(D)	5,629	N/A	107.25%
Number Sheep/Lambs	76	220	603	174.09%	693.42%
Tobacco Acreage	7,645	7,432	4,018	-45.94%	-47.44%
Corn for Grain Acreage	2,478	1,930	1,351	-30.00%	-45.48%
Wheat for Grn. Acre.	6,811	5,465	3,648	-33.25%	-46.44%
Soybeans Acreage	2,568	2,185	3,163	44.76%	23.17%
Forage/Silage Acreage	8,212	11,350	14,266	25.69%	73.72%

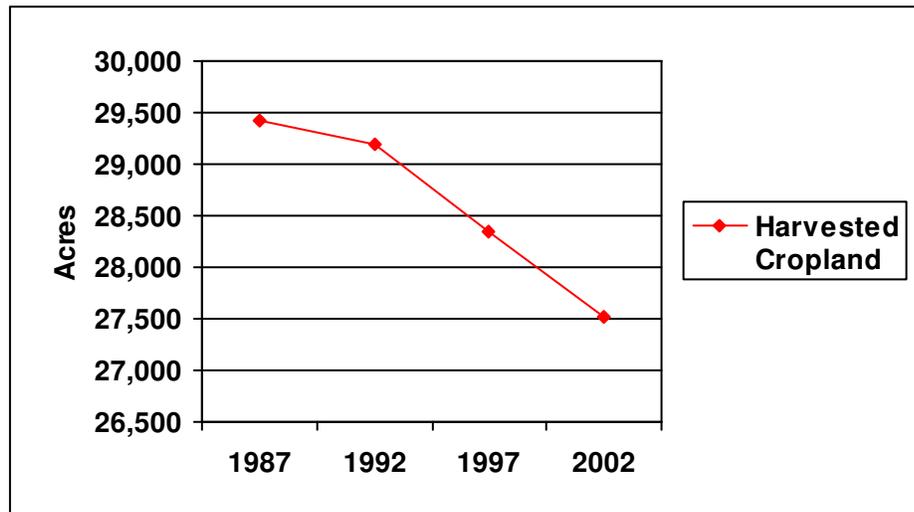
(D) – Data withheld to avoid disclosing data for individual farms

NA – Data Not Available

Source: USDA, 2002 US Census of Agriculture

Although agricultural products continue to play an important role in the County's economy, the number of acres of harvested cropland started to decline between 1987 and 2002 by roughly 6.5% (see *Figure 6* below).

Figure 6 – Rockingham County Harvested Cropland (1987-2002)



Source: USDA, 2002 US Census of Agriculture

3.4 Environmental Growth Factors

Four key environmental growth factors—steep slopes, soil limitations, flood hazard areas, and watershed critical areas—were mapped and analyzed to identify physical limitations and regulatory constraints affecting future land development (i.e., higher intensity uses such as dense subdivisions and industrial/commercial developments). A fifth factor, areas occupied by existing development, was also mapped and included in this analysis. Each of these factors has a varying degree of negative impact on potential new growth, and often can be mitigated with additional expense and design. For example, building a subdivision in a flood hazard area can be overcome with reserving flood prone lands, grading and filling approved flood areas, building homes above the base flood elevation, or utilizing public sanitary sewers. Results of this analysis were used to determine the potential suitability of vacant land for higher intensity development, and to formulate strategies for future growth.

Map 13 combines the five environmental growth factors into one category named “unfavorable” and is displayed in a blush red color. The other category is named “favorable” and is displayed in a blue color. The combination of these factors was practical due to the large scale of the County (as compared to a smaller municipal area). Unfavorable areas total approximately 75,000 acres, or 24% of the territory in the Plan study area (i.e., County jurisdiction). In general, unfavorable areas are not as conducive to higher intensity development as favorable areas, and are primarily located in the eastern portion of Rockingham County. The predominant development constraint in this area of the County is soil limitations. Overall, *Map 13* indicates that Rockingham County is not severely constrained overall by environmental factors, and potential higher intensity development is feasible in select areas. The four environmental growth factors are discussed separately in more detail below.

Topographic Steep Slope Limitations

The degree of slope throughout the planning area was calculated using topographic contour data provided by the Rockingham County GIS Department. This data was used to generate a topographic contour map with a contour interval of 20 feet.

Potential future land uses are quite variable in their sensitivity to steep topographic conditions. Structures such as houses and small commercial and institutional buildings may have more topographic flexibility because their small footprints require less grading than large industrial buildings, shopping centers, and schools. Another consideration is the land value of developable sites. For high-value sites such as those designated for industrial or commercial use, the costs of grading typically represent a smaller share of total development costs than on lower value sites. Thus, a developer proposing a project on a commercial site may view it as economically feasible even if steep topography calls for excessive grading. As a “middle ground” estimate for most land uses, a 20% slope (20 feet of fall per 100 horizontal feet) was used as the threshold for steep slope limitations. Steep slopes are widely scattered throughout the County’s jurisdiction, but they are generally concentrated along the major river banks and tributaries making these areas inappropriate for higher intensity uses.

Soil Limitations

Some soil conditions can make potential land development more difficult or expensive. In Rockingham County, predominant soil limitations include hydric/wet (flood plain) soils, shallow depth-to-rock (bedrock) content, high shrink-swell potential due to high clay content and moisture fluctuations, and slow permeability (or poor percolation) resulting from water not adequately moving/filtering through the soil. GIS digital soils maps and attribute data from the Rockingham County Soil Survey (*USDA Soil Conservation Service*) were used to identify areas containing one or more of these **severe** soil limitation conditions. Because the mapping units for soils are only indicative of prevailing soil types in those areas, the actual distribution of hydric, rocky, shrink-swell, or slow permeability soils may differ somewhat from what is shown. Even where such conditions actually occur, there would probably still be a means to undertake higher intensity development, although with greater difficulty or expense. Soils with slow permeability may also make for difficulty in locating successful septic systems. This would apply primarily to lower density residential growth without access to public sewer services.

Soil survey data indicates soils with slow permeability characteristics are concentrated in the extreme southeastern portion of the County’s Planning area, and east of the Town of Madison – predominantly north of US 311. Hydric soils are predominantly located along rivers, streams, and natural drainage areas. However, a particularly high concentration of wet soils is located in an area east

of the City of Reidsville, and generally bounded north of NC 150 and east of US 29.

Flood Hazard Area Limitations

Development suitability is also affected by the location of a flood plain. Areas within the floodplain where the chance of being flooded is one percent or greater in any given year are called special flood hazard areas (SFHAs). For regulatory purposes, SFHAs are divided into zones - the floodway and A zones. The floodway area is the river or creek itself and the area very near the river or creek that carries the flood waters. The A zone is the area that would be inundated during a 100-year flood.

Flood damage prevention regulations require special site planning and construction standards to minimize the threats to personal safety and damage to property caused by flooding. SFHAs are designated on the official maps issued by the Federal Emergency Management Agency (FEMA) and establish base flood elevations to use in meeting the construction standards specified in the Flood Damage Prevention Ordinance. For obvious reasons, development is not allowed in an area designated as a floodway. Outside of the floodway, any fully enclosed space in a new residence or mobile home must be situated above the designated base flood elevation. Accessory structures (e.g. sheds, detached garages) may be built within SFHAs if special criteria are met. Non-residential structures are allowed if they are certified as floodproofed or watertight by a professional engineer or architect.

The Flood Damage Prevention regulations in Rockingham County require a Flood Development Permit for any development activities proposed within SFHAs. The lowest floor elevation of any new structure) or substantially improved existing structure), is required to be a minimum of two feet above the base flood elevation in all SFHAs. In areas where the base flood elevation is not available, the lowest floor elevation (including the basement) is required to be at least two feet above the highest adjacent grade. All encroachments to SFHAs (including fill material or structures) must be located at least twenty feet away from the top of the bank or five times the width of the stream, whichever is greater. The regulations also set out procedures for obtaining a Floodplain Development Permit.

The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 mandate the purchase of flood insurance as a condition of Federal or federally regulated financing for acquisition and/or construction of buildings in SFHAs. These Acts prohibit Federal agency lenders, such as the Small Business Administration (SBA) and United States Department of Agriculture's (USDA) Rural Housing Service, and Government-Sponsored Enterprises for Housing (such as Freddie Mac and Fannie Mae) from making, guaranteeing, or purchasing a loan secured by real estate or mobile home(s) in a

SFHA, unless flood insurance has been purchased and is maintained during the term of the loan.

Watershed Critical Areas

Local governments are required to have Watershed Overlay Districts to manage land use within these areas and to protect the drinking water supply from pollution. Surface water classifications are one tool that state and federal agencies use to manage and protect all streams, rivers, lakes, and other surface waters in North Carolina. Each classification carries an associated set of water quality standards or rules to protect those uses. Surface waters are also designated by the Department of Water Quality as critical area, protected area, or balance of watershed. A critical area is the land adjacent to a water supply intake where risk associated with pollution is greater than from remaining portions of the watershed. Critical area is defined as land within one-half mile upstream and draining to a river intake or within one-half mile and draining to the normal pool elevation of water supply reservoirs. A critical area classification, among other things, requires a minimum lot size of 80,000 square feet, and limits the amount of impervious surfaces. For more information on Watershed Overlay Districts used in Rockingham County, see *Section 3.7 Current Land Development Regulations*.

Occupied Areas

Occupied areas were calculated from GIS and Tax Department records for any development site containing structures of value (e.g., homes and businesses). Only parcels less than 2 acres (1.99 acres or less) were included due to time constraints and County zoning requirements primarily requiring one acre lot sizes. For example, a home situated on a 10 acre tract of land only occupies a small area of the total tract. To include the 10 acre tract would skew the actual area occupied. On the other hand, a 1.99 acre parcel could not be further subdivided unless public water or sanitary sewer was available, and this established a more realistic “cut-off” point or upper range of parcel size to include in the occupied area analysis. As previously discussed in *Section 3.2*, occupied areas in the County consist primarily of housing and subdivisions, and these are increasingly located in the southern and southwestern portions of the County planning area.

Significant Natural and Cultural Resources

Rockingham County includes a wide array of natural and cultural resources that include natural heritage areas, rare plant or animal species, and historic sites. These resources are included within *Section 3.4* due to the need to recognize additional environmentally sensitive areas that may be adversely affected by future land development (i.e., higher intensity uses). Knowing the general location of these areas can be valuable in guiding the location of future development in order to balance the impacts of economic development with

protection of the environment. *Map 13 A* provides a geographic representation of the natural and cultural resources described in more detail below. The creation of a separate map for these resources was practical due to the large scale of the County.

Natural Heritage Areas

An inventory of significant natural areas was conducted in Rockingham County by the North Carolina Natural Heritage Program beginning in 1999. Natural heritage areas are land or water sites that support natural assemblages of fauna and flora, and are considered important for conservation of the County, region, and state's biodiversity. Twenty-six (26) natural heritage areas have been identified within the Plan study area, and they are listed in *Table 15* below. The majority of these areas either completely or partially overlap with the environmental constraint areas depicted in *Map 13*.

Natural Heritage Elements

Natural heritage elements represent occurrences of a rare plant or animal species confirmed during the North Carolina Natural Heritage Program inventory. The Plan study area contains over 60 natural heritage elements that range from a river otter to purple fringeless orchids. A detailed list of all the elements located in Rockingham County can be obtained through the North Carolina Natural Heritage Program.

Historic Sites

The National Register of Historic Places currently lists a total of 18 properties in Rockingham County's jurisdiction. The National Register provides updated historic property information at least monthly. The following are some of the sites included on the National Register of Historic Places in Rockingham County:

- Troublesome Creek Ironworks (listed in 1972)
- Cascade Plantation (listed in 1975)
- Lower Sauratown Plantation (listed in 1984)
- Chinqua-Penn Plantation (listed in 1993)

Table 15 – Natural Heritage Areas

Site Name	Acres
A. Benaja Alluvial Forest and Creek Wetlands	226.76
B. Candy Creek Beaver Pond	21.17
C. Cedar Mountain	151.63
D. Collins Bridge Bluffs	48.60
E. Dan River Aquatic Habitat	587.71
F. Hogan's Creek Wetland and Slopes	457.39
G. Jacobs Creek Slopes	14.51
H. Leaksville Loam Forests	163.02
I. Mayo River Anglin Mill Bluffs	113.09
J. Mayo River Aquatic Habitat	203.86
K. McKinney Road Forest	37.81
L. Mebane Bridge Slope	18.63
M. Paw Paw Creek Tributaries and Dike	123.27
N. Pine Hall Slopes	130.37
O. Pleasantville Basic Forest	137.01
P. Roach Creek Slope	46.30
Q. Rock House Creek Slopes	85.68
R. Rocky Branch Conglomerate Exposure	60.13
S. Tate Road Forest	269.97
T. Troublesome Creek Marsh	92.63
U. Upper Haw River Floodplain and Slopes	855.94
V. Warf Airfield Forest	67.58
W. Wentworth Woods	123.24
X. Wide Mouth Creek Conglomerate Exposure	24.10
Y. Williamsburg Alluvial Forest	150.20
Z. Winfree's Overlook	185.83
Total Acres	4,396.43

Source: North Carolina Department of Environment and Natural Resources (NCDENR), Basins Pro Database, 2006

3.5 Urban Service Growth Factors

Water System Analysis

Existing Municipal Water Distribution Systems

Rockingham County has an abundant supply of water from three major rivers – the Mayo, the Smith and the Dan. *Table 16* shows the finished water supply facilities in the County and the average daily use, capacity, allocation, source and service area of each

Table 16 – Municipal/Non-Profit Water Distribution Systems

Municipality/ Entity	Average Daily Use*	Capacity	Source	Service Area
City of Eden	± 11.0 mgd	20.5 mgd	Dan River	Eden / Dan River Water, Inc.
Dan River Water	± 1.0 mgd	(1.7 mgd) (Eden allocation)	City of Eden	North-East Rockingham Co.
Town of Mayodan	± 1.3 mgd	3.0 mgd	Mayo River	Mayodan / Stoneville
Town of Stoneville	± 0.15 mgd	(0.3 mgd) (Mayodan alloc.)	Town of Mayodan	Stoneville
Town of Madison	± 0.5 mgd	1.5 mgd	Dan River	Madison / Rockingham County
City of Reidsville	± 4.6 mgd	9.0 mgd	Lake Reidsville	Reidsville / Rockingham Co.
TOTAL	± 18.6 mgd	34.0 mgd	N/A	N/A

Source: Southwest Rockingham County Water & Sewer Planning Document, Hobbs, Upchurch & Associates, P.A., February 2005 [Average daily use & allocation data collected by PTCOG in interviews with municipal representatives in October 2005.]*

system (see also *Map 14* for a visual representation of the water distribution system outside of municipal limits). It is apparent that all water purveyors listed above currently have excess water service capacities. The capacity column total of 34.0 million/gallons/day (mgd) does not include Dan River Water or the Town of Stoneville because they are supplied water by other communities (i.e., capacity is included for respective jurisdiction). The City of Eden has the largest excess water capacity of approximately 9.5 mgd. Overall, there is a water capacity surplus of 15.4 mgd, or approximately 45% of current finished water resources. The Town of Wentworth was not included in *Table 16* because water supply services are provided on an individual basis by Dan River Water, Inc. (i.e. there is no existing municipal system).

Table 17 below provides information about the current number of residential and non-residential customers served by municipal/non-profit water distribution systems in Rockingham County. The City of Eden has the largest customer base, and serves approximately 35% of all municipal/non-profit water customers in Rockingham County. Interestingly, Dan River Water supplies the third most water customers in the County, or approximately 22%. Eden is a key player in the provision of finished water to the northern and eastern sectors of Rockingham County because they are also the water source for Dan River Water. Wentworth was not included in *Table 17* because the town does not own or operate its own water system.

Table 17 – Municipal/Non-Profit Water Customers

Municipality or Entity	Residential	Non-Residential	Total
City of Eden	6,945	650	7,595
City of Reidsville	5,294	884	6,178
Dan River Water, Inc.	4,619	55	4,674
Town of Mayodan	1,250	100	1,350
Town of Madison	900	270	1,170
Town of Stoneville	496	91	587
Town of Wentworth*	N/A	N/A	N/A

Source: PTCOG interviews with municipal representatives in October 2005.

[* Wentworth citizens are provided with water services on an individual basis by Dan River Water, Inc.]

Existing County Water Distribution System

Rockingham County’s existing water system is comprised of a major extension along US 158 to Witty Road, and an extension along US 220 south of Madison. The US 158 system is supplied through an agreement with the City of Reidsville and provides water service to customers along the route including the Bethany Community and Dynegy. The US 220 system is supplied through a connection to the Town of Madison at the NC 704 intersection. Water service is currently provided to customers along the west side of US 220 including the Huntsville School. *Table 18* below provides a summary of these two County water distribution systems. It is apparent that the County’s water systems are currently under-utilized and can accommodate additional water customers.

Table 18 – Existing County Water Distribution System

System	Distribution Lines	Storage	Average Daily Use/ Capacity
US158 System	12” – 16,343 feet 16” – 74,600 feet	0.5 million gallon tank	25,000 / 550,000 gpd
US220 System	12” – 380 feet 16” – 17,100 feet	0.3 million gallon tank	12,500 / 200,000 gpd

Source: Southwest Rockingham County Water and Sewer Planning Document, Hobbs, Upchurch & Associates, 2005

Recommended County Water System Improvements

According to the *Southwest Rockingham County Water and Sewer Planning Document* recently completed by Hobbs, Upchurch and Associates, the southwest area of Rockingham County is experiencing residential and economic development growth along the US 220 and US 158 corridors and surrounding areas. The County has the potential to provide water to these two corridors, and in Fall 2005 approved bidding for the Phase 1 water project described below. The water and sewer planning study recommends the County pursue funding for the initial and subsequent phases of service to these areas in the near future. It is also noted that economic development will most likely occur in the [southwest] planning area. The primary need for businesses seeking to locate in this area is the availability of water and sewer. While some funding programs can assist in

projects to serve new businesses, most industrial prospects are looking for sites that are ready to develop with utilities in place. This study recommends the following major water system improvements:

- **Phase 1** – Extend a 16” water line south along US 220 & NC 68 and install a 500,000 gallon elevated storage tank (\$2.8 million)
- **Phase 2** – Extend a 16” (and 12”) water line west along US 158 to connect with the proposed US 220 water line (\$1.5 million)
- **Phase 3** – A variety of potential inter-connected water lines along Sardis Church Road, Ellisboro Road, Gideon Church Road, Stanley Road, Lemons Road, and Lauren Road – based on future growth and system development needs.

With an excess water treatment capacity of approximately 15.4 mgd, Rockingham County’s water treatment and distribution system is likely to continue to provide excellent water service to existing customers, and accommodate a significant amount of new development over the next ten to twenty years. In addition, continued improvements and expansions to the system will encourage new economic growth, especially along the US 158 and US 220 corridors.

It is important that the County complete a master water plan or utility plan that provides policy and capital improvement guidance for issues that include prioritizing areas for new or expanded water facility investments, developing requirements/incentives for connection to County water and sewer resources, developing rates and fees schedules in conjunction with defined service district areas, coordinating projects with local municipalities and Dan River Water, Inc., and improving water quality flows and pressures through upsizing and “looping” existing water mains. A water master plan requires a detailed level of analysis for future utility planning that is beyond the scope of this Land Use Plan.

Wastewater System Analysis

Existing Wastewater Treatment Systems

Wastewater treatment in Rockingham County is provided primarily by the municipalities. There are also a few small domestic and commercial discharges to surface waters of the County. *Table 19* below provides a summary of the average daily use, capacity (allocation), and discharge location of the major wastewater treatment systems throughout the County. Eden’s wastewater capacity accounts for over 50% of the total municipal systems capacity, and is currently operating at approximately 60% of its local capacity. As a whole, municipal wastewater treatment systems are operating at approximately 52% of total capacity. *Map 14* also displays areas in the County where gravity sanitary sewer lines are present. Gravity lines are more easily accessible for new development than pressurized force mains. The latter typically require additional pump systems to tap into the force main.

Table 19 – Existing Wastewater Treatment Systems

System Operator	Average Daily Use*	Capacity (Allocation)	Discharge Location
Eden – Mebane Branch	7.59 mgd	13.50 mgd	Dan River
Eden – Dry Creek	0.37 mgd	0.50 mgd	Dan River
Town of Mayodan	(total) 1.91 mgd (town use) 1.44 mgd	4.50 mgd	Mayo River
Town of Stoneville (Treated by Mayodan)	0.17 mgd	(0.5 mgd)	Mayo River
Town of Madison (Treated by Mayodan)	0.3 mgd	(1.0 mgd)	Mayo River
City of Reidsville	3.1 mgd	7.5 mgd	Haw River
Municipal Total	± 13.4 mgd	26.0 mgd	N/A
Miller Breweries	varies	5.2 mgd	Dan River
Hollingsworth GP	varies	0.5 mgd	Dan River
Duke Energy	varies	not limited	Dan River

Source: Southwest Rockingham County Water & Sewer Planning Document, Hobbs, Upchurch & Associates, P.A., February 2005 [Average daily use & allocation data collected by PTCOG in interviews with municipal representatives in October 2005.]*

Existing County Wastewater Collection System

Rockingham County operates a wastewater collection system along US 220 south of Madison that discharges to the Town of Madison collection system, which, in turn, discharges to the Town of Mayodan treatment system. This County system accepts flow from the new Huntsville School. The County has an agreement with Madison to discharge up to 200,000 gpd. The County also coordinated construction of the Wentworth sewer system that serves the County’s governmental center, Rockingham Community College, and various institutional, commercial, and residential customers in the central Wentworth area. This system has recently been expanded east to serve the area along NC 65 and NC 87 between the Rockingham County High School and Sandy Cross Road. Wastewater collected by this system is pumped to the City of Eden for treatment and disposal. The County’s Wentworth wastewater collection system has a maximum discharge capacity of 218,000 gpd and is operating at an average daily flow of 61,500 gpd.

Recommended County Wastewater Collection System Improvements

Rockingham County currently operates relatively small wastewater collection systems that rely on municipal facilities for treatment and discharge. Therefore, County wastewater collection system improvements recommended by the *Southwest Rockingham County Water and Sewer Planning Document* are focused on the following three anticipated growth areas:

- **US 220 Corridor** – Extend sewer collection lines south (\$1.8 million)
- **Shiloh Airport** – Provide sewer collection services to support economic development opportunities near the airport (\$2.5 million)

- **Deep Springs Area** – Periodically review the financial feasibility of providing sewer collection services to existing residential uses as other improvements are made

Not unlike Rockingham County’s water system, an excess wastewater treatment capacity of approximately 12.6 mgd will accommodate future new development over the next ten to twenty years. In addition, continued improvements and expansions to the system will encourage new economic growth, especially along the US 220 corridor.

A master utility plan that provides policy and capital improvement guidance is needed for Rockingham County following the completion of this Plan. See *Recommended County Water System Improvements* above for more details.

Transportation System Analysis

Transportation Functional Classification System

The North Carolina Department of Transportation (NCDOT) has established a functional classification system for public roads. This system is a hierarchy (i.e., ranging from an interstate highway to a local road) that helps to distinguish between the various road classifications as illustrated in *Map 15*. The functional road classifications and a brief description of each are listed below:

- **Interstate** – Serves interstate travel, high mobility, controlled access only at interchanges, all cross roads grade separated, 4 lanes minimum with a median
- **Other Principal Arterial** – Serves interstate and statewide travel, may contain one or more interstate characteristics or those to a lesser degree (e.g., partial controlled access, right-in/right-out lane restrictions, acceleration and deceleration lanes)
- **Minor Arterial** – Links cities, larger towns, and other traffic generators such as large resorts, generally serves intrastate and inter-County travel with trip lengths and travel densities somewhat less than the principal arterial system
- **Major Collector** – Provides service to larger towns not directly served by the higher systems and to other traffic generators of equivalent intra-County importance (e.g., consolidated schools, County parks, etc.)
- **Minor Collector** – Collect traffic from local roads and bring all developed areas within a reasonable distance of a major collector road
- **Local Roads** – All other roads not classified within the functional road classification hierarchy (e.g., local subdivision streets and residential collector streets), tend to either be cul-de-sacs, loop streets less than 2,500 feet in length, or streets less than one mile in length, serve as the connecting street system between local residential streets and the thoroughfare system

Three main factors are used by NCDOT in establishing a roads' functional classification – current designation (e.g., US highway route, NC highway route, or local road); degree of connectivity (i.e., connect regions, counties, or local communities); and average daily traffic (ADT) counts. ADT counts factor the average number of vehicles passing a specified point during a 24-hour period, and is the primary factor that NCDOT considers for a road classification.

Map 15 illustrates that Rockingham County currently has three routes designated as “Other Principal Arterials” – US 220, US 29, and the portion of US 158 east of the City of Reidsville. The Federal Highway Administration has also designated US 220 as the future I-73 Interstate Corridor, and designated US 29 as the future I-785 Interstate Corridor. This designation means that the routes are High Priority Corridors on the National Highway System by Section 1105 (e)(5)(A)(ii) of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). However, neither of these routes currently have any set schedule nor funding for planning/design, right-of-way acquisition, or construction. US 158 is prioritized for widening to a multi-lane facility from US 220 east to NC 62 in the Town of Yanceyville (Caswell County). Not unlike the two interstate corridors, however, US 158 has no set schedule or funds currently designated for improvements. See *Transportation Improvement Program* section below for more information on the US 158 widening project proposal.

Transportation Improvement Program

As an active member of the Piedmont Triad Regional Planning Organization (PTRPO), Rockingham County recently submitted its Project Priority List for the 2007-2013 North Carolina Transportation Improvement Program (TIP). In 2004, the PTRPO adopted criteria to guide the project prioritization process, including a goal for improving the region's transportation system by focusing support on projects that enhance mobility, economic vitality, and quality of life. In order for a project to be included in the RPO priority list, it must meet each of these three tests. Additionally, each project was scrutinized to determine if it fits the *Statewide Investment Scenario* or a *Strategic Corridor*, both adopted by the North Carolina Board of Transportation in 2004. Finally, the PTRPO adopted categories of need and a stratified ranking system to break projects into groupings by significance.

The TIP project groupings are:

- **Regional** – the project will improve mobility across the region or state
- **County** – the project will improve mobility primarily within the County
- **Local** – the project will provide improved localized mobility

The categories of need are:

- **Critical** – the project will address an immediate transportation need
- **Priority** – the project will address an emerging transportation need

Rockingham County Transportation Project Priority List, 2007-2013 TIP:

Regional Projects – Critical Requests

- 1. NC 68/US 220 (R-2413).** Multi-lane on new location from Pleasant Ridge Road in Guilford County and multi-lane existing NC 68/US 220 in Guilford and Rockingham Counties; 12.4 miles.
- 2. US 29, Future I-785 (Not on current TIP).** From future Greensboro Urban Loop interchange to Virginia Line. Improvements to bring facility to interstate standards, including access control and new interchanges.
- 3. Painter Boulevard (U-2525 C).** Complete multi-lane eastern loop segment on new location from US 29 to US 70, 15.4 miles.

Regional Projects – Priority Requests

- 4. US 158 (R-2580; R-2586).** Widen to multi-lane from US 220 to US 29 Business in Reidsville and From US 29 to NC 62 in Yanceyville.
- 5. NC 14/87 (R-4402).** Widen to multi-lane from NC 700/770 in Eden to Virginia state line; 5.5 miles.
- 6. US-220/NC 135 Interchange (FS-0507B).** Widen bridge carrying NC 135 over US 220; upgrade interchange. A feasibility study is currently underway.

County Projects – Critical Requests

- 1. US 29 Business, Freeway Drive (U-3326A/B).** Widen to multi-lane from South Scales Street to NC 14; 5.6 miles. 5 lane cross-section preferred.
- 2. NC 770 (Not on current TIP).** Widen to multi-lane from Gant Road to the Miller Brewing Company. A portion of this project has been completed with *NC Moving Ahead!* funds.

County Projects – Priority Requests

- 3. NC 65 (B-4622).** Replace bridge over Rock House Creek.

4. US 311 (B-4252). Replace bridges over Big Beaver Island Creek and Little Beaver Island Creek, in conjunction with the realignment of Lindsey Bridge Road. Pedestrian improvements also requested.

Recommended Transportation Improvements

It is no longer sufficient for Rockingham County to rely solely upon a transportation functional classification system or a prioritized road improvement program when making long range land use and transportation system decisions. The County should take the next logical step toward the preparation and completion of a countywide Comprehensive Transportation Plan (CTP) in order to develop a more regional view of desired future transportation system outcomes. A CTP would also underscore how these outcomes relate to land development policies.

Key interstate (i.e., US 220/I-73 and US 29/I-785) and major thoroughfare corridors (e.g., US 158) should be identified and protected from adverse development and uncontrolled access. A safe and efficient transportation network system is vital to Rockingham County's future growth potential.

It is strongly encouraged for the County to collaborate with North Carolina Department of Transportation officials (i.e., State and local) before, during, and after the completion of a transportation plan. This will help to foster regional cooperation and improve plan implementation. Ultimately, mutually supported transportation policies and improved project coordination (e.g., subdivision impact analysis) will result.

Parks and Recreation System Analysis

Existing Recreation Plans and Facilities

Rockingham County does not currently own or operate any parks or recreational facilities. County residents can access recreational facilities located within the County's municipalities. In addition, the North Carolina Parks and Recreation Division is in the process of developing two state park sites in Rockingham County. Recently, the State has acquired 1,588 acres northeast of Mayodan along the Mayo River, and approximately 300 acres in the southern portion of the County along the Haw River. An additional 1,145 acres are currently under negotiation with private land owners along the Mayo River. The State has also recently developed a Haw River park conceptual plan that identifies the planning area, identifies tracts of land that would be desirable for a state park, and sets out a course of action to locate and negotiate with property owners. These sites and other ancillary sites along Rockingham County river corridors offer numerous recreational opportunities including camping, walking, hiking, paddling and horseback riding. In addition, planned state recreation facilities can add a significant boost to the County's local economy.

Recommended Future Parks, Recreation, and Open Space Improvements

In the future Rockingham County may desire to complete a Parks and Recreation Master Plan. A plan would provide strategies for developing a parks and recreation system to meet the needs of new and future land development. This may also include planning and development of “greenways” or natural corridors that provide public connectivity to County park and recreation areas. These greenways could become part of a larger system network currently taking shape in the region that include the Mountains to Sea Trail, Haw River Trail Corridor, and NCDOT/locally designated bicycling routes.

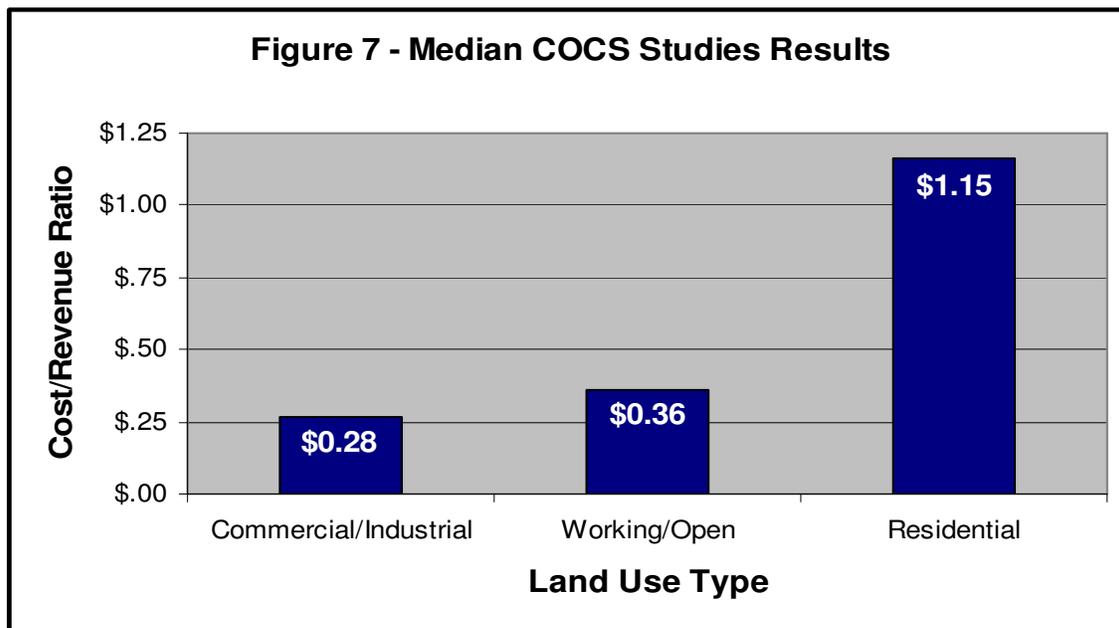
At the conclusion of the land use planning process the County may update its development regulations. In an effort to more fully meet the parks, recreation and open space needs of County residents, and to make necessary connections among greenways and other land uses, the County may consider regulations requiring open space, greenways, and pedestrian facilities as land development and transportation improvements occur.

3.6 Developmental Impacts on Tax Base

One of the most critical and talked-about issues facing communities today is how various land uses financially affect the local economy over the long term. Conventional wisdom states that a community is more fiscally sound if it can continue to grow its tax base and convert agricultural and other open land to a “higher and better” use. However, this reveals only a part of the picture and does not account for the costs that a community must pay out in order to manage its growth and development. Increasingly, the question arises as to whether a particular development or development pattern “pays its fair share” of local taxes. To help answer this question, more communities are completing cost of community services (COCS) studies that determine costs and revenues generated by different land use categories (i.e., industrial, commercial, residential, and agricultural). Costs are typically defined as the local community’s costs for providing public services or infrastructure to a particular development that include schools, law enforcement, fire protection, trash removal, emergency management, streets, water, and sanitary sewer. Revenues are the tax revenues generated by developments and collected by the local community to help offset their costs.

The American Farmland Trust recently conducted a case study of 102 COCS studies completed nationwide since the mid-1980s. Approximately one third of these were conducted by counties. *Figure 7* below summarizes the results of the 102 COCS studies and depicts the median costs, expressed as a ratio per dollar of revenue raised, necessary to provide public services to different land use categories. For example, the median cost for providing public services to residential land uses is \$1.15 for every \$1.00 of revenues generated. Conversely, it costs only 28 cents per dollar of revenues collected to provide services to commercial and industrial developments. *Figure 7* also illustrates that working and open land (i.e.,

agricultural and forested areas) generates a fiscal surplus similar to commercial and industrial developments. Thus, conversion of agricultural land to residential uses is not a means in and of itself to balance a growing tax base. It is important to note that *Figure 7* represents all residential development types (i.e., manufactured and stick-built housing) in one broad land use category. This creates a wide range of housing values (from low to high-end) that affect local tax revenues. It is clear that high-end housing developments tend to more adequately offset their public service costs to the community. Furthermore, *Figure 7* does not factor in private sector revenue streams generated through the home construction job industry (e.g., general contractors, plumbers, roofers, etc.).



Source: American Farmland Trust, 2004

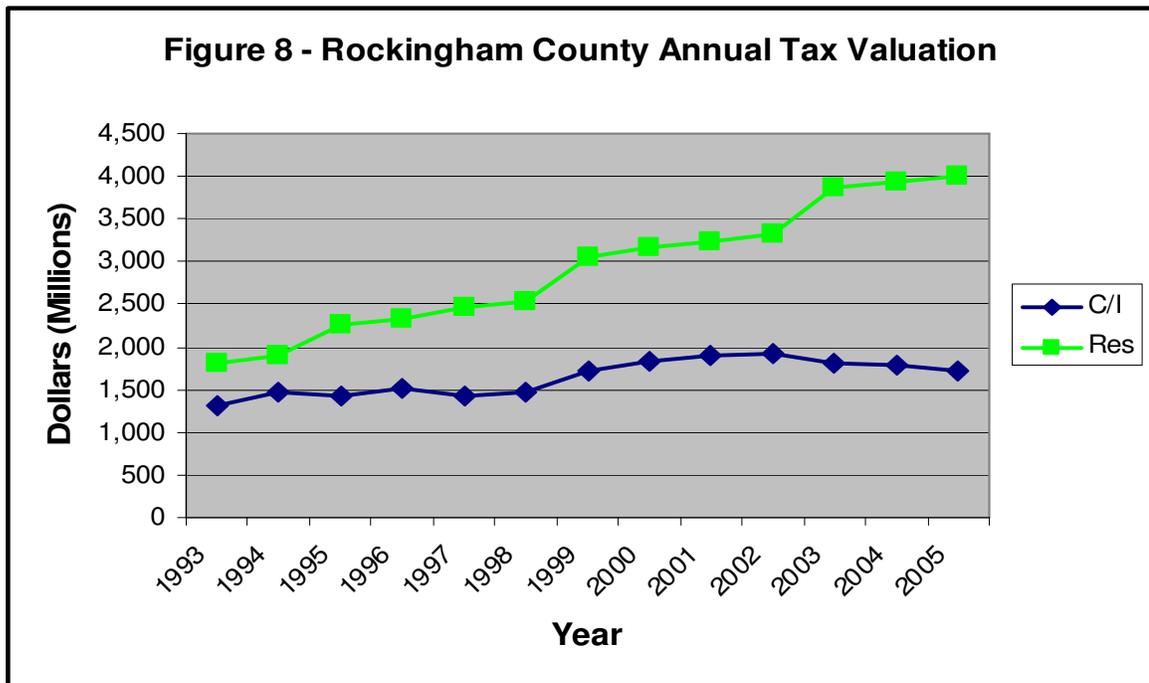
In June 2001 Wake County, North Carolina completed a COCS report that concluded with the following results similar to Figure 7 above:

- For every dollar of revenue generated by residential land uses Wake County spends \$1.54
- For every dollar of revenue generated by farm/forest land uses Wake County spends \$0.47
- For every dollar of revenue generated by commercial/industrial land uses Wake County spends \$0.18

The Wake County report points out that “...*this study in no way deals with the social value of each of these forms of development – i.e., their contribution (positive or negative) to the well-being of the County’s citizens. Rather it focuses on the more narrow issue of whether or not these land uses ‘pay their own way.’ It is important to bear in mind that there is nothing sacred about an exact balance*”

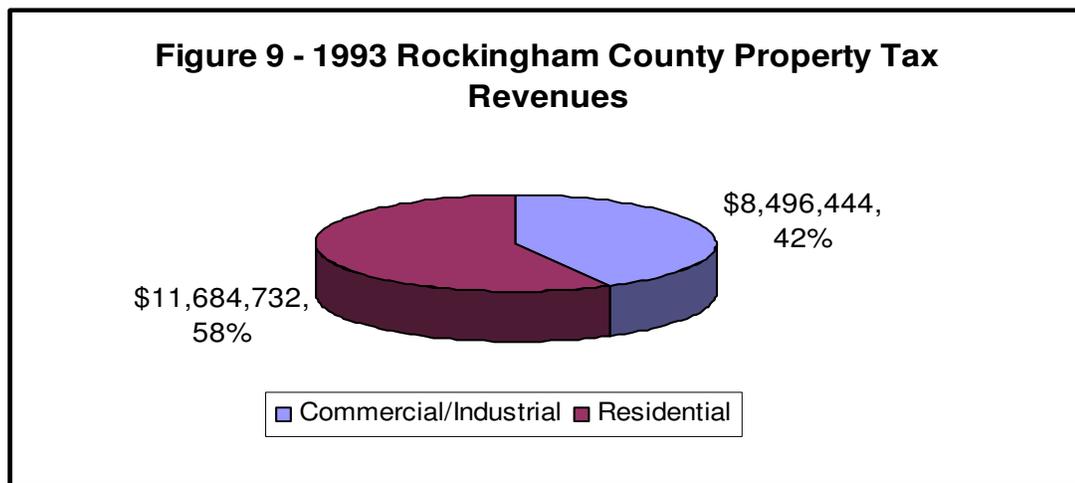
between revenues and expenditures associated with a particular land use, even when balancing the local budget is an overriding priority. Indeed, one of the primary functions of a local government is to redistribute local financial resources such that services desired by citizens are supplied, even when those services cannot pay for themselves. Determining the optimal distribution of those resources is a public policy issue to be resolved in the political arena. A study such as this fits into the process wherein such issues are resolved by shedding light on the relative costs and benefits of specific distribution of financial resources implicit in the existing pattern of development.” (The Cost of Community Services in Wake County, 2001)

Developmental impacts upon Rockingham County’s economy can best be illustrated in two ways. First, *Figure 8* below shows the County’s annual tax valuation since 1993 classified into two broad land use categories – commercial/industrial (C/I) and residential (Res). Valuation is the appraised value of both real (e.g., real estate) and personal property (e.g., machinery, equipment, mobile homes, and boats) upon which the tax rate is applied to generate tax revenues to the County. For the purposes of this report, the commercial/industrial valuation also includes public utility companies, and agricultural uses and registered vehicles are included with residential valuation. An upward trend of steadily increasing residential valuation has occurred since 1993 in Rockingham County, and this clearly reflects increasing housing development and the strong performance of home values over time. This upward trend, however, is also affected by steadily increasing valuation of registered vehicles. This indicates more residents are purchasing more vehicles as compared to over 10 years ago. Commercial/industrial valuation has remained steady overall since 1993. This is due in large part to fluctuating valuation in business personal property, which tends to depreciate over time in lieu of new investments.



Source: Rockingham County Tax Department, 2005

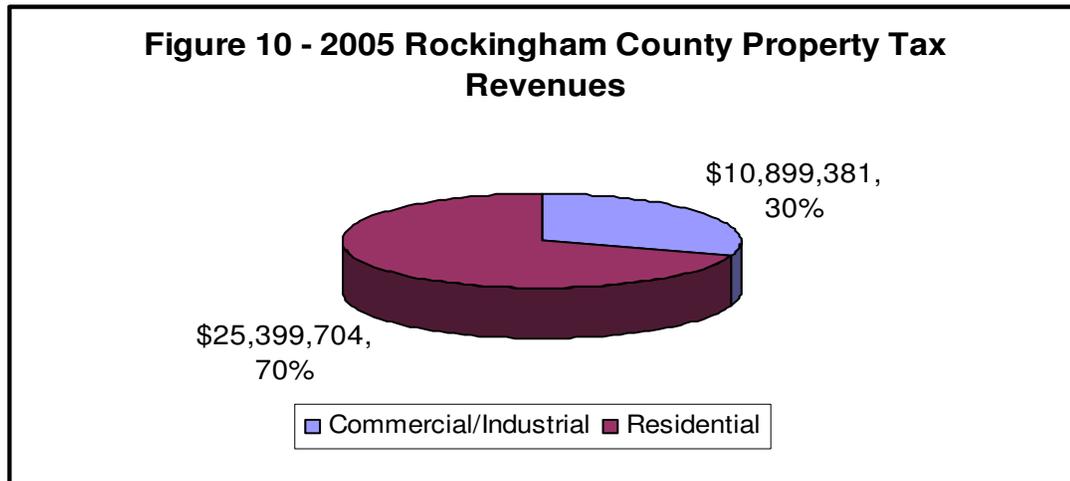
Second, tax revenues are the dollars collected from applying the tax rate to the valuations as previously discussed above. *Figure 9* below reveals the



Source: Rockingham County Tax Department, 2005

breakdown of property tax revenues ***billed*** by Rockingham County in 1993. Commercial/industrial valuations generated almost \$8.5 million in revenues, or approximately 42% of the total property taxes billed. Residential valuations accounted for over \$11.5 million in property taxes, or approximately 58% of the total billed.

As a comparison, *Figure 10* below depicts County property tax revenues billed in 2005. Commercial/industrial valuations generated nearly \$11 million, but their



Source: Rockingham County Tax Department, 2005

proportion to all property taxes billed has dropped 12% since 1993. On the other hand, residential tax revenues have grown to over \$25 million, or approximately 70% of the total property taxes billed in 2005. Obviously, this shift in the property tax revenue base is driven by the valuations trend previously discussed above. It also points to the fact that the local tax burden has significantly increased toward residential valuations. The potential implications of this (assuming this trend remains) is County residents will be faced with the larger share of the costs to provide future community services. However, strategies and policies discussed in *Chapter 5.0 RECOMMENDATIONS* provide some means to offset these costs.

3.7 Current Land Development Regulations

The Rockingham County Unified Development Ordinance (UDO) contains five major elements that regulate the development of land – zoning, subdivisions, watershed protection, flood damage prevention, and airport hazard. The UDO was enacted on June 7, 2004, and was mainly intended to reorganize and recodify the Rockingham County Planning and Development Ordinances originally adopted on March 17, 1988. At that time, zoning, subdivisions, and watershed protection regulations were also first adopted. The airport hazard and flood damage prevention ordinances were enacted prior to 1988. The UDO also established a new voluntary farmland preservation program that will be discussed in further detail below. However, this program is currently not considered an enforceable land development regulatory tool because it is strictly voluntary.

Zoning

Zoning involves the division of a county (or other governmental unit) into use districts, and for the regulation within those districts of:

1. The height and bulk of buildings and other structures;
2. The area of a lot, which may be occupied, and the size of required open spaces;
3. The density of population;
4. The use of buildings and land for trade, industry, residence or other purposes.

Rockingham County administers zoning in accordance with Chapter 153A of the North Carolina General Statutes. Zoning is a legal and administrative means to insure land uses of a community are properly situated in relation to one another, and that adequate space is provided for each type of development. Zoning is probably the single most commonly used legal device available for implementing the land-use plan of a community. It allows the control of development density in each area so that property can be adequately serviced by such governmental facilities as the street, school, recreation, and utility systems. This directs new growth into appropriate areas and protects existing property by requiring that development afford adequate light, air, and privacy for persons living and working within the community. Zoning does not, however, regulate the materials and manner of construction of a building; these are covered by the local building code.

Rockingham County is divided into the following zoning districts (the zoning chapter of the UDO should be referred to for more detailed information):

RA	Residential-Agricultural District
RA-CD	Residential-Agricultural Conditional District
RP	Residential-Protected District
RP-CD	Residential-Protected Conditional District
RM	Residential-Mixed District
RM-CD	Residential-Mixed Conditional District
RC	Rural Commercial District
RC-CD	Rural Commercial Conditional District
NC	Neighborhood Commercial District
NC-CD	Neighborhood Commercial Conditional District
OI	Office and Institutional District
OI-CD	Office and Institutional Conditional District
HC	Highway Commercial District
HC-CD	Highway Commercial Conditional District
LI	Light Industrial District
LI-CD	Light Industrial Conditional District
HI	Heavy Industrial District
HI-CD	Heavy Industrial Conditional District

The Conditional Zoning Districts listed above are identical to the base zoning districts with the exception that a site plan is required for rezoning, and additional conditions (i.e., site-specific standards) may be imposed. These conditions are limited to the conformance of the development and use of the site to County ordinances and those that address the impacts reasonably expected to be generated by the development of the site.

Of major importance for the individual citizen is the part zoning plays in stabilizing and preserving property values by facilitating compatibility and predictability of land uses. It affects the taxation of property as an element of value to be considered in assessment. Ordinarily, zoning is only indirectly concerned with achieving aesthetic ends, although there has been an increasing tendency to include within zoning ordinances aesthetics provisions that are most solidly based on "general welfare" principles.

If a property is currently zoned for its intended use, then the use is "permitted by right" and the required permits can simply be obtained through application and the payment of fees. If a rezoning is required, then the Board of County Commissioners must give approval after a public hearing. This process can take several months depending on the magnitude and complexity of the proposal.

In addition to rezoning property, special use permits give flexibility to the UDO. This permit allows uses that are not automatically permitted in a particular zoning district, but are permitted if certain specified conditions are met. A public evidentiary hearing is required to determine if the conditions are met. Once the permit is issued, it may be transferred by the applicant to another person but not to another property. All of the conditions included in the original permit still apply to the new owner. There are many advantages to this in terms of protection of the area, insuring compatibility between various adjoining properties, protecting property values, and providing a sense of security to the neighboring property owners.

It is important to note that a request to change the zoning district, whether by application for a conventional or conditional district, is a request to change the basic plan for the area where the property is located. For example, if someone applies to change the zoning from residential to commercial to allow a used car lot, regardless of the special conditions on the site, the basic issue is still whether a business should be located on that property and does it meet the general purposes of the ordinance. Such decisions or changes to the plan may not individually have a large impact, but taken collectively may indicate the need to revise or modify the plan to meet continuing demands for growth and development.

Rockingham County is also one of many counties to adopt a variety of other regulations to control particular aspects of development as part of the UDO. These have sometimes been referred to as "nuisance" regulations because they prevent one person's use of land from harming their neighbor. Some of these

regulations include: junk car regulations that limit the number of inoperable vehicles on a site; mobile home park standards that regulate lot size, density, and internal street width and paving; sign regulations that specify what type of signs are allowed and include standards on their height, size, and illumination, and junkyard regulations that set standards for fencing and buffers and limit location and hours of operation.

Subdivision Regulations

In addition to zoning, subdivision regulations are another commonly used method to implement land use plans. These regulations establish a standard procedure for the creation of new lots and the legal transfer of land. Subdivision standards generally address the size and shape of new lots, and not what future use can occur on the lots. Another major aspect of the subdivision regulations is that they set out the standards for the provision of improvements such as roads and utilities and how they are to be designed and constructed. While North Carolina statutes allow communities to have local subdivision regulations, they do not set out any procedural requirements for subdivision approval. Even so, subdivision approval follows a similar process in most counties.

In Rockingham County, subdivision regulations have different review procedures for the various types of plats. This allows for an expedited review of minor plats where rezoning is not required and no new roads are created. For multiple lots or where a new road(s) is required for access, a preliminary sketch plan may be required and is reviewed by the Planning staff to insure there are no glaring problems. In the subdivision approval process, a preliminary plat is essential and requires detailed survey plats of all the lots and engineering details on all of the proposed and required improvements. Review of preliminary plats is delegated to the Technical Review Committee (TRC). The TRC is composed of members of various government and public agencies who review various aspects of the proposed development. For example, environmental health officials insure that a new development has a safe water supply and an adequate sewage disposal system. The North Carolina Department of Transportation reviews proposed streets that will be dedicated to the state. Public school representatives ensure that children moving into new neighborhoods have adequate school buses/routing and classroom space. The Chief Fire Marshall checks streets for acceptability for use by fire trucks and adequate fire hydrant location. Approval of the preliminary plat authorizes the owner to install the required public improvements and make other site improvements.

After the improvements are installed, the County inspects them for compliance with the ordinance. If they meet the standards and are built as proposed, final plat approval is given. Final plat approval allows the plat to be recorded with the register of deeds and authorizes the owner to begin selling lots.

In addition to land use restrictions imposed by the government, private agreements such as restrictive covenants or deed restrictions can limit how land

is used. Such covenants are often more strict than local zoning. However, enforcement of covenants is a private matter; the County government only enforces the ordinance requirements.

Overlay Zoning Districts

An overlay district is an additional zoning or other land use requirement that is placed on a geographic area but it does not change or supersede the base zoning districts. Rockingham County also has four overlay districts each with their own distinctive set of regulations. These districts are **Flood Damage Prevention, Watershed, Airport Hazard, and Voluntary Farmland Preservation**. These areas are mapped and special regulations on development are applied in addition to base zoning district requirements. A property may be situated in one or more overlay districts.

Flood Damage Prevention Regulations Overlay

Rockingham County utilizes a flood damage prevention overlay district to provide extra protection of the public health, safety, and general welfare in flood prone areas. It is known that allowing uncontrolled development within floodplains results in damage to private and public facilities, creates safety hazards, impacts the tax base, and can lead to expensive floodway improvement projects. Floodplain overlay districts try to minimize these impacts by allowing only uses that will not experience significant impact by floods and will not obstruct flood flows. The Federal Emergency Management Agency produces and periodically updates official maps of Rockingham County, which delineate both the special flood hazard areas and the risk premium zones applicable to the community.

In addition, communities that agree to manage flood hazard areas by adopting minimum regulatory standards for flood damage prevention may participate in the National Flood Insurance Program (NFIP). Rockingham County participates in the NFIP, which promotes sound development practices within flood prone areas. Participation in the NFIP allows property owners in the NFIP jurisdiction to purchase federally backed flood insurance. Also, federal grants, loans, disaster assistance, and Federal mortgage insurance are available for the acquisition or construction of structures located in the floodplain as shown on the Flood Insurance Rate Maps (FIRM).

The Flood Damage Prevention regulations in Rockingham County require a Floodplain Development Permit for any development activities proposed within flood prone areas. The lowest floor elevation of any new structure (or substantially improved existing structure) is required to be a minimum of two feet above the base flood elevation in all areas of special flood hazards (where base flood elevation data is provided). In areas where base flood elevation data is not available, the lowest floor elevation (including the basement) is required to be at least two feet above the highest adjacent grade. All encroachments to special

flood hazard areas (including fill material or structures) must be located at least twenty feet away from the top of the bank, or five times the width of the stream at the top of the bank, whichever is greater. The regulations also set out the procedures for obtaining a Floodplain Development Permit.

Watershed Overlay Districts

According to the N.C. Environmental Management Commission, twenty percent of North Carolina's land area is within a *water supply* watershed. Local governments are required to have Watershed Overlay Districts to manage land use within these areas and to protect the drinking water supply from pollution. Rockingham County has portions of six watersheds within its boundaries – County Line Creek, Troublesome Creek, Smith River, Dan River (Madison), Dan River (Eden) and Mayo River.

Surface water classifications are one tool that state and federal agencies use to manage and protect all streams, rivers, lakes, and other surface waters in North Carolina. Surface water is classified as WS-I, WS-II, WS-III or WS-IV. One of these designations applies to each surface water body, such as streams, rivers and lakes, and defines the uses to be protected within these waters. For example, classifications may be designed to protect water quality, fish, and wildlife, the free flowing nature of a stream or river, or other special characteristics. Each classification carries an associated set of water quality standards or rules to protect those uses.

Surface waters are also designated by the Department of Water Quality as critical area, protected area, or balance of watershed. While lands within the protected area and balance of watershed have some restrictions, lands within the critical area are subject to the more stringent regulations. A critical area is the land adjacent to a water supply intake where risk associated with pollution is greater than from remaining portions of the watershed. Critical area is defined as land within one-half mile upstream and draining to a river intake or within one-half mile and draining to the normal pool elevation of water supply reservoirs. A critical area classification, among other things, requires a minimum lot size of 80,000 square feet, and limits the amount of impervious surfaces.

Airport Hazard Overlay

Airport Hazard regulates the height of structures and trees and the use of property in the vicinity of the Rockingham County Shiloh Airport. The airport has a non-precision instrument runway meaning the runway has only horizontal navigation guidance for which a straight-in, non-precision instrument approach procedure has been approved. The Airport Hazard Ordinance was adopted on November 26, 1984 and later became part of the UDO.

In addition to height regulations, the airport hazard overlay prohibits electrical interference with navigational signals or radio communication and use of lights that may impair a pilot's visibility or safety of aircraft using the airport.

Because the airport was established prior to the zoning ordinance, it is a non-conforming use in a Residential Agricultural zoning district. This zoning category prohibits many commercial and light manufacturing uses that are the norm in airport land uses. A prevalent trend in North Carolina County development ordinances is to place airports in a separate zoning district due to the variety of uses in and surrounding airports, and for safety issues unique to an airport. Placing the Rockingham County airport in a separate zoning category would enhance the prospects for development related to airport services and the business it generates.

Voluntary Farmland Preservation

Farmland preservation overlay districts exist to promote agricultural land uses, protect prime soils, and prevent non-agricultural uses from negatively impacting agriculture as the primary land use. As development spreads beyond existing urban areas, it is not unusual to see "spots" of development scattered throughout a primarily agricultural area. As these developments grow, and as municipal services are extended to these areas, more discontinuity in land uses and urban sprawl often results. Farmland preservation districts help local communities insure that farming remains an integral feature of the rural landscape.

Rockingham County established Voluntary Farmland Preservation Districts to protect and preserve agricultural, silvicultural, horticultural, and livestock lands and activities on June 4, 2004. Farmland preservation overlay districts provide the farmers that *enroll* with several benefits, including the ability to defer utility assessments on new water and sewer lines. This district also enables farmers to request a public hearing whenever condemnation proceedings are initiated on their farmland and authorizes counties to inform all purchasers of real property that the property is within one aerial mile of an agricultural area and that certain agricultural activities, including but not limited to pesticide spraying, manure spreading, machinery, tractor, truck operations, livestock operations, sawing, and similar activities may take place in this area to help to reduce the number of nuisance suits from new neighbors.

These districts are strictly ***voluntary*** and depend on the landowner to apply and enroll to become a part of the farmland district. To execute a farmland preservation district, the landowner must certify that the land is a Qualifying Farmland and sign a conservation agreement to sustain, encourage, and promote agriculture. This application process must be approved by the Rockingham County Agricultural Advisory Board. Yet, these voluntary districts do not completely protect farmland because the qualifying landowner has the

right to revoke (i.e., non-binding) the conservation agreement by written notice to the Advisory Board.

Current Development Ordinance Recommendations

Most zoning and subdivision regulations follow a fairly standardized pattern that includes certain features, which are necessary to insure the effectiveness of zoning and subdivision regulations. When any of these provisions are ambiguous or missing, difficulties often arise in the application, interpretation, or enforcement of the regulations. This section of the Plan outlines issues/deficiencies that need to be addressed in the County's Unified Development Ordinance (UDO).

The UDO has been amended many times since countywide zoning and subdivision ordinances were initially adopted in 1988. This has resulted in fragmentation of the UDO, making it difficult to read. Like a lot of regulations, the existing UDO is not written in plain English. It often takes several sentences to say what could be said in one. At times, outdated phrases are used to express commonplace ideas. In anticipation of a variety of situations, the UDO at times is verbose.

The current organization of the UDO does not clearly set forth the various permitting processes. Some of the procedures are located under Chapter 2, Article XV, while others are distributed throughout the document. Likewise, development review bodies and their powers and duties are either omitted or scattered throughout the UDO.

Current zoning regulations assign every acre of land a development designation – residential, commercial, or industrial. The conventional zoning standards currently used in Rockingham County promote the separation of land uses; that is, uses are deemed to be “compatible” or “incompatible” according to the development designation. However, in a large rural area such as Rockingham County, an unintended consequence of this system has been the segregation of residential areas from convenient rural shopping areas and has resulted in an increased dependence on automobiles and longer travel distances. In some counties, a “Euclidian” zoning standard is utilized that allows more restrictive uses to be permitted in less restrictive zoning districts (e.g., single-family residence permitted in commercial or industrial zones). Other jurisdictions have incorporated smart growth principles to encourage mixed-use development.

Minimum lot sizes, established by zoning, exercise important control over the use of land and the distribution of population. UDO standards specify a minimum lot area and width in residential zoning districts. For a developer, the best way to achieve maximum density is to design a pattern of minimum lot sizes with little consideration for the natural features of a site, which results in cookie cutter subdivisions. Using lot size and width to regulate the intensity and density of development is not as effective as other methods.

Current land use regulations do little to actively protect open space that would preserve and protect rural character. Subdivision development in Rockingham County consists of little more than house lots and streets because zoning and subdivision design standards do not require a developer to provide more. While the UDO does have provisions for a Planned Unit Development (PUD), which is a type of cluster/conservation development, there are no incentives for a developer to use a PUD. A conventional subdivision requires less time for review and approval without the restrictions of a PUD.

One major concern with the zoning regulations is the heavy reliance on conditional district rezoning as a means to control development. Adding more development standards for each zoning district, increasing the number of special use permits for distinct uses, and increased staff administrative review and approval of certain development proposals would send a more positive signal to applicants and developers. Development that complies with established standards would be allowed, and in some cases after undergoing an expedited, staff-administered review process. Applicants who feel they cannot comply with such standards would be given the option of submitting alternative plans with the more formal review.

The permitted use table in the UDO has a list of permitted uses in alphabetical order. Some of the uses are repeated under different names and are allowed in different districts. For example, "Automobile service station" is allowed by right in CS, HC, LI, and HI while "Service stations" are allowed only in CS, HC, and LI. The American Planning Association's Land Based Classification System (LBCS) classifies uses on similar physical and functional characteristics. Converting to this system would give the County the flexibility to allow additional or emerging uses that may not be included in a name based category. It would also be more user-friendly and eliminate duplications.

The effectiveness of the control exercised by zoning regulations can be considerably impaired if adequate control is not exercised over the use, location, size, and area occupied by accessory buildings. The only zoning regulations for accessory structures currently in the UDO are setbacks. Many counties have standards governing the maximum amount of lot area that can be occupied, the height, and placement of accessory structures. Other counties list uses permitted in accessory buildings as some uses may have a detrimental effect on adjacent properties in certain zones.

Conventional zoning and subdivision regulations alone are not sufficient to carry out a land use plan, but development ordinances that are adequate, flexible, and up-to-date can facilitate successful plan implementation. As an outgrowth of this Plan's process, the County will continue to refine its ordinances, to reflect community values, and to encourage quality development as the County continues to grow. Some of the key issues the County intends to address through updates to the UDO as an outgrowth of this Plan include:

- Support the implementation of the Land Use Plan.
- Make the regulations easier to use, understand, and administer.
- Streamline the development review process.
- Provide additional development options.
- Encourage mixed-use development in targeted areas.
- Conserve and protect existing natural resources.
- Encourage high quality development throughout the County.

3.8 Corridor Studies

In the mid 1990s, the Rockingham County Board of Commissioners realized the need for more detailed planning documents to guide land use decisions and zoning changes along the County's major thoroughfare corridors. The Board was particularly interested in sites suitable for economic development and their compatibility with existing uses. Eight major highway corridors in Rockingham County were considered, and four corridors (NC 14, US 220, US 29 east of Reidsville, and the Wentworth/NC 704 area) coincided with those identified in a 1992 study (*Investigation of New Water and Sewer Facilities for Development Corridors in Rockingham County*) as potential sewer extension corridors. In anticipation of increasing interest in development due to the widening of NC 14 to five lanes, the NC 14 Corridor was chosen for the model corridor plan.

The NC 14 Corridor Study, adopted in April, 1995, covered approximately fourteen square miles, running seven miles from the Reidsville ETJ (near Wolf Island Creek) north to the Eden city limits (at the Dan River) and included approximately one mile (± 5000 feet) on either side of the highway. Recommendations for land use patterns along the corridor were based on a detailed, two-step site evaluation process and public input. Of forty-three sites considered for future non-residential uses, nine sites were ranked most suitable; nineteen sites were ranked moderately suitable; and fifteen sites were ranked least suitable. Both moderately suitable and least suitable sites were designated for residential land uses by the Study. Although the Study recommended a corridor overlay zoning district with development guidelines for site plans, setbacks, buffers, site size, access, and parking, this overlay district was never implemented.

Phase I - US 220 Corridor Study was selected next due to the widening of US 220 to a four-lane divided highway. The study, adopted in October, 1996, covered approximately sixteen square miles, running eight miles from the Guilford County line north to the NC 704 interchange and included approximately one mile (± 5000 feet) on either side of the highway. *The NC 14 Corridor Study* was used as a model for the planning process, methodology, and recommendations for *Phase I - US 220 Corridor Study*. Of eighteen sites considered for future non-residential uses, fifteen sites were ranked as most

suitable and three were ranked moderately suitable. This study also recommended a corridor overlay zoning district be established.

In November of 1995, funds were allocated for the Wentworth/NC 704 Corridor Study. This plan was never undertaken nor have any other corridors studies been completed. Both corridor studies should be updated to reflect changing conditions and development that has occurred since completion of the studies more than ten years ago. This will ensure that the corridor plans reflect current economic development needs and compatibility with existing land uses.

3.9 Summary of Chapter 3 Key Points

- Since 2000, Rockingham County's unincorporated areas (i.e., townships) have grown at a higher overall population rate than the incorporated areas (i.e., municipalities).
- Huntsville and New Bethel Townships (i.e., southwestern portion of Rockingham County) each grew over 30% in population during 1990 to 2000.
- The southern and southwestern areas bordering Guilford County have experienced the most new residential housing and subdivision construction since 2000.
- During 2000 to 2005 new manufactured housing units have steadily declined, but new conventional stick-built home construction has remained strong.
- Nearly 80% of the land use within the County's jurisdiction (i.e., Plan study area) is used for agricultural purposes. Commercial and industrial development comprises approximately 1% of total land use.
- The number of farms in the County rose approximately 12% between 1997 and 2002, but remained 3.4% below 1992's total.
- Traditional agricultural production (i.e., tobacco, corn, and wheat) has waned over the past decade, but livestock numbers has increased significantly (i.e., equine, hogs, and sheep).
- Roughly 24% of the Plan study area consists of lands unfavorable to future higher intensity land development. Poor soil conditions are the primary environmental constraint in these areas.
- Aggregate municipal water and sanitary sewer systems can accommodate future growth and development—currently operating at 55% and 52% capacity, respectively.

- Average daily use for the County's US 158 and US 220 water mains comprises only 4.5% and 6.3% of total capacity, respectively.
- In general terms, tax revenues generated from residential development does not offset its public service costs compared to agricultural lands and commercial/industrial development.
- Since 1993, Rockingham County's property tax burden has increasingly shifted from commercial/industrial development to residential.
- The County needs to continue to update and reorganize the Unified Development Ordinance (UDO) in order to create more development options and become more user-friendly. The UDO should also coincide with and support the applicable recommendations of this Plan.