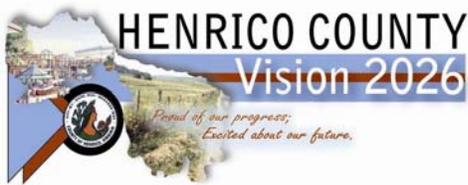


APPENDIX C: DEMOGRAPHIC APPENDIX

Revised: April 13, 2006



APPENDIX C: DEMOGRAPHIC APPENDIX

I. EXECUTIVE SUMMARY

The Demographic Appendix is the first in a series of Appendices produced by the Henrico County Planning Department. This document presents basic information on population, housing and patterns of land use in the County. It is intended to contribute to the discussion and formulation of goals, objectives and policies to be incorporated into a revised long-range plan for the County, Henrico 2026. The following will highlight information contained in the Demographic Appendix.

According to the County's 2004 3-C Report, the number of residents of Henrico County is 288,735 as of the end of 2004. This report also showed the County's population increased by over 32 percent between 1990 and 2004. The population growth rate is expected to slow in coming years due to the availability of developable land. The Demand Analysis completed by McBride Dale Clarion as part of the 2026 Comprehensive Plan projects the County's population to be 323,847 in 2010, 372,957 in 2020, and 410,914 in 2030.

The 2004 American Community Survey provided statistics on the income, poverty and employment sections of this report. The 2004 median income for households in the County was \$55,657. The data indicates fewer than five percent of the residents of Henrico were below the poverty level in 2004. Approximately 77 percent of Henrico residents in 2004 are private-wage-and-salary-workers and about 17 percent are Federal, State or Local government employees, with the remainder being self-employed or unpaid family workers. The total labor force in the County consists of 147,751 people age 16 or older.

The total housing stock in the County (121,038 units) , as shown in the 2004 3-C Report, is split close to 70/30 single-family detached versus multi-family units. Approximately 57 percent of all the housing units are owner-occupied and approximately eight percent of all homes are vacant. While according to the 2004 American Community Survey, the median home value in 2004 was \$163,762. The median amount for home mortgage payments was \$1,269, and the median rent was \$797 per month. Notably, the multi-family units such as apartments increased at a faster rate than single-family homes. This trend is further supported by the fact that rental housing grew 41 percent between 1990 and 2004, while owner-occupied housing only increased by 37 percent.



APPENDIX C: DEMOGRAPHIC APPENDIX

The Appendix presents a variety of research results related to the pattern of land use in the County. One aspect of this was to look at where the population increases have most recently occurred in the County. Through this study it was evident that much of the growth in recent years has been primarily concentrated in the western portion of the County. Another aspect of this was to look at where the concentrations of various land uses were located in the County through a series of maps depicting high, medium and low ranges. These maps showed areas in the western portion of the County have a tendency toward higher concentrations of single-family, multi-family, commercial and office uses. It also is evident from the mapping of vacant land, the general development in the County has expanded outward from the City of Richmond.



II. INTRODUCTION

This appendix highlights the basic trends in the growth and development of Henrico County. Its intent is to contribute to the discussion, investigation and formulation of goals, objectives and policies to guide future growth and development in the County for the 2026 Comprehensive Plan.

The first part of this appendix will address population demographics: these are factors which provide basic data regarding the human factor – population, residence, age, race and income. This appendix also presents the current forecast for population growth in the County.

A brief description of housing characteristics is also included. This topic includes basic data concerning the number of homes, housing types, value and ownership patterns, and important trends.

The last part of this appendix will address patterns of land use in the County, investigating where different land uses such as office and industry are concentrated, and what the trends have been for the increase of these different land uses over the last fourteen years.

III. POPULATION CHARACTERISTICS

POPULATION GROWTH AND DENSITY:

Henrico County's total population as of April 1, 1990 was determined by the U.S. Bureau of Census to be 217,881. The Henrico County 2004 3-C Report, published by the Planning Department, shows the end of year population to be 288,735. This represents a growth of 70,854 people or a 32.5 percent increase between 1990 and 2004. Additionally, the Henrico County Planning Department completes the 3-C Report on annual basis. Figure 1 depicts the growth in population using the County's records between 1990 and 2004.

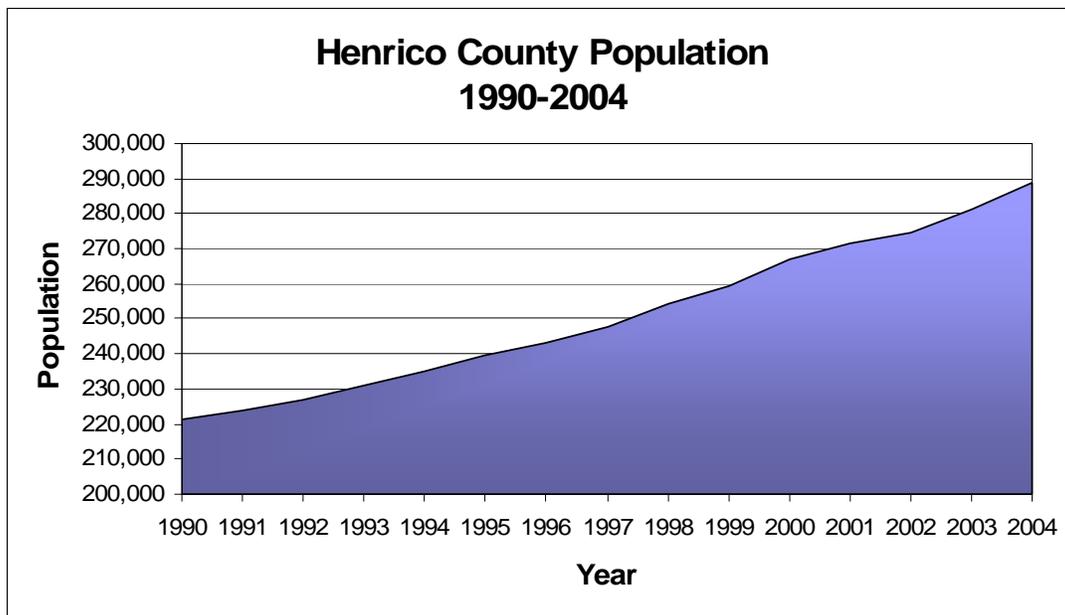
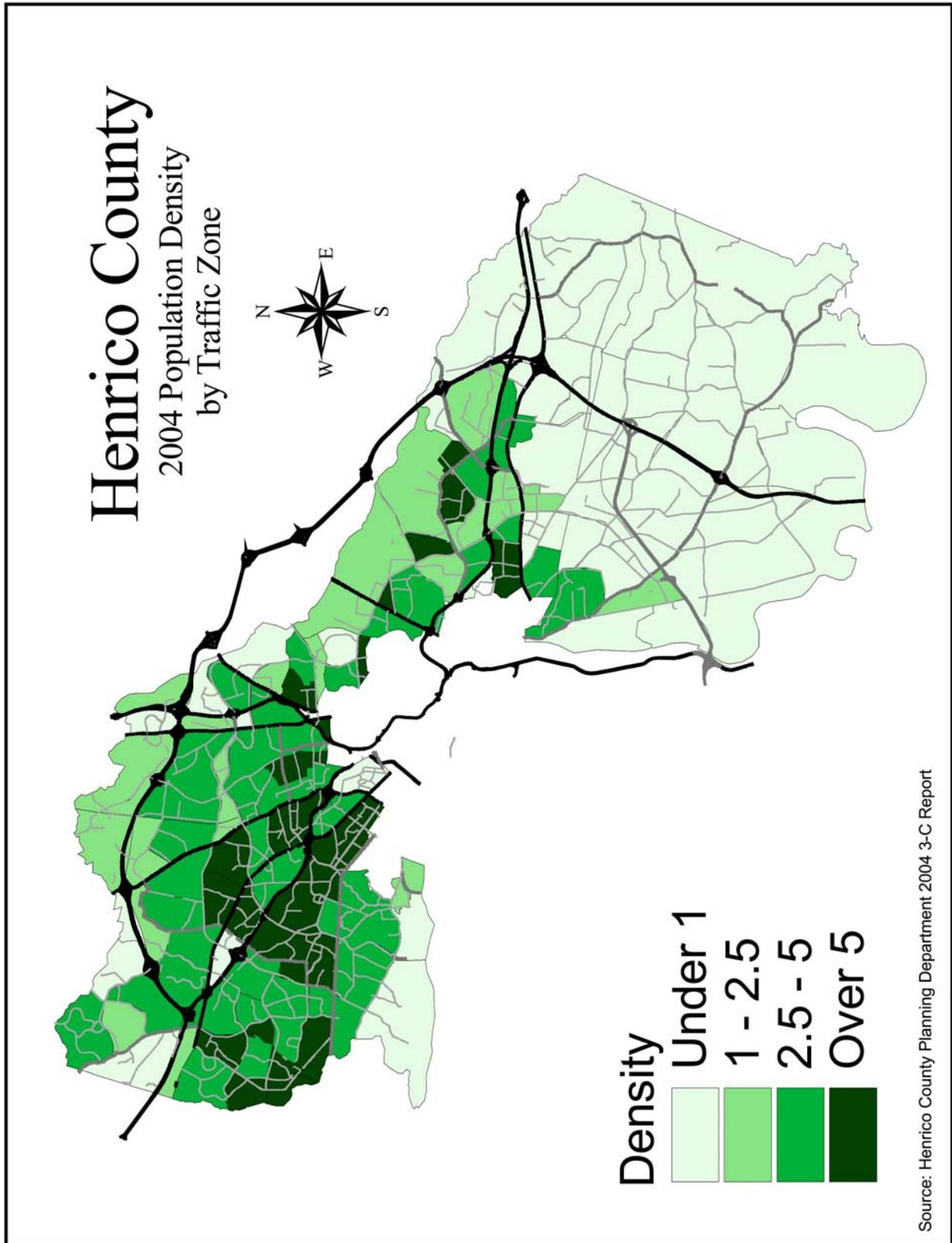


Figure 1 - Overall Population Trend

The growth in population corresponds to the County's continuing urbanization. This urbanization is reflected by the average population density of 1,183 persons per square mile based on the 2004 3-C data. This is an increase from 915 persons per square mile using the 1990 Census data.

Map 1, on the following page, shows the 2004 population density of "traffic zones" in Henrico County. This figure shows density in term of persons per acre. As shown in this Figure, population density in the County tends to be highest closer to the boundaries of the City of Richmond while also being weighted toward the western portion of the County. These areas are more developed than the traffic zones which are in the outlying areas.



Map 1 - Population Density By Traffic Zone

POPULATION CHARACTERISTICS:

The data collected by the U.S. Census Bureau reveal three main population trends between 1990 and 2004: 1) a significant increase in the average age of residents; 2) a higher proportion of males in the population; and 3) a significant increase in the proportion of non-white residents. These trends can be seen in Table 1 showing the change in these characteristics between 1990 and 2004. These population trends, for the most part, mirror what has happened throughout the United States over this time period.

The median age of Henrico County residents is approximately 36 years old. In other words, half of the County's residents are over 36 years old and half are under 36 years old. Figure 2 below shows the breakdown of the age and gender categories according to the 2004 American Community Survey produced by the U.S. Census Bureau. When combined with the trends shown in Table 1, which compares 1990 and 2004 figures, a picture of where the County has come from and where the trends in population are moving to can be seen.

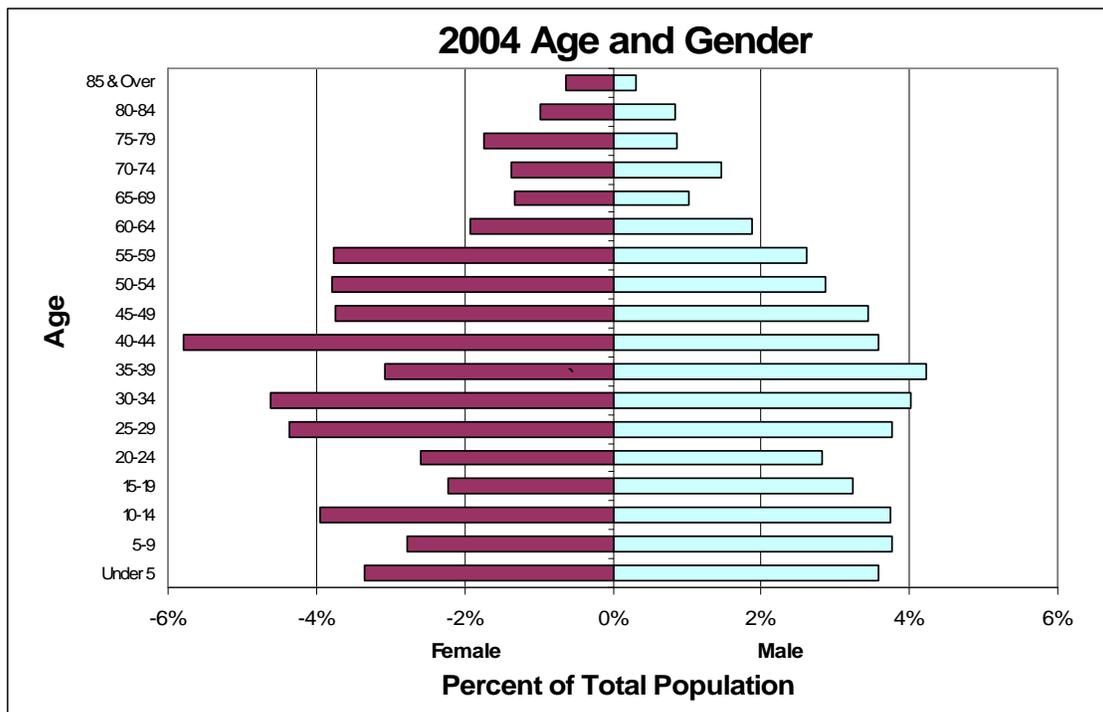


Figure 2 - 2004 Age and Gender Percentages

Figure 2 shows several potential trends for the future. As the age group in the 50 to 64 category continues to age, the County will see added pressures to provide adequate housing and services for these citizens. Conversely, the smaller percentage of 15 to 24 year olds shows that the county is not retaining a large number of the young people who are just out of high school or college. While

the number for the bottom three age groups depicts what many people term an “echo boom,” or an increase in the population resultant from baby boomers having children and moving to the County. This statistic will continue to impact County services.

Trends in Population Characteristics			
Population Characteristic	1990	2004	% Change 1990-2004
Less than 18	22.98%	25.05%	8.99%
18 and Over	77.02%	74.95%	-2.68%
65 and over	12.37%	10.55%	-14.76%
White	77.31%	65.69%	-15.03%
Black	20.12%	26.05%	29.50%
Asian	2.00%	4.70%	134.56%
Other*	0.57%	3.56%	527.31%
Hispanic	1.00%	2.93%	193.97%
Male	46.45%	47.98%	3.29%
Female	53.55%	52.02%	-2.85%

Table 1 - Population Characteristics Trends

Following a national trend Henrico County is becoming more diverse. Table 1 shows the percentage of different racial categories for 1990 and 2004. The racial distribution of Henrico County's population (in 2004) is 66 percent White, 26 percent Black, five percent Asian, and four percent "Other". The category of "Other" includes residents who are American Indian, Eskimo or Aleut, or who selected two or more racial categories. As a percentage of the total population the White population of the County has decreased significantly. During the timeframe studied, some of the minority categories have seen an increase of over 100 percent.

Similar to the racial trends, the percentage of Hispanics living in Henrico in 2004 has almost tripled from the 1990 figure. The actual numbers for the Hispanic population were 2,171 in 1990 and 7,981 in 2004. The Census considers the title Hispanic to be an ethnicity and not a race as Hispanics can come from a number of races. The trend of an increasingly diversified population in Henrico County is expected to continue following the similar national trend.

INCOME AND EMPLOYMENT:

The 2004 median income for households in Henrico County is \$55,657. This is the amount where half the households have a higher income, and half have a lower income. At either end of the spectrum of household income, slightly fewer than four percent of the households make less than \$10,000 per year while slightly more than four percent of the households make \$200,000 per year or more. The per capita income for Henrico residents in 2004 is \$30,672. With

respect to income, the 2004 American Community Survey conducted by the U.S. Census Bureau shows slightly fewer than five percent of the population of Henrico is classified as below the poverty level. Approximately 3.5 percent of the families in the County are considered below the poverty level.

There are 147,751 residents of the County (age 16 and above) who are considered part of the labor force as of the 2004 American Community Survey. The survey showed 7,144 individuals as unemployed, for an unemployment rate of 4.8 percent. Approximately 76.5 percent of employed persons in the County are private wage and salary workers and approximately 17 percent either are Federal, State or Local government employees. The remainder of employed persons either are self-employed or unpaid family workers.

POPULATION FORECAST:

The population forecast included in this report reflects the study of the County's future population conducted by the consultant McBride Dale Clarion, and explained in detail in the Demand Analysis. Figure 3 displays the population forecast selected after reviewing several potential alternatives. This forecast is based on forecasts for the County through the year 2030 by Woods & Poole, a nationally recognized provider of demographic projections. A slight slowing trend is projected in the percentage rate of growth as the County's population becomes larger and less land is available for development. The results of this study show the County having a population of 323,847 in 2010, 372,957 in 2020, and 410,914 in 2030.

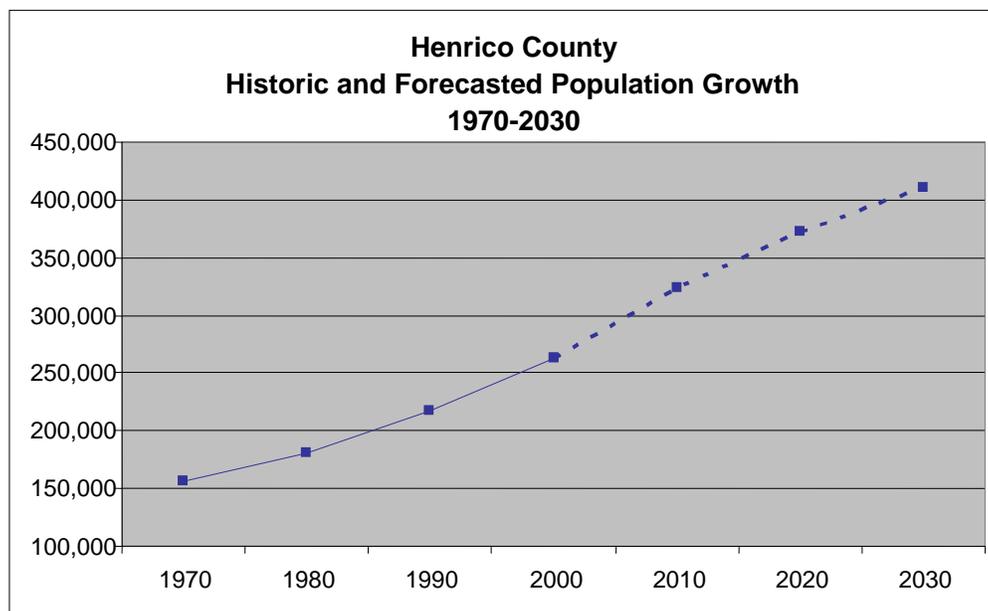


Figure 3 - Historic and Forecasted Population Growth

IV. HOUSING CHARACTERISTICS

AMOUNT, VALUE, AND OWNERSHIP:

According to the 2004 American Community Survey conducted by the US Census Bureau, there is a total of 121,038 housing units in Henrico County. A "housing unit" is defined as a house, an apartment, a mobile home, or a single or group of rooms used as a separate living quarters. Of the year-round housing units in the County (i.e., not including vacation homes, hunting cabins, etc.), about 70 percent are single-family detached units while the remainder are multi-family units such as apartments. Of the entire housing stock, approximately 57 percent is occupied by owners, 35 percent by renters, and about eight percent is vacant.

In 2004 the median value of occupied housing units in the County is \$163,762. This is the level at which half of the homes are valued above and half below. The median monthly mortgage payment is \$1,269, and the median monthly rent in the County is \$797. As expected with the recent increases in housing prices, these figures have increased significantly since 1990 as shown in Table 2.

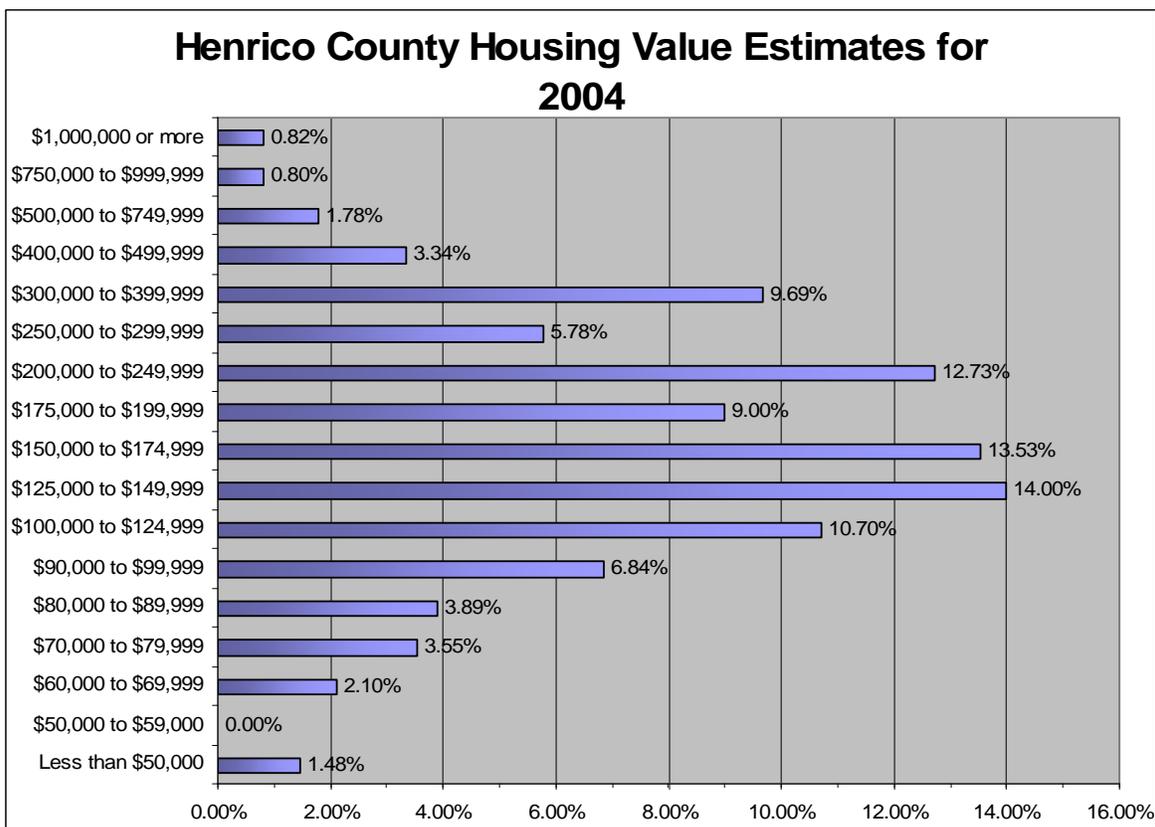


Figure 4 – Housing Values

As shown on Figure 4, the greatest number of occupied homes is in the two categories ranging from \$125,000 to \$174,999. These two categories represent over a quarter of all of the units in the County. It should be noted there are additional spikes in the \$200,000 to \$249,999 and \$300,000 to \$399,999 ranges. This could be a representation of the increase in the costs of new homes, especially in the western portion of the County. Approximately 73 percent of the County's residents live in owner-occupied housing, while the remaining 27 percent live in rental units and/or group quarters such as dormitories. This is an increase from 1990 when 68 percent of the County's residents lived in owner-occupied housing.

TRENDS IN HOUSING CHARACTERISTICS:

The total number of housing units in Henrico County increased by over 28 percent between 1990 and 2004 (see Table 2). The additional housing built during this time period was most likely in response to the demand generated by overall population and job growth. In addition to adding a considerable amount of housing during this period, the average household size increased to 2.46 people per household. This is up from the 1990 figure of 2.3. The increase in people per household could be partially due to young families with children moving into the new housing available in the County.

Trends in Housing Characteristics			
Housing Characteristic	1990	2004	% Change 1990-2004
Total Housing Units	94,539	121,038	28.03%
Owner Occupied Units	54,848	75,418	37.50%
Renter Occupied Units	32,290	45,620	41.28%
Vacant Units	5,401	10,211	89.06%
Avg. Household Size	2.30	2.46	6.96%
Median Value (\$)	83,900	163,762	95.19%
Median Contract Rent (\$)	436	777	78.21%
Single Family Units	70.75%	64.50%	-8.83%
Multi-Family Units	29.25%	35.50%	21.36%

Table 2 - Housing Characteristic Trends

The median value of homes in the County has risen by an average of nearly five percent per year over the last fourteen years (1990-2004); from a median value of \$83,900 in 1990 to \$163,762 in 2004. The most rapid increase in housing values has actually been seen in the last several years. For example, the increase between 2003 and 2004 was slightly over 10 percent.

The median amount which people pay in rent, on average, has risen slightly slower than the value of homes during this time period, increasing by slightly more than four percent annually between 1990 and 2004. The lower average

increase for the median amount paid for rent may reflect several trends in the County during this period. First, a large amount of apartment units were built in the County during this period. In fact, Henrico has the second largest number of apartment units of any locality in the Richmond Metropolitan Area, trailing only the City of Richmond. Secondly, there has been an increase in the percentage of residents living in owner-occupied housing.

The trends in housing characteristics show the changes in the mix of housing unit types in the County. Comparing the increase in multi-family housing versus single-family housing shows that there is more "high-density" housing relative to 1990. This could be a result of an increase in the cost of land and a limited supply of land in some of the more developed areas of the County. As land values continue to increase and portions of the County continue to become more urbanized, this trend will likely continue.

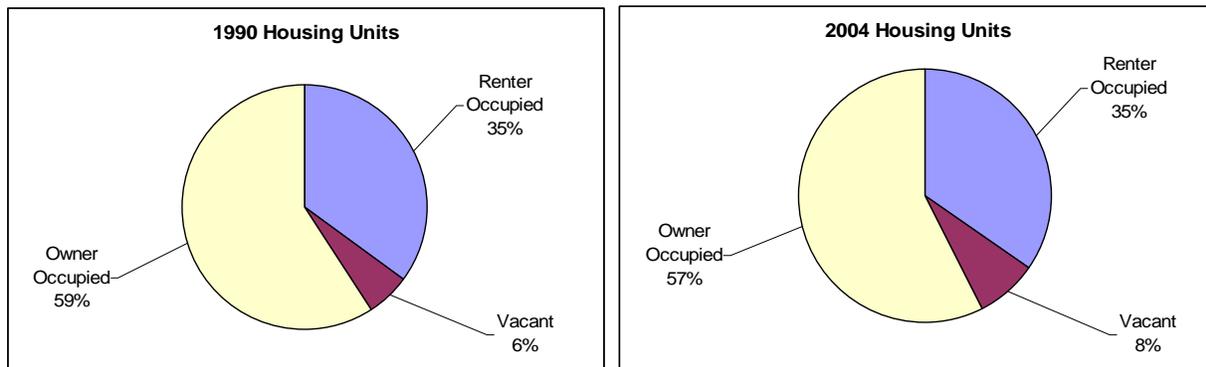


Figure 5 - Owner Occupied vs Renter Occupied Housing in 1990 and 2004

The renter-occupied units increased 41 percent (13,330 units) between 1990 and 2004 (see Table 2 and Figure 6), while owner-occupied units increased 37.5 percent (20,570 units). Although the total number of vacant units had a significant absolute increase between 1990 and 2004 (4,810 units or 89 percent), as a proportion of the total housing stock, there was only a slight increase (six percent in 1990 versus eight percent in 2004).

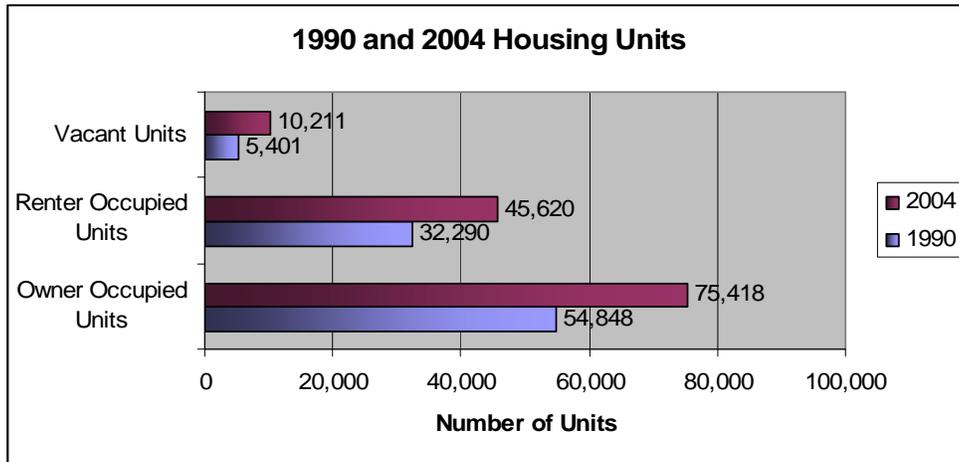


Figure 6 – Housing Unit Occupancy Trends

V. LAND USE AND DEVELOPMENT CHARACTERISTICS

GROWTH, INFRASTRUCTURE, AND LAND USE CHANGES:

The preceding sections of this Working Paper presented some basic data and trends with respect to population and housing characteristics between 1990 and 2004. This portion of the Working Paper shifts the focus to a closer analysis of where, and what type of development has occurred in the County. The data was split into two sections, 1990-1999 and 2000-2004. By looking at the data in this manner, additional patterns which began after 2000 become more apparent.

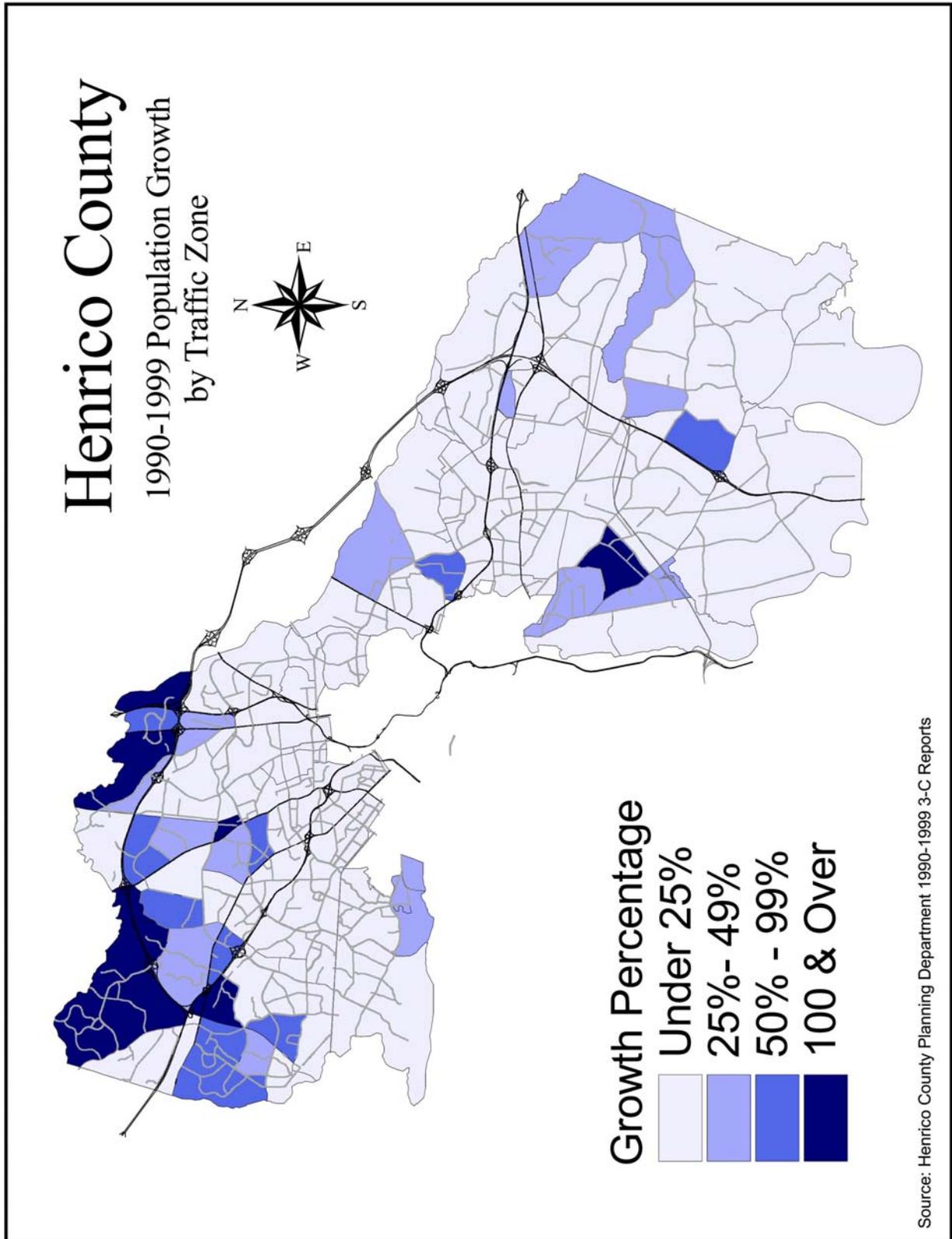
As shown on Map 2 on the following page, the western and northern portions of the County were the recipients of the highest rate of population growth during the 1990s. A combination of these traffic zones in the "West End" of the County grew in population by over 100 percent during this time period. Additionally, a small area of eastern Henrico close to the City experienced a high rate of population growth. However, this area of growth was not as widespread as the growth which occurred in the northern and western portions of the County.

During the first part of this decade, the greatest increases in population have continued to be in the northern and western sections of the County, as seen on Map 3. While some of the specific growth areas have changed due to the shortage of developable land in some traffic zones, the growth in the general area has continued. From this data, it is apparent that the west end of the County has been the focus of change in land use to accommodate the rapid increase in residents living in this region. Another trend of note which can be seen when comparing Maps 2 and 3 is the slight increase in population in a greater number of areas in the eastern portion of the County.

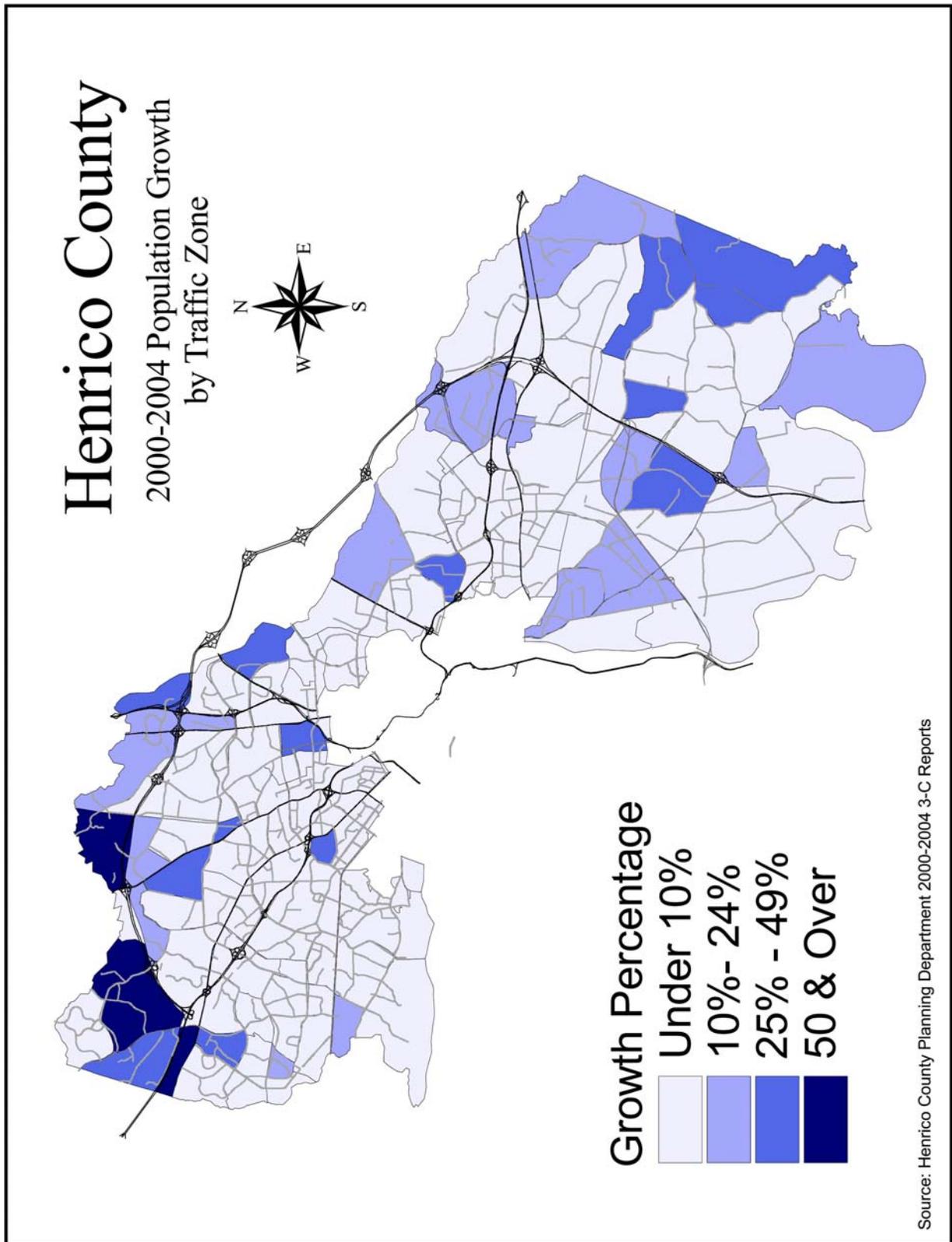
Miles of Infrastructure 1990-2004		
	Total Miles	Increase
Roads	167.74	15%
Water	424.58	45%
Sewer	315.91	31%
Total	908.23	30%

Table 3 - Increase in Infrastructure

Along with the growth in the number of residents in the County, infrastructure such as roads, and water and sewer lines needs to be provided to accommodate new homes and businesses. In total, a combined 908 miles of roadways, water lines and sewer lines have been built during the seven year period from 1990 to 2004 (see Table 3). This represents a total 30 percent increase in miles of infrastructure provided since 1990.



Map 2 - Population Growth from 1990-1999 by Traffic Zone



Map 3 - Population Growth from 2000-2004 by Traffic Zone

The two pie charts in Figure 7, reveal the degree to which various land uses such as single-family and multi-family residential, commercial, industrial and others constitute a portion of all of the acres of land available in the County in both 1990 and 2004. These charts show these uses as a percentage of the overall acreage of the County, which is just over 156,000 acres. In Table 4, these land use components are shown in numerical form and the increase/decrease in each category between 1990 and 2004 is shown.

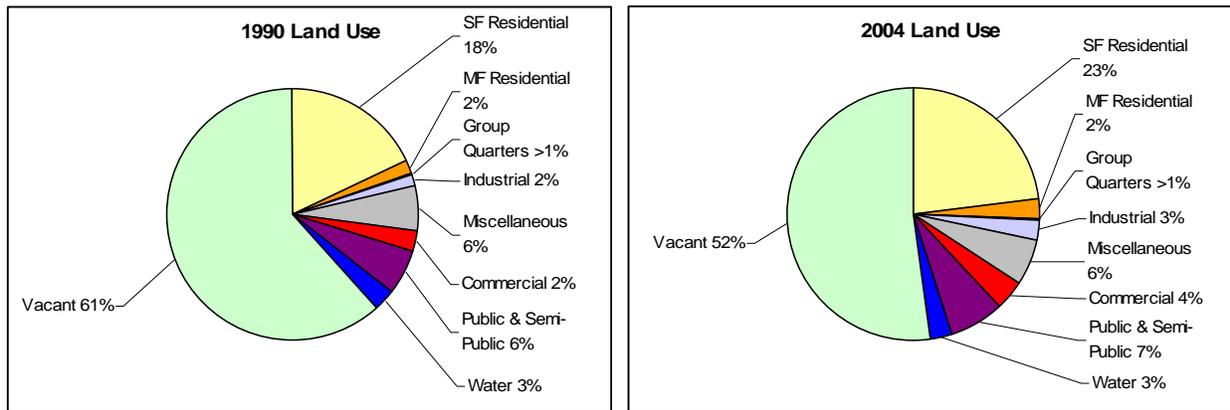


Figure 7 - 1990 and 2004 Percentage of Land Uses

	1990	2004	Change	
			Actual	Percent
Population	221,287.0	288,735.0	67,448.0	30.48%
Housing Units	95,420.0	121,505.0	26,085.0	27.34%
Acreage:				
SF Residential	28,072.6	36,162.4	8,089.8	28.82%
MF Residential	2,651.5	3,599.1	947.6	35.74%
Group Quarters	270.6	415.9	145.3	53.70%
Industrial	2,514.1	3,958.9	1,444.8	57.47%
Miscellaneous	8,928.4	9,375.6	447.2	5.01%
Commercial	3,810.6	5,954.3	2,143.7	56.26%
Public & Semi-Public	9,181.3	10,842.7	1,661.4	18.10%
Water	4,341.4	4,353.0	11.6	0.27%
Vacant	96,199.1	81,537.4	-14,661.7	-15.24%

Table 4 - Change in Land Use Acreage Between 1990 and 2004

Most of the land in the County is classified as "vacant" even though some of this land may be currently in agricultural use. The amount of land classified as vacant has been decreasing over the years; for example at the end of 1990, 61 percent of the County was classified as vacant. At the end of 2004 this figure stands at 52 percent. It should be noted that not all of this vacant land can be



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considered developable since it includes areas in floodplains and other lands which are otherwise restricted in terms of development.

The second largest category of land use, in terms of the number of acres, is single-family residential use. The single-family residential land use category may not have grown at the greatest percentage, but it did achieve the greatest actual acreage gain during the time period studied. At the end of 2004, almost one quarter of the land uses in the County were considered to be single-family in nature. This was up from just 18 percent in 1990.

The two other residential land use categories increased at a greater rate than the single-family uses. The increase in the group quarter land uses can be partly attributed to the increased demand for assisted living facilities as the number of residents needing these services increases. The increase in multi-family land uses was also greater than that of the single-family uses. This greater increase has brought a greater balance to Henrico's housing stock as the County continues striving to provide a variety of housing options.

Both commercial, which includes office uses, and industrial land uses increased by over 50 percent and were among the highest of all categories. The increases in these two categories show the health of the non-residential sector of Henrico County's economy. Overall, the land uses are typical of a suburban locality with a balanced economy. While the single-family uses may be the most prevalent they have not dominated to the point where Henrico has become a bedroom community.

EXISTING LAND USE PATTERNS:

Beyond a look at the countywide picture of the population and land use changes which have occurred over the years, the remainder of this Appendix focuses more closely on the geographic distribution of various land uses. The location of various land uses throughout the County, and the related trends in these areas, allows an analysis of the patterns of land use and the implications these patterns may have for future growth and development.

Maps 4 through 8 depict the patterns of various existing land uses in Henrico County. These maps depict the concentrations of various land uses; by showing which traffic zones have a higher proportion of specific uses, such as commercial or industrial, relative to the rest of the County. In effect, each traffic zone is compared with a hypothetical average traffic zone to determine its ranking.

For example, Map 4 shows concentrations of single-family residential uses. For ease of reference, the amount of single-family residential use (measured in acres) has been divided into Low, Medium and High categories. In this case, an area is ranked High (or above average) if more than 30 percent of the area is single-family residential. It is ranked Low (below average) if the figure is less than 15 percent. The remainder of this section of the Appendix will discuss the pattern of development for each land use category in the County.

Single-Family Residential (Map 4) (High: > 30% Low: < 15%): The concentration of single-family residential uses occur principally in the western portion of the County, with an area consistently in the High category occurring along the Patterson Avenue corridor, stretching westward from the City of Richmond. Other areas of note where the High category is concentrated are in the northwestern portion of the County in the Traffic Zones containing the Wyndham and Twin Hickory neighborhoods, and a large portion of the area between Hungary Road and I-295.

In the eastern portion of the County, single-family residential use is principally concentrate close to the City of Richmond. Additionally, two areas around Nine Mile Road near Sandston, and Doran Road near the I-295/New Market Road interchange have multiple Traffic Zones in the High category. The area outside of I-295 has distinctly lower concentration of single-family uses when compared to other portions of the County.

Multi-Family Residential (Map 5) (High: > 5% Low: < 2%): Multi-family residential use includes apartments, townhouses, attached condominiums and duplexes. Concentrations of multi-family residential use, on a countywide basis, occur principally in the portion of the County west of I-95. With the exception of two small traffic zones, all of the area bounded by I-64, Staples Mill Road and I-295 rank either in the Medium or High category in terms of multi-family residential use.

The prevalence of multi-family use is significantly reduced in the eastern portion of the County. The exception to this is the corridor along I-64 between the City of Richmond and I-295. Within this general corridor there are multiple traffic zones in the High and Medium categories. However, in the far southeastern portion of the County (an area encompassing at least one third of the entire County), all of the traffic zones rank Low in the multi-family category, with less than two percent of land area used for multi-family residential.

Commercial (Retail and Office) (Map 6) (High: >6% Low: <3%): The overall pattern revealed in this map shows that commercial uses in the County,

including retail and office, have developed along radial transportation routes leading to/from the City of Richmond. For example, in the western portion of the County, concentrations of commercial use parallel the majority of the major transportation corridors fanning-out from the City: Patterson Avenue, West Broad Street, Staples Mill Road and Brook Road. The most intense is West Broad Street. With the exception of two Traffic Zones in the Medium category, the entire stretch of West Broad between the City and Goochland County are rated in the High category. In the eastern portion of the County, this same pattern seems to hold true with Williamsburg Road, Laburnum Avenue and Nine Mile Road being the general corridors where commercial use is concentrated.

Industrial and Office/Service (Map 7) (High: >4% Low: <2%): While industrial and office/service uses are found throughout the County, concentrations of industrial use appear to be more concentrated and not as wide spread as some of the other uses discussed above. As would be expected, all of these areas have excellent connections to multiple modes of transportation. There are two main concentrations of these uses.

The first of these concentrations is along the Staples Mill Road corridor. Starting adjacent to the City and running to Parham Road, the Traffic Zones to the east of Staples Mill are all in the High category. The primary reason is the location of Acca Yard, one of the largest rail switching yards on the East Coast, and the CSX rail line which originates there and runs roughly parallel to Staples Mill Road. The second of the main concentrations is an area stretching from the City of Richmond to and around Richmond International Airport. In addition to being served by the airport and Interstates 64 and 895, a CSX line serves this area.

It should be noted, several single Traffic Zones in outlying areas are also included in the High category. These include the existing quarry northwest of the I-295 and Staples Mill Road interchange, as well as the White Oak Technology Park.

Vacant Land (Map 8) (High: >80% Low: <40%): The County still has a considerable amount of land classified as vacant, nearly 40 percent in an average traffic zone. To be eligible for the High ranking in vacant land, a traffic zone must have at least 80 percent of its land area classified as vacant.

The most significant concentration of vacant land occurs in the eastern portion of the County, particularly east of I-295. Conversely, areas with a Low ranking in terms of vacant land (i.e., they are more developed overall, on average) largely are concentrated in the western portion of the County. It should be noted that land classified vacant is not necessarily developable since it often includes floodplains, wetlands or otherwise restricted land, as well as farms and other



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large land holdings. This is made particularly evident by the traffic zones along the northern and southern boundaries of the County which are made by the James and Chickahominy Rivers.

From Map 8, it is evident that the pattern of development in general has moved out in a concentric circle away from the boundaries of the City of Richmond. It does appear, however, that the Richmond International Airport has been a major attractor of development, as the area between it and the City of Richmond seems to be the only major concentration of areas ranking Low on the vacant land scale anywhere in eastern Henrico. Another exception to this is the eastern portion of the County along the James River. Unlike other Traffic Zones located adjacent to the City of Richmond, these Traffic Zones are all in the Medium and High categories. With the pending development of Rocketts Landing and Wilton Farm this may change in the future.

In the western portion of the County, no Traffic Zones remain in the High category in terms of vacant land; however, several Traffic Zones are in the Medium category. While these zones are currently shown in the Medium category, they are mostly in areas currently experiencing higher rates of population growth.

Implications: By looking at the patterns of various land uses, some general conclusions about the nature of growth and development in the County can be made. It is clear that the bulk of development has occurred within the County to the north and west of the City of Richmond. This holds true for all kinds of development with the possible exception of industrial uses which have some higher concentrations in the eastern portion of the County.

Another generalization about the pattern of development in the County is that it has expanded outward roughly in a concentric circle around the boundaries of the City of Richmond; most of the land use concentrations are nearest the City. Again, the pattern of industrial development may be an exception.

Certain types of uses, particularly commercial and industrial, are located in distinct association with major transportation corridors. For industrial uses this could include rail and air in addition to vehicular modes of transportation. This pattern is evident despite the broad level of detail inherent in analyzing traffic zone-level data.

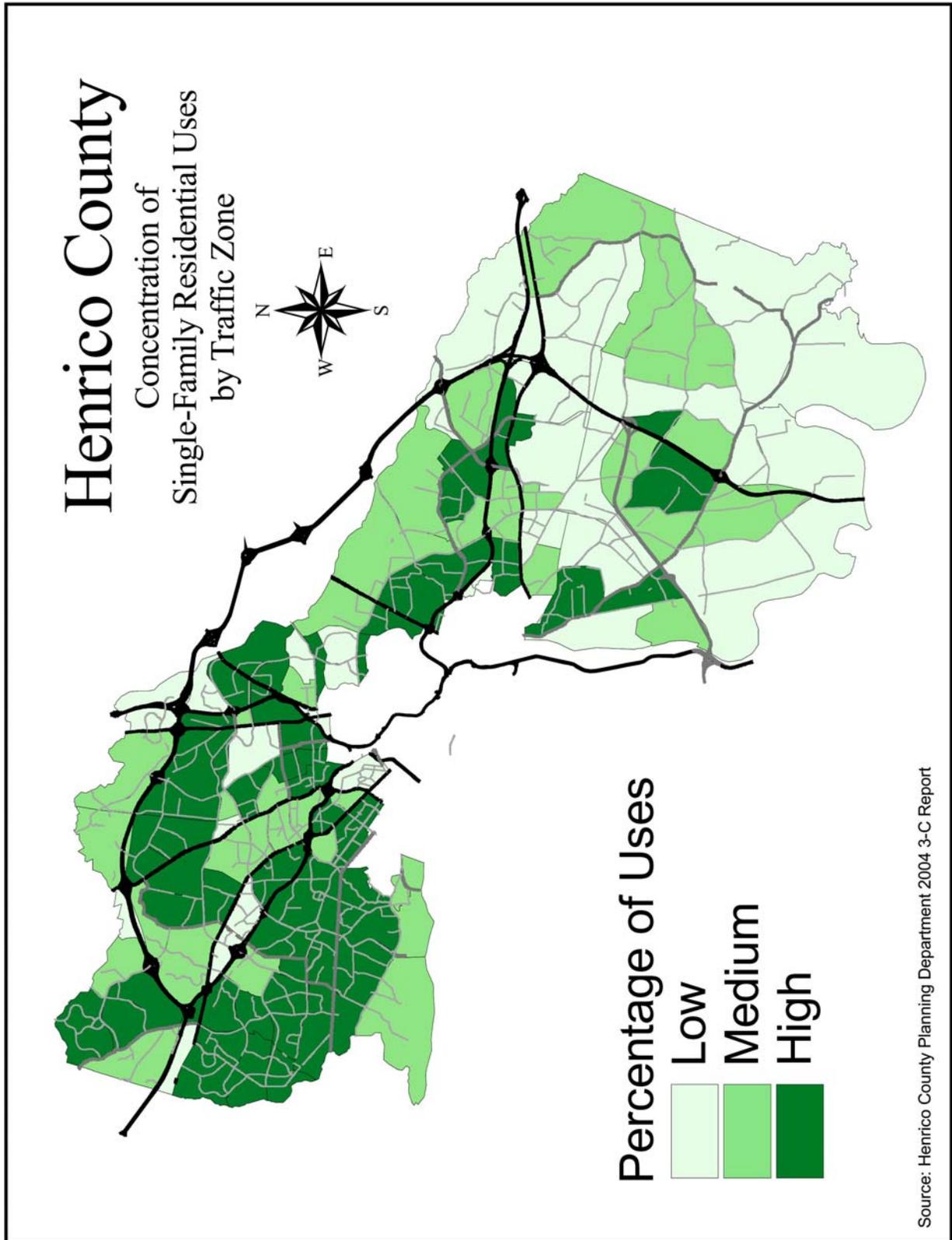
The location of vacant land shows perhaps most clearly the difference in land use character between western and eastern Henrico. Although there are still many infill sites available in western Henrico, major concentrations of vacant



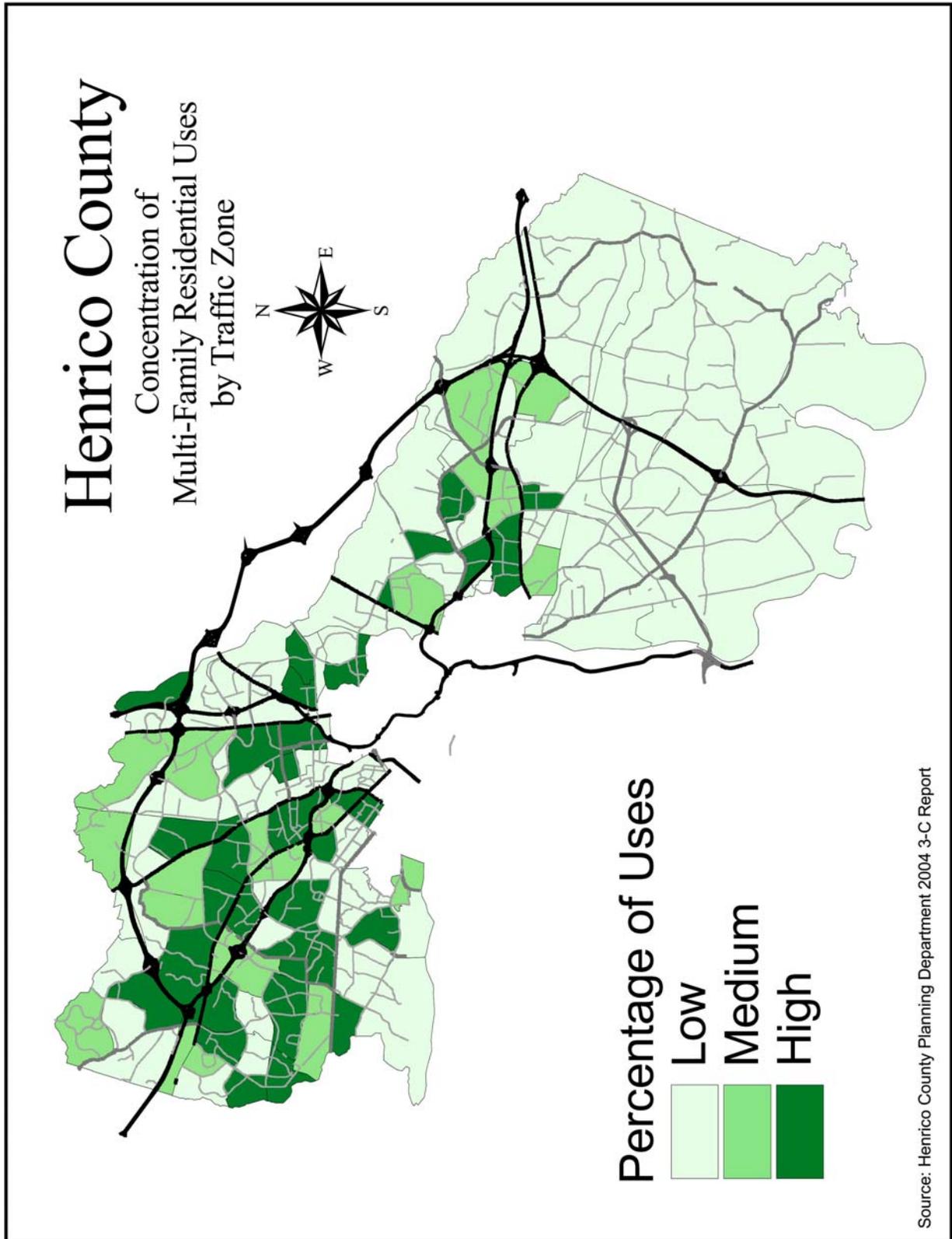
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land are confined to the easternmost portions of the County. In general, the overall pattern of land use has been determined in western Henrico, while much of eastern Henrico is still subject to future decisions.

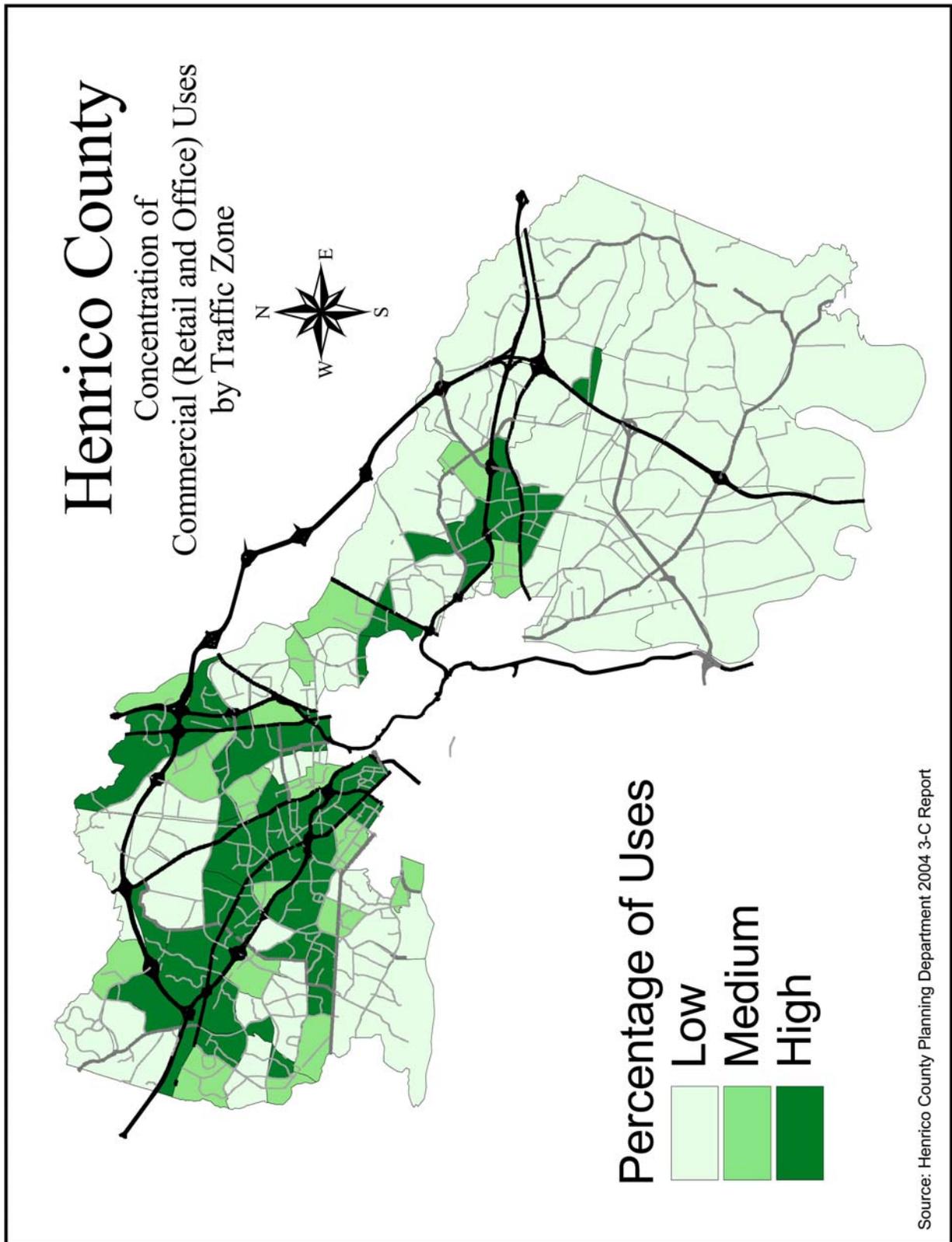
Lastly, along with the visual display of existing land use patterns, this analysis also has revealed the prevalence of different land uses. For example, an average traffic zone would consist of just over 1,000 acres. It would have the following breakdown of land uses: 29 percent of its acreage in single-family residential use; 3.5 percent in multi-family residential use; 6.5 percent in commercial and office use; 3.7 percent in industrial and office/service use; and 38.7 percent vacant. The remaining land area in this hypothetical average traffic zone (18.6 percent) would be divided among public/semipublic uses, water and miscellaneous uses (e.g., roads, utility easements).



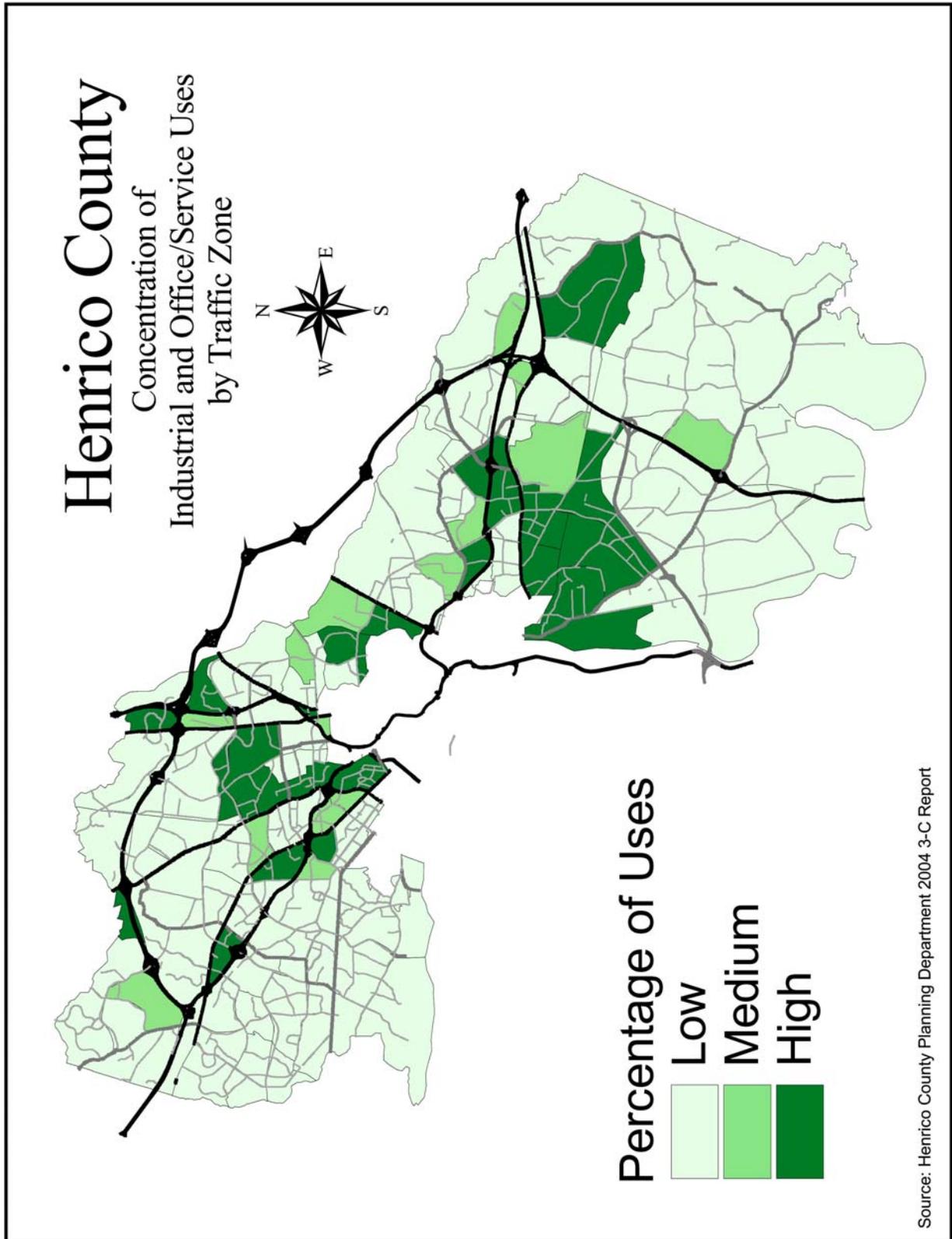
Map 4 - Single Family Residential Uses by Traffic Zone



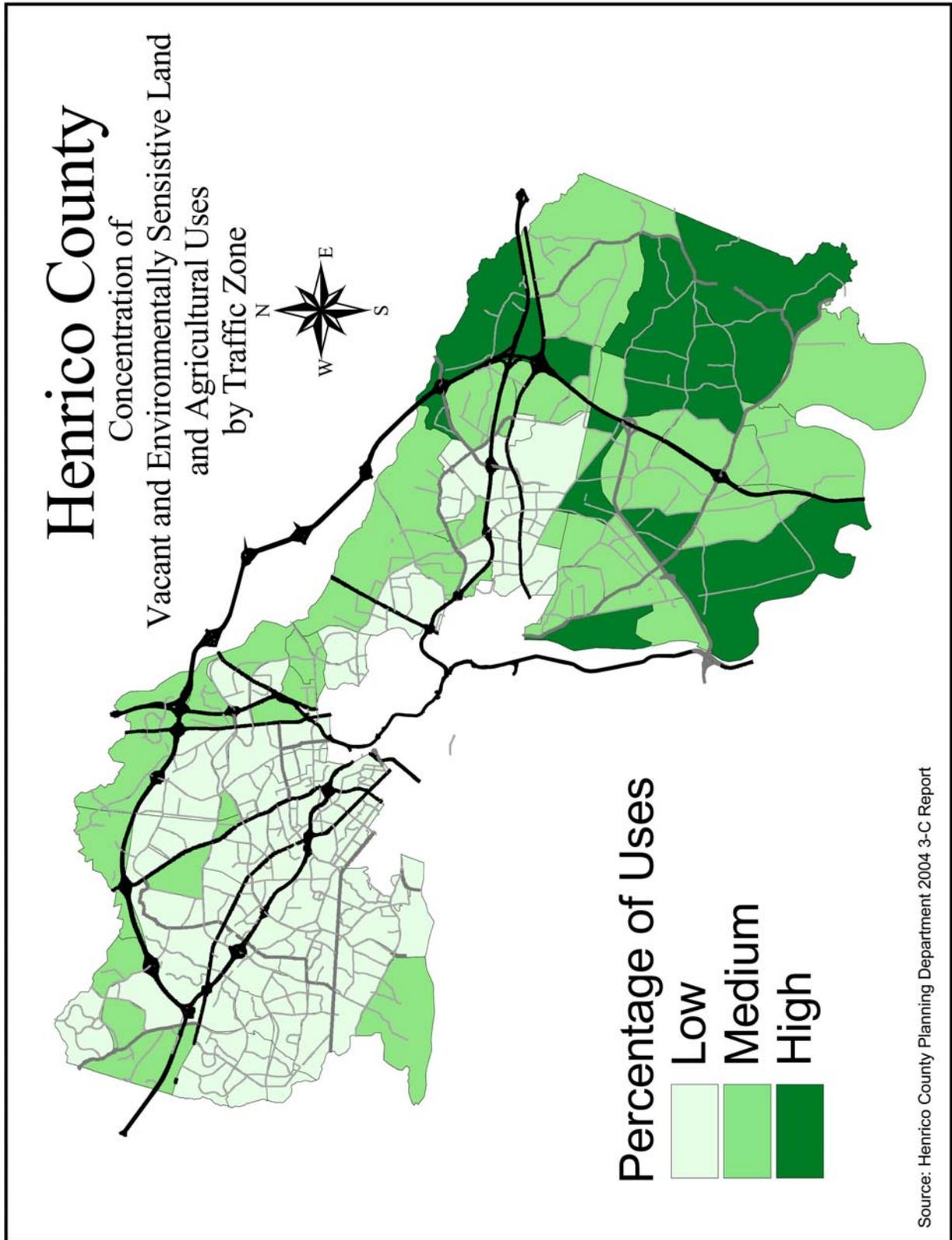
Map 5 - Multi-Family Residential Uses by Traffic Zone



Map 6 - Commercial Uses by Traffic Zone



Map 7 - Industrial and Office/Service Uses by Traffic Zone



Map 8 - Vacant Land and Environmental Uses by Traffic Zone

PRIMARY AND SECONDARY DEVELOPMENT AREAS:

This section of the appendix delves further into an analysis of the pattern of land use, growth and development in Henrico County. Instead of focusing on the totality of existing land uses in the County, it looks more specifically at where major development projects have located and the patterns created by that process. To investigate where most of the development in the County has been occurring, the locations of all the largest development projects between 1990 and 2004 have been shown on Map 9. The results show that there are two clearly defined areas that have attracted most of the major development projects. These have been labeled the Primary and Secondary Development Areas.

Primary Development Area: The Primary Development Area of the County in the last fourteen years has been in the western and northern portion of the County, mainly west and north of Parham Road and north of Gayton Road. Projects meeting the criteria of "major" projects, as shown on Map 9, within this area were totaled to determine the extent of development in each category. Within the area outlined on the map, there have been nearly 10,500 lots developed for residential subdivisions since 1990; close to 2,300 multi-family units/apartments have been provided; almost 1,700 hotel rooms have been constructed; 3.8 million square feet of shopping center/retail uses have been developed; and over 4.7 million square feet of office space has been approved for development.

With respect to the proportion of all major development projects in the County, within the area shown as the Primary Development Area, 71 percent of all "major" subdivision lots have been recorded in this area between 1990 and 2004. Similarly, 69 percent of all the multi-family/apartment units in this analysis were developed in this area. Almost 90 percent of all major retail space was developed within this area, over 87 percent of all hotel rooms constructed over the fourteen years of the study were in this area, and 82 percent of all major office uses were located within the Primary Development Area. It is interesting to note that while such large percentages of most types of development are located in this area, a much lower (6 percent) of the major industrial/warehouse uses have located within the Primary Development Area.

Secondary Development Area: A Secondary Development Area also is depicted on Map 9. While this area did not see as much development as the Primary Development Area, it experienced a significant amount of development between 1990 and 2004. This area is located in the eastern portion of the County and includes three main nodes. The three nodes are centered on



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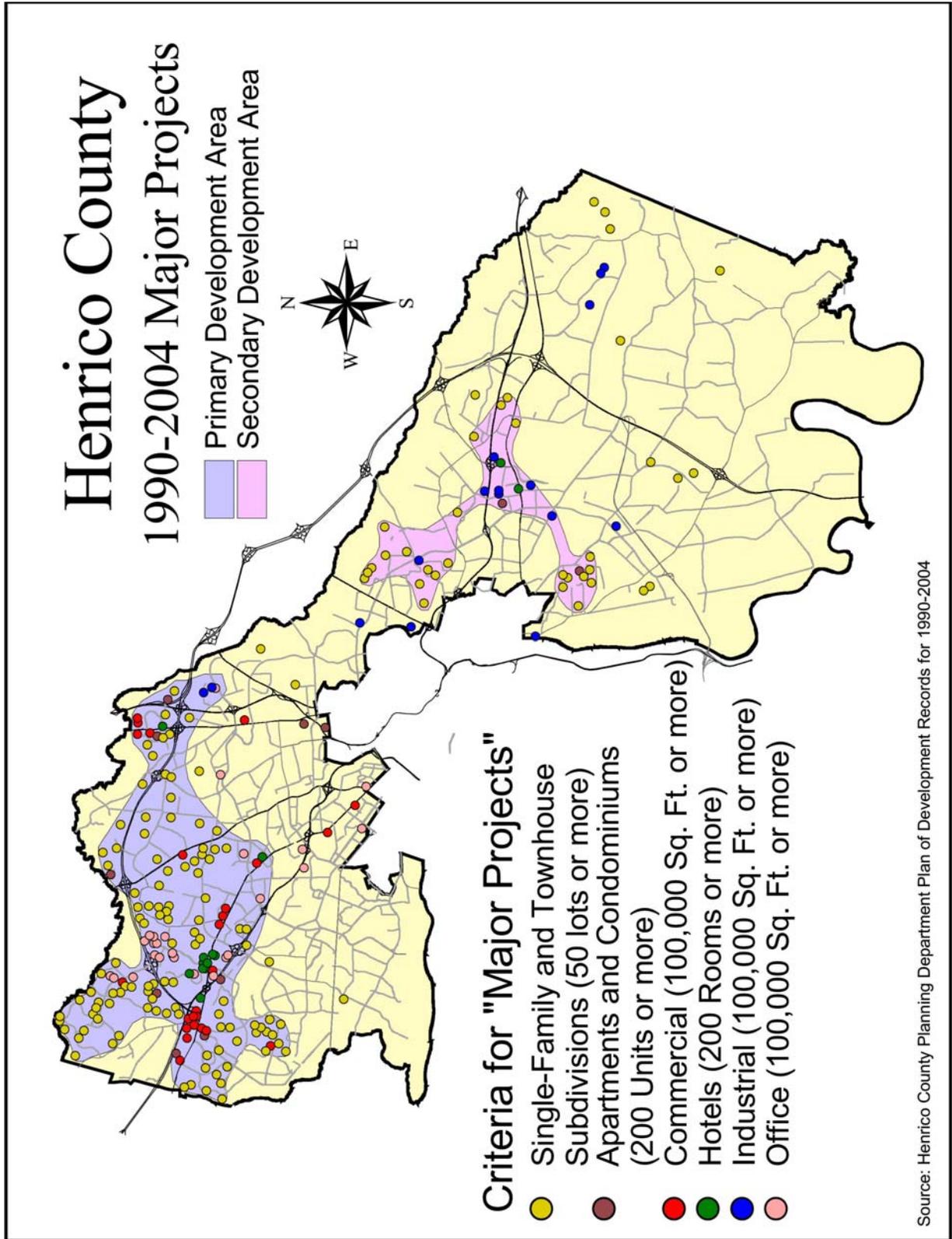
Williamsburg Road just north of the Richmond International Airport, the area surrounding Creighton Road and South Laburnum Avenue, and the area between New Market Road and Darbytown Road just east of the City of Richmond.

The major form of development in the eastern portion of the County was industrial/warehouse uses. While the industrial/warehouse projects within the Secondary Development Area included just over 1.1 million square feet of development, adding just four other nearby developments in the White Oak and Highwoods Industrial Parks brings the total to almost 4.9 million square feet. This total represents 84 percent of the industrial/warehouse development for the entire County between 1990 and 2004.

The majority of the residential development in the Secondary Development Areas occurred around Creighton Road and South Laburnum Avenue, west of Midview Road between New Market Road and Darbytown Road, and on the outside edge of the Sandston community along Williamsburg Road. The residential development in this area totaled over 2,700 recorded lots and over 500 apartment units. These amounts represent 19 percent of the recorded lots and 16 percent of the multi-family residential development in the County during the years included in the study.

Another feature worth noting in this area is the number of hotel rooms. A total of 246 hotel rooms have been provided between 1990 and 2004. Two major developments account for the number of hotel rooms in the Secondary Development Area, all in close proximity to the Richmond International Airport. These hotel rooms represent approximately 13 percent of all hotel rooms associated with major development projects during the period of the study.

Along with the major development projects which have located in the Secondary Development Area, it is also interesting to note what types of projects were not developed in this area. Among the millions of square feet of office and retail use associated with major developments in the County between 1990 and 2004, no major office development or retail developments have located within the Secondary Development Area.



Map 9 - Primary and Secondary Development Areas

Implications: The research on major development projects described above indicates a clear pattern of geographic distribution of land uses over the study's fourteen years. By plotting the sites of the major developments on the map, two areas emerge as the principal locations for development activity between 1990 and 2004. By virtue of the magnitude of development which has occurred in these areas, they have been termed Primary and Secondary Development Areas.

In terms of the overall pattern of land use, both the Primary and Secondary Development Areas outlined on Map 9 display a pattern of growth resulting in concentric circles of development emanating from the center, with each area pushing development further away from the central city. The development surrounding the airport is the exception to this pattern. This area has developed due to the location of the airport and the catalyst it has become for certain types of businesses. This pattern of growth has emerged over the years through countless individual locational decisions which have taken into account marketing and economic factors to help ensure the success of each of the major development projects cited on Map 9 and the accompanying table.

To some extent, it must be realized that features attracting on type of development to a particular area will have a similar attraction for comparable developments. All other factors being equal, the result is a type of clustering effect. This logic may possibly explain why a majority of the major office developments during the period of study were concentrated generally in the Innsbrook area, or why a majority of the commercial growth has occurred around the two nodes of the Short Pump area and the Virginia Center Commons area. Another example of this type of growth on a broader scale would be the amount of industrial/warehouse development which occurred in the eastern portion of the County. This type of growth can have additional implications when other uses locate near a certain concentration. For instance, a large number of the major hotel projects in the County were located in areas adjacent to or in the Innsbrook Office Park because of the number of business travelers visiting these businesses who need accommodations.

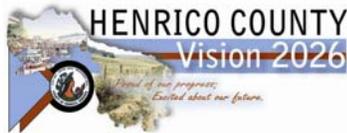
To anticipate what sort of future development patterns may emerge, one may extrapolate from past activities. In that case, due to the clustering effect, it is likely there will be more of the same type of development or other uses to support the clustering developments. For example, one could anticipate that the West Broad Street corridor around the Short Pump Town Center will continue to absorb a large portion of the future retail developments. Additionally, uses



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supporting a regional shopping destination, such as hotels, will continue to locate in this area.

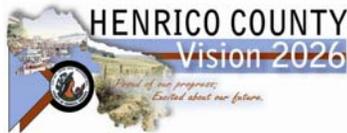
What remains to be answered, however, is the desirability of this pattern of growth and development. To what extent should this pattern be encouraged? What alternative patterns of development are more desirable, and what means are available for influencing the pattern of growth? These are the types of questions which need to be addressed within the Henrico 2026 Comprehensive Plan. That will be the focus of future efforts as we move beyond the analyses presented in this appendix of what has happened, to the more future directed analyses of what should happen.



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Table 5A – Major Development Projects 1990-2004 – Recorded Subdivisions

Subdivision	Lots	Subdivision	Lots	Subdivision	Lots
Afton	79	Greenwood Glen	82	Rivendell	77
Almond Creek	60	Hampshire	151	River Bluffs	95
Almond Creek Estates	79	Hampton Woods	82	Rock Springs Estates	72
Almond Creek North	77	Hartley Plantation	60	Rockstone	69
Andover Hills	62	Harvest Crest	94	Rolfield	74
Aubury at Wyndham	55	Harvest Glen at Twin Hickory	60	Royal Oaks	79
Autumnwood at Twin Hickory	50	Hearthside Ridge	59	Saddle Ridge at Twin Hickory	54
Avery Green at Twin Hickory	123	Heartstone at Twin Hickory	56	Sadler Glen	73
Barrington Valley	54	Hickory Grove	69	Sadler Grove	52
Bennington Ridge East	82	Hickory Woods at Twin Hickory	147	Scandia Lake	79
Bradford Landing at Wyndham	59	Hollybrook Townhouses	62	Scotsglen at Twin Hickory	76
Bradington at Wyndham	71	Hungary Ridge	134	Shady Ridge	73
Brittany	92	Hungary Woods	73	Shelbourne at Wellesley	63
Burgundy Parke	61	Hunters Run	110	Sheppards Way	91
Cambridge	88	Hunton Estates	165	Spring Creek	117
Carrington	110	Huntwood	146	Stanwood at Berkley	52
Cedar Grove	169	Ironwood at Crossridge	50	Sterling Forest	178
Chappell Ridge at Wyndham Forest	85	Jamerson Park	66	Steveston	131
Chartwood	88	Keswick	124	Stonewall Glen	99
Cherry Hill at Wyndham	52	Kingston	122	Stony Run Estates	71
Clarendon Farms	124	Lakeland Townes	190	Summerberry	62
Clarendon Woods	199	Langtree at Wellesley	61	Summerwood	94
Cobblestone Landing at Twin Hickory	132	Laural Lake Townhouses	124	Sussex Wood	66
Courtland at Wyndham	150	Lee's Crossing	65	Sutton	93
Covington	64	Lexington	180	Telegraph Run	101
Creekwood	73	Linsey Lakes	126	The Cottages at Crossridge	72
CrossPoint	174	Magnolia Pointe	69	The Manor at Hunton Park	80
Crystal Creek	75	Magnolia Ridge	285	The Meadows	69
Darbytown Meadows	252	Manor Park at Wyndham	56	The Oaks at Crossridge	79
Deer Spring	61	Maplewood Farms	101	The Townes at Crossridge	145
Dominion Hills	69	Maybrook at Wyndham	81	The Townes at Hunton Park	159
Doran Forest	64	Meadow Farms	91	The Townes at Meredith Creek	98
Doubletree	74	Milbrooke	136	The Village at Olde Colony	132
Dove Hollow	53	Milhaven	83	Townes at Shady Grove	152
Eagles Ridge	80	Millspring Townes	207	Varina Station	166
Edenberry	74	Mountain Glen	159	Weston Hills	58
Elko Station	74	Mountain Laurel Townhouses	111	Wexford at Wyndham	55
Estates at Willis Church	55	Mountain Road Townes	70	White Oak Forest	52
Fairfield Woods	103	Northbrooke	81	White Oak Ridge	74
Fairlawn	172	Oak Glen	78	Willows Bend	84
Forest Trace	65	Oakland Chase	78	Windsor Oaks	52
Four Mile Run	254	Oakland Pointe	50	Windsor Place West	74
Foxboro Downs	166	Olde Colony Estates	66	Winterberry	136
Foxhall	319	Park West	91	Woodberry	111
Gayton Ridge	60	Parsons Walk at Twin Hickory	117	Wyndham Forest	205
Gayton Station	170	Pemberton Oaks Townhouses	234	Wynfield	78
Glen Allen Oaks	57	Pine Creek	50	Wythe Trace	107
Glenwood Lakes	226	Pine Creek South	50		
Graham Meadows	60	Preston at Wyndham	90		
Greensprings	85	Ridgefield Green	88		
				Total	14,689



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Table 5B - Major Development Projects 1990-2004 – Apartment and Non-Residential Projects

Apartment Projects		
POD	Name	units/sq ft
081-02	Westminster Canterbury Addition	200
098-02	The Villas at Oakland Chase	332
083-01	The Lodge at Hunton Park	300
029-00	The Gardens at Twin Hickory	378
018-00	Ovrellook at Brook Run	282
030-99	Summit Gayton Apartments	290
014-99	Audobon Village	214
110-96	Crosspoint - The links	288
085-96	The Chesapeake at Virginia Center	264
082-96	The Madison at Spring Oak	506
057-95	Camden Crossing Apartments	280
	Total	3,334

Office Projects		
POD	Name	units/sq ft
081-04	Hickory Park Office Condos	109,575
084-04	Highwoods Plaza	505,920
044-04	Saxon Capital Headquarters	115,000
031-01	Trigon Addition	100,000
014-01	Mayland and Parham Office Building	102,000
110-00	First Union National Bank Expansion	430,000
002-01	Emerywood Office Park	133,560
080-00	Park Central - Phase 3	116,000
082-00	Northshore Commons	420,000
055-00	East Shore at Wyndham	101,600
075-99	FBI - Parham Road	121,000
111-98	Hillcrest Office Park	160,000
079-97	Owens & Minor Inc	110,000
084-97	Highwoods IV	228,000
064-97	Overlook Office Complex	130,000
052-97	Highwoods Plaza	404,000
011-96	Capitol One - Phase III & IV	198,000
097-95	Wheat First Addition	109,000
075-95	Circuit City HQ - Phase C	190,000
056-94	Lake Plaza at Innsbrook	128,238
020-94	The Concourse at Wyndham	108,000
091-93	Signet Bank Ops Complex	649,701
051-92	Health South Medical Center	200,857
043-92	Circuit City HQ - Phase B	190,000
071-90	The Park at Innsbrook North	358,918
072-90	St. Mary's Hospital	313,348
	Total	5,732,717

Industrial Projects		
POD	Name	units/sq ft
046-04	Siefen Self Storage	110,825
019-04	Coca-Cola Addition	100,600
043-03	Laburnum Race Track Storage	132,390
005-00	S.B. Cox Storage Yard	100,000
045-99	Hewlett Packard - Phase II	643,610
112-98	Hewlett Packard - Phase I	1,207,000
063-98	Rehrig International	307,394
123-97	Highwoods Distribution Center	1,100,000
002-98	Park Central - Phase 1	160,000
097-96	White Oak Semi-conductor	769,186
042-96	International Business Center	114,000
036-96	Highwoods Center	216,000
059-95	Eastport IV	121,680
059-92	Airport Center East	140,000
079-91	International Business Park - Phase II	355,400
100-90	Four Park Central	213,288
	Total	5,791,373

Commercial Projects		
POD	Name	units/sq ft
034-03	Park Place At Short Pump Town Center	100,000
012-02	The Shops at Crossridge	100,000
079-01	John Rolfe Commons Shopping Center	143,808
006-01	Short Pump Tiwn Center	1,250,620
080-99	Downtown Short Pump	119,792
081-99	Nuckols Town Center	102,000
083-99	The Creeks at Virginia Center	132,804
127-98	Dominion Chevrolet	102,000
003-99	Home Depot - 6517 W. Broad	109,500
013-98	Colonnades West	136,000
107-97	Fountain Square Shopping Center	116,500
085-97	Lowes at Short Pump Plaza	110,000
077-96	Va. Center Market place - Ukrop's	103,000
020-96	Short Pump Crossing	150,000
028-96	Target at Brookhollow	122,000
134-95	Target at Libbie Place	116,000
069-95	Short Pump Crossing	117,000
078-95	Walmart - Short Pump	193,000
068-94	Wal-mart - North Park	201,576
047-92	Va. Center Commons - Phase III	132,638
052-91	Shoppes at Short Pump	112,370
041-91	Va Center Commons - Phase II	108,521
043-91	The Price Club	112,620
045-91	Lowe's - W. Broad	100,000
046-91	Sam's Club	130,000
	Total	4,221,749

Hotel Projects		
POD	Name	units/sq ft
125-98	Spring Hill Suites	134
092-98	Extended Stay - Audobon Rd	104
060-98	Candlewood Suites	122
049-98	Marriott at Innsbrook	242
118-97	Suburban Lodge	143
040-97	Hilton garden Inn	159
029-97	Marriot Courtyard - Williamsburg Rd.	142
002-97	Marriott Residence Inn	104
011-97	Marriott Courtyard - W. Broad	154
048-96	Comfort Suites at Innsbrook	124
083-95	Homewood Suites	123
030-95	Innsbrook Hotel and Conf. Center	220
032-93	Hampton Inn at Innsbrook	136
	Total	1,907



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