US 64 - NC 49 Corridor Study
Charlotte and Statesville to Raleigh

Problem Statement

North Carolina Department of Transportation
Transportation Planning Branch

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FINAL

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EXECUTIVE SUMMARY

ES.1 Purpose of This Problem Statement

Through the North Carolina Department of Transportation's (NCDOT's) Strategic Highway Corridors concept, US 64 from Statesville to Raleigh and NC 49 from Charlotte to Asheboro have been identified as a corridor of significance. This corridor is vital to the state's interest in preserving mobility and connectivity to travel destinations within and just outside of central North Carolina.

This problem statement describes how the US 64-NC 49 Corridor fits into the NCDOT Strategic Highway Corridors concept. It addresses transportation needs in the corridor on a broad scale, considering the corridor's existing and future role in meeting the state's regional transportation needs.

The information from this document and the results of the US 64-NC 49 Corridor Study can be incorporated into planning and environmental documents and purpose and need statements associated with future project-level improvements that may be proposed by NCDOT or other entities.

ES.2 Proposed Action

The NCDOT proposes to develop a vision for the US 64-NC 49 Corridor and an associated improvement master plan. The vision and master plan will examine the relationship between land use and transportation, provide guidance for corridor improvements, address financial feasibility, and be sensitive to future project-level requirements relating to the National Environmental Policy Act (NEPA) and NCDOT's project development processes.

ES.3 The US 64-NC 49 Corridor as a Strategic Highway Corridor

The NCDOT has identified the US 64-NC 49 Corridor within the central portion of the state as a Strategic Highway Corridor. This corridor is considered to possess the following characteristics consistent with five of the seven general Strategic Highway Corridors criteria:

- Carries significant traffic, including substantial truck traffic and provides long-distance travel options.
- Connects existing major activity centers.
- Connects existing and planned Interstate facilities.
- Has potential to serve as a reliever route to an existing Interstate facility.
- Is part of a statewide/national highway system.

ES.4 Summary of Need Related to Function as a Strategic Highway Corridor

The factors and conditions that substantiate the need for a consensus-based vision for the US 64-NC 49 Corridor are summarized briefly below.

Criterion – Mobility

Long-distance east-west mobility across the central portion of North Carolina is compromised by the limited number of high-speed facilities. I-40 and I-85 are the only continuous, controlled-access freeways traversing east-west across the central portion of the state, which is the most populated and urbanized area of North Carolina.

The US 64-NC 49 Corridor is the most direct alternative corridor to I-40 and I-85. Origin and destination surveys conducted for this project suggest that truckers and travelers are making long-distance interstate and intercounty trips in and through the central portion of North Carolina, and some travelers appear to be consciously diverting to the US 64-NC 49 Corridor as an alternative to using I-40 and I-85. These current freight carriers and travelers could benefit from more efficient route options between Charlotte and Raleigh and Statesville and Raleigh.

Criteria – Connectivity and Interstate Connectivity

Improvements to US 64 and NC 49 would improve connectivity between the major activity centers along and in the vicinity of these routes and to north-south Interstates in the region.

Criterion – Interstate Reliever

Information obtained from the origin-destination travel surveys and stakeholder interviews conducted as part of the US 64-NC 49 Corridor Study indicate that the US 64-NC 49 Corridor is presently utilized as an alternative to the parallel Interstates for a small percentage of travelers.

Purpose – Foster Economic Prosperity

Coordination with local stakeholders and data collection efforts provided information on future conditions within their respective municipalities. Information obtained through these coordination efforts uncovered that many of the communities believe that transportation alternatives are vital to their prospective economic initiatives and development needs. US 64 over its entire length and the portion of NC 49 in the vicinity of Harrisburg and Mount Pleasant are both viewed as vital public infrastructure elements of future growth plans for the communities through which they pass.

Purpose – Protect the State's Transportation Investment

There are finite funds available for transportation system improvements throughout North Carolina. Prioritizing needs and having a clear vision of the ultimate function of the US 64-NC 49 Corridor will help direct funds for projects beyond the timeframe of NCDOT's Transportation Improvement Program (TIP) more efficiently and preserve the functioning of the corridor as a major through-traffic route for the long term.

Purpose – Promote Environmental Stewardship

The US 64-NC 49 Corridor passes through or adjacent to several communities and environmentally sensitive areas.

As individual transportation projects develop along US 64 and NC 49, early identification of these areas and resources as provided in this document will aid in future preparation of environmental documents required under the National Environmental Policy Act (NEPA) (if federal funds are involved) or the NC State Environmental Policy Act (SEPA). NEPA and SEPA require detailed evaluation of the human and natural environment in the design and implementation of a transportation project.

Also, the information on the human and natural environment along the corridor assembled as part of this planning study can be used by the local communities in their continuing planning efforts.

ES.5 US 64-NC 49 Corridor Study Goals and Objectives

An overall corridor study goal and a number of supporting objectives were developed in order to determine how well potential improvement alternatives would fulfill the vision of the US 64-NC 49 Corridor as a Strategic Highway Corridor, and how well it would address the transportation and land use needs in the study area.

The study goal and objectives for the US 64-NC 49 Corridor relate directly to the purpose, goals, and definition of the NCDOT's Strategic Highway Corridors concept. The Statewide Strategic Highway Corridors definition is clear as it relates to facility characteristics in terms of mobility, connectivity, design, and access management standards.

The following study goal and supporting objectives were developed through early interaction with local stakeholders, who were represented in the study process through the Corridor Development Team (CDT).

Study Goal

To develop a transportation system consistent with the Strategic Highway Corridors concept definition that will serve the mobility needs of people and freight to and through Central North Carolina while addressing the environmental and economic development opportunities of the public.

Study Objectives

1. Enhance transportation connectivity and mobility.
2. Serve as a reliever to I-85 and I-40.
3. Improve safety.
4. Support regional and local transit plans.
5. Support economic development.
6. Support local land use plans.
7. Optimize costs and benefits to system users and funding agencies.
8. Be sensitive to environmental and social factors.

ES.6 SUPPORTING INFORMATION

A wide range of information was collected and evaluated, along with stakeholder input, to determine the factors and conditions that substantiate the need for a consensus-based vision for the US 64-NC 49 Corridor. Below is an overview of the supporting information described in **Chapters 8** and **9** of the Problem Statement.

System Linkage

- Links to interstates, US routes, and State routes.
- Description of numbers of lanes, speed limits, surrounding land use, etc.
- Other planned projects in the study area.

Existing and Projected Traffic Service

- Existing traffic volumes from counts taken as part of NCDOT's statewide count program.
- Truck percentages from NCDOT data and FHWA's Freight Analysis Framework.
- Projected 2030 traffic volumes developed from a regional travel demand model created specifically for the US 64-NC 49 Corridor Study.
- Existing and projected levels of services along US 64-NC 49 and other major routes in the study area.

Existing Travel Patterns and Characteristics

Existing Travel patterns and characteristics were determined by analyzing data from a variety of sources:

- 2000 US Census journey-to-work data.
- Video license plate origin-destination survey at five sites on I-40 and I-85.
- Postcard origin-destination survey from data obtained in the video license plate survey.
- Series of roadside origin-destination surveys at three sites on US 64 and NC 49.
- Series of travel time surveys on I-40, I-85, US 64, and NC 49.

Safety

Sources used to obtain accident data and crash rates include:

- *Highway Safety Improvement Program (HSIP).*
- *US 64 and NC 49 Strip Analysis Data (NCDOT, June 1, 2000 – May 31, 2003).*
- *North Carolina Moving Ahead (NCDOT Traffic Engineering and Safety Systems: 1999-2001 County Crash Data).*
- *Statewide Crash Rates (NCDOT Traffic Engineering and Safety Systems Branch: 2000-2002).*

Modal Interrelationships

Information is provided on existing and planned public transit, freight services (railroads and trucking), and aviation services in the region.

Population

- Existing population from the 2000 US Census, including overall population and minority populations.
- Future 2030 population projections provided by Global Insight for all nine counties in the study area.

Land Use

- Local land use and transportation plans.
- 1996 Land Cover data from the NC Center for Geographic Information and Analysis (NCCGIA), particularly for areas where land use plans were not available.

Economic Development

Statewide and local economic development initiatives are described, including:

- Tax Credits
- Job Development Investment Grant
- One North Carolina Fund
- Industrial Revenue Bonds
- Community Development Block Grants
- Community Economic Development Strategy (CEDS)
- County initiatives
- Yadkin-Pee Dee Lakes Project

Major Environmental Features

Data on environmental features is on a county-wide scale, and is from the NCCGIA database. Information is provided on the following:

- Wetlands on the National Wetlands Inventory
- Streams and Water Bodies
- Outstanding/High Quality Waters
- Impaired Waters (EPA's 303d list)
- Watershed Areas
- Natural Heritage Program Sites

- State and Federally owned lands
- Hazardous materials/Superfund sites
- Historic Resources

Stakeholder Involvement

The stakeholder involvement program for the project reached and involved numerous corridor stakeholders such as elected officials, organizations, agencies, area citizens, and transportation providers through the following:

- Corridor Development Team
- Stakeholder Interviews
- Public Information

1. INTRODUCTION

1.1. Purpose of the Problem Statement

Through the North Carolina Department of Transportation's (NCDOT's) Strategic Highway Corridors concept, US 64 from Statesville to Raleigh and NC 49 from Charlotte to Asheboro have been identified as a corridor of significance. This corridor is vital to the state's interest in preserving mobility and connectivity to travel destinations within and just outside of central North Carolina.

This problem statement describes how the US 64-NC 49 Corridor fits into the NCDOT Strategic Highway Corridors concept. It addresses transportation needs in the corridor on a broad scale, considering the corridor's existing and future role in meeting the state's regional transportation needs.

This problem statement will:

- Demonstrate how the corridor meets the criteria set forth in the NCDOT's Strategic Highway Corridors concept.
- Describe the need for improvements to the US 64–NC 49 Corridor as they relate to the corridor's function as a Strategic Highway Corridor.
- Serve as a preface and supporting documentation for recommended future improvements that enter the NCDOT's project development process and NCDOT's NEPA/404 Merger Process.
- Promote opportunity for early resource agency and stakeholder involvement and input on concerns regarding future improvements in the corridor.

This problem statement is distinct from project-level purpose and need statements that are prepared as part of project development activities conducted in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended. It is part of the transportation planning process and is not part of a NEPA document for a specific project. The problem statement helps establish a statewide and regional framework that can shape corridor-level recommendations for future projects and can influence individual projects' purpose and need statements and criteria for alternative evaluation. The information from this document and the results of the corridor study can be incorporated into planning and environmental documents and purpose and need statements associated with future project-level improvements that may be proposed by NCDOT or other entities.

1.2. Organization of This Document

This document generally follows the outline for project-level purpose and need statements recommended in the NCDOT's publication - *NCDOT Purpose and Need Guidelines*. **Sections 1 through 7** provide an overview of the project and a summary of the purpose and need. **Section 8** provides a summary of the supporting documentation and **Section 9** describes stakeholder involvement.

2. PROPOSED ACTION

The NCDOT proposes to develop a vision for the US 64-NC 49 Corridor and an associated improvement master plan. The vision and master plan will examine the relationship between land use and transportation, provide guidance for corridor improvements, address financial feasibility, and be sensitive to future project-level requirements relating to the National Environmental Policy Act (NEPA) and NCDOT's project development processes.

3. NORTH CAROLINA STRATEGIC HIGHWAY CORRIDORS CONCEPT

The North Carolina Strategic Highway Corridors concept represents the first major implementation step to be advanced under the update of the state's Long-Range Multimodal Statewide Transportation Plan. The concept, developed in partnership with the North Carolina Department of Environment and Natural Resources and the North Carolina Department of Commerce, represents a timely initiative to protect and maximize the mobility and connectivity on a core set of highway corridors, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods. The concept offers NCDOT and its stakeholders an opportunity to consider long-term vision when making land use decisions and design and operational decisions on the highway system. The creation of a long-term vision identifies the ultimately desired facility type (freeway, expressway, boulevard, or thoroughfare) for each corridor. A tri-agency policy statement endorsing the SHC concept was signed by the Secretaries of the three agencies on December 2, 2004.

Figure 1 identifies the Strategic Highway Corridors as adopted by the North Carolina Board of Transportation (NCBOT) in September 2004. The identification of a corridor as a Strategic Highway Corridor is based on the following general criteria:

Mobility	Corridor currently serves or has the potential to expeditiously move large volumes of traffic.
Connectivity	Corridor provides a connection between activity centers including cities, airports, military bases, seaports, etc.
Interstate Connectivity	The corridor provides a connection between existing and/or planned Interstates.
Interstate Reliever	Corridor serves or has the potential to serve as a reliever route to an existing Interstate facility.
Hurricane Evacuation Routes	Corridor represents a major route within North Carolina's Emergency Management's Coastal Evacuation Route Map.
Cited in a Prominent Report	For example, the Rural Prosperity Task Force Report.
Part of a National, Statewide, or Military Highway System	For example, the National Highway System or STRAHNET.

The purpose of the Strategic Highway Corridors concept is to create a consensus–based vision for each identified corridor. Goals of the corridor vision are to improve mobility and connectivity, foster economic prosperity, promote environmental stewardship, and protect the state's transportation investment. The Strategic Highway Corridors concept will influence key policy decisions related to funding, project planning, design, facility type, and local land use.

4. THE US 64-NC 49 CORRIDOR AS A STRATEGIC HIGHWAY CORRIDOR

The NCDOT has identified the US 64 and NC 49 corridors within the central portion of the state as Strategic Highway Corridors. This corridor is considered to possess the following characteristics consistent with five of the seven Strategic Highway Corridors criteria listed in **Section 3**:

- Potential to carry significant traffic, including substantial truck traffic.
- Connects existing major activity centers.
- Connects existing and planned Interstate facilities.
- Potential to serve as an Interstate reliever.
- Part of the national highway system.

5. STUDY AREA DEFINITIONS

There are two study areas for which findings are presented: (1) the corridor study area and (2) the regional study area. These are both described below. However, it should be noted that various elements of the study, especially the travel demand analysis, extend beyond the boundaries of the study areas. For example, the geographic extent of the demand analysis actually encompasses the entire state, so that major external travel flows affecting the study area can be considered.

5.1. Corridor Study Area

Figure 2 shows the US 64-NC 49 Corridor. It is approximately 200 miles in total length, traversing ten counties. No set width surrounding the existing roadways was established. It varied depending on the type of analysis and typically extended one mile or more on either side of the existing highways.

The US 64 Corridor extends from I-77 (including I-40 from I-77 to Mocksville) in Statesville (Iredell County) to I-440 in Raleigh (Wake County). The NC 49 Corridor extends from I-85 in Mecklenburg County northeast to US 64 in Asheboro (Randolph County).

The corridor limits build upon the connectivity and Interstate relief criteria established for Strategic Highway Corridors. The US 64-NC 49 Corridor connects three major urban areas in the state: Triangle, Triad, and Metrolina. Furthermore, US 64 and NC 49 within the corridor limits could provide a logical relief route for I-40 and I-85.

5.2. Regional Study Area

As shown in **Figure 3**, the regional study area encompasses 19 counties in central North Carolina, and defines the general limits of the US 64-NC 49 travel shed boundary. This regional study area primarily was used for the transportation demand modeling conducted for this project.

Given the long length of the US 64-NC 49 Corridor, a regional study area was defined that captured both the local and intra-regional travel patterns, as well as longer distance intra-state and interstate travel movements within the primary corridor study area.

By using entire counties as the basic geographic area for the definition of the regional study area, it was possible to include in the travel demand modeling effort all of the potentially effected urban areas as well as all of the important junctions along the Interstate and primary state highway systems in this portion of the state. By including both geographic areas (counties) and important highway facilities such as I-77 that do not directly connect with the defined segments of the US 64-NC 49 Corridor, it is possible to account for decisions that drivers in these "external" areas might make relative to their potential diversion to use US 64 or NC 49, as opposed to other routes serving common destinations.

This latter consideration is particularly important since one of the primary criteria used to define the US 64-NC 49 Corridor is its current or potential ability to serve as a reliever route to existing Interstate facilities. It was thus necessary to include a more comprehensive description of the regional and statewide highway network in order to be able to account for all reasonable diversion paths through the study area that might be used by current travelers along the I-40 and I-85 corridors and their major feeder routes.

6. SUMMARY OF NEED RELATED TO FUNCTION AS A STRATEGIC HIGHWAY CORRIDOR

The factors and conditions that substantiate the need for a consensus-based vision for the US 64-NC 49 Strategic Highway Corridor are discussed below. The Strategic Highway Corridor Concept criteria and purposes for the corridor vision were used as a basis for organizing the discussion (see **Chapter 3**). Supporting documentation is found in **Chapter 8**.

Criterion – Mobility

Mobility is defined as the ability to move people and goods between two points. Improvements to mobility can result in faster travel, more reliable transportation, greater travel options, and reduced travel costs

Long-distance east-west mobility across the central portion of North Carolina is compromised at the present time by the limited number of available high-speed facilities. I-40 and I-85 are the only full control of access facilities traversing east-west across the central portion of the state, which is the most heavily populated and urbanized area of North Carolina. Between Greensboro and Burlington, I-40 and I-85 share a common roadway. These Interstates carry large numbers of commercial vehicles, short distance local travelers, and long-distance travelers. Extended periods of congestion are prevalent in the urbanized areas through which I-40 and I-85 pass.

The US 64-NC 49 Corridor is the most direct alternative corridor to I-40 and I-85. US 64 from Statesville to Raleigh is a part of the National Highway System. The segment of NC 49 from Charlotte to Asheboro is a designated National Scenic Byway. The corridor has a mix of facility types (controlled-access freeway, five-lane suburban arterial sections with driveways, four-lane divided highways with traffic signals, two-lane rural highways, etc.). The corridor serves local, regional, and long distance travel and is within a region that is heavily traveled by truckers and motorists, including commuters, business travelers, and to a lesser extent, recreational visitors.

Origin and destination surveys conducted for this project suggest that truckers and travelers are making long-distance interstate and intercounty trips in and through the central portion of North Carolina, and some travelers appear to be consciously diverting to the US 64-NC 49 Corridor as an alternative to using I-40 and I-85. These current freight carriers and travelers

could benefit from more efficient route options between Raleigh and Charlotte and Raleigh and Statesville.

Criteria – Connectivity and Interstate Connectivity

Existing major activity centers served either directly or indirectly (via US 421) by the US 64–NC 49 Corridor include Charlotte, Concord, Kannapolis, Greensboro, High Point, Winston-Salem, Burlington, Durham, Chapel Hill, Cary, and Raleigh. The Corridor also serves the major airports in Charlotte, the Triad, and the Triangle areas.

US 64 and NC 49 provide east-west connectivity between several north-south Interstate routes in the regional study area:

- US 64 between Statesville and Asheboro connects I-77, I-40, I-85, and I-73/I-74.
- NC 49 between Charlotte and Asheboro connects I-85, I-485, and I-73/I-74.
- US 64 between Asheboro and Raleigh connects I-73/I-74, the future I-540, I-440, and I-40.

Improvements to US 64 and NC 49 would improve connectivity between the major activity centers along and in the vicinity of these routes and to north-south oriented Interstates in the region.

Criterion – Interstate Reliever

Information obtained from the origin-destination travel surveys and stakeholder interviews indicate that US 64 and NC 49 are currently being used by travelers as viable alternatives to the parallel Interstate routes. This can be attributed to location and direct connection US 64 and NC 49 provide to Interstates connecting major activity centers within the region. As described above, the US 64–NC 49 Corridor provides connections to I-77, I-40, I-85, I-73/I-74, I-485, and I-440. These Interstates provide high-speed mobility, accessibility, and connections to North Carolina's major metropolitan areas, its capital city and emerging developments, as well as providing a linkage between the central portion of North Carolina and adjacent states.

Although I-40 and I-85 provide access to numerous cities and activity centers in the region, Interstate mobility from the Raleigh area west to Charlotte and Statesville is hindered by the congestion through the urban centers. Not unexpectedly, virtually all of the I-85 corridor in Mecklenburg County experiences heavy congestion throughout much of the day, with LOS E or F conditions observed during peak travel periods. Heavy congestion levels also were identified along the portion of I-40 between Winston-Salem and Greensboro and along the I-40/I-85 overlap section to the east. Similar high congestion levels are prevalent in the Raleigh/Durham area on I-40.

Travel time surveys were conducted to determine average travel times between Raleigh and Charlotte, and between Raleigh and Statesville using I-40 and I-85 compared to using US 64

and NC 49. The surveys showed essentially identical travel times between the same defined beginning and ending points along the corridor, regardless of whether the Interstate, or state highway routings were used. Therefore, it appears intuitively obvious that any improvements to US 64 and NC 49 would allow these routings to offer competitive travel times to those achieved on the Interstate system. In turn, this would seem to have the potential to divert some appreciable percentage of Interstate traffic onto this defined Strategic Highway Corridor.

Regional travel demand forecasts prepared as part of this study for the year 2030 anticipate substantial increases in both locally-generated and through travel demands on both the I-40/I-85 and US 64-NC 49 corridors. Given the location of the urbanized portions of I-40 and I-85 and the substantial amount of adjacent development that presently exists, it is unlikely that significant additional widenings beyond those identified in the current NCDOT Transportation Improvement Program can be accomplished along these segments of I-40 and I-85. Thus, over the long term, improvements to alternative travel facilities such as US 64 and NC 49 will be needed to ensure the continuation of adequate regional and statewide mobility.

Purpose – Foster Economic Prosperity

Coordination with local stakeholders provided information on future conditions within their respective municipalities. Information obtained through these coordination efforts uncovered that many of the communities believe that transportation alternatives are vital to their prospective economic initiatives and development needs. US 64 over its entire length and the portion of NC 49 in the areas of Harrisburg and Mount Pleasant are both viewed as vital public infrastructure elements of future growth plans for the communities through which they pass.

While many of the municipalities in the study area will continue to serve as "bedroom communities" for regional commuters, several stakeholders envision their county or municipality as becoming more self-supporting with a mixture of residential and commercial/service growth available to encourage a viable tax base.

The Yadkin-Pee Dee Lakes Project is a formal effort to develop the region as a major tourism/recreational and cultural/historic destination. The region already possesses many of these types of features (i.e. Badin Lake, Seagrove Pottery, Uwharrie National Forest, Asheboro Zoo, Jordan Lake, etc.), and there is a strong desire to promote the concept of the area as a distinct region in terms of its geographic and economic significance. The Yadkin-Pee Dee Lakes Project, also known as the "North Carolina Central Park Project," seeks to take advantage of the area spanning Charlotte to Raleigh/Durham. With this area lying at the junction of US 64 and NC 49, any improvements to these facilities would serve to further enhance and strengthen the development of the region.

Purpose – Protect the State's Transportation Investment

The currently adopted NCDOT Transportation Improvement Program (TIP) includes approximately 412 Interstate, rural, and urban roadway projects in the 19-county regional study area. In some instances, these are either multiple phases (planning, design, right-of-way acquisition, and construction) of a single major project or individual segments of a large corridor improvement. The total estimated cost of these projects in 2004 dollars is $18.4 billion.

Projects on I-85 and I-40 include enhancements to portions of I-85 between Charlotte and Greensboro and portions of I-40 between Winston-Salem and Raleigh. These range from major pavement rehabilitations and interchange modifications to the construction of additional through travel lanes.

There are several improvement projects along US 64 and NC 49 currently contained in the NCDOT TIP. These include the four-lane Asheboro Bypass (TIP Project R-2536), the two-lane Mocksville Bypass (TIP Project R-3111), the widening of US 64 from two to four lanes between Mocksville and Lexington (TIP Project R-3602) and between Lexington and Asheboro (TIP Project R-2220), the widening of NC 49 from two to four lanes between Harrisburg and the Yadkin River (TIP Project R-2533) and between the town of Farmer and the Asheboro Bypass (TIP Project R-2535), and the six-lane widening of US 64/US 1 from the US 64/US 1 interchange to Walnut Street (TIP Project U-3101).

There are finite funds available for transportation system improvements throughout North Carolina. Prioritizing needs and having a clear vision of the ultimate function of the US 64-NC 49 Corridor will help direct funds for projects beyond the timeframe of the TIP more efficiently and preserve the functioning of the corridor as a major through-traffic route for a longer term.

Purpose – Promote Environmental Stewardship

The NCDOT Environmental Stewardship Policy (February 7, 2002) states NCDOT is "committed to planning, designing, constructing, maintaining and managing an interconnected transportation system while striving to preserve and enhance our natural and cultural resources." Environmental stewardship includes "safeguarding the public's health by conducting our business in an environmentally responsible manner, demonstrating our care for and commitment to the environment, and recognizing that our customers expect us to provide mobility and a quality of life that includes the protection of the natural resources and the cultural and social values of their community."

The US 64-NC 49 Corridor passes through or adjacent to several communities and environmentally sensitive areas.

The US 64-NC 49 Corridor provides a vital transportation link for the following major communities along their lengths: Raleigh, Cary, Apex, Pittsboro, Ramseur, Siler City,

Asheboro, Mocksville, Statesville, Richfield, Harrisburg, and Charlotte. In many of these communities, there are stretches of commercial or mixed development adjacent to US 64 or NC 49 that could be disrupted or relocated by improvements to the existing facilities.

Environmentally sensitive natural resources along the corridor include, but are not limited to, historic architectural sites, forested lands, Jordan Lake, the Haw River and surrounding natural areas, Uwharrie National Forest, Badin Lake, Yadkin River, and numerous streams with their associated floodplains and wetlands.

As individual transportation projects develop along the US 64 and NC 49 Corridor, early identification of these areas and resources as provided in this document will aid in future preparation of environmental documents required under the National Environmental Policy Act (NEPA) (if federal funds are involved) or the NC State Environmental Policy Act (SEPA). NEPA and SEPA require detailed evaluation of environmental and social issues in the design and implementation of a transportation project.

Early planning and an overall vision for the entire corridor, along with the early involvement of local communities and state and federal resource agencies, can provide opportunities for long-term collaboration on preserving and enhancing natural resources in the corridor area and for consideration of how the corridor's overall vision and the development of individual projects can help preserve the cultural and social values of communities along the corridor.

As local communities continue to grow, the information on environmental and social resources along the corridor that has been assembled as part of this corridor study can be used to aid their continuing street and infrastructure planning efforts.

7. US 64-NC 49 CORRIDOR STUDY GOALS AND OBJECTIVES

An overall corridor study goal and a number of supporting objectives were developed in order to determine how well potential improvement alternatives would fulfill the criteria of a Strategic Highway Corridor. The study goal and objectives for the US 64-NC 49 Corridor are a derivative of the purpose and goals of NCDOT's Strategic Highway Corridors concept.

The following study goal and supporting objectives were developed through early interaction with local stakeholders, who were represented in the study process through the Corridor Development Team (CDT) (See **Chapter 9** for a discussion of stakeholder involvement).

Study Goal

To develop a transportation system consistent with the Strategic Highway Corridors concept definition that will serve the mobility needs of people and freight to and through Central North Carolina while addressing the environmental and economic development opportunities of the public.

Study Objectives

1. Enhance transportation connectivity and mobility.
2. Serve as a reliever to I-85 and I-40.
3. Improve safety.
4. Support regional and local transit plans.
5. Support economic development.
6. Support local land use plans.
7. Optimize costs and benefits to system users and funding agencies.
8. Be sensitive to environmental and social factors.

8. SUPPORTING INFORMATION

8.1. System Linkage

The regional study area contains many of the state's most important highway facilities, including some of the highest volume sections of the state's Interstate Highway System. Interstate facilities in the regional study area include I-40, I-73, I-74, I-77, I-85, I-440, I-485, and I-540. Other significant routes include US 64, US 220, US 421, US 15/501, US 1, NC 49, and NC 24/27.

The primary east-west routes through the study area are I-85 and I-40 (see **Figure 2**), connecting the regions major activity centers. US 64 and NC 49 parallel the Interstates and to a small degree serve as an alternate route between Charlotte and Raleigh based on the results of the origin-destination studies performed as part of US 64-NC 49 Corridor Study (see **Section 8.4.5**).

I-85 is a north-south route that traverses the study area in a northeast to southwest direction. I-85 extends from Petersburg, Virginia through Atlanta, Georgia. I-85 connects the northern part of the Charlotte metropolitan area to the north part of the Raleigh-Durham metropolitan area. I-85 connects to I-77, I-485, and Charlotte to the north and South Carolina to the south.

I-40 is an east-west route that traverses the study area in an east to west direction. I-40 extends from Barstow, California to Wilmington, North Carolina. I-40 enters North Carolina from Tennessee east of Knoxville and goes through Asheville, Winston-Salem, Greensboro, the southern portion of Durham, and Raleigh. From Raleigh, I-40 continues south and east through the coastal plain of North Carolina before terminating in the coastal city of Wilmington. I-40 connects to I-26, I-77, I-85, I-73/74, I-540, I-440, and I-95.

US 64 and NC 49 also provide an east-west travel option in this region and serve as a parallel route to I-40 and I-85. US 64 traverses the entire state, beginning from southern Tennessee and continues eastward through Statesville, Lexington, Asheboro, Raleigh, and Rocky Mount. US 64 terminates in the coastal town of Manteo in Dare County.

NC 49 enters the study area in Mecklenburg County from South Carolina. After it connects with US 64 in Randolph County, it continues through Alamance, Orange, and Person counties before entering Virginia.

Existing major activity centers served directly by the US 64-NC 49 Corridor include Charlotte, Concord, Cary, Raleigh, as well as the international airports in Charlotte and Raleigh. US 64 is indirectly linked to Greensboro, High Point, Winston-Salem, Burlington, Durham, and Chapel Hill through its connection with north-south facilities, including US 52, US 220 (I-73/I-74), US 421, US 15/501, and NC 87.

The section of US 64 between Statesville and Asheboro connects I-77, I-40, I-85, and I-73/I-74. US 64 between Asheboro and Raleigh connects I-73/I-74, I-440, and I-40. The section of NC 49 between Charlotte and Asheboro connects I-85, I-485 (both which connect to I-77), and I-73/I-74.

8.2. Existing Facility Characteristics of US 64 and NC 49

The facility type and function of US 64 and NC 49 vary along the corridor. **Figure 4** shows the general existing facility characteristics. Different sections of the corridor serve different traveling populations, including regional commuters, recreational traffic, trucking traffic, and local traffic.

Land uses along the corridor also vary from the urbanized areas of Raleigh and Charlotte to rural undeveloped, forested, and agricultural lands. **Figure 5** shows existing (1996) land cover data along the US 64-NC 49 Corridor obtained from the North Carolina Center of Geographic Information and Analysis.

The following sections describe the roadway and immediately surrounding land uses. Due to its length, the corridor study area was divided into five segments for ease of description and organization.

1. Statesville to Lexington: I-40 from Statesville to Mocksville and US 64 from Mocksville to just west of Lexington.
2. Lexington to Asheboro: US 64 from west of Lexington to NC 49 in Asheboro.
3. Asheboro to Pittsboro: US 64 from NC 49 to west of Pittsboro.
4. Pittsboro to Raleigh: US 64 from west of Pittsboro to I-440 in Raleigh.
5. Charlotte to Asheboro: NC 49 from I-85 in Charlotte to US 64 in Asheboro.

8.2.1. US 64 – Statesville to Lexington

This segment of the corridor begins in Statesville and passes through the town of Mocksville, the small community of Fork, ending at the west side of the city of Lexington. From Statesville to Mocksville, the corridor, as defined for this study, uses I-40. I-40 from I-77 to the I-40/US 64 Interchange (Exit 168) is a four-lane, rural freeway with a posted speed limit of 65 mph.

Outside the municipal areas of Lexington and Mocksville, the surrounding land use consists of agricultural and forested land with pockets of commercial and large parcel residential use. In the cities, the corridor is developed with commercial and residential uses typical of small to medium sized towns.

From the I-40/US 64 interchange, US 64 heads east to Mocksville as a two-lane, rural road with a 55 mile per hour (mph) posted speed limit.

US 64 through Mocksville

Through Mocksville, US 64 is a three-lane, winding section with a posted speed limit of 35 to 45 mph.

In the historic district of Mocksville, the posted speed limit is 35 mph. There are safety issues along US 64 in the Mocksville area with its narrow, winding section and numerous access points in historic downtown Mocksville.

East of the US 601 intersection, US 64 transitions to 45 mph, then up to 55 mph. From the east side of Mocksville, through Fork, to the west side of Lexington, US 64 is a two-lane, rural roadway through rolling terrain.

8.2.2. US 64 –Lexington to Asheboro

This segment of the corridor extends from just west of Lexington to the US 64-NC 49 intersection west of Asheboro. Between the municipal areas of Lexington and Asheboro, the surrounding land use consists of agricultural and forested land with pockets of commercial and large parcel residential use. In the municipal areas, the corridor is heavily developed with commercial and residential uses typical of small to medium sized towns. This segment of US 64 primarily serves as a connector between Asheboro (US 220) and Lexington (I-85).

US 64 through Lexington

Through Lexington, US 64 is a variety of facility types: a four-lane roadway with no access control, partial access control, and full access control; and a five-lane roadway. US 64 overlaps with Business I-85 through Lexington.

US 64 between Lexington and Asheboro

From east of Lexington to west of Asheboro, US 64 is a two-lane, rural highway in hilly terrain with a 55 mph posted speed limit. There are areas of poor sight distance and safety concerns with high-speed travel.

8.2.3. US 64 – Asheboro to Pittsboro

This section of the corridor extends from just west of Asheboro to the US 64 Pittsboro Bypass just west of Pittsboro. In between, it passes through small commercial areas associated with Franklinville, the town of Ramseur and the town of Siler City. Through Asheboro, Franklinville, Ramseur, and Siler City, US 64 serves as a primary commercial corridor. Outside the towns, the land uses primarily are agricultural and forest.

Access is critical to towns and communities that are not directly on, but adjacent to US 64, such as Cedar Falls, Franklinville, and Silk Hope. Although commuter congestion is currently not an issue in this section, safety, speed, and trucking concerns are important.

US 64 through Asheboro

In general, US 64 is a five-lane roadway through the towns and communities with a posted speed limit of 35 to 45 mph.

Through Asheboro, US 64 is a five-lane section with a 45 mph posted speed limit. US 64 is a primary commercial corridor for Asheboro, with uses such as public schools, large shopping centers, automobile sales, hotels, and restaurants having numerous driveways along both sides of the roadway. There are also numerous at-grade intersections, many with traffic signals.

US 64 east of Asheboro

Outside the towns, US 64 is a four-lane, divided highway with generally no control of access and a 55 mph posted speed limit. Crossroads outside the towns are infrequent and are primarily controlled by stop signs. The driveways outside the town areas are widely spaced and provide access to rural residences.

US 64 through Siler City

8.2.4. US 64 – Pittsboro to Raleigh

This section of the corridor extends from the western terminus of the Pittsboro Bypass to I-40 in Raleigh. There is significant development in the Wake County portion of this section compared to other sections of the corridor. This section of US 64 is a heavily used commuter corridor with peak-hour directional travel. Approximately 11 percent of the workers who live in Chatham County commute to Wake County, based on the 2000 US Census. Existing and planned development will increase weekday congestion and cause a lengthening of peak-

periods on the weekdays. Also, there is some recreational traffic associated with the Jordan Lake state recreational area, especially on summer weekends.

Pittsboro Bypass

The Pittsboro Bypass is a recently constructed, four-lane fully-controlled freeway around the north side of Pittsboro. It is designated as US 64. The old US 64 through the center of Pittsboro is now US 64 Business. Currently, there are few developed areas along this new freeway, but the land use plans for Pittsboro indicate future commercial and/or office development at the Bypass termini and the interchange with US 15/501.

US 64 near Jordan Lake

East of the Pittsboro Bypass, the corridor crosses over the Haw River and Jordan Lake and continues into Wake County. US 64 is a four-lane roadway with a grass median and no access control. The posted speed limit is 55 mph.

In Wake County, US 64 is an important commercial strip for Cary and Apex. Land uses adjacent to US 64 are primarily commercial with some larger residential subdivisions. Commercial uses include a car dealership mall (Cary Auto Park), strip shopping centers, and offices. There are traffic signals at major cross streets, with the exception of NC 55 and Salem Street, which have interchanges. Most of this section is four-lane, divided with a grass median and partial access control.

US 64 through Apex

US 64 connects to US 1 at an interchange in Cary. From there, the corridor extends north to I-40 in Raleigh. This segment is a four-lane, controlled-access freeway with a posted speed limit of 55 mph. The study corridor terminates at the US 64/US 1/I-40/I-440 interchange.

8.2.5. NC 49 – Charlotte to Asheboro

This segment of the corridor extends from I-85 in the northern fringes of Charlotte to US 64 just west of Asheboro. In between, NC 49 passes near the University of North Carolina - Charlotte, through the city of Harrisburg, the eastern fringe of the city of Concord, the town of Mount Pleasant, through the town of Richfield, over Badin Lake on the Yadkin River, and past the northwestern edge of the Uwharrie National Forest.

Badin Lake, Tuckertown Reservoir and the Uwharrie National Forest all attract recreational traffic.

Outside the municipal areas, the surrounding land use consists of agricultural and forested land with occasional pockets of commercial, industrial and large parcel residential use. In the municipal areas, the corridor is developed with commercial and residential uses typical of small to medium sized towns. One area of industrial uses is on NC 49 west of Asheboro (Klaussner Furniture, Matlab, and a plastics corporation).

From I-85 to I-485, NC 49 is a four-lane, divided roadway with driveways and turn lanes. The posted speed limit is 45 mph. The connection of NC 49 to I-85 is via directional ramps to and from the south.

From east of I-485 to just west of Harrisburg in Cabarrus County, NC 49 is a four-lane, divided roadway with turn lanes and a posted speed limit of 55 mph. NC 49 is one of the main connecting roads between Cabarrus and Mecklenburg County and it carries significant commuter traffic. About 34 percent of Cabarrus County's approximately 66,000 workers commute to Mecklenburg County (2000 US Census).

NC 49 through Harrisburg

In Harrisburg, NC 49 is the main artery of the town, serving businesses in the town as well as commuter and truck traffic. East of town, NC 49 is presently being widened to a five-lane urban roadway (curb and gutter and sidewalk) with a posted speed limit of 35 mph and numerous driveways and signalized intersections.

East of Harrisburg to west of Mount Pleasant, NC 49 is presently being widened to a four-lane, divided roadway with no control of access as part of TIP Project R-2533. From Mount Pleasant east, NC 49 is generally a two-lane road with a 55 mph posted speed limit. Exceptions are described below.

In Mount Pleasant and Richfield, NC 49 has a posted speed limit of 45 mph. There is an interchange with NC 73 in Mount Pleasant.

NC 49 changes to four-lane, divided near the intersection with NC 8 just west of the Yadkin River. The posted speed limit is 55 mph. After crossing the river, NC 49 becomes a two-lane road to NC 109. From NC 109 to the interchange with Old Highway 49 (just west of Asheboro), NC 49 is a four-lane, divided roadway. After the interchange with Old Highway 49, NC 49 is a two-lane roadway to US 64.

8.3. NCDOT Transportation Improvement Program

The majority of planned improvements to the study area highway system would be undertaken by the NCDOT. The NCDOT's Transportation Improvement Program (TIP) identifies those projects for which funding have been allocated for planning, design, right-of-way, and construction activities over the next six years. Individual project listings also

identify those phases of project development that are anticipated to take place beyond the six-year TIP period. Such expenditures are identified as taking place in 'post years'. There are several improvements along the US 64-NC 49 Corridor and within the regional study area that are included in the NCDOT's *2004-2010 Transportation Improvement Program*.

8.3.1. TIP Projects Along the US 64-NC 49 Corridor

TIP Projects along the US 64-NC 49 Corridor are shown in **Figure 6** and described below.

TIP Project R-3111

TIP Description:	US 64 east of Mocksville to US 601 west of Mocksville. Two-lane bypass of Mocksville on four-lane right-of-way, new location.
Length:	6.1 miles
Estimated Cost:	$29.6 million
Schedule:	This project is unfunded in the 2004-2010 TIP. Right-of-way and construction would occur post year.

TIP Project R-3602

TIP Description:	US 601 south of Mocksville to US 52 in Lexington. Widen US 64 to multi-lanes and upgrade interchange at US 52.
Length:	14 miles
Estimated Cost:	$95.2 million
Schedule:	This project is unfunded in the 2004-2010 TIP. Right-of-way and construction would occur post year.

TIP Project R-2220

TIP Description:	East of I-85 Business in Lexington to US 220 in Asheboro. Widen US 64 to four lanes.
Length:	28.5 miles
Estimated Cost:	$125.7 million
Schedule:	Right-of-way and construction is anticipated to occur post year.

TIP Project R-2536

TIP Description:	Asheboro Southern Bypass. US 64 West to US 64 East. Four-lane freeway on new location with interchanges at US 220, NC 49, and zoo access at NC 159.
Length:	13.5 miles
Estimated Cost:	$163.1 million
Schedule:	Construction is scheduled to begin in FY 2009 and to be completed post year.

TIP Project U-3101

TIP Description:	US 1-64, US 64 to south of SR 1313 (Walnut Street). Rehabilitate pavement, additional travel lanes, and modify SR 1313 interchange.
Length:	2.6 miles
Estimated Cost:	$27.4 million
Schedule:	Construction to occur in the FY 2004-FY 2006 time period.

TIP Project R-2533

TIP Description:	Harrisburg to Yadkin River. Widen NC 49 to multi-lanes.
Length:	29.3 miles
Estimated Cost:	$166.6 million
Schedule:	A portion of this project (from Harrisburg to Mount Pleasant) is currently under construction. Construction of the remaining sections (Mount Pleasant to the Yadkin River) is planned to begin in FY 2010 and continue post year.

TIP Project R-2535

TIP Description:	SR 1174 West of Farmer to proposed Asheboro Southern Bypass (R-2536) west of SR 1193. Widen NC 49 to a four-lane divided facility.
Length:	9.7 miles
Estimated Cost:	$31.6 million
Schedule:	Right-of-way acquisition is scheduled to occur in the FY 2004-FY 2010 time period. Construction is scheduled to occur post year.

8.3.2. Interstate Improvement Projects

The following list includes TIP projects for mainline improvements to I-40 from Statesville to Raleigh and I-85 from Charlotte to Greensboro.

TIP Project I-911

TIP Description:	West of NC 801 (Exit 180) to west of SR 1122. Pavement rehabilitation and construction fifth and sixth lanes.
Length:	7.1 miles
Estimated Cost:	$55.6 million
Schedule:	Part complete. Part unfunded.

TIP Project I-2201

TIP Description:	SR 1850 (Squire Davis Road) to west of SR 1398 (Freeman Mill Road) in Greensboro. Widen to six and eight lanes. Upgrade guardrail and lighting.
Length:	10.9 miles
Estimated Cost:	$199.1 million
Schedule:	Part complete. Part under construction.

TIP Project U-2524

TIP Description:	Greensboro Western Loop, North of I-85 to Lawndale Drive. Construct Freeway on New Location. (Part of Loop to be signed as I-40)
Length:	15.0 miles
Estimated Cost:	$569 million
Schedule:	Part complete. Part under construction.

TIP Project I-3306

TIP Description:	I-85 in Orange County to NC 147 (Buck Dean Freeway) in Durham County. Add additional lanes.
Length:	20.7 miles
Estimated Cost:	$88.9 million
Schedule:	Part under construction. Part unfunded.

TIP Project I-2204

TIP Description:	NC 147 (Exit 279) in Research Triangle Park to Bradshaw Freeway at Wade Avenue (Exit 289). Widen to eight lanes.
Length:	9.4 miles
Estimated Cost:	$27.5 million
Schedule:	Part complete. Part under construction.

TIP Project I-3803

TIP Description:	US 29-NC 49 Connector in Mecklenburg County to NC 73 in Cabarrus County. Add additional lanes.
Length:	12.8 miles
Estimated Cost:	$174.9 million
Schedule:	Part under construction as design-build project. Part unfunded.

TIP Project I-2511

TIP Description:	US 29-601 Connector (Exit 68) to north of SR 2120 (Exit 81). Rehabilitate bridges and widen to eight lanes.
Length:	13.2 miles
Estimated Cost:	$236.8 million
Schedule:	Part complete. Part under construction.

TIP Project I-2304

TIP Description:	North of SR 2120 (Exit 81) in Rowan County to US 29-52-70/I-85 Business (Exit 87). Additional lanes and bridge reconstruction.
Length:	6.8 miles
Estimated Cost:	$147.8 million
Schedule:	Construction in 2006 (Design-build project)

8.4. Transportation Demand and Capacity

8.4.1. Existing Traffic Volumes

One of the most basic measures of utilization of the existing highway system is the average annual daily traffic (AADT) volume using each of the various roadway segments. The NCDOT conducts a comprehensive, statewide traffic count program on a continuing basis. The information collected and analyzed through this program is used for a variety of purposes ranging from statewide and regional long-range planning, through project-level planning and environmental studies, to the design of roadway pavements and the timing of traffic signals.

For the purposes of the US 64-NC 49 Corridor Study, traffic volume data was obtained from NCDOT files for the Interstate, primary, and important secondary routes throughout the nineteen county regional study area. Traffic volume data for the study's base year (2002) was used to obtain an understanding of present day travel patterns and to identify where congestion was presently being experienced. This information also was used to assist in the development of the regional travel demand forecasting model.

Table 1 presents a summary of 1998 and 2002 AADT volumes on the major roadways in the study area. These are only representative traffic volumes along each of the roadway segments identified, and higher or lower volumes would be observed at specific locations between the defined beginning and ending points of each segment. **Figure 7** illustrates 2002 AADT volumes on the major roadways in the study area.

The largest AADT volumes are along the Interstate routes traversing the study area. Volumes along I-40 range from about 30,000 vehicles per day (vpd) between I-77 and the Forsyth County line in the more rural western portion of the study area, to 80,000 and 100,000 vpd between Greensboro and Burlington along the section co-signed with I-85, and are in excess of 130,000 vpd on sections of I-40 between Durham and Raleigh. Similarly, AADT volumes along the I-85 corridor range from about 155,000 vpd just east of I-77 in Charlotte to about 60,000 vpd in the vicinity of Business I-85/US 52 near Lexington.

Daily traffic volumes along the primary routes of interest to this corridor study, US 64 and NC 49 are much lower than those observed on the parallel Interstate corridors and tend to exhibit much higher variations in volume. Along the US 64 corridor, for example, the average daily volumes in the Lexington area were approximately 25,000 vpd, while just a few miles to the east in Randolph County volumes along a rural section of US 64 were about 7,500 vpd. From Asheboro east to Pittsboro, average daily volumes on US 64 were typically between 10,000 and 15,000 vpd. East of Pittsboro, traffic volumes along US 64 steadily increase, from about 15,000 vpd at the Chatham/Wake County line, to about 24,000 vpd just west of the of NC 55 in Apex, to about 45,000 vpd just west of US 1 in Cary. Along the section jointly signed as US 1/US 64 in Cary, traffic volumes were approximately 75,000 vpd

Along the length of NC 49 through the study area, traffic volumes exhibit the same type of wide variations as those observed along US 64. In the Charlotte area, for example, AADT volumes along NC 49 were typically on the order of 25,000 vpd. In the rural portions of the corridor between Charlotte and Asheboro, AADT volumes were generally in the range of 4,000 to 6,000 vpd.

Information obtained from NCDOT also allowed for a comparison of AADT volumes in 1998 and 2002 to identify short-term trends in traffic growth. As illustrated on **Table 1**, a wide range of traffic growth changes have taken place on the study area highway system in recent years. With respect to the US 64-NC 49 Corridor, it appears that the most significant volume changes in recent years have taken place along the portion of NC 49 between Charlotte and Asheboro and along the section of US 64 between Asheboro and Raleigh. Volumes along the referenced section of NC 49 experienced an average annual percent change of between 5.0 and 7.2 percent. Along the section of US 64 between Asheboro and Raleigh, traffic volumes experienced an average annual percent change of between 2.0 and 3.6 percent.

Table 1: Average Annual Daily Traffic Volumes in the Regional Study Area

Route/Limits: From	To	1998 AADT	2002 AADT	Percent Change, 1998-2002	Average Annual Percent Change
Interstate 40					
I-77 (near Exit 154)	US 64 (near Exit 162)	26,000	33,000	26.9%	6.1%
US 601	NC 801	33,000	37,000	12.1	2.9
US 158	NC 67	85,000	86,000	1.2	0.4
US 220	I-85	79,000	89,000	12.7	4.1
NC 119	Mebane-Oaks Rd	80,000	81,000	1.3	0.4
Fayetteville Rd. (Exit 276)	NC 55	78,000	89,000	14.1	4.5
NC 147	Miami Blvd (Exit 281)	110,000	110,000	0.0	0.0
Aviation Parkway	Harrison Ave (Exit 287)	120,000	134,000	11.7	2.8
Interstate 73/74 (US 220)					
I-85	US 311	23,400	24,500	4.7%	1.2%
US 311	US 64	34,000	38,000	11.8	2.8
US 64	NC 24	20,800	22,400	7.7	1.9
Interstate 85					
I-485 (at NC 24)	NC 73	75,000	91,000	21.3%	6.7%
NC 73	US 52	58,000	61,000	5.2	1.3
US 52	US 64	57,000	61,000	7.0	1.7
US 64	US 220	42,000	46,000	9.5	2.3
NC 49	NC 87	98,000	99,000	1.0	0.3
NC 86	US 70	35,000	43,000	22.9	7.1
US 64					
I-40	US 601	26,000	29,000	11.5%	2.8%
US 601	US 52	26,600	26,600	0.0	0.0
I-85	NC 109	11,000	11,000	0.0	0.0
NC 109	US 220	10,500	11,000	4.8	1.2
US 220	NC 22	19,400	22,000	13.4	3.2
NC 22	US 421	7,200	7,800	8.3	2.0
US 421	US 15/501	8,500	9,800	15.3	3.6
US 15/501	NC 751	13,000	15,000	15.4	3.6
NC 55	Davis Drive	29,000	33,000	13.8	6.7
NC 49					
NC 24	I-485	24,800	27,600	11.3%	2.7%
Morehead Rd.	Robinson Rd.	28,000	30,000	7.1	2.3
US 601	NC 73	9,600	12,700	32.3	7.2
NC 73	US 52	7,000	8,500	21.4	5.0
US 52	NC 109	5,100	6,300	23.5	5.4
NC 109	US 220	5,500	6,300	14.5	3.5

(Source: Annual Average Daily Traffic Counts, Traffic Survey Unit, Transportation Planning Branch, North Carolina Department of Transportation, Raleigh, North Carolina, Years 1999-2002).

8.4.2. Existing Truck Percentages

One of the defining characteristics of the North Carolina Strategic Highways Corridor concept is that the routes comprising this statewide network connect major activity centers around the state. While total traffic volume is one indication of this degree of connectivity, another important indicator is the portion of the total traffic stream that is made up of trucks, both single-unit and multi-unit vehicles. Particularly in the case of a multi-county, regional corridor study such as this, the identification of those highway facilities with a high percentage of trucks is a factor that can help to define the purpose and need for any potential improvements to those facilities.

Information was obtained from the NCDOT on the percentage of the total traffic stream represented by large trucks. This data was supplemented by information obtained from the Federal Highway Administration's (FHWA's) national Freight Analysis Framework (FAF) to identify major truck routes through the study area. This information is summarized below and shown on **Figure 8**.

The study area roadways with a "high" percentage of truck traffic (defined as those routes carrying 15 percent or more trucks) tend to be the Interstates and other elements of the state primary highway system. Virtually all segments of the Interstate Highway System in the study area, with the exception of some urban segments in the Charlotte and Raleigh areas, are carrying at least 15 percent trucks. Along I-40/I-85 in the Greensboro area, this truck percentage translates into 20,000 trucks per day. In the central portion of the I-85 corridor between Charlotte and Greensboro, 13,000 vehicles per day are trucks.

Those segments of the state primary highway system that are freeways or expressways, such as US 421 southeast of Greensboro and US 220 south of Asheboro (the I-73/I-74 corridor), are also carrying in excess of 15 percent trucks on an average daily basis.

Along US 64 , the truck percentage varies considerably as it passes through the defined study area. Near Lexington, less than ten percent of the total traffic volume along US 64 is trucks, representing approximately 1,000 large vehicles per day. Just west of Asheboro, the average daily truck percentage on US 64 is between 10 and 15 percent, representing approximately 1,000 trucks per day. From east of Asheboro through Siler City to Pittsboro, the truck percentage is in excess of 15 percent with the number of trucks estimated to be between 1,500 to 2,000 per day. East of Pittsboro, the percentage of average daily truck traffic decreases to less than ten percent, due to the increase in total traffic near the Raleigh area. However, in this more "urbanized" section of the study area, US 64 is estimated to be carrying approximately 2,500 to 3,000 trucks per day.

On the NC 49 corridor, similar wide variations in the percentage of trucks were observed. In the Charlotte area, the truck percentage on NC 49 is relatively low (between five and ten percent) because of the high volumes of commuter traffic. This translates into approximately 1,500 to 2,000 trucks per day along this section of NC 49. However, in the rural areas

between Harrisburg and Asheboro, more than 15 percent of the total traffic stream is comprised of trucks. This represents about 1,700 trucks per day.

Based on stakeholder interview comments and the results of the roadside interview surveys, it is likely that a significant proportion of the trucks currently using the US 64 and NC 49 corridors are transporting goods to and from nearby agricultural and manufacturing activities located along these corridors

8.4.3. Future Traffic Volumes

For the US 64-NC 49 Corridor Study, a travel demand model was developed to forecast traffic volumes in the study area under various assumptions about the level of highway capacity and service characteristics on US 64 and NC 49. The model forecasts the volume and spatial orientation of travel and the likely levels of congestion that will result from household, business, and through-traffic growth over a 28-year period, between 2002 and 2030. According to economic forecasts produced for this study, households in the US 64-NC 49 Corridor will increase by 78 percent, from 1.6 million to 2.8 million, and employment will increase by 69 percent, from 2.2 million to 3.6 million jobs by 2030. The original year 2030 roadway system represented in this model is a composite of NCDOT and other public agencies' transportation improvement projects and fiscally constrained long-range transportation plans.

In its level of detail and sophistication, the transportation model was designed for consistency with the objectives of a corridor-level study. The model was constructed to capture changes in longer-distance (inter-urban) flows of autos and trucks that result from significant changes in highway capacity, household growth, and employment growth. In contrast, transportation models developed and used by Metropolitan Planning Organizations, such as those in Charlotte, the Triad, and the Triangle, are designed to capture traffic demand within a metropolitan region. They are designed to capture the impact of small scale changes in travel times and costs on travelers' mode of travel, their choice of routes, and their choice of destination.

One direct way to characterize growth in travel demand and the way it is distributed over the highway system is to examine the volume of traffic which crosses fixed, aligned points in the study area. This study identified six groups of such points, or screenlines, which are aligned in the north-south direction and which cut across several roadways, from I-40/I-85 to NC 27. These screenlines thus capture east-west travel movements along the corridors between Charlotte and Raleigh and between Statesville and Raleigh.

Traffic volumes produced by the travel demand model for the years 2002 and 2030 at these locations are shown in **Table 2**. Overall, traffic demand is forecast to grow by 79 percent within the study area, which nearly matches the growth forecasts for households.

Table 2: Forecast Growth in Daily Traffic Volumes – 2002 to 2030

Location	Daily Volumes 2002	Daily Volumes 2030	Difference	Percent Change	Average Annual Percent Change
Between Pittsboro and Raleigh Screenline					
I-40 and I-85	79,500	132,200	52,700	66%	2.4%
US 64	12,700	47,400	34,700	273%	9.8%
US 421	10,300	25,500	15,200	148%	5.3%
Subtotal	*102,500*	*205,100*	*102,600*	*100%*	*3.6%*
East of Ramseur Screenline					
US 64	11,500	38,600	27,100	236%	8.4%
US 421	3,200	19,200	16,000	500%	17.9%
I-40 and I-85	80,400	128,000	47,600	59%	2.1%
Subtotal	*95,100*	*185,800*	*90,700*	*95%*	*3.4%*
Between Winston-Salem and Greensboro Screenline					
I-85	40,700	65,900	25,200	62%	2.2%
I-40	88,500	143,400	54,900	62%	2.2%
NC 49	14,900	44,800	29,900	201%	7.2%
US 64	1,800	15,900	14,100	783%	28.0%
Subtotal	*145,900*	*270,000*	*124,100*	*85%*	*3.0%*
West of Winston-Salem Screenline					
I-40	45,600	94,000	48,400	106%	3.8%
I-85	44,200	80,900	36,700	83%	3.0%
NC 49	6,400	28,700	22,300	348%	12.4%
US 52	30,300	44,900	14,600	48%	1.7%
US 64	1,800	10,900	9,100	506%	18.1%
BUS I-85	18,700	27,000	8,300	44%	1.6%
Subtotal	*147,000*	*286,400*	*139,400*	*95%*	*3.4%*
South of Mocksville Screenline					
I-40	32,600	57,400	24,800	76%	2.7%
I-85	65,000	115,000	50,000	77%	2.7%
NC 49	5,300	26,600	21,300	402%	14.4%
Subtotal	*102,900*	*199,000*	*96,100*	*93%*	*3.3%*
East of Charlotte Screenline					
I-40	31,800	56,200	24,400	77%	2.7%
I-85	73,900	154,200	80,300	109%	3.9%
US 64	2,800	3,300	500	18%	0.6%
NC 49	20,700	52,700	32,000	155%	5.5%
Subtotal	*129,200*	*266,400*	*137,200*	*106%*	*3.8%*
Total	**722,600**	**1,412,700**	**690,100**	**96%**	**3.4%**

Note: Total and subtotals include several facilities with 2030 vpds under 5,000 which are not listed individually in the table.

8.4.4. Roadway Levels of Service

An important element of defining the potential need for any roadway improvement is the ability of the facility to adequately accommodate both existing and projected future traffic volumes. Roadway performance is rated on a level-of-service scale of A through F based on a variety of factors, including average vehicle operating speed and the freedom to maneuver (percent time spent following the vehicle ahead in the case of two-lane roadways where passing opportunities are limited). Level-of-service (LOS) "A" reflects an ability to travel at the roadway's posted speed limit and complete freedom to change lanes or to pass other vehicles. LOS F represents very congested, stop-and-go flow conditions with no freedom to maneuver. LOS C is generally considered the desirable minimum acceptable level of performance for rural highways, with LOS D generally considered the minimum acceptable level of performance for urban and suburban facilities.

In order to evaluate levels of service for roadways across the regional study area, values of per lane capacity were defined for the general roadway categories of freeways, expressways, other major arterials, minor arterials, and collector routes which existed in the study area in 2002. These represent all of the facilities of interest in this study. These values were then used to develop estimates of the maximum daily traffic volume that could be accommodated at each level of service A – F on each type of roadway within the study area. The comparison of these maximum daily traffic volumes associated with each level of service to the year 2002 average annual daily traffic volumes allowed for a determination to be made of the relative levels of traffic congestion currently observed on the regional highway network.

2002 Levels of Service

Figure 9 presents a summary of 2002 traffic congestion levels for the study area highway system. This figure shows congestion trends based on the regional travel demand model and does not address peak hour conditions. Its purpose is to provide an overall region-wide picture of relative congestion levels.

As illustrated in **Figure 9**, the vast majority of mileage on the study area highway system operated at acceptable levels of service (i.e., LOS A, B, or C) on an average daily basis in 2002. This is particularly true along US 64 and NC 49. Along US 64, there are no significant pockets of congestion caused by limited roadway capacity as indicated from daily traffic volumes. However, there are several locations between Raleigh and Statesville that experience significant delay at intersections during peak hours, such as in Asheboro, Lexington, and Mocksville. Likewise, NC 49 operates at acceptable levels of service throughout the corridor, although intersection delays occur in and near the city of Charlotte.

In the case of many of the other Interstate and primary routes in the study area, significant areas of moderate to heavy congestion were identified. Not unexpectedly, the majority of I-77 and I-85 in the Charlotte area were determined to be experiencing severe congestion levels (LOS E or F) in 2002.

Moderate to heavy congestion levels (LOS E/F) also were identified along I-40 between Winston-Salem and Greensboro. Similar high congestion levels were also observed in the Raleigh/Durham area, particularly along I-40 through Wake and Durham Counties (LOS D/E). However, sections of I-40 throughout this area have been since improved to address the congested conditions that were observed in 2002.

2030 Levels of Service

Figure 10 presents level of service estimates for the Year 2030 Existing and Committed (E+C) roadway network. For the US 64-NC 49 Corridor Study, the E+C model network for the study area included all projects in the NCDOT's *2004-2010 Transportation Improvement Program* and metropolitan planning organizations' (MPO) fiscally constrained long-range transportation plans (LRTP). In contrast to Year 2002 traffic conditions, large sections of roadway facilities in the corridor are forecast to operate at LOS E or F conditions in 2030. Significant stretches of many of the primary routes within the Charlotte, Winston-Salem, and Raleigh metropolitan areas are projected to experience LOS E/F operations, despite the completion of a number of major widenings to existing facilities and the construction of several new location circumferential freeway and expressway routes around these urbanized areas.

Although US 64 and NC 49 are both projected to attract significantly higher traffic volumes between 2002 and 2030, many sections of these facilities are still anticipated to operate at acceptable levels of service. These include NC 49 between Concord, and Asheboro, US 64 west of Asheboro, and US 64 from Ramseur east to the west side of the Pittsboro Bypass. Under the 2030 E+C model network scenario, US 64 from Lexington to Asheboro is projected to continue to operate at LOS B/C, and does not appear to attract large volumes of traffic. However, pockets of congestion are projected to appear along US 64 just west of Ramseur and in the areas just east and west of the Pittsboro Bypass. East of Pittsboro, (to as far east as US 1 and I-540), Year 2030 traffic along US 64 is projected to operate in very congested conditions.

The section of NC 49 between I-485 near Charlotte and US 601 near Concord is forecast to experience significant congestion (LOS E/F) in the year 2030.

8.4.5. Existing Travel Patterns and Characteristics

In addition to obtaining an understanding of the total volume of traffic using the study area highway system, it is also important to understand the travel patterns associated with these vehicles. This is particularly important because a major goal of this study is to examine the potential for improvements to US 64 and NC 49 to divert current and future-year traffic from I-85 and I-40. Existing travel patterns and characteristics were determined by analyzing data from a variety of sources. These included:

- 2000 US Census journey-to-work data.
- A video license plate origin-destination survey at five sites on I-40 and I-85.

- A postcard origin-destination survey from data obtained in the video license plate survey.
- A series of roadside origin-destination surveys at three sites on US 64 and NC 49.
- A series of travel time surveys on I-40, I-85, US 64, and NC 49.

A summary of the key findings associated with each of these data collection activities is presented below.

2000 US Census Journey-to-Work data. For the purpose of this large scale regional study, 2000 US Census journey-to-work data was evaluated at the county level.

As would be expected, home-based work trip travel patterns tend to be focused on the three major urban areas within the region: Charlotte-Mecklenburg County, Piedmont Triad (Greensboro, High Point, and Winston-Salem), and the Triangle (Raleigh, Durham, and Chapel Hill).

In the western portion of the study area, Mecklenburg County is the dominant destination for work trips, both for those trips beginning in Mecklenburg County and those beginning in surrounding study area counties such as Cabarrus, Stanly, Rowan, and Iredell. Within the 19-county study area, the home-based work travel shed for the Charlotte/Mecklenburg County area appears to be generally bounded by the cities of Statesville to the north, Salisbury to the northeast, and Albemarle to the east. Some portion of the interaction between Cabarrus County and Mecklenburg County would be expected to use NC 49

The Piedmont Triad cities of Greensboro, High Point, and Winston-Salem are the primary home-based work trip destinations for the central portion of the regional study area, with the study area communities of Lexington and Asheboro also being important destination areas. The largest county-to-county travel patterns use major corridors such as US 220 (I-73/I-74) between Randolph County (Asheboro) and Guilford County (Greensboro) and I-40 between Forsyth County (Winston-Salem) and Guilford County (Greensboro). There is also a significant movement between Davidson County (Lexington) and Randolph County (Asheboro) that could reasonably be expected to use this portion of US 64.

In the eastern portion of the study area, the Raleigh/Durham/Chapel Hill urban areas are the primary home-based work trip destinations. While the majority of work trips appear to take place between these three urban centers and their immediately surrounding suburbs, the 2000 US Census data identified a number of other significant travel patterns of interest to this study. The most important of these include:

- Between Chatham County (Pittsboro and Siler City) and Wake County (Raleigh and Cary) that would principally use the US 64 corridor.
- Between Chatham County, Orange County (Chapel Hill), and Durham County (Durham) that would principally use the US 15-501 corridor.

- Between Lee County (Sanford) and Chatham County that would principally use the US 15-501 or US 421 corridors.
- Between Lee County and Wake County that would principally use the US 1 corridor.

Those cities and counties that are currently the largest population and job centers in the study area are anticipated to retain these rankings in the planning horizon year of 2030. Thus, while the absolute magnitude of the 2000 US Census journey-to-work travel patterns can be expected to increase, the basic orientation of these travel patterns can be expected to continue.

Video Origin-Destination Surveys along I-40 and I-85. On October 15, 2003, high-speed video cameras were set up at five locations along I-40 and I-85 to capture license plate images of vehicles traveling on the interstates. Details on the survey process are described in the *Video Origin-Destination Survey Technical Memorandum (December 2003)*. The sites were located at:

Site #1. I-40 Exit 280 (David Drive) in Durham County
Site #2. I-40/I-85 Exit 132 (Mount Hope Church Road) in Guilford County
Site #3. I-40 Exit 208 (Gallimore Dairy Road) in Guilford County
Site #4. I-40 Exit174 (Springbrook School Road) in Davie County
Site #5. I-85 near Exit 60 (Centergrove Road) in Cabarrus County

The license plate images of most vehicles passing the five survey stations in both directions over the course of the 12-hour survey period were obtained from the video survey. The origin, destination, and entry/exit times of these vehicles were recorded by analyzing individual license plate images at each survey station. A total of 246,587 license plates were able to be recorded out of a total of 285,175 vehicles passing the survey stations (86.5 percent).

Based on the video survey, the majority of the matched observations were determined to be short to medium distance trips within the study area. For example, 27 percent of the vehicles observed heading westbound on I-40 at Site #1 (the easternmost site) over the course of the survey period were observed passing this same location in the eastbound direction later in the day, but were not recorded passing another survey station. Conversely, only two percent of the total number of vehicles observed heading westbound on I-40 at Site #1 were observed heading westbound on I-40 near Mocksville (Site #4) and only three percent of the total vehicles observed heading westbound at Site #1 were later observed heading southbound on I-85 at Site #5. Thus, only five percent of the total westbound traffic stream passing Site #1 could be termed a "long" trip; that is, one that traverses the entire length of the study corridor

One conclusion that can be drawn from this analysis is there may be only a small portion of the total traffic stream along I-40 and I-85 that appears to currently follow either the entire Charlotte-Raleigh or the Statesville-Raleigh routes. However, even five to seven percent of a large AADT volume can represent a substantial number of vehicles.

Postcard Survey from I-40 and I-85 Video Data. The North Carolina Department of Motor Vehicles provided vehicle owner names and addresses for the North Carolina license plate numbers recorded at video survey Site #2 (I-40/I-85 Exit 132, Mount Hope Church Road in Guilford County). These motorists were mailed a survey questionnaire asking them to provide details of their trip. A total of 33,000 postcard surveys were mailed. Approximately 3,400 surveys (10.3 percent of the total distributed) were returned with sufficient data to allow for subsequent processing and analysis. Details of the postcard survey are documented in the *Postcard Survey Technical Report, May 2004*

Eastbound trip origins were concentrated in Charlotte, Greensboro, High Point, and Winston-Salem. Origins also included Tennessee along the I-40 corridor, South Carolina and Georgia along the I-85 corridor, and Virginia and West Virginia along the I-77 and US 220 north corridors. This indicates there is a large travel market shed for traffic passing through Site #2. Eastbound destinations were concentrated in the Raleigh-Durham-Chapel Hill area, but with a widespread distribution through eastern North Carolina and into south central and southeastern Virginia (particularly the Richmond/Petersburg and Hampton Roads urban areas). The terminus of I-40 in Wilmington also had a high concentration of eastbound destinations.

Westbound trips displayed similar patterns as the eastbound trips. The largest concentrations of westbound destinations were Guilford, Forsyth, and Mecklenburg Counties. Other destinations included the I-40 corridor through western North Carolina, the I-85 south corridor through South Carolina into Atlanta, Georgia, the I-77 south corridor through South Carolina and southwestern Virginia and West Virginia along US 220 and I-77.

From the postcard survey, a number of intercounty travel patterns were observed in the I-40/I-85 corridor that would appear to be high probability candidates for diversion to an improved US 64-NC 49 corridor. For example, a strong movement was identified between Mecklenburg County and Wake County, and between Mecklenburg County and Chatham County (Siler City and Pittsboro). Other major movements that could be expected to use an improved US 64-NC 49 corridor linked Cabarrus County with Chatham and Wake Counties and Wake County with Iredell County (Statesville). Thus, it would appear that a substantial percentage of current traffic using the central portion of the I-40/I-85 corridor between Charlotte and Raleigh could potentially be diverted to an improved US 64-NC 49 corridor.

US 64 and NC 49 Roadside Origin-Destination Surveys. In October 2003, roadside origin-destination surveys were conducted at three locations:

- US 64 – Lexington (October 15, 2003) – 1,554 surveys
- NC 49 – Yadkin River (October 16, 2003) – 1,543 surveys
- US 64 – Siler City (October 21, 2003) – 1848 surveys

Details regarding these surveys are contained in the project technical memorandum *Roadside Origin-Destination Survey Technical Report, (May 2004)*.

A total of 4,945 vehicle drivers were surveyed, which was an average of 19 percent of the total daily traffic passing these three locations in both directions.

The overall results of the three roadside origin-destination surveys on NC 49 and US 64 appear to further validate the findings of the postcard survey; namely, there is significant utilization of the NC 49 corridor between Charlotte and Asheboro and of the US 64 corridor linking Statesville, Lexington, Asheboro, and Raleigh for travel between the Charlotte and Raleigh urban areas. Moreover, there appears to be a potential to divert some portion of the traffic that is now using the I-85 and I-40 corridors between the Charlotte and Raleigh metropolitan areas onto an improved US 64-NC 49 Corridor.

At the US 64 – Lexington site, the origins of the eastbound US 64 vehicles are concentrated either in Mecklenburg County and the immediately adjacent counties to the east and west, in Davidson County, or in Forsyth County. A noticeable portion of the trips had their origins in the I-85 south corridor through South Carolina and into Georgia, in the I-40 west corridor through North Carolina, or to the northwest into Virginia and West Virginia in locations served by the I-77 north corridor.

The destinations of eastbound US 64 vehicles are widely dispersed throughout the counties of central and eastern North Carolina, with most of the destinations located to the south of the US 64–NC 49 Corridor. The only immediately obvious concentration of destinations is in Wake County. A small number of trips are destined for locations in northeastern South Carolina and communities along the Atlantic Coast.

Westbound US 64 vehicles passing through this survey station had origins that were generally concentrated in the counties along US 64 between Asheboro and Raleigh. As was the case with the eastbound destinations, the majority of the westbound origins were observed in the portions of central and eastern North Carolina south of US 64. The destinations of the vehicles traveling westbound on US 64 past this roadside survey station appear to be concentrated in the following counties: Cabarrus, Davidson, Davie, Forsyth, Iredell, Mecklenburg, and Rowan. These counties are generally contained within the triangle formed by the junctions of I-40 and I-77 at Statesville, I-40 and I-85 at Greensboro, and I-77 and I-85 at Charlotte. Trip destinations also appear to follow the I-40 west corridor through North Carolina into Tennessee, and the I-85 south corridor beyond Charlotte into South Carolina and Georgia.

At the NC 49 – Yadkin River site, the origins of the northbound NC 49 vehicles are concentrated in and around Mecklenburg County and the immediately adjacent counties to the east and west. A noticeable portion of the trips had their origins in either South Carolina along the I-77 corridor between Charlotte and Columbia, or along the I-85 corridor through South Carolina and into Georgia. The destinations of the northbound NC 49 vehicles, while generally concentrated in the Triad (Winston-Salem/Greensboro/High Point) and Triangle (Raleigh/Durham/Chapel Hill) areas, include locations throughout central and eastern North Carolina. Several of the northbound trips passing through this survey station reported destinations in central Virginia.

The origins of the southbound NC 49 vehicles, while generally concentrated in the Triad and the Triangle urban areas, include locations throughout central and eastern North Carolina. Several of the southbound trips passing through this survey station reported their trip origins as being in central Virginia along the US 220 and I-85 corridors. The destinations of the southbound NC 49 vehicles are concentrated in and around Charlotte and the immediately adjacent counties to the east and west. Other concentrations of destinations were observed in the Lexington and Statesville areas. A noticeable number of the southbound trips reported their destinations in either South Carolina along the I-77 corridor between Charlotte and Columbia, or along the I-85 south corridor through South Carolina and into Georgia.

At the US 64 – Siler City site, the origins of the eastbound US 64 vehicles are concentrated in the following counties: Cabarrus, Davidson, Davie, Forsyth, Iredell, Mecklenburg, and Rowan. A noticeable portion of the trips had their origins along the I-85 corridor in South Carolina and Georgia, in the I-40 corridor through North Carolina, or to the northwest into Virginia in locations served by the I-77 and US 220 corridors. The destinations of the eastbound US 64 vehicles are highly concentrated in and around Wake County. Other destinations tend to follow either US 64 to the east of Raleigh or I-40 south of Raleigh to Wilmington.

The origins of the westbound US 64 vehicles passing through the US 64 - Siler City survey station were heavily concentrated in Wake and Durham Counties, with additional locations scattered throughout most of eastern North Carolina The destinations of the westbound US 64 vehicles traveling past this site are concentrated in the following counties: Cabarrus, Davidson, Davie, Forsyth, Iredell, Mecklenburg, and Rowan. Trip destinations also appear to follow the I-40 corridor through the western counties of North Carolina, and the I-85 corridor from Charlotte into South Carolina and Georgia. Other trips were scattered across southwest Virginia along the I-77 and I-81 corridors.

Travel Time Surveys. A series of travel time surveys were undertaken to record the average vehicle travel times and speeds for trips between Charlotte and Raleigh and Statesville and Charlotte utilizing I-40 and I-85, and US 64 and NC 49. The surveys were conducted over a period of six weekdays between November 19, 2003 and December 9, 2003. Multiple trips were taken in each direction along each route during both peak and off-peak periods. Details of these surveys are described in the *Travel Time Survey Technical Report (May 2004)*.

As expected, the slowest sections of the Interstate were those located in the largest urban areas with the highest traffic volumes. Peak-period travel times along I-85 north of Charlotte, for example, were less than 30 mph until well into Cabarrus County. Once beyond the boundaries of the Charlotte urban area, travel speeds along I-85 north were almost always at or above the posted speed limit, with only minor slowdowns observed in the Salisbury area during peak periods.

One of the more consistently congested segments of the Interstate was the overlap section between Greensboro and Burlington. Throughout most of the survey period, speeds in this area were at or below 30 mph reflective of stop and go conditions. It should be noted that

these travel time runs were conducted in late 2003 prior to the completion of the Interstate improvements in the Greensboro area, and thus illustrate conditions that were significantly worse than what would be observed today if new data were collected.

Continuing east along the I-40 corridor beyond Burlington, travel times were consistently at or above the posted speed limit until entering the Raleigh/Durham/Chapel Hill urban area. From about the Orange County/Durham County line east to I-440, travel speeds along the I-40 corridor were less than 30 mph during peak periods.

Along US 64, traffic generally moved at the posted speed limits except for occasional small pockets of localized congestion and traffic signal delay. Between I-40 at Mocksville and I-85 at Lexington, travel speeds along US 64 were between 45 and 60 mph except when traversing the communities of Mocksville and Lexington, where average travel speeds were at times 15 mph. East of the I-85 interchange at Lexington, travel speeds along US 64 were at the posted speed limit to Asheboro.

From the US 64/NC 49 junction on the west side of Asheboro east along US 64 through Ramseur, traffic congestion was typically encountered. This resulted in fluctuations in the observed travel speed from less than 15 mph to more than 45 mph. These fluctuations are typical of conditions along multilane suburban arterial highways with substantial roadside commercial development characteristics, which define this portion of US 64.

East of Ramseur, travel speeds along US 64 were typically at the posted speed limit to the east side of Pittsboro in Chatham County. The only exception to this was observed in the more commercialized Siler City area, where speeds were in the 30 to 45 mph range. From the Chatham County/Wake County line east to the end of the defined study area at the I-40/I-440/US 1/US 64 interchange, moderate to heavy congestion and delay was typically observed during peak travel periods. Much of this was attributed to intersection delays, with resulting overall average travel speeds through the area being less than 30 mph.

Along NC 49 between Charlotte and Asheboro, a wide range of travel speeds was observed. The portions of NC 49 closer to Charlotte, generally from the Concord/Mount Pleasant area south into the city of Charlotte, experienced significant fluctuations in travel time, due primarily to traffic signal delays. Peak-period speeds in this area were less than 30 mph. Once north of Mount Pleasant, travel speeds along NC 49 were at the posted speed limit to Asheboro. The only noted exceptions to this were observed at the intersection of NC 49 and US 52 in Richfield and at the NC 49/NC 109 interchange in Davidson County.

Based on the results of the travel time runs, a typical trip between Raleigh and Charlotte utilizing I-40 and I-85 would take approximately 2 hours and 30 minutes, covering a distance of approximately 155 miles at an average speed of 62 mph. Traveling between the identical origin and destination points utilizing US 64 and NC 49 would also take approximately 2 hours and 30 minutes, covering a slightly shorter distance of approximately 140 miles at an average speed of 56 mph. From a total travel time perspective, these two routings are essentially identical. The travel distance on the Interstate routing is somewhat longer, but at

a faster average speed, while the same trip via US 64 and NC 49 is slightly shorter in distance, but has a slower average travel speed.

Similarly, a typical trip between Raleigh and Statesville along I-40 would take approximately 2 hours and 15 minutes, covering a distance of approximately 150 miles at an average speed of 67 mph. Traveling between the identical origin and destination points along US 64 would take approximately 2 hours and 30 minutes, covering a slightly shorter distance of approximately 130 miles at an average speed of 52 mph. From a total travel time perspective, the US 64 routing would take approximately 15 minutes more, or about an 11 percent increase over the Interstate travel time.

Given the relatively identical travel times between the same defined beginning and ending points along the corridor, regardless of whether the Interstate or state highway routings were used, it is reasonable that improvements to US 64 and NC 49 would allow these routings to offer lower travel times than those via the Interstate. This would create the opportunity to divert some appreciable percentage of Interstate traffic onto this defined Strategic Highway Corridor.

8.5. Safety

Crash data provided information on safety conditions in the study area. Traffic accident records were obtained for the most recent years available. Crash information was reviewed for I-85, I-40, US 64, and NC 49. General findings from the data review and analysis are summarized in this section.

The following sources were referenced:

- *Highway Safety Improvement Program (HSIP).*
- *US 64 and NC 49 Strip Analysis Data (NCDOT, June 1, 2000 – May 31, 2003).*
- *North Carolina Moving Ahead (NCDOT Traffic Engineering and Safety Systems: 1999-2001 County Crash Data).*
- *Statewide Crash Rates (NCDOT Traffic Engineering and Safety Systems Branch: 2000-2002).*

8.5.1. Highway Safety Improvement Program (HSIP)

The *Highway Safety Improvement Program Report (May 2003)* provided information on North Carolina's top potentially hazardous locations, including intersections, bridges, roadway sections, and bicycle and pedestrian areas. The HSIP report provided a preliminary list of ranked locations that are considered potentially hazardous, meaning they are not necessarily dangerous; but simply a candidate for crash analysis and possible investigation. Until a location is analyzed and investigated it is difficult to determine if the location is dangerous or not. Data used to determine potentially hazardous locations were based on crashes occurring between October 1, 1999 and September 30, 2002 or based on crashes occurring between October 1, 1992 and September 30, 2002.

I-40 and I-85

Intersections. Three of the 400 potentially hazardous intersections statewide are located on I-40 and I-85 in the study area. Two of these are located in Wake County and two in Durham County as indicated below.

State Ranking	
	Durham County
#32	• I-85 at US 70
#48	• I-40 at SR 1973 (Page Road)
	Wake County
#190	• I-40 at SR 1497 (Cary Towne Boulevard)

Roadway Sections. Twenty-one of the 200 potentially hazardous sections of roadway are located on or near I-40 and I-85 in the regional study area. One or more hazardous roadway sections are located in all counties that I-40 and I-85 pass through in the regional study area, except Cabarrus County, Mecklenburg County and Wake County, which have none. Potentially hazardous sections of I-40 and I-85 are listed below by county.

State Ranking	
	Alamance County
#14	• I-40/I-85 near SR 1007 (Mebane Oaks Road)
	Davidson County
#24	• I-85 near NC 8
#26	• I-85 near SR 2085 (Baptist Children's Home Road)
#54	• I-85 near SR 1295 (I-85 Service Road)
#154	• I-85 near SR 1133 (Belmont Road)
	Davie County
#24	• I-40 near SR 1410 (Farmington Road)
#19	• I-40 near US 64
#30	• I-40 near US 601
#152	• I-40 near SR 1436 (Pinebrook School Road)
	Durham County
#148	• NC 147 near I-40
#177	• I-85 near SR 1675 (Glen School Road)
	Forsyth County
#10	• I-40 near NC 66
#55	• I-40 near SR 1101 (Harper Road)

Guilford County

#15 • I-40/I-85 near SR 3056 (Rock Creek Dairy Road)
#191 • I-85 near I-85 Business

Iredell County

#4 • I-40 near SR 2158 (Old Mocksville Road)
#157 • I-40 near US 64
#167 • I-40 near SR 1005 (Old Mountain Road)

Orange County

#38 • I-40/I-85 near SR 1120 (Mt. Willing Road)

Rowan County

#96 • I-85 near SR 1505 (Mt. Hope Church Road)
#130 • I-85 near SR 1221 (Old Beatty Ford Road)

Bridges. Sixteen of the 113 potentially hazardous bridge locations statewide are located on or near I-40 and I-85 within the regional study area and are listed below by county.

State Ranking

Alamance County

#77 • Bridge #130 & #131 on I-40/I-85 near NC 49
#88 • Bridge #120 & #122 on I-40/I-85 near NC 49

Durham County

#82 • Bridge #108 & #112 on I-85 near US 15
#83 • Bridges #229 & #230 on I-40 near I-540
#105 • Bridges # 17 & #21 on US 15 near I-40
#108 • Bridge #306 on SR 1118 (Fayetteville Street) near I-40

Forsyth County

#90 • Bridge #125 on I-40 Business near I-40

Guilford County

#26 • Bridge #325 on US 220 near I-85
#53 • Bridge #220 on SR 1541 (Wendover Avenue) near I-40

Mecklenburg County

#43 • Bridge #294 on SR 2665 (Harris Boulevard) near I-85
#73 • Bridge #354 on NC 16 near I-85
#74 • Bridges #511 & #512 on SR 2665 (Harris Boulevard) near I-85
#95 • Bridges #187 & #188 on US 74 near I-485
#24 • Bridge #285 on SR 2480 (Cheshire Road) near I-85

	Orange County
#98	• Bridges #103, #106, #110, & #111 on I-85 near US 70
	Randolph County
#61	• Bridges #20 & #26 on I-85 near US 311

US 64 and NC 49

Intersections. Five of the 400 potentially hazardous intersections statewide are on or near NC 49 or US 64 in the study area and are listed below by county.

State Ranking	
	Cabarrus County
#51	• NC 49 at Old Charlotte Highway
#358	• US 601 at NC 49
	Randolph County
#126	• US 64 at SR 1335 (Rush Mountain Road)
#80	• NC 47 at NC 49
	Wake County
#336	• US 64 at SR 1163 (Kelly Road)

Roadway Sections. One of the 200 potentially hazardous sections of roadway statewide is located near US 64 in the study area and is listed below.

State Ranking	Chatham County
#42	• US 421 near US 64

Bridges. Three of the 113 potentially hazardous bridge locations statewide are located on or near US 64 or NC 49 in the study area and are listed below by county.

State Ranking	
	Randolph County
#51	• Bridge #191 on US 64 near NC 22
	Wake County
#3	• Bridge #167 on US 1 near US 64
#57	• Bridges #169 & #170 on US 64 near SR 2217 (Old Milburnie Road)

Bicycle and Pedestrian Areas. Three of the top 100 potentially hazardous bicycle and pedestrian sections statewide are located on US 64 or NC 49 in the study area and are listed below by county.

State Ranking		
	Mecklenburg County	
#34	• On NC 49 in rural Mecklenburg County	
#79	• On NC 49 in Charlotte	
	Randolph County	
#55	• On US 64 in rural Randolph County	

8.5.2. Strip Analysis Data

I-40 and I-85

Accident data for 2000-2002 was reviewed to determine accident trends along I-40 and I-85 within the regional study area. The analysis also compared crash rates (crashes/100 million vehicle miles traveled (VMT)) to average crash rates for all Interstates in North Carolina.

The Interstate Strip Analysis revealed that I-40 in Wake County from the Durham County line to the I-40/I-440/US 1/US 64 interchange, and I-85 in Mecklenburg County from the US 29/49 Connector to the Cabarrus County line had notably higher crash rates than the statewide average rates for Interstates.

The Strip Analysis Data also showed that most accidents on I-40 and I-85 occur during peak (morning and afternoon) periods and are rear-end collisions. This data suggests that most accidents along I-40 and I-85 are occurring during periods of congestion.

US 64 and NC 49

The analysis compared crash rates (crashes/100 million VMT) to statewide average crash rates for rural routes, primary rural routes, and rural US routes in North Carolina.

The accident rates suggest that the US 64-NC 49 Corridor is not particularly hazardous. Accident, injury, and fatality rates generally are below statewide averages in recent years. However, data for particular sections along the corridor reveal that NC 49 through Cabarrus County and US 64 through Randolph County had crash rates that were more than 20 percent higher than the statewide average crash rate.

8.5.3. North Carolina Moving Ahead

Another source used to assess safety conditions along US 64 and NC 49 is the NCDOT ***NC: Moving Ahead! Maps***[1]***,*** which contain crash rate factors. These maps contain 1999-2001 crash data by county and were reviewed for all counties through which US 64 and NC 49 pass. A crash rate is given in units of crashes per vehicle miles traveled. A crash rate factor

[1] Maps of all the counties can be viewed at the following NCDOT website: http://www.ncdot.org/planning/tpb/gis/DataDist/GISNCMovingAheadCenter.html.

is derived by dividing the crash rate for that road segment by the county wide crash rate for that type of road.

Data is defined with crash rate factors that range from 0-1, 1.01-2.00, 2.01-5.00, and 5.01-111. For the purpose of this analysis, sections with crash rate factors of 2.01-5.00 and 5.01-111 were noted as "high".

The data suggests that US 64 in Randolph and Chatham counties have a higher occurrence of crashes and highway safety "hot spots" compared to the rest of the NC 49 and US 64 corridors. With the exception of the high rates noted along the fully access controlled Pittsboro Bypass, most of these occurrences are located on sections of US 64 that have no access control.

8.6. Modal Interrelationships

This section discusses the existing and planned public transit, freight services, and aviation services in the regional study area.

8.6.1. Existing Public Transit Services

Although mostly rural in nature, sections of the corridor are anticipated to transition from rural to suburban/urban over the next 20-25 years, with significant changes in land use and development proposed in the long-term. Although the personal automobile is the primary mode of transportation in the area, there is potential for the enhancement of or additions to transit service by 2030 as projected development is realized within the region.

Information was obtained from the following agencies that coordinate and/or implement transit services throughout the region:

- North Carolina Department of Transportation, Public Transportation Division
- Charlotte Area Transit System (CATS)
- Piedmont Area Regional Transit (PART)
- Triangle Transit Authority (TTA)

Fixed Route Bus Service

There are several agencies that provide fixed-route transit service within the study area. These are listed below:

- **Charlotte Area Transit System (CATS)** – City of Charlotte and nearby suburbs in Mecklenburg County
- **Concord Kannapolis Area Transit** – Fixed route bus system (Rider) serving the communities of Concord and Kannapolis.

- **Salisbury Transit System** – City of Salisbury and nearby towns of Spencer and East Spencer.
- **Greensboro Transit Authority** – City of Greensboro.
- **High Point Transit System (Hi-Tran)** – City of High Point. Hi-Tran connects with Greensboro Transit routes at Guilford Technical Community College.
- **Winston-Salem Transit Authority (WSTA)** – City of Winston-Salem.
- **Piedmont Area Regional Transit (PART)** – Connects the fixed-route bus systems of Greensboro, High Point, and Winston-Salem.
- **Triangle Transit Authority (TTA)** - Commuter bus service throughout the Research Triangle metropolitan region to connect Durham, Cary, Chapel Hill and Raleigh with Research Triangle Park, Raleigh-Durham International Airport, major universities and surrounding suburbs.
- **Capital Area Transit (CAT)** - City of Raleigh.
- **Durham Area Transit Authority (DATA)** - City of Durham, including Research Triangle Park..
- **Chapel Hill Transit** - Town of Chapel Hill and the neighboring Town of Carrboro.

All nineteen counties in the regional study area provide some type of subscription and dial-a-ride transportation services for certain authorized residents with special service needs, typically the elderly or the disabled.

Intercity Passenger Bus Service

There are two passenger bus carriers that operate within the study area – Carolina Trailways (a wholly-owned subsidiary of Greyhound Lines, Inc.) and Greyhound Lines, Inc.

Carolina Trailways. Carolina Trailways is the primary passenger bus carrier in the study area and operates three different lines that provide daily service:

- Schedule # 423 - Provides daily roundtrip service from Norfolk, Virginia to Atlanta. Within the study area, this route travels between Charlotte and Raleigh through Winston Salem, Greensboro, Burlington, and Durham. Some routes along this schedule also service Concord, Lexington, Salisbury, Statesville, and High Point.

- Schedule #424 - Provides daily roundtrip service from Richmond, Virginia to Atlanta. Within the study area, this route travels between Charlotte and Durham through Winston Salem, Greensboro, and Burlington. Some routes along this schedule also service Concord, Lexington, Statesville, and High Point.

- Schedule #427 - Travels via US 1 and US 74 between Raleigh and Charlotte through Sanford, Rockingham, and Monroe. The only portion of this route within the study area is that along US 1 between Southern Pines and Raleigh.

Greyhound Lines, Inc. Greyhound operates a daily roundtrip service between Greensboro and Charlotte through Concord, Salisbury, Lexington and High Point. Greyhound also operates daily roundtrip service between Charlotte and Fayetteville.

Existing Intercity Passenger Rail Service

Amtrak is the sole intercity passenger rail carrier in North Carolina and operates three routes that travel through the study area: The Carolinian, The Piedmont, and The Crescent. The state of North Carolina supports the operation of the Carolinian and the Piedmont through promotion and marketing and by reimbursing Amtrak for its in-state costs.

- The Carolinian - Provides roundtrip service between Charlotte and New York City. Within the study area, this route travels between Charlotte and Raleigh through Kannapolis, Salisbury, High Point, Greensboro, Burlington, Durham, and Cary. Total annual ridership during 2004 was reported by Amtrak as 331,996.

- The Piedmont - Travels roundtrip between Charlotte and Raleigh through Kannapolis, Salisbury, High Point, Greensboro, Burlington, Durham, and Cary. This entire route is within the study area. Unlike other passenger rail services, the Piedmont is owned by the state of North Carolina and operation by Amtrak under contract. Total annual ridership during 2004 was reported by Amtrak as 40,330.

- The Crescent - Provides roundtrip service between New Orleans and New York City. Within the study area, this route travels between Charlotte and Greensboro through Salisbury, High Point, and Greensboro. Total annual ridership during 2004 was reported by Amtrak as 254,152.

8.6.2. Future Public Transit Services

Planned improvements to intercity passenger rail are discussed in this section, along with the following local transit initiatives that were identified as being regionally significant to the corridor:

- 2025 Transit System Plan by the Charlotte Area Transit System
- Regional Rail by the Triangle Transit Authority
- Triad Major Investment Study by the Piedmont Authority for Regional Transit

Intercity Passenger Rail Plans

NCDOT has worked with Amtrak, the railroads, and local communities to investigate potential improvements to existing intercity rail passenger services in the state. The most significant planned passenger rail improvements include:

- Western North Carolina Passenger Rail Initiative
- Southeastern North Carolina Passenger Rail Feasibility Study
- Southeast High Speed Rail Corridor

More specific route information is provided in the sections that follow. However, it should be noted that the service characteristics proposed within each of these initiatives is subject to change as each service is in the early stages of development.

Western North Carolina Passenger Rail Initiative. The North Carolina General Assembly in 2000 directed NCDOT to study the feasibility of providing passenger rail service to western North Carolina. The March 2001 Western North Carolina Passenger Rail Study, which updated a similar report from 1997, recommended a phased implementation for passenger service. During the course of the studies, the operation and number of freight trains in the corridor increased markedly as Norfolk Southern added and rerouted trains between Salisbury and Asheville.

In March 2001, NCDOT adopted a phased plan to extend passenger rail service to Asheville and western North Carolina via a routing linking Salisbury, Statesville, Morganton, and Hickory. The plan includes renovating or building train stations that would incorporate other uses. Current budgetary constraints have prompted NCDOT to delay the return of passenger rail service to the mountains.

In April 2002, the department submitted to the General Assembly a summary of costs to make necessary track and signal improvements to safely and efficiently accommodate the 37 existing freight trains and four proposed passenger trains. Based on the state's current financial status and cost of track improvements, NCDOT has recommended delaying the start of passenger train service to western North Carolina. The delay could likely push the start date for train service back to 2008.

Southeastern North Carolina Passenger Rail Feasibility Study. In May 2001 the final report was issued for the Southeastern North Carolina Passenger Rail Feasibility Study that evaluated three possible routes for the reinstitution of rail service to Wilmington and the southeastern part of the State. The final report, which will identify the total estimated costs, as well as the best route for passenger service and the costs and benefits associated with enhanced freight services, was originally scheduled to be completed in early to mid-2004. As of the date of the US 64–NC 49 Corridor Study Report, the project website [2] indicates that the Southeastern North Carolina Passenger Rail Feasibility Study is still ongoing.

Southeast High Speed Rail Corridor. In October 2002, the Federal Railroad Administration and Federal Highway Administration confirmed and approved the preferred Southeast High-Speed Rail Corridor. In 2004, the state legislatures in North Carolina and Virginia passed legislation to form a bi-state compact that will facilitate implementation of high-speed rail service in the corridor.

[2] http://www.bytrain.org/future/southeastern.html

The North Carolina and Virginia Departments of Transportation also completed a Tier I Environmental Impact Statement (EIS) for the Washington, DC to Charlotte, NC portion of the corridor. A Draft Tier II EIS is now being prepared, which outlines the potential impacts for detailed designs through this segment.

Once the corridor has been selected, the Department will work to acquire access to the Southeast High-Speed Rail Corridor and make any necessary improvements to the rail line to accommodate freight rail service and 110 mph passenger rail service by 2010.

Charlotte Area Transit System - 2025 Transit System Plan

The Charlotte Area Transit System is in the early stages of building a state-of-the-art rapid transit system which will integrate bus, light rail, commuter rail and bus rapid transit into a comprehensive public transportation network for the 21st Century.

The Metropolitan Transit Commission (MTC) is taking the lead for planning and implementing various forms of bus and rail transit service in the city of Charlotte and the surrounding Mecklenburg County area. The 2025 Transit System Plan[3] consists of multiple rapid transit improvements in five corridors, a series of improvements in Center City Charlotte, and bus service and facility improvements throughout the rest of the region. Rapid transit guideway services will extend to I-485 in order to intercept trips coming in and out of Mecklenburg County and to improve regional connectivity.

Two corridors extend beyond Mecklenburg County to Iredell County in the North Corridor and to Cabarrus County in the Northeast Corridor. These recommendations are designed to leverage transportation investments already completed or underway in the corridors. Improvements in the West and Southeast Corridors are being planned so that future expansions into Gaston and Union Counties can be coordinated as well.

It is estimates that when completed the 2025 Transit System Plan will serve four times as many transit riders as the present system does today. There is expected to be 28 miles of bus rapid transit (BRT) guideways, 21 miles of light rail transit (LRT), 11 miles of streetcars, 30 miles of commuter rail, and an expanded network of buses and other transportation services throughout the entire region. The addition of park-and-ride lots, neighborhood transit centers, other transit facilities, and expansion of the bus fleet is projected to cost $952 million.

Triangle Transit Authority - Regional Rail System

The Triangle Transit Authority is planning a 37-mile commuter rail system that stretches from north Raleigh to downtown, through Cary, Morrisville, and the Research Triangle Park and into Durham. The North Carolina Board of Transportation approved an initial funding package for the project in December, 2003. TTA expects to begin operating this service in December 2008.

[3] http://www.charmeck.org/Departments/CATS/Home.htm

TTA has recently completed an Environmental Impact Study (EIS) for Phase I of the Regional Rail project. The proposed transit system is a two-track rail diesel multiple unit (DMU) system that will run from Duke Medical Center in Durham to Durant Road in Northeast Raleigh on an existing railroad alignment. The exception to this is the construction of a 1,600-foot section of track on new alignment to avoid construction disturbance and/or existing track relocation near downtown Raleigh.

The initial segment to be constructed for operation in 2008 will run from the Ninth Street Station in Durham to the Government Center in Raleigh. Construction is scheduled to begin in 2005. The entire Phase I Regional Rail project is scheduled for completion by 2015.

The Triad Major Investment Study

In November 2002, PART completed the Triad Major Investment Study (MIS) to determine which corridors within the Triad region could support a fixed-guideway transit system. The MIS evaluated the feasibility of designing, building, operating and maintaining premium transit along the following four corridors that were deemed of the highest priority within the region:

- Burlington to Clemmons
- High Point to Greensboro
- High Point to Piedmont Triad Airport
- High Point to Winston Salem

Two technologies, diesel multiple unit (DMU) and bus-rapid transit (BRT), were evaluated in this study for each of these alignments. The Triad MIS evaluated these alternatives for access, convenience, environmental consequences, and costs. The study did not recommend a preferred alternative, but provided a comparison of these alternatives to assist the community and PART in deciding which alternatives best meets the needs of the Triad. In May 2003, the PART Board of Trustees adopted the Burlington to Clemmons alignment as the preferred alignment for premium transit. The Federal Transit Administration has requested that PART reevaluate potential technologies for the corridor. This technology evaluation is expected to be complete by 2005.

8.6.3. Existing Freight Systems

Railroads. In 2002, the American Association of Railroads (AAR) (*Railroad Service in North Carolina – 2002, January 2004)* reported a total of approximately 109 million tons of freight carried by all of the railroads in North Carolina. This represents a decrease of about 20 percent from the reported 136 million tons of freight that was shipped or received by North Carolina railroads in 1999. Of the estimated 13.4 million tons of railroad freight traffic originating in North Carolina in 2002, the major products transported were chemicals (24 percent), nonmetallic minerals (19 percent), and lumber and wood products (14 percent). Of the estimated 58.3 million tons of railroad freight traffic terminating in North Carolina in 2002, the major products were coal (49 percent), farm products (13 percent), and chemicals (10 percent).

In the US 64-NC 49 regional study area, railroad lines are located either along the I-85/I-40 corridor to the north (Norfolk Southern) or along the NC 24/27 corridor to the south (Aberdeen, Carolina and Western Railway Company – ACWR). Branch lines off of these two main routes connect Greensboro with Siler City, High Point with Asheboro, and Lexington and Salisbury with Albemarle. The main east-west Norfolk Southern (NS) line through the region operates over the state-owned North Carolina Railroad (NCRR). This 317-mile-long railroad connects Charlotte to Morehead City, and includes the most active rail corridor in the State between Raleigh and Charlotte.

Trucking and Courier Services. There are two major truck/train transfer facilities within the regional study area, one in Charlotte and one in Greensboro. Charlotte is a major trucking hub and is also an inland port serving freight to/from the Port of Wilmington.

Within the regional study area there are nearly 1,400 firms specializing in trucking and courier services. Collectively, these firms employ approximately 39,000 individual and have annual national sales of nearly $5.0 billion. The trucking firms located in the regional study area are estimated to generate nearly 30,000 daily truck trips[4]. Three large trucking firms have their headquarters within the study area, including:

- Old Dominion Freight Line, Inc., a national trucking company, is based in High Point and employs more than 6,400 individuals.
- Kenan Transport Company specializes in liquid and dry bulk hauling, is based in Chapel Hill, and has more than 1,700 employees.
- Central Transport, Inc, a hazardous materials and waste transporter, is based in High Point and employs 460 persons.

Of the nearly 1,400 trucking firms in the study area, a majority (84 percent) are engaged in traditional motor carrier services, including contract hauling, delivery, truckload, and less-than-truckload. Another eight percent of the firms specialize in moving services and six percent are engaged in specialized hauling, such as heavy hauling of oversize and overweight shipments, including mobile homes. The remaining firms specialize in other hauling activities, such as hazardous materials and waste.

8.6.4. Existing Aviation System

There are three commercial service airports within the study area:

- Charlotte-Douglas International Airport in Mecklenburg County
- Piedmont Triad International Airport in Guilford County
- Raleigh Durham International Airport in Wake County

[4] Daily truck trip generation rate per employee for Standard Industrial Code [SIC] 42 – Truck Transportation based on average calculated from the NCHRP 298 publication by the Transportation Research Board, 2001.

Charlotte-Douglas International Airport is located southeast of the I-77/I-85 interchange. Piedmont Triad International Airport is located north of I-40 west of Greensboro. Raleigh-Durham International Airport is located just north of I-40 between Raleigh and Durham.

8.7. Population and Land Use

Population densities in the regional study area for 2000 and 2030 are shown in **Figure 11 and Figure 12**, respectively.

8.7.1. Existing Population Characteristics

Existing Population and Growth Trends

Population growth in the study area has been rapid over the last few years. According to the 2000 US Census estimates, growth between 2000 and 2003 has been highest in Charlotte and Raleigh where the corresponding metropolitan statistical areas have grown at rates of 7.6 percent and 11.3 percent, respectively. As **Figure 11** indicates, population density in 2000 was highest in these same metropolitan areas. As of 2000, the population of all of the counties in the study area totaled over 3.5 million; Charlotte and Raleigh, with a combined population exceeding 1,300,000 at the time, made up 38 percent of that total. This growth has been attributed to a number of factors, including new job opportunities in banking sector in Charlotte and technology sector in Research Triangle Park. The growth in these sectors is accompanied by growth in the service sector, particularly services that support the other two sectors.

Minority Populations

This section is a summary from a technical memorandum prepared for the US 64-NC 49 Corridor Study on minority and low-income populations in the vicinity of the corridor (*Environmental Justice Technical Memorandum, April 2005*). The primary data source for population composition is the 2000 US Census. The census tracts containing areas within three miles of either side of US 64 and NC 49 serve as the study area for this analysis. Therefore, the EJ study area includes 117 census tracts traversing eleven counties. A complete set of 2000 US Census data is included in the *Environmental Justice Technical Memorandum*.

The overall minority concentrations along the length of the corridor are shown in **Table 3**.

The 2000 US Census data collected for the EJ study area reveals that Blacks are the largest racial minority with 114,157 members. However, the concentration of Blacks and also American Indians and Alaskan Natives was lower within the EJ study area than North Carolina as a whole. Native Hawaiians and Other Pacific Islanders, and "Two or more races" had concentrations equal to the state. The two racial minorities with higher concentrations of population within the EJ study area than the state as a whole were Asians and those classified by the 2000 US Census as "Some Other Race."

Table 3: Racial Composition Along US 64-NC 49 Corridor

Race	US 64-NC 49 Corridor[1]	North Carolina
Black alone	114,157	1,737,545
Percentage	*15.2%*	*21.6%*
American Indian and Alaska Native alone	2,689	99,551
Percentage	*0.4%*	*1.2%*
Asian alone	20,779	113,689
Percentage	*2.8%*	*1.4%*
Native Hawaiian and Other Pacific Islander alone	230	3,983
Percentage	*0.0%*	*0.0%*
Some other race alone	21,809	186,629
Percentage	*2.9%*	*2.3%*
Two or more races	10,031	103,260
Percentage	*1.3%*	*1.3%*
Total	**748,614**	**8,049,313**

Source: 2000 US Census
[1] The total sum of the populations within 117 Census Tracts bordering the US 64-NC 49 Corridor

Blacks
The statewide concentration for Blacks in North Carolina was 21.6 percent. Of the 117 census tracts in the EJ Study area, 33 had concentrations of greater than 21.6 percent and eight of those tracts had concentrations of over 50 percent.

The highest concentrations of Blacks within the EJ study area are in Mecklenburg County, where all but two census tracts have concentrations equal to or greater than 21.6 percent. Furthermore, seven of the eight census tracts with concentrations over 50 percent are also located in Mecklenburg County. Other noteworthy Black population concentrations included those within urbanized areas in and around Concord, Lexington, Siler City, Asheboro, and Cary

Asians
Of the 748,614 persons residing within the EJ study area, 20,779 are Asians. For the purposes of this analysis, a concentration of Asians was defined as 1.4 percent or greater. There were a total of 59 census tracts within the EJ study area with Asian concentrations that meet this threshold. Of these, a total of 24 tracts contain Asian concentrations of over five percent and three tracts contain concentrations of over ten percent.

Of the 59 tracts with noteworthy Asian populations, 43 tracts are located in either Wake or Mecklenburg County. All of the Asian concentrations of greater than or equal to five percent are located in Mecklenburg and Wake counties in the urbanized areas of Charlotte, Cary and Apex.

Some Other Race
The statewide concentration of "some other race" was 2.3 percent, lower than the 2.9 percent within the EJ study area. When comparing the racial minority data to that of ethnic minorities, there was a high correlation between the concentration of those of Some Other Race and Hispanics.

A total of 49 census tracts along the corridor had concentrations of Some Other Race of 2.3 percent or greater. Of these tracts, 24 had concentrations of over five percent with five of these having concentrations of over ten percent.

The locations of concentrations of those of Some Other Race can be found throughout the entire length of the corridor, with the largest concentrations being located in Mecklenburg, Randolph, Cabarrus, and Chatham counties.

Ethnic Minority (Hispanic) Concentrations
Based on empirical data and field observations, the primary ethnic group within the EJ study area is Hispanics. The federal government considers race and Hispanic origin to be two separate and distinct concepts. Origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as Spanish, Hispanic, or Latino may be of any race. The two most frequently identified racial groups for Hispanics were "some other race alone" (48.0 percent) and "white alone" (43.1 percent). The populations of Hispanics and other racial minority groups must be analyzed separately because some Hispanics may also be of a racial minority group. For example, there is a high correlation between the concentration of Hispanics and those of Some Other Race. However, those of Some Other Race are not exclusively Hispanics.

The EJ study area had a slightly higher concentration of Hispanics than the state as a whole. In recognition of the statewide concentration of 4.7 percent, any census tract with concentrations over this ratio was considered to have a notable concentration of Hispanics. Forty-nine of the census tracts within the EJ study area have concentrations that exceed the state average. Of these, 21 tracts have concentrations of ten percent or greater and five have concentrations of 20 percent or greater.

The distribution of Hispanic populations within the EJ study area was fairly widespread. Rowan and Stanly were the only counties within the EJ study area that did not have a census tract with a Hispanic concentration greater than the statewide average. The largest concentrations of Hispanics were located in Mecklenburg, Randolph, Chatham and Cabarrus counties in the urbanized areas of Charlotte, Asheboro, Siler City, and Concord.

8.7.2. Forecasted Population Conditions (Year 2030)

The greatest population changes throughout the study area, according to data compiled by Global Insight in January 2004, are projected to occur in Mecklenburg, Cabarrus, Chatham, and Wake Counties (See **Figure 12**). Increasing employment growth from the Charlotte metropolitan area and the Research Triangle region will continue to have an impact on nearby cities and counties.

In portions of northeastern Mecklenburg County, a significant change (an increase of 80 percent or more) in population is projected, increasing population density to over 10,000 persons per square mile in some places. Consistent with recent growth patterns, some of this growth is expected to spill over into the western portion of Cabarrus County. While the resulting population densities are expected to be relatively low in this area by 2030 (up to 3,500 persons per square mile, as indicated in **Figure 12**), the change from rural-agricultural land with few residents to suburban residential subdivisions with many residents is a dramatic one. For this reason, western Cabarrus County is also anticipating an increase of 80 percent or more. Much of this growth is in response to the availability of relatively large parcels of less expensive developable land near some of the region's major destinations, such as UNC-Charlotte, Concord Mills Mall, Lowe's Motor Speedway, and the Concord Regional Airport.

The city of Concord is projected to have a large net population increase, mostly from anticipated future annexations coupled with new residential development. The city of Harrisburg is projected to have a significant increase in population growth due to its close proximity to both Concord and Charlotte. The central portion of Cabarrus County will have growth rates comparable to those projected for the State, which is about 45.5 percent. Increases in this area where the percent change in population is lower will occur in currently developing areas that, today, are almost built out.

Wake County is expected to experience a major population increase by 2030, especially in the southwestern portion of the County where I-540, also known as the Western Wake Freeway, will be constructed. As the Research Triangle Park expands in population and employment, areas to the south will continue to see new growth pressures. Morrisville, Cary, Apex, and Holly Springs, the four towns situated in this part of Wake County, are all bracing for the population increase projected to be at least 80 percent by 2030.

Chatham County, which has been described as a "modest growth" area based on 2000 US Census estimates, is expected to experience a 60 to 80 percent increase in population in this 30-year period. Two areas in particular are expected to be the recipients of the growth: Siler City and the portion of the county that lies south of the Orange County line and flanks the US 15-501 corridor. Based on discussions with local planning staff, Pittsboro and Siler City project growth to be mainly due to being a bedroom community to Chapel Hill, Greensboro, and RTP. Cheap land, good connectivity and small town charm contribute to its growth, while the US 15-501 corridor growth is due to current and future spillover growth from

Chapel Hill where UNC-Chapel Hill, a long-time catalyst of growth in Orange County, is located.

Modest population gains will occur in other counties along the US 64-NC 49 Corridor, but not at the rates expected for areas within Wake, Chatham, Mecklenburg, and Cabarrus Counties. Three areas that will have stable growth rates (meaning a constant growth rate roughly comparable to the state's projected rate of 45 percent) include Iredell, Davie, and Randolph Counties. Iredell and Davie Counties are projected to have a 25 to 40 percent population increase by 2030. Davie County, although largely a rural county in 2000, will gradually be urbanizing as new development is anticipated in the northeastern portion of the County, stemming from Mocksville toward Winston-Salem along the I-40 corridor where highway access is readily available. Randolph County is predicting an influx of both urban and suburban residential growth. Relocations to Randolph County from other areas of the Piedmont Triad are likely to result as incoming residents seek lower tax and utility rates, more modest housing prices, and a lower overall population density.

According to Global Insight, an economic forecasting firm, low population increases are anticipated in Stanly County and Davidson County (6.8% and 17%, respectively, over a 30-year period) and the northern portion of Iredell County (18%). This projected lack of growth is due in part to local economy of each jurisdiction. The decline of manufacturing has had an impact on these counties. Places like Lexington, the county seat of Davidson County, with strong furniture manufacturing base in the past are reinventing their economic base.

8.7.3. Employment Growth

Between 1990 and 2000 employment grew at a slightly slower pace than households. According to the 2000 US Census, employment in the US 64–NC 49 regional study area grew by about 22 percent, with the largest employment generation occurring in Mecklenburg County and Wake County, which grew by 43 and 31 percent, respectively.

Of industries that lost jobs, manufacturing, wholesale and retail trade, and agriculture industries saw the steepest decline, with an over 50 percent drop in employment. By contrast, the service industries gained the most workers, over 51 percent, between 1990 and 2000.

Presently, and likely well into the future, employment is most highly concentrated along I-40 and I-85 between Raleigh and Winston-Salem, and in the Charlotte region. Agricultural employment is the exception and is more dispersed throughout the regional study area relative to transportation facilities.

Employment between 2000 and 2030 is forecast to increase by 69 percent, according to data prepared for this study by InfoUSA and Cambridge Systematics. Growth forecasts show similar patterns to household forecasts with the counties around the Greensboro, Winston-Salem, Raleigh, and Charlotte urban centers leading the growth. Total employment in Mecklenburg County and Wake County are projected to increase by approximately 93 percent and 96 percent, respectively over this time period. Similarly, employment growth in

Forsyth County and Guilford County is projected to increase by 38 percent and 62 percent, respectively.

8.7.4. Existing Land Use and Local Land Use/Transportation Plans

An understanding of the current pattern of land uses in the study area is important to planning for the strategic corridor. Unfortunately, only limited data on existing land use is available. As can be seen on the Existing Land Use Map (see **Figure 5**), this data was available for Mecklenburg County, the Lexington area, Randolph County, Pittsboro, and Wake County (only data for the relevant quadrants of Wake County is shown). In the rest of the areas shown on the map, 1996 land cover data from NCCGIA was shown in order to create a rough sketch of the development pattern, but should not be considered a reliable source of information about current land use or development. Even where this data was available, its quality limited the understanding and analysis of the land use patterns. As would be expected, the general pattern of existing land use is similar to that of existing zoning, with residential and vacant land in outlying portions of the counties and more non-residential uses clustered in and near towns and cities.

Land use changes are anticipated to occur due to the expanding economies of Charlotte and the area encompassing the Research Triangle Park. Increasing growth pressures from the two metropolitan areas are expected to greatly transform adjacent cities and counties. Most city and county governments have prepared plans for managing anticipated growth for the next 20 to 30 years. Each plan expresses a vision for future land use based on assumptions about future growth patterns informed by a wide range of data including projections for population, employment, and infrastructure availability. These local land use plans document anticipated land use changes. Brief land use descriptions are provided below by county:

Iredell County

The eastern portion of Iredell County is primarily going to remain a rural setting with very low density residential uses. Growth is foreseen to occur in the southern portion of the County, close to Mecklenburg County.

Rowan County

Rowan County is going through a comprehensive planning process and therefore the future land use information was not available at the time of the data collection conducted for this study. The process is scheduled to be completed by late 2005 or early 2006.

Davie County

The Davie County Land Use Plan recommends that the county moderate the overall rate of population growth and preserve its quality of life. The agricultural base is giving way to more areas for industrial development and service employment. However, both the town of Mocksville and Davie County have a vision of becoming a leading distribution center due to their strategic location in the larger Triad region. To this end, their plans include the

designation of a large amount of land for industrial development. Situated with good access to Interstates 40, 85, and 77, this area is attractive to industrial development.

Davidson County

Minor land use changes are foreseen to occur in Davidson County by 2030. Davidson County projects an 11 percent per decade increase in population growth and has produced a guiding growth plan. It has identified locations for new growth in accordance with the desired density, character of development and extent of services that can be provided. Medium and high density residential growth is planned to locate within and around the City of Lexington.

Randolph County

Randolph County's excellent road connections with numerous state highways have put urban centers such as Greensboro and Winston-Salem within commuting distance. As a result, Asheboro and Randolph County are predicting an influx of both urban and suburban residential growth. The residential growth is anticipated to spread outwards from the core of Asheboro to the northern, western and eastern boundaries of Randolph County. A future Interstate highway corridor (I-73/I-74) along the current routing of US 220 and Asheboro's Southern Bypass (TIP Project R-2536) will change land use patterns in the southern part of the county by attracting high intensity uses (retail and employment) at major intersections.

Chatham County

The Chatham County comprehensive plan anticipates more residential growth pushing down from Chapel Hill along the US 15-501 corridor, and the town of Pittsboro anticipates that suburban residential development will extend north of US 64 along US 15-501, allowing this corridor to be flanked with thousands of new housing units by 2030. Significant residential growth is also anticipated in Siler City, mainly due to its continuing evolution into a bedroom community for the regional employment centers in Greensboro, Chapel Hill and Research Triangle Park. Relatively inexpensive land, good regional highway connectivity, and small-town charm will contribute to its continued growth. Poor soils and environmental restrictions are expected to limit growth elsewhere in the county.

Wake County

Three regional centers are identified for new growth to occur by the Raleigh Comprehensive Plan, including downtown Raleigh, the Northeast District Area, and the Northwest/Research Triangle Area. Raleigh plans to expand residential and employment uses through redevelopment and infill development in its downtown. The Northeast Area has large undeveloped land tracts, developing infrastructure, and the Neuse River making the area attractive for new development. In the Northwest Area, employment-generating land uses are planned for corridor transition areas and existing employment areas.

The town of Cary is located at the heart of the Triangle region with an economy highly interconnected to the Triangle. The proximity of the RTP and the Raleigh-Durham

International Airport places Cary in a favorable position to receive supporting and spin-off high-technology and service industry and office uses.

The Apex 2025 Vision Plan has called for a clearly defined development area, delineated by an urban growth boundary (UGB). Urban development uses are planned right up to the UGB, with very low intensity uses occurring outside the boundary. Major retail development around US 64 and the NC 55 interchange is anticipated to change land use patterns in the northwest part of town.

Mecklenburg County

One of the major goals identified in the Charlotte Northeast District Plan is to encourage development of commercial and mixed-use centers along its thoroughfares. There is an ample amount of undeveloped land that will provide an opportunity for new employment growth to occur, including light industrial and office uses. The Northeast District Plan supports the expansion of research uses to the north and east of the University Research Park boundaries. A major area of expansion of business park development is planned to be located around the future interchange of I-485 and NC 115, northwest of the I-485/NC 49 interchange.

Spillover growth from Mecklenburg County and Charlotte will continue to create demand for land in Cabarrus County. New interstate and highway improvements such as I-485 in Mecklenburg County will increase access to Western Cabarrus County and create new development possibilities in this area. With the expansion of I-485 and NC 49, growth moving from the northeast of Charlotte is anticipated to include residential, office and industrial uses.

Cabarrus County

In recent years, Cabarrus County has experienced tremendous growth in the tourism industry. Attractions such as Lowes Motor Speedway and Concord Mills retail center have brought an increasing number of visitors to Concord. The City of Concord expects to see strong growth and demand for local retail businesses, restaurants, and lodging in conjunction with the continued success of these two destinations.

Harrisburg's close proximity to Concord and Charlotte has helped spur residential and industrial growth in recent years and will likely continue. Harrisburg's proximity to the Interstate Highway System and the Norfolk Southern rail line is expected to continue to attract industrial development. The Town of Harrisburg is looking to create a prime industrial employment corridor for the southwest portion of Cabarrus County with the future provision of water and sewer utilities.

Mount Pleasant anticipates its desirable rural town setting will bring additional growth in the future. Suburban residential growth is identified to stretch from Mount Pleasant along NC 49 to a locally defined Future Urban Service Boundary.

The Town of Richfield anticipates growth in the form of residential development along US 52.

Stanly County

According to the Stanly County Land Use Plan (2002), the county is anticipating growth of 10 percent per decade through 2020. Residential growth is the predominant form of development that is foreseen to occur in the county by 2020. Also according to the plan, primary growth areas are going to attract a higher density development of approximately 3 to 4 dwelling units per acre. However, secondary growth areas will have lower density development. Future development along the US 52 corridor is expected to impact NC 49 by attracting higher intensity development near the intersection of the two major roads.

8.8. Economic Development

Economic development activity is occurring at state and local levels, mostly in response to the dramatic loss of manufacturing jobs in the last decade. The success of economic development initiatives could greatly influence the location and size of employment centers in the US 64-NC 49 corridor over the next 25 years. The following is a brief summary of such initiatives.

8.8.1. Statewide Initiatives

The following is an overview of the State Economic Development Programs within North Carolina. They include:

- Tax Credits
- State Development Zone Program
- Job Development Investment Grant
- One North Carolina Fund
- Industrial Revenue Bonds
- Community Development Block Grants
- Community Economic Development Strategy (CEDS)

Tax Credits

To further improve the business climate in North Carolina, the William S. Lee Quality Jobs and Expansion Act was passed during the 1996 legislative session and was enhanced in 1998, 1999, and 2000. This program allows for qualifying new and expanding companies in North Carolina to take advantage of tax credits for job creation, investment in machinery and equipment, worker training, research and development, and investment in business property. Information about who is taking advantage of this program is not currently available.

State Development Zone Program

North Carolina's State Development Zone (SDZ) program offers incentives for businesses that locate in designated development areas. The intent of the State Development Zone is to stimulate investment and job creation to improve conditions in high poverty areas. Companies that meet the minimum requirements in a State Development Zone can receive higher tax credits for job creation, worker training, and investments in equipment. Businesses qualify if they are in one of six categories, including warehousing, manufacturing/processing, air courier service, distribution, data processing, and central administration office.

There are currently seven municipalities along the corridor that have State Development Zones, including Asheboro, Charlotte, Concord, Durham, Lexington, Raleigh and Statesville.

The SDZ in Concord contained mostly industrially zoned land. The zone, which included land adjacent to NC 49, expired in December 2004. Success is difficult to measure; the city does not currently keep track of the number or type of jobs created or any private benefits. However, interest in the program increased with more companies contacting the city of Concord to see if a particular piece of property was in the SDZ.

Job Development Investment Grant

The state of North Carolina recently implemented a Job Development Grant Program for major investment/job creation projects considering the state. The program will rebate a portion of "new employees" personal income tax withholdings back to the county in which these jobs are created for a period of up to 12 years. The program is limited to 15 projects per year statewide. Projects that create a minimum of 20 new full-time positions may apply for a grant.

One North Carolina Fund

The One North Carolina Fund may provide financial assistance to those businesses or industries deemed by the Governor to be vital to a healthy and growing State economy and are making significant efforts to expand in North Carolina. The fund is a competitive fund and the location or expansion must be in competition with another location outside of North Carolina. No information is available at this time regarding the allocation of funds, and the impact of this fund is not known as it is in its infancy and it is too early to measure success.

Industrial Revenue Bonds

Industrial Revenue Bonds (IRBs) have a variety of names, such as industrial development bonds (IDBs) or qualified small issue bonds, but essentially are of three basic types: tax exempt, taxable, and exempt facility/solid waste disposal bond. The State's principal interest in these bonds is in assisting new and expanding industry while ensuring that North Carolinians attain higher wage jobs. The regulations governing bond issuance are a combination of federal regulations and North Carolina statutes. The amount each state may issue annually is determined by population. In 2003, 20.8 million in IDB funds were distributed in North Carolina. Since 2000, five companies in Mecklenburg have been

awarded industrial revenue bonds, creating 116 new jobs. In Randolph County, 70 new jobs have been created since 2000 through this program.

Community Development Block Grants

The Community Development Block Grant (CDBG) program of the US Department of Housing and Urban Development (HUD) has been administered by the state of North Carolina since 1982. The funds may be accessed by a local government applicant (municipal or county, excluding entitlement cities or designated urban counties). Proposed projects must involve a specific business that will create new jobs (or sometimes retain existing jobs). Assisted project activities must benefit persons (60 percent or more) who were previously (most recent 12 months) in a low or moderate family income status, based on income levels published for the state annually by the U. S. Department of Housing and Urban Development (HUD). The town of Mocksville received $976,000 in CDBG money in 2003 to support expansion of the Ingersoll Rand and VentLab/Comfort Bilt facilities.

Community Economic Development Strategy (CEDS)

A CEDS is the result of a local planning process designed to guide the economic growth of an area. A CEDS process is used to help create jobs, foster more stable and diversified economies, and improve living conditions. It provides a mechanism for coordinating the efforts of individuals, organizations, local governments, and private industry concerned with economic development. To date, no counties within the US 64-NC 49 Corridor have been the subject of a CEDS study, and none is expected to have a CEDS study in the foreseeable future.

8.8.2. Local and Regional Initiatives

Of the nine counties through which the US 64 - NC 49 Corridor passes, six have taken steps to stimulate economic development. These economic development programs are at varying levels of maturity and have had varying degrees of success. Below are brief descriptions of such programs.

Mecklenburg County

Charlotte/Mecklenburg Investment Grant Program. The City of Charlotte and the County of Mecklenburg have adopted a Business Investment Program (BIP) to encourage new and expanding businesses to locate in identified areas where economic stimulus is a community priority. This has been successful along with properties adjacent to Charlotte-Douglas International Airport and for major thoroughfares such as Wilkinson Blvd. It is intended to work closely with the State Development Zone.

Large Project Investment Grants. If a project will create 300 new jobs and will invest a minimum of $10 million, an investment grant may be available from local government. The City of Charlotte and Mecklenburg County have adopted a policy that allows them to consider projects on an individual basis and determine if the project warrants the offer of an incentive grant.

Cabarrus County

Cabarrus County and its largest municipalities offer a unique Industrial Grant Program for qualified new and expanding companies. This program provides a cash grant calculated on the tax-appraised value of the client's investment and the annual amount of property taxes paid to the county and the city.

Stanly County

Companies looking to relocate to Stanly County enjoy a low tax rate and a strong economic aid package that includes low interest rates for facility renovations and the purchase of equipment as well as the provision of a tax credit for every newly created job. Employers also benefit from investment, job creation, and worker training tax credits. Many companies are able to realize a credit of up to 50 percent against state income or franchise taxes. Information about which businesses along the corridor, if any, have taken advantage of this was not available during this study.

Chatham County

The Chatham County Land Development & Conservation Plan envisions the creation of Economic Development Centers to provide the elements necessary to recruit new business and industry in an increasingly competitive market. These centers would be planned in advance for development, with allowable activities specified and uses subject to performance standards and design criteria

Wake County

Wake County participates in the William S. Lee Quality Jobs and Expansion Program of North Carolina. A portion of Wake County has been designated a State Development Zone. Companies eligible for tax credits under the William S. Lee Act gain additional tax credits when located in the SDZ.

Randolph County

Businesses that locate or expand an industrial or office enterprise in Randolph County may qualify for incentives such as economic development grants, utility and energy assistance, transportation access and workforce assistance. These are in addition to incentives offered by the State of North Carolina.

Randolph County and its individual municipal governments support and encourage the location and expansion of manufacturing, distribution, and office enterprises within the county. Businesses may be eligible for economic development grants that are structured to meet project specific needs and take into consideration approximately three to five years of prospective property tax revenues.

Local governments work in partnership with state and private allies to improve and extend utility access to service the needs of companies that are locating or expanding in the county. Companies may be eligible for discounted energy rates if they meet certain usage and job

creation thresholds. Discounted rates are also available for eligible businesses that locate or expand into industrial buildings that have been vacant for two months.

Assistance may be provided by Randolph County to improve and extend road access to an eligible business that locates or expands in the county. Assistance is available to construct rail spur tracks to service new or expanding businesses.

Yadkin-Pee Dee Lakes Project

The Yadkin-Pee Dee Lakes Project is a formal effort to develop the region as a major tourism/recreational and cultural/historic destination. Although the region already possesses these features (i.e. Badin Lake, Seagrove Pottery, Uwharrie National Forest, Asheboro Zoo, Jordan Lake, etc.), there is a strong desire to promote the concept of the area as a distinct region in terms of its geographic and economic significance. The Yadkin-Pee Dee Lakes Project, also known as the "Central Park Project," seeks to take advantage of the area spanning Charlotte to Raleigh/Durham.

The Yadkin-Pee Dee Lakes region is located in the Piedmont of North Carolina, and consists of the following seven counties: Anson, Davidson, Montgomery, Randolph, Richmond, Rowan, and Stanly. It was initiated approximately 12 years ago as a nonprofit organization to develop and promote the concept of the area as a distinct region. Recognizing the geographic and economic significance of the region, the goal of the Yadkin-Pee Dee Lakes Project is to "provide a foundation for sound economic growth while maintaining the environmental integrity of the area." It is hoped that the Yadkin-Pee Dee Lakes Project will generate lifestyle jobs that attract hospitality resources for overnight visitors, not just day visitors.

Some of the existing attractions in the region include: Badin Lake Recreational Area, High Rock, Lake Tillery, Pee Dee National Wildlife Refuge, the NC Zoo, and Seagrove Pottery. Significant projects planned include the Village of Misenheimer/Pfeiffer University cycling center, which will attract the large population of cycling enthusiasts in the region. Another project is known as *Chautauqua* in Badin, which will somewhat emulate the western NY Chautauqua, which is a lakeside community that focuses on arts, education, religion and recreation with various programs, classes, and events for residents and visitors to attend. Accommodations for visitors at Chautauqua, NY range from rental houses and condos to hotels and bed & breakfasts. Other projects include possible use of freight lines (around Aberdeen) for dining/lodging.

Proponents of the Yadkin-Pee Dee Lakes Project maintain that appropriate transportation infrastructure, with consideration to "visual integrity and scenic protection" is key to implementing the "Central Park" strategy. Proponents also noted the importance of the US 64 and NC 49 corridors to the Project's existing and future endeavors, and propose that the seven-county area be a destination, not populated with "drive-by" businesses.

8.9. Major Environmental Features

Figure 5 shows major environmental features in the vicinity of the study corridors. Data on environmental features was obtained on a county-wide scale from the NCDOT's GIS Unit. NCDOT is a partner with the NC Center for Geographic Information and Analysis (NCCGIA). The NCCGIA database contains information on the following:

- Wetlands on the National Wetlands Inventory
- Streams and Water Bodies
- Outstanding/High Quality Waters
- Impaired Waters (EPA's 303d list)
- Watershed Areas
- Natural Heritage Program sites
- State and Federally owned lands
- Hazardous materials/Superfund sites
- Historic Resources

No pedestrian field surveys were conducted along the corridors, but a limited windshield survey was conducted along US 64 and NC 49 to review the features shown in the database.

The Natural Heritage Program elements, parks, hazardous materials/Superfund sites, and historic resources located on or near the US 64-NC 49 corridor are numbered from 1 to 91 on **Figure 5**. The **Appendix** to this document contains a description of each numbered resource.

8.9.1. Water Resources

Wetlands, streams, and open waters (Waters of the United States) are regulated by the US Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act. The North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDWQ) also has regulatory input through Section 401 Water Quality Certification. Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Any action that proposes to place fill into these areas falls under the jurisdictional of the USACE under Section 404 of the Clean Water Act (33 USC 1344).

Wetlands. The National Wetland Inventory (NWI) is a program administered by the US Fish and Wildlife Service. The NWI program "produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. The National Wetlands Inventory information is used by Federal, State, and local agencies, academic institutions, US Congress, and the private sector. Congressional mandates in the Emergency Wetlands

Resources Act requires the Service to map wetlands, and to digitize, archive, and distribute the maps."[5]

The NWI provides information on wetlands on a regional scale. As shown in **Figure 5**, NWI wetlands are relatively small and scattered throughout the study area, generally associated with stream courses. This distribution pattern is typical of the Piedmont region. There are no large areas of known wetlands along the US 64 or NC 49 corridors.

When individual projects along US 64 and NC 49 are identified for development, field surveys and delineations of wetland areas and streams, and an evaluation of impacts and mitigation, will be required for permitting under Section 404 of the Clean Water Act.

Streams, Water Bodies, and Watersheds. Rivers, lakes and major streams are shown on **Figure 5**. The figure does not show minor perennial and intermittent tributaries.

The US 64 and NC 49 study corridors are primarily in the Cape Fear and Yadkin-PeeDee River Basins. A small portion of the eastern end is in the Neuse River Basin. In the Cape Fear River Basin, US 64 crosses the following rivers and their tributaries: Jordan Lake portion of the Cape Fear River, the Haw River, the Rocky River, and the Deep River. These rivers are, from east to west, in subbasins 03-06-05, 03-06-12, and 03-06-09 of the Upper Cape Fear River Basin.

In the Yadkin River Basin, US 64 crosses the Uwharrie River as well as the Yadkin River and the South Yadkin River and their tributaries. These rivers are, from east to west, in subbasins 03-07-09 of the Lower Yadkin-PeeDee River Basin and 03-07-07, 03-07-04, 03-07-05, and 03-07-06 of the Upper Yadkin-PeeDee River Basin. US 49 crosses the following rivers and their tributaries: the Uwharrie River, the Yadkin River just north of Badin lake, and the Rocky River. These rivers are, from east to west, in subbasin s 03-07-09, 03-07-08, 03-07-13, 03-07-12, and 03-07-11 of the Lower Yadkin-PeeDee River Basin.

Critical watershed areas along the US 64 and NC 49 corridors are found at Jordan Lake (US 64 in Chatham County), Uwharrie River (US 64 in Randolph County), and Badin Lake (NC 49 at the boundary of Rowan County and Davidson County). Critical area is defined as land within one-half mile upstream and draining to a river water supply intake or within one-half mile and draining to the normal pool elevation of water supply reservoirs.

Water Quality. There are three major lakes along the corridors: Jordan Lake, Badin Lake, and High Rock Lake. Jordan Lake is currently supporting its designated uses and there are no public health advisories for swimming, fish consumption or drinking water use. However, water quality standards related to eutrophication are not consistently achieved.[6]

[5] USFWS website http://www.nwi.fws.gov/aboutus.htm, accessed October 8, 2004.

[6] *Cape Fear River Basin Plan*, NC DWQ, August 2000.

High nutrient concentrations have been a concern in High Rock Lake and Badin Lake. Potential sources of nutrient loading to Badin Lake include development in the immediate watershed and inflow of nutrient-rich water from High Rock Lake upstream.[7]

There is one High Quality Water area along the US 64 and NC 49 corridors. This area is along an unnamed tributary to Back Creek just west of Asheboro (**Figure 5**, Sheet 5).

Section 303(d) of the Clean Water Act requires states to identify waters not meeting standards set by the US Environmental Protection Agency (EPA).[8] A list of waters not meeting these standards is submitted to the EPA every two years. The EPA reviews and approves the listed waters. Waters placed on this list require the establishment of total maximum daily loads (TMDLs) intended to guide the restoration of water quality[9].

The US 64 and NC 49 corridors cross two streams included on the 303(d) list and they are near and upstream of two other streams on the 303(d) list. The first stream, in the upper reaches of Swift Creek, is located just west of the US 64/US 1 split in Wake County (**Figure 5**, Sheet 1) and this stream is crossed twice by US 64. The second stream is Coddle Creek, a tributary of Rocky River located just north of Harrisburg (**Figure 5**, Sheet 8). It is crossed by NC 49. Roberson Creek is located just south of US 64 in Pittsboro (**Figure 5**, Sheet 2) and Loves Creek is located just south of US 64 in Siler City (**Figure 5**, Sheet 3).

8.9.2. Natural Heritage Program Sites

NCDENR Natural Heritage Program (NHP) maintains a database of rare species and unique habitat that is included in the county-wide GIS data obtained from the NCDOT GIS Unit. Natural Heritage Program elements are shown on **Figure 5**. These areas represent unique or rare habitats and/or known occurrences of federal or state protected species.

The known occurrences of federal Threatened and Endangered species in the corridor vicinity are freshwater mussels, a fish (Cape Fear shiner), and the bald eagle. Individual projects along US 64 and NC 49 would require field surveys for federally protected species and their habitats.

8.9.3. State and Federally Owned Lands

State and federally owned land along the corridor includes land owned by the federal government surrounding Jordan Lake and in the Uwharrie National Forest. State-owned lands include the North Carolina Zoo in Randolph County. County-owned land includes Richfield Park in Richfield, north of NC 49.

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[7] *Yadkin-PeeDee River Basin Plan*, NC DWQ, March 2003.

[8] Described on the DWQ website, http://h2o.enr.state.nc.us/tmdl/General_303d.htm.

[9] DWQ, March 2003, page 79.

Any individual transportation project proposed along US 64 or NC 49 that involves federal funds would be subject to Section 4(f) of the Department of Transportation Act of 1966 (49 USC § 303) and 23 CFR § 771.135. In accordance with this Act, the FHWA "may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that: (i) there is no feasible and prudent alternative to the use of land from the property; and (ii) the action includes all possible planning to minimize harm to the property resulting from such use."

8.9.4. Hazardous Materials and Superfund Sites

Known regulated and unregulated (Superfund) hazardous materials sites are located throughout the corridor, with concentrations in urbanized areas. Road construction through these types of sites can require remediation of the site, and can result in increased construction costs. The following are sites located on or directly adjacent to US 64 or NC 49.

Galvan Industries and Olin Corporation/Ecusta Paper and Film Group. These two sites are Superfund sites located on the south side of NC 49 in south Harrisburg (Feature Numbers 1 and 2 on **Figure 5**, Sheet 9).

FL Steel Corporation. This Superfund area is located on the south side of NC 49 north of Harrisburg and north of the Rocky River (Feature Number 6 on **Figure 5**, Sheet 9).

Lee County Landfill. This Superfund area is located on the north side of NC 49 north of Harrisburg and north of the Rocky River (Feature Number 9 on **Figure 5**, Sheet 9).

Burlington Furniture/Lumber Plant #1. This Superfund area is located on the north side of US 64 in Davidson County, just west of NC 109 (Feature Number 75 on **Figure 5**, Sheet 10).

Battery Tech and Lexington Municipal Landfill. These Superfund sites are located in the northeast quadrant of the US 64/US 29/I-85 junction (Feature Numbers 79 and 80 on **Figure 5,** Sheet 11).

8.9.5. Historic Resources

The records on file at the State Historic Preservation Office (HPO) were reviewed in October 2004 to identify known historic resources on or determined eligible for the National Register of Historic Place that are located within a four-mile wide corridor centered around US 64 and NC 49.

Based on the file search conducted at the HPO, there are 78 historic resources within two miles of the US 64-NC 49 corridor that are on file at the State Historic Preservation Office (HPO). As shown in **Figure 5**, these are scattered throughout the corridor study, with

concentrations in the older communities along the roadways. There are seven resources that are on or directly adjacent to US 64 or NC 49.

Any individual transportation project proposed along US 64 or NC 49 that involves federal funds would be subject to Section 4(f) of the Department of Transportation Act of 1966 (49 USC § 303) and 23 CFR § 771.135, which includes protection for significant historic sites. Section 106 of the National Historic Preservation Act of 1966 and the *Advisory Council on Historic Preservation Regulations for Compliance with Section 106*, codified as 36 CFR Part 800, would apply to all proposed roadway projects along US 64 or NC 49.

8.9.6. Air Quality

Air pollution originates from various sources, with emissions from industrial processes and internal combustion engines the most prevalent sources. Other sources of outdoor air pollution are solid waste disposal and combustion and any form of fire. The impact resulting from highway construction can range from intensifying existing air pollution problems to improving the ambient air conditions.

The federal Clean Air Act of 1970, as amended (42 USC 750(c)), was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity.

The US Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), particulate matter, and lead (Pb). For ozone, North Carolina adopted the 8-hour standard on April 1, 1999.

Table 4 lists National Ambient Air Quality Standards. The primary standards are set at a limit intended to "protect the public health with an adequate margin of safety," and the secondary standards are set at a limit intended to "protect the public welfare from known or anticipated adverse effects (effects to aesthetics, crops, architecture, etc.)" (Federal Clean Air Act 1990: Section 109). The primary standards are established with a margin of safety, and consider long-term exposures for the most sensitive groups in the general population (i.e., children, senior citizens, people with breathing difficulties).

Table 4: National Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Standard	Standard Type
Carbon Monoxide	8-hour Average	9 ppm	Primary
	1-hour Average	35 ppm	Primary
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm	Primary and Secondary
Ozone	1-hour Average	0.12 ppm	Primary and Secondary
	8-hour Average	0.08 ppm	Primary and Secondary
Lead	Quarterly Average	1.5 $\mu g/m^3$	Primary and Secondary
Particulate < 10 micrometers (PM_{10})	Annual Arithmetic Mean	50 $\mu g/m^3$	Primary and Secondary
	24-hour Average	150 $\mu g/m^3$	Primary and Secondary
Particulate < 2.5 micrometers ($PM_{2.5}$)	Annual Arithmetic Mean	15 $\mu g/m^3$	Primary and Secondary
	24-hour Average	65 $\mu g/m^3$	Primary and Secondary
Sulfur Dioxide	Annual Arithmetic Mean	0.03 ppm	Primary
	24-hour Average	0.14 ppm	Primary
	3-hour Average	0.50 ppm	Secondary

Source: US EPA Website: http://www.epa.gov/oar/oaqps/greenbk/

Table 5 shows the NAAQS attainment status of the 19 counties in the regional study area.

A designation of "attainment" for a pollutant means the county is meeting the National Ambient Air Quality Standards for that pollutant. A designation of "non-attainment" means the county currently is violating the NAAQS for that pollutant. "Maintenance" means the county was previously designated non-attainment for a pollutant, but is now meeting the standard.

Most of the counties in the regional study area, and all the counties that US 64 and NC 49 pass through, do not currently meet the 8-hour ozone standard. The Triad area (counties include Surry, Stokes, Rockingham, Caswell, Yadkin, Forsyth, Guilford, Alamance, Davie, Davidson, and Randolph) has entered into an Early Action Compact (EAC) with the EPA to aid in achieving the 8-hour ozone standard[10].

The EPA is working with communities like the Triad to achieve the 8-hour ozone standard as soon as possible by entering into EACs that will reduce ground-level ozone, commonly known as smog. Communities close to or exceeding the 8-hour ozone standard that have elected to enter into an EAC will start reducing air pollution at least two years sooner than required by the Clean Air Act. Communities participating in the EACs must submit plans in 2004 for meeting the national 8-hour ozone air quality standard, rather than waiting until 2007, which is the plan submittal deadline for other areas not meeting the 8-hour ozone standard. EACs require communities to:

[10] US EPA Web Site: www.epa.gov/ttn/naaqs/ozone/eac/index.htm, March 2005

- Develop and implement air pollution control strategies.
- Account for emissions growth.
- Achieve and maintain the national 8-hour ozone standard.

Table 5: Regional Study Area NAAQS Attainment Status

County[1]	Carbon Monoxide[2]	Nitrogen Dioxide[2]	Ozone 1-hour[2]	Ozone 8-hour[2]	Lead[2]	Particulate Matter – 10 micron[2]	Particulate Matter – 2.5 micron[2,3]	Sulfur Dioxide[2]
Alamance				NonAtt (EAC)				
Cabarrus				NonAtt				
Chatham				NonAtt(P)				
Davidson			Maint	NonAtt (EAC)			NonAtt	
Davie			Maint	NonAtt (EAC)				
Durham	Maint		Maint	NonAtt				
Forsyth	Maint		Maint	NonAtt (EAC)				
Guilford			Maint	NonAtt (EAC)			NonAtt	
Iredell				NonAtt(P)				
Lee								
Mecklenburg	Maint		Maint	NonAtt				
Montgomery								
Moore								
Orange				NonAtt				
Randolph				NonAtt (EAC)				
Rowan				NonAtt				
Stanly								
Wake	Maint		Maint	NonAtt				
Yadkin				(EAC)				

Source: EPA's Green Book: www.epa.gov/oar/oaqps/greenbk, March 2005.

1. If cell is blank, the County is in attainment for that pollutant
2. Maint = Maintenance area for pollutant (an area that was previously not in attainment but is now)
   NonAtt = Non attainment area for pollutant. (P) means only a portion of the county is non attainment.
   EAC means that the county is a member of an Early Action Compact and impacts of a non-attainment designation are deferred.
3. PM-2.5 – EPA final determinations. EPA Web Site www.epa.gov/pmdesignations/finaltable.htm, March 2005.\

EPA designated these areas as "non-attainment" in April 2004. However, as long as EAC areas meet agreed upon milestones, the impact of non-attainment designation for the 8-hour ozone standard will be deferred. On September 24, 2004, the NC DENR Division of Air Quality submitted *North Carolina's 8-hour Ozone Attainment Demonstration* for all four EAC's in North Carolina, including the Triad EAC. As of March 2005, the Triad EAC has met the milestones and the non-attainment designation is deferred.

9. STAKEHOLDER INVOLVEMENT

The stakeholder involvement program for the US 64-NC 49 Corridor Study reached and involved a wide-range of corridor stakeholders, encompassing those who may be impacted by future roadway improvements, who represent others who may be impacted by roadway improvements, or who have a casual interest in the corridor through their respective area. The Study Team identified and involved elected officials, organizations, agencies, area citizens, and transportation providers.

The objective of the stakeholder involvement program was to identify, inform, and involve stakeholders in an effort to develop study recommendations that are not based exclusively on technical information.

The following aspects of the stakeholder involvement program are described below:

- Corridor Development Team
- Stakeholder Interviews
- Public Information

9.1. Corridor Development Team

The Corridor Development Team (CDT) was an advisory committee developed to oversee both technical and non-technical matters. The CDT was comprised of NCDOT staff-level individuals with a comprehensive knowledge of the regional study area, Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) staff who work closely within the corridor study area, local elected/appointed officials, and local staff who represent a specific municipality along the corridor.

CDT members represented the following organizations:

- NCDOT
- Capital Area Metropolitan Planning Organization (CAMPO)
- Town of Cary
- Town of Apex
- Wake County
- Town of Siler City
- Chatham County
- Town of Pittsboro
- Piedmont Triad Rural Planning Organization (RPO) (Randolph County)
- NW Piedmont RPO (Davie County)
- Lake Norman RPO (Iredell County)
- Cabarrus-Rowan MPO (Cabarrus County)
- Mecklenburg-Union MPO (MUMPO)

- Triangle Area RPO
- Rocky River RPO
- FHWA

CDT meetings provided opportunities for the study team to present and discuss major work items, including problem identification, alternatives identification and evaluation, and overall study recommendations. The CDT meetings provided a forum to present findings and to solicit feedback on the viability and acceptability of key decisions and recommendations.

9.2. Stakeholder Interviews

Stakeholder interviews were conducted as one of the first outreach activities for the US 64-NC 49 Corridor Study. More detailed documentation of the stakeholder interviews is provided in the *US 64-NC 49 Corridor Study Stakeholder Interviews Summary Report, May 2004*. The intent of these interviews was to ensure that study recommendations were sensitive to the vision of and would adequately address issues raised by corridor stakeholders.

These interviews were designed to:

- Gather critical information on potential concerns, opinions, and issues of targeted groups.
- Obtain feedback on potential study options.
- Establish a connection with key individuals and groups.
- Identify key issues, opportunities, and concerns related to US 64-NC 49 Corridor Study improvement options.
- Identify additional groups/individuals that should be made aware of and/or involved in the process.

The stakeholders represented businesses, special interest groups, and political jurisdictions. It is anticipated that such stakeholders will play a key role in subsequent phases of the planning process for this corridor. A total of 20 stakeholder interviews were conducted during a six-week period between January and February of 2004. Four interviews were conducted in each of the five corridor segments identified in **Section 8.2.**

Feedback on Existing Corridor Conditions

Nearly all interview participants were familiar with the NCDOT Strategic Highway Corridors concept and the significance of US 64 and NC 49 in this planning initiative. There were key issues that emerged with regard to the perception of existing and future corridor conditions, as well as key issues confronting planning along the corridor. Feedback was similar among participants within each delineated public involvement cell.

Nearly all participants agreed that an increasing number of people are using the corridor for long distance travel. Participants agreed that the corridor is heavily used for local, commuting, and trucking travelers. Furthermore, most of the participants stated that the county or municipality they lived in or represented serves as a "bedroom community" to these regional commuters.

Although nearly all participants have noticed an increase in traffic on the corridor, not all said that this contributes to existing safety or mobility problems in their respective areas. A few general comments were made about high-speed travelers in specific areas of the corridor. A few participants attributed existing safety and mobility issues to truck conflicts, narrow and winding sections along some sections of US 64 and NC 49, and the presence of numerous driveways along the routes.

Some participants identified existing "hot spots" in their respective areas. The following specific needs were identified as being critical to stakeholders interviewed:

- US 64/US 1 in Wake County was identified as an interchange that needs improvements.
- US 64 in Davie County (near Mocksville) has major safety issues associated with heavy truck and vehicle conflicts.
- US 64 through Asheboro is heavily congested.
- Siler City has local and through traffic conflicts.
- The NC 49/NC 8 intersection was identified as dangerous.
- The NC 49 intersection with Roberta Road deteriorates mobility through Harrisburg.
- The section of US 64 between Lexington and I-85 was noted as being "dangerous".
- NC 49 through Mount Pleasant has a school bus route along the corridor, raising safety concerns for school children.

Feedback on Future Corridor Conditions

While most participants stated that development in the region is inevitable, there were a number of differences expressed with respect to the nature of this desired growth. Nearly all participants noted they are looking to expand their employment opportunities outside of manufacturing, including trying to attract larger companies. Nearly all participants stated that US 64 (NC 49 in the case of Harrisburg and Mount Pleasant) is a vital corridor for their future growth plans. While most of the participants said that areas along the corridor will continue to serve as "bedroom communities" for regional commuters, some participants would like to see their county or municipality as self-supporting with a mixture of residential and commercial/service growth available to encourage a reasonable tax base.

A few participants noted a strong desire to see the region as a whole become a major player in terms of being a tourism/recreational and cultural/historic destination. Although the region already possesses a number of major features (i.e. Badin Lake, Seagrove Pottery, Uwharrie National Forest, Asheboro Zoo, Jordan Lake, etc.), there is a strong desire to promote the concept of the area as a distinct region in terms of its geographic and economic

significance. The Yadkin-Pee Dee Lakes Project, also known as the "Central Park Project", seeks to take advantage of the area spanning Charlotte to Raleigh/Durham. The plan is to protect the natural, cultural, and historic resources of the region, while expanding the economic base by using these resources for "sustainable tourism" and recreation development. The idea is not to replace existing industries, but to supplement them with this type of tourism as a major economic industry for the region. The idea is to generate lifestyle jobs that attract hospitality resources for overnight visitors, not just day visitors.

Feedback on Study Options

Nearly all participants agreed that the US 64-NC 49 Corridor should be improved to a high-speed facility with limited or full control of access. The majority opinion of the participants was that the corridor should be upgraded to a full access control facility, although they acknowledged that they had mixed feelings about the potential impacts of this facility type (including a bypass) on smaller towns, including Ramseur and Richfield.

A few participants favored a new alignment roadway for their long-term needs, as they felt it will be needed to improve mobility through their respective city/town. For example, those interviewed in Asheboro consider the planned bypass as a welcome improvement. Participants in Pittsboro agreed that the Pittsboro Bypass has helped the historic downtown area by alleviating truck and vehicle conflicts in the area and by taking a significant amount of through traffic out of the central business district. Several participants noted that they liked the visual quality of the Pittsboro Bypass.

One participant felt strongly that improvements should only take the form of minor safety enhancements at strategic locations. A couple of participants indicated their desire not to see recommendations for improvements that would further restrict access through their respective area.

9.3. Public Information

Group Outreach Presentations

A series of presentations about the US 64-NC 49 Corridor Study were given at several local government or other committee meetings along the study corridor. Presentations consisted of a PowerPoint presentation, followed by a question and answer session. The presentations focused on introducing the concept of corridor planning studies, and presented the specific elements to be undertaken as NCDOT and its partners to develop a long-term mobility vision for the US 64-NC 49 Corridor.

Presentations were given to the following:

- Chatham County Commissioners
- Piedmont Triad RPO
- Davie County Commissioners
- Apex Town Council

- Cabarrus-Rowan MPO
- Northwest Piedmont RPO
- Rocky River RPO
- Siler City Town Council
- Mecklenburg-Union MPO (MUMPO)

Study Brochure

A brochure that described the study scope, schedule, and process was produced at the beginning of the study. This brochure served as a partnering piece to the study's first PowerPoint presentation made at group outreach meetings and to the CDT. The brochure was provided in bulk to CDT members for their distribution to their staff and/or her interested parties within their community. The brochure offered the reader a "return card" to become part of the study database and highlighted contact information for the study project manager.

Web Site

A project web site[11] was linked to the NCDOT Strategic Highway Corridors site and introduced the Strategic Highway Corridor concept, the US 64-NC 49 Corridor Study, and provided updated information about its progress and general findings. General public information, the study schedule, and media releases were posted on the web site.

[11] www.ncdot.org/planning/tpb/shc/cs/studies/64_49/

Figure 1: Strategic Highway Corridors System

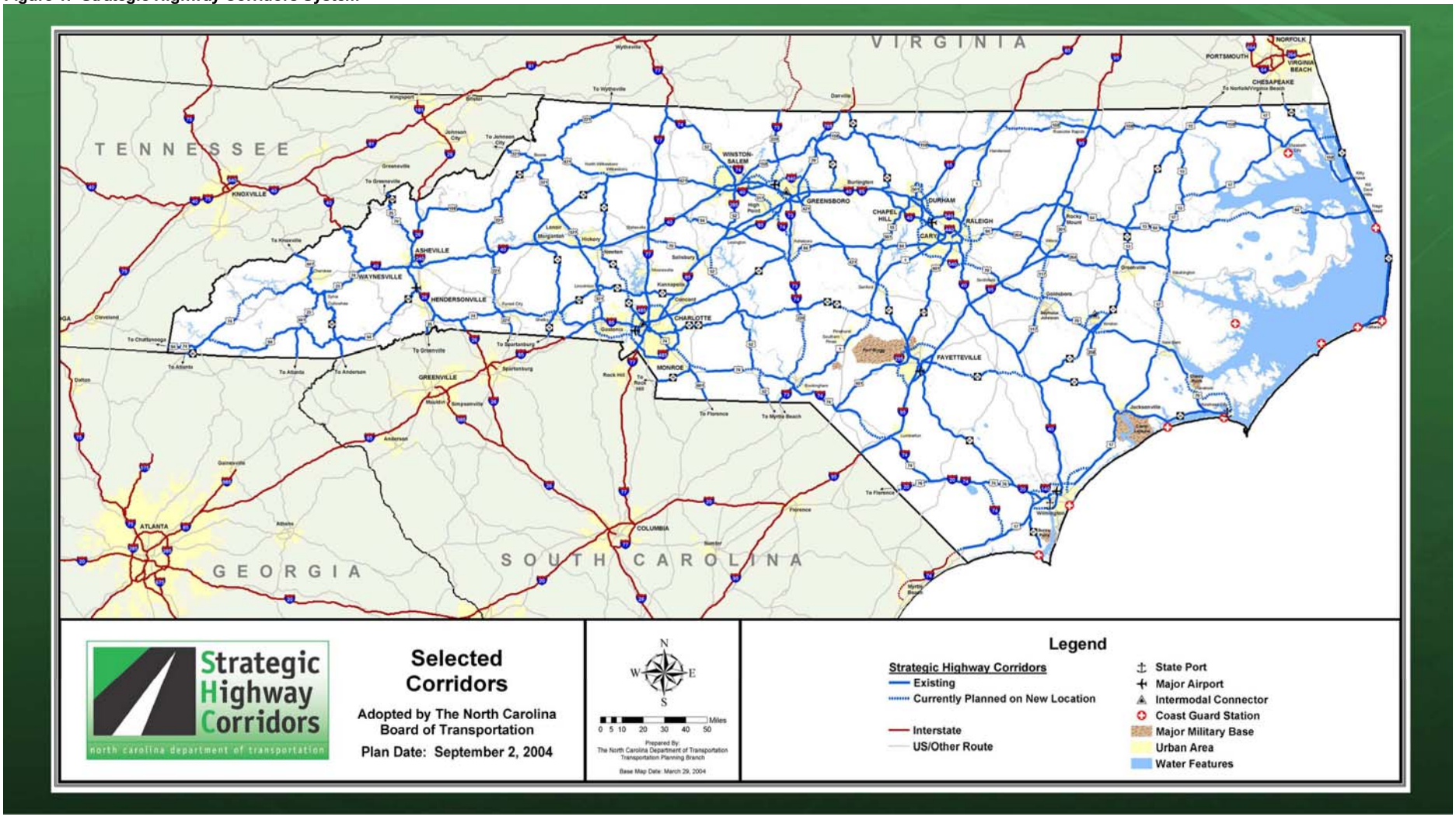


Figure 2: US 64–NC 49 Corridor Study Area

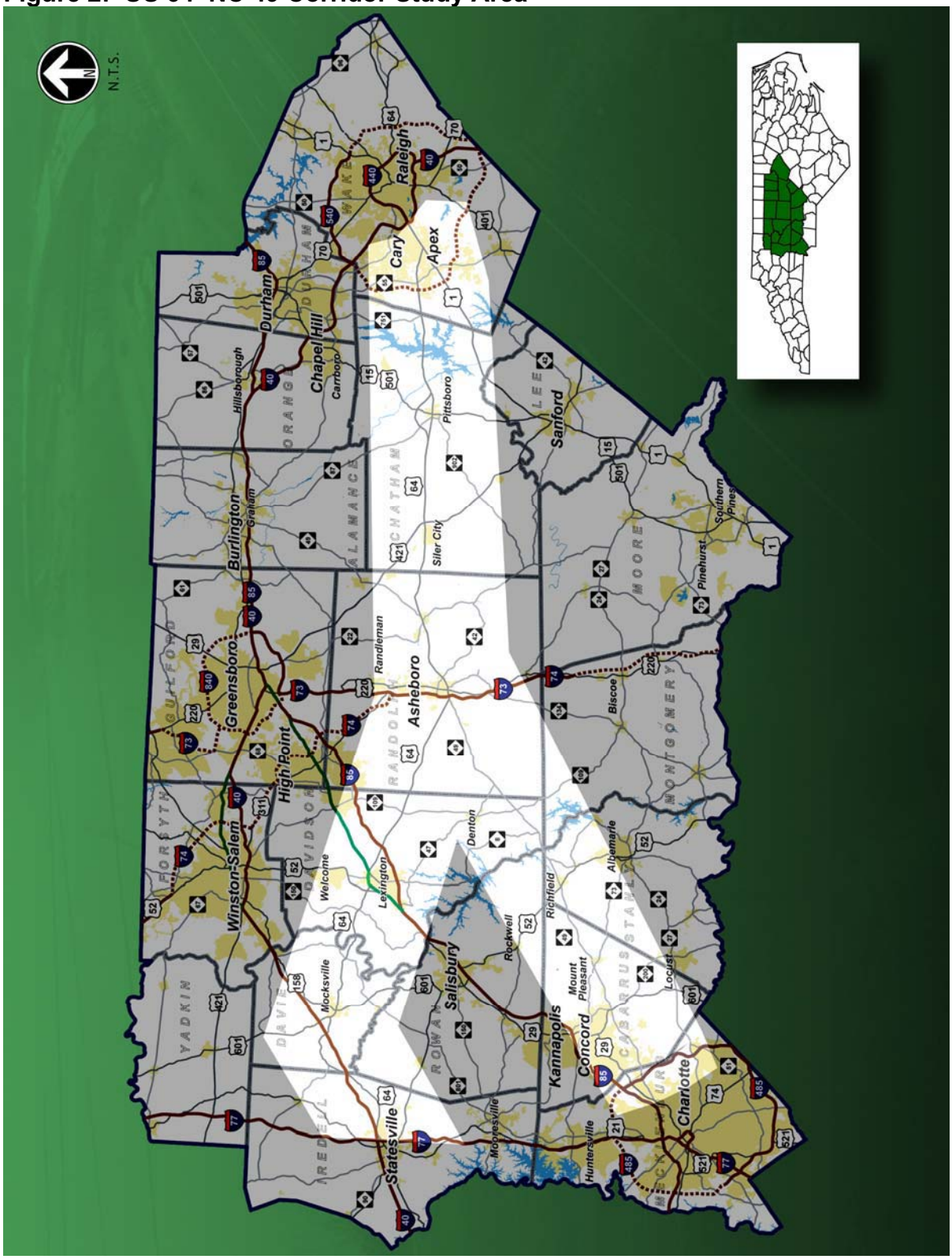
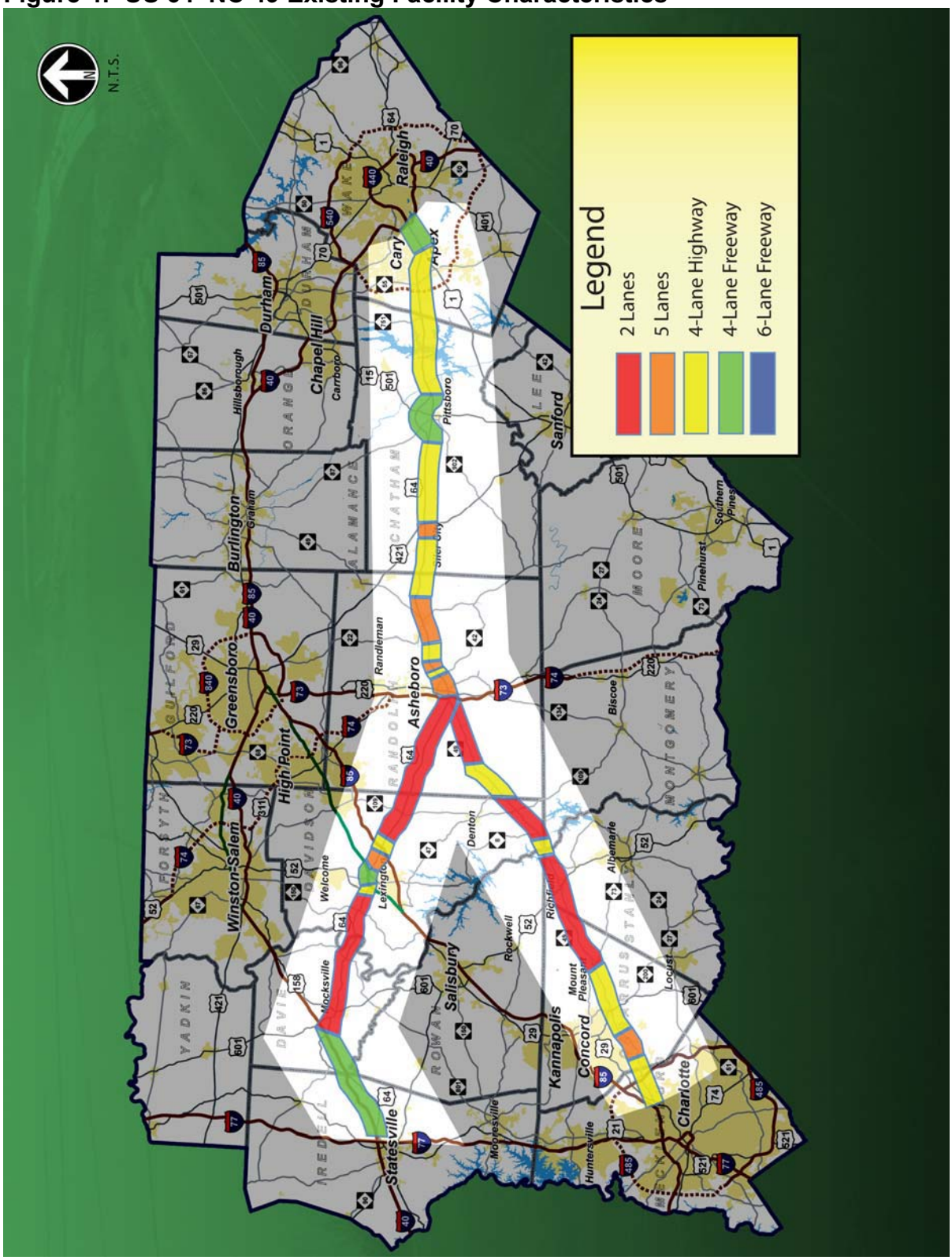
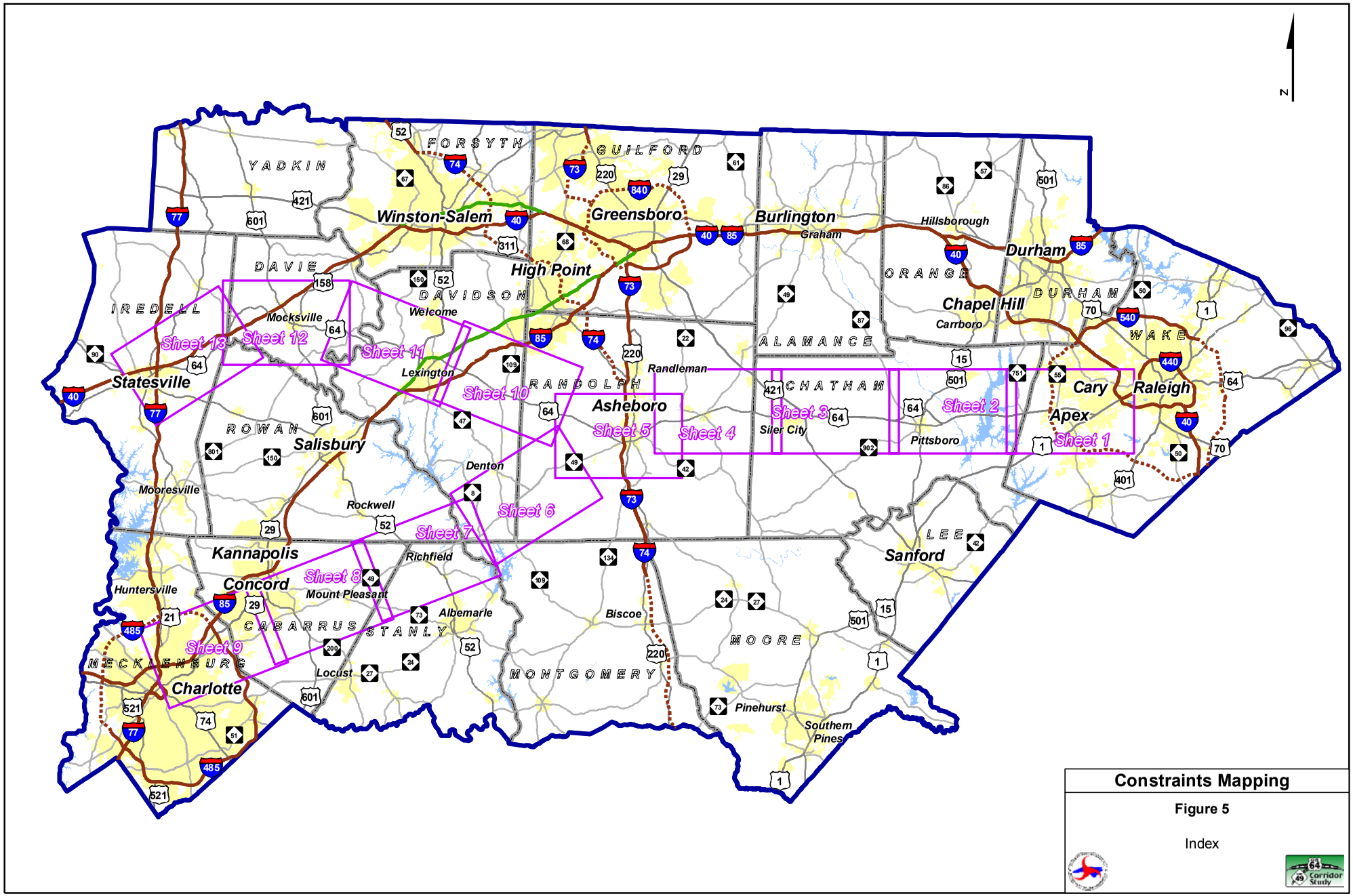


Figure 3: Regional Study Area

Figure 4: US 64–NC 49 Existing Facility Characteristics





Constraints Mapping

Figure 5

Index

Legend

- Study Corridor
- Creeks & Streams
- Impaired Water (303d Listed)
- High Quality Outstanding Resource Water Zones
- Critical Watersheds
- Major Water Bodies
- NWI
- Counties
- Municipal Limits

Natural Heritage Element Occurance

- Vertebrate Animal
- Invertebrate Animal
- Special Animal Habitat
- Regulated Hazardous Waste Facilities
- Unregulated Hazardous Sites (Superfund)
- Historic Points
- 20 Environmental Inventory Number

- Superfund Areas
- Parks
- Historic Sites
- Historic Study List Districts
- Federally Owned Land
- Significant Natural Heritage Areas

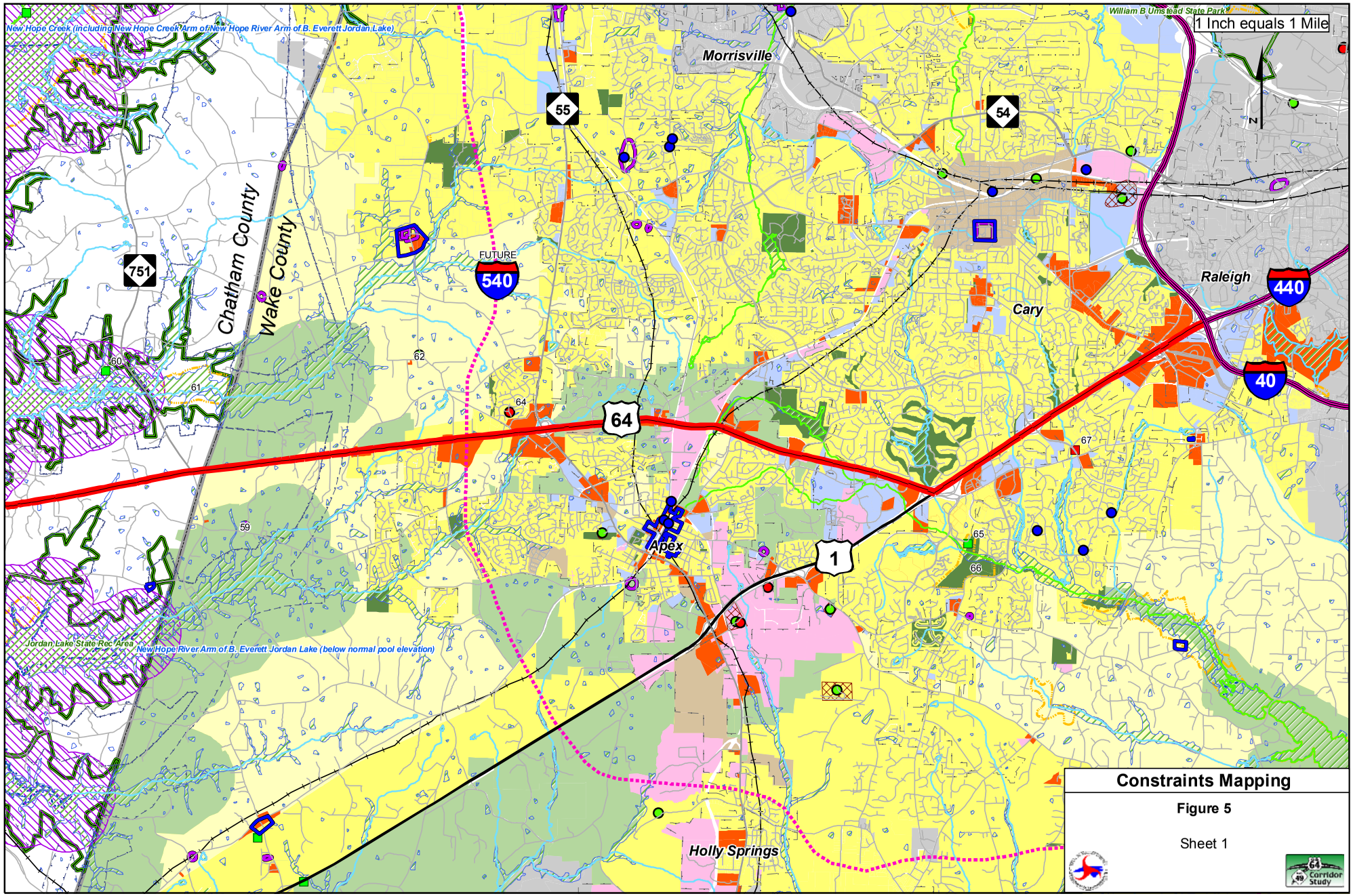
Zoning

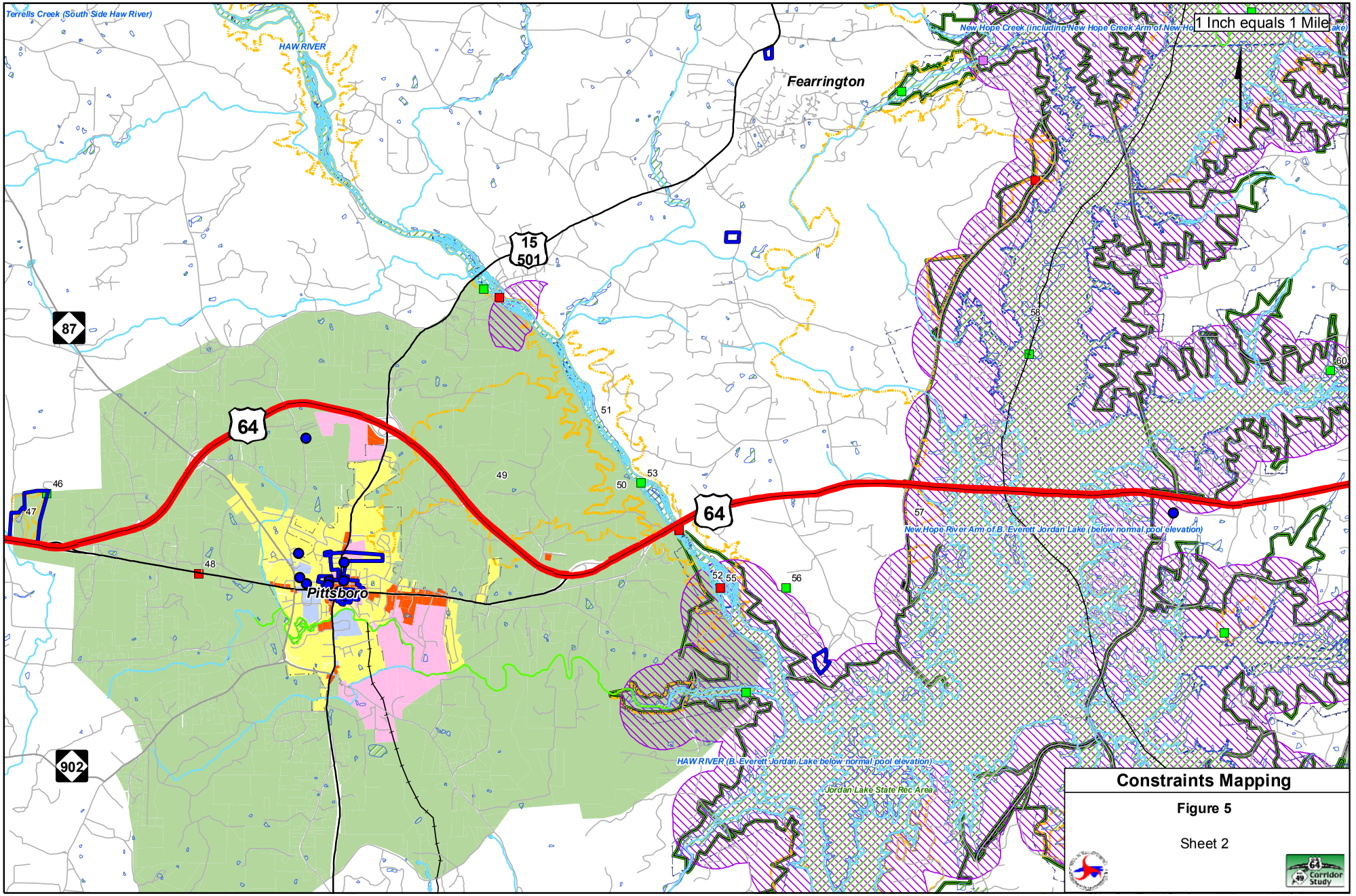
- Conservation
- Rural Agriculture
- Suburban Residential (Low Den)
- Urban Residential (Mid to High Den)
- Commercial
- Office and Institutional
- Industrial
- Mixed Use
- Other
- No Color No Zoning

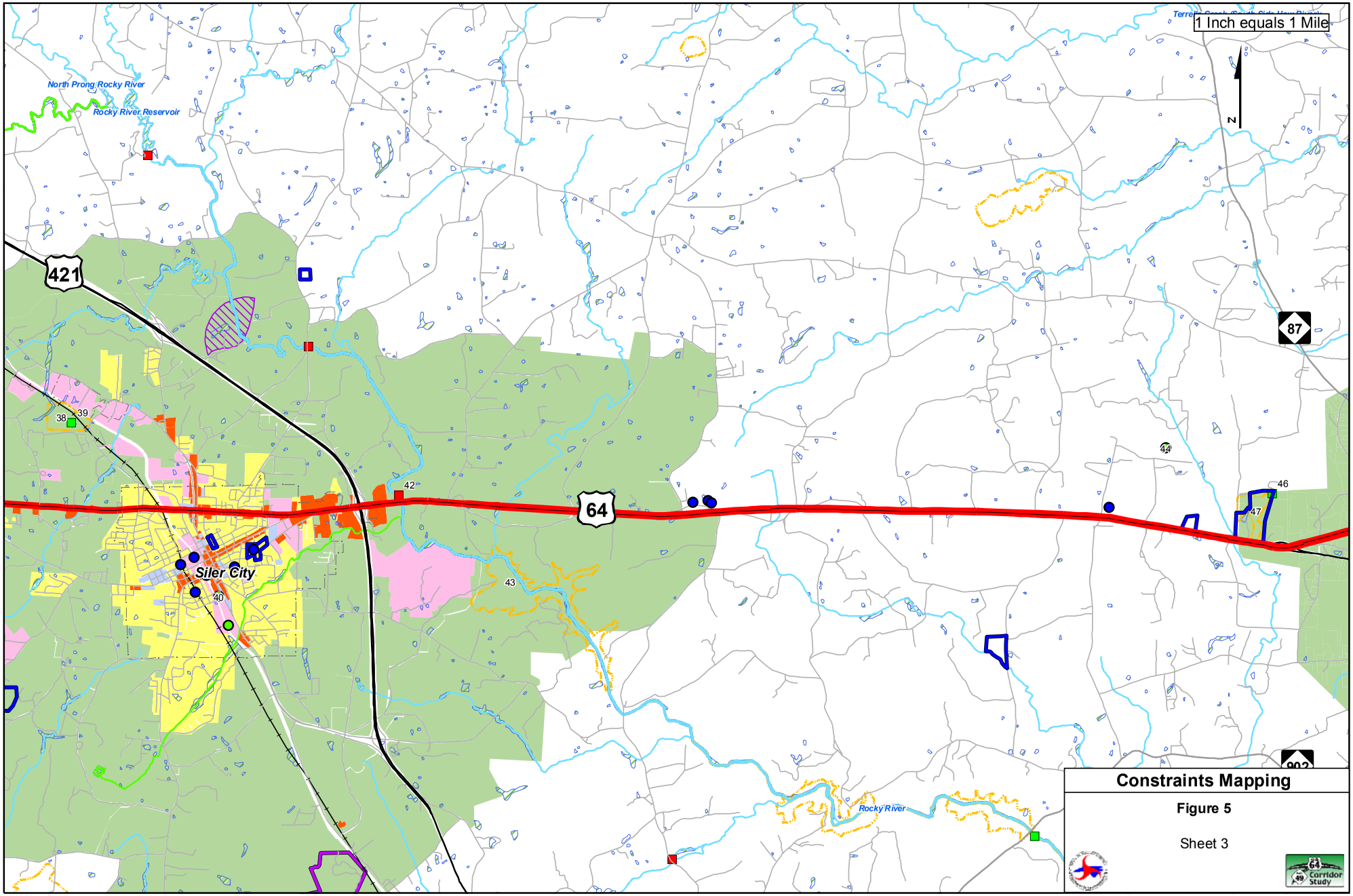
Constraints Mapping

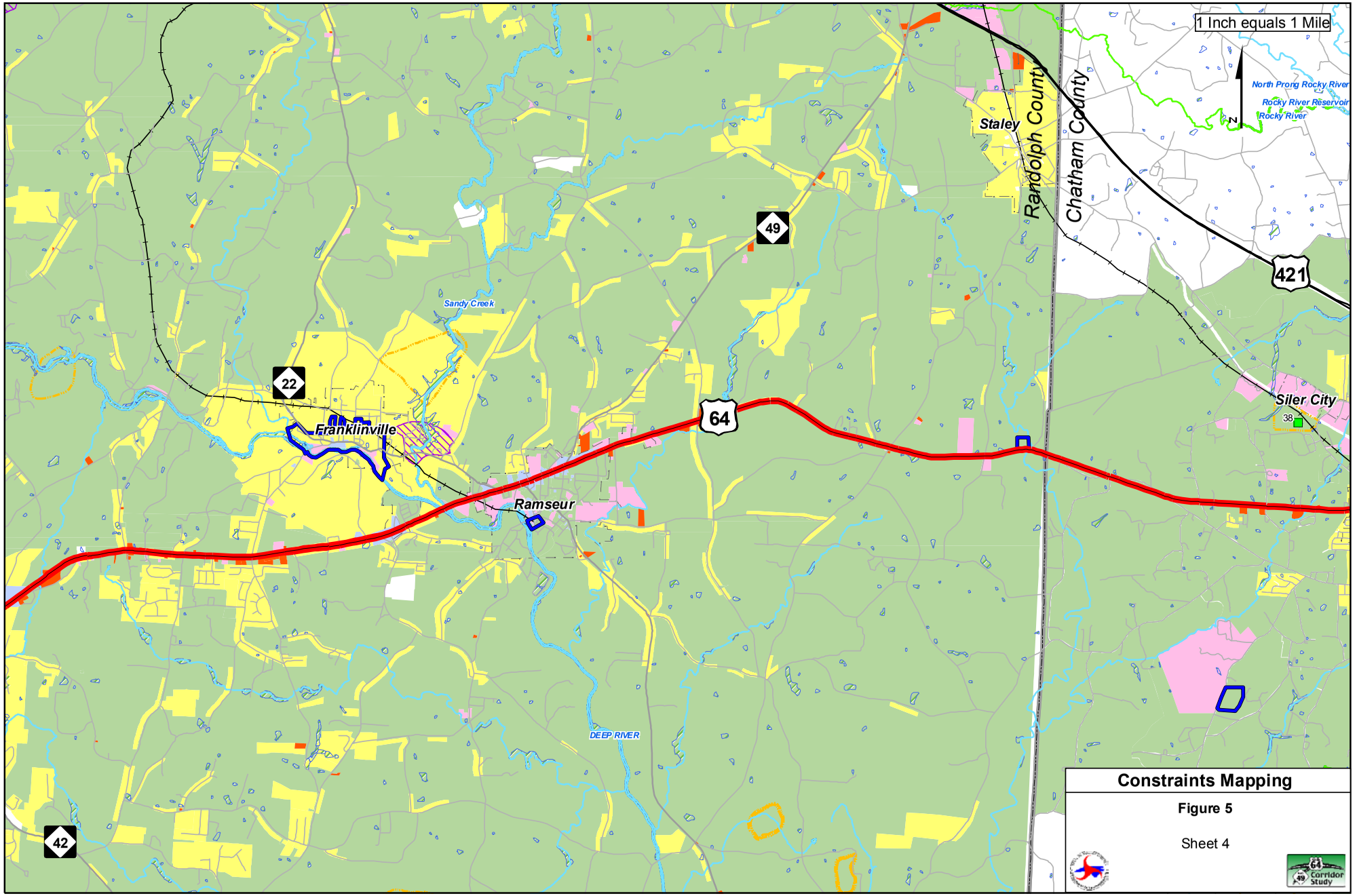
Figure 5

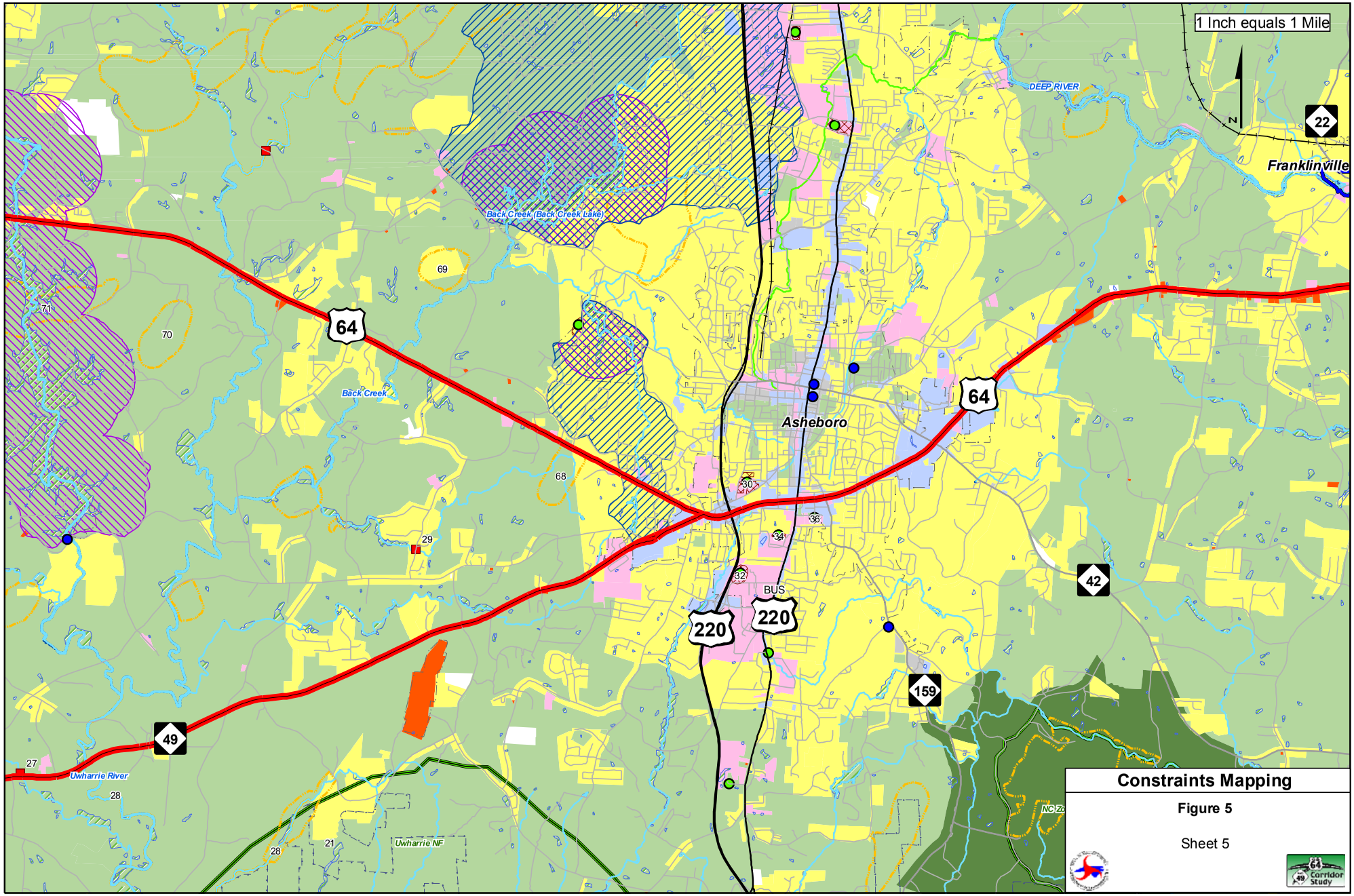
Legend

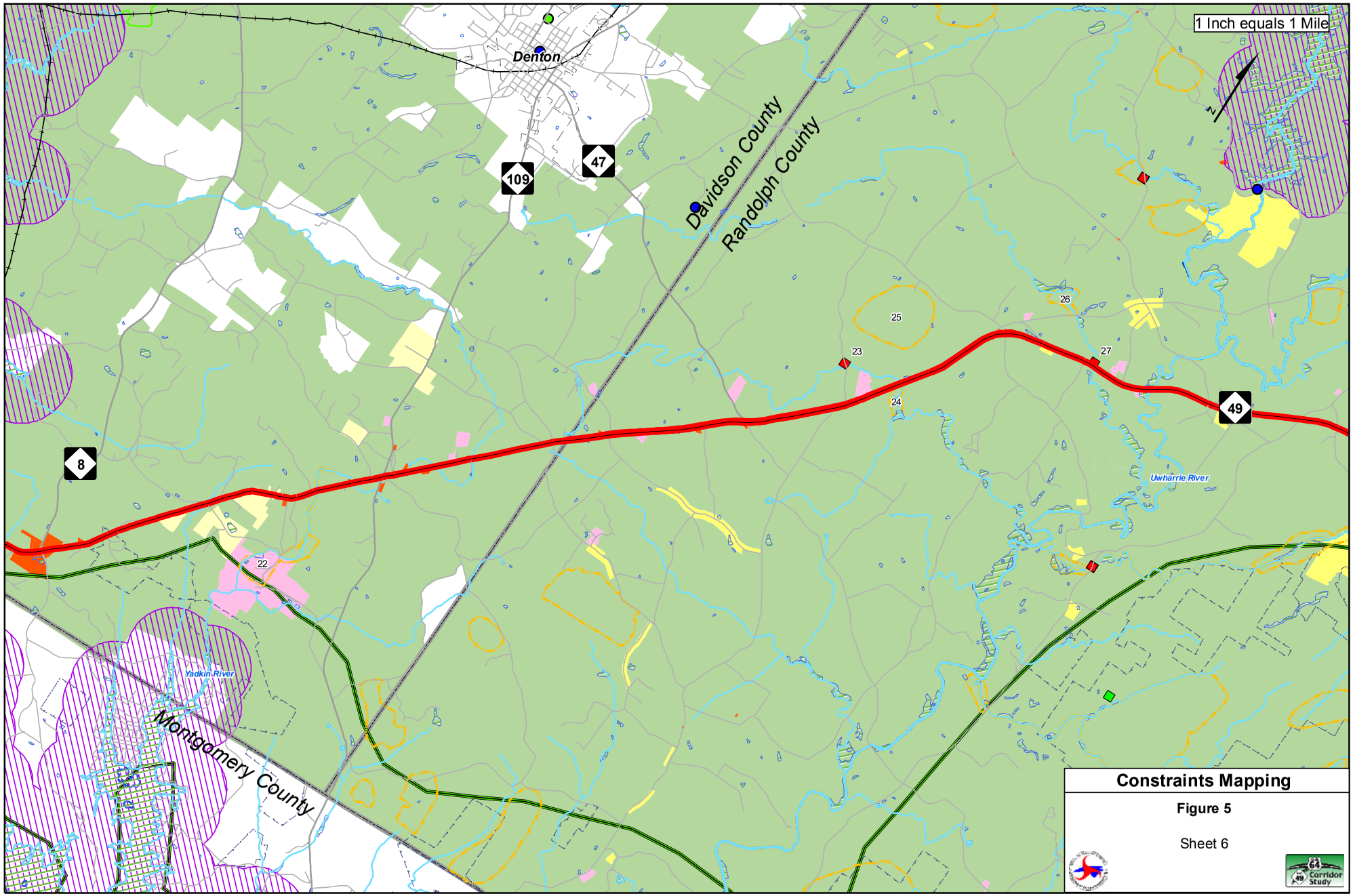

1 Inch equals 1 Mile
New Hope Creek (including New Hope Creek Arm of New Hope River Arm of B. Everett Jordan Lake)
William B Umstead State Park
Morrisville
Chatham County
Wake County
FUTURE
540
55
54
751
Raleigh
Cary
440
40
64
1
Apex
Holly Springs
Jordan Lake State Rec Area
New Hope River Arm of B. Everett Jordan Lake (below normal pool elevation)
59
60
61
62
64
65
66
67
N
Constraints Mapping
Figure 5
Sheet 1
NC 64 Corridor Study

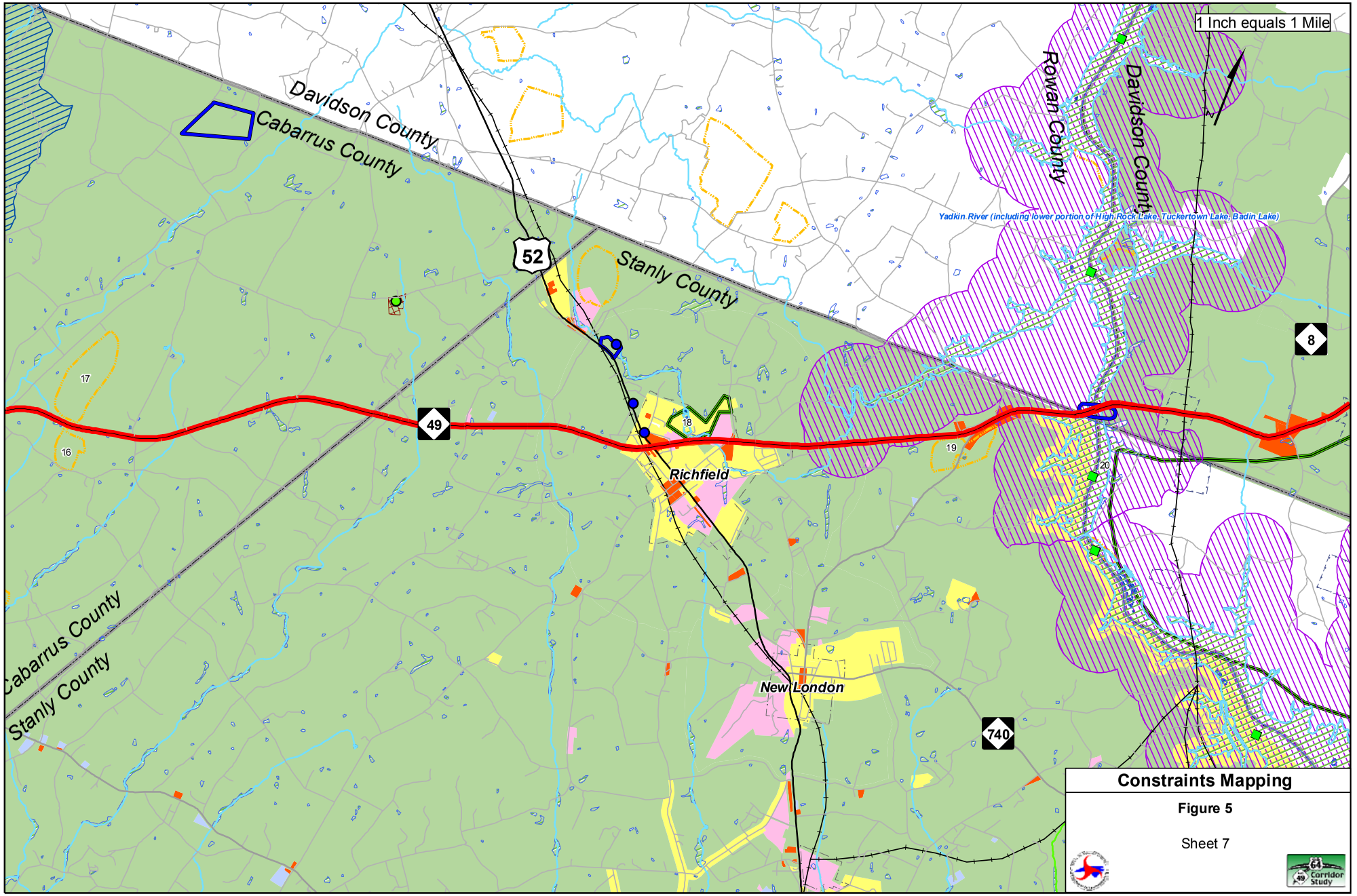

1 Inch equals 1 Mile
Terrells Creek (South Side Haw River)
HAW RIVER
Fearrington
New Hope Creek (including New Hope Creek Arm of New Ho
ake)
15
501
87
64
64
902
Pittsboro
46
47
48
49
50
51
53
52
55
56
57
58
60
New Hope River Arm of B. Everett Jordan Lake (below normal pool elevation)
HAW RIVER (B. Everett Jordan Lake below normal pool elevation)
Jordan Lake State Rec Area
N
Constraints Mapping
Figure 5
Sheet 2
64 Corridor Study

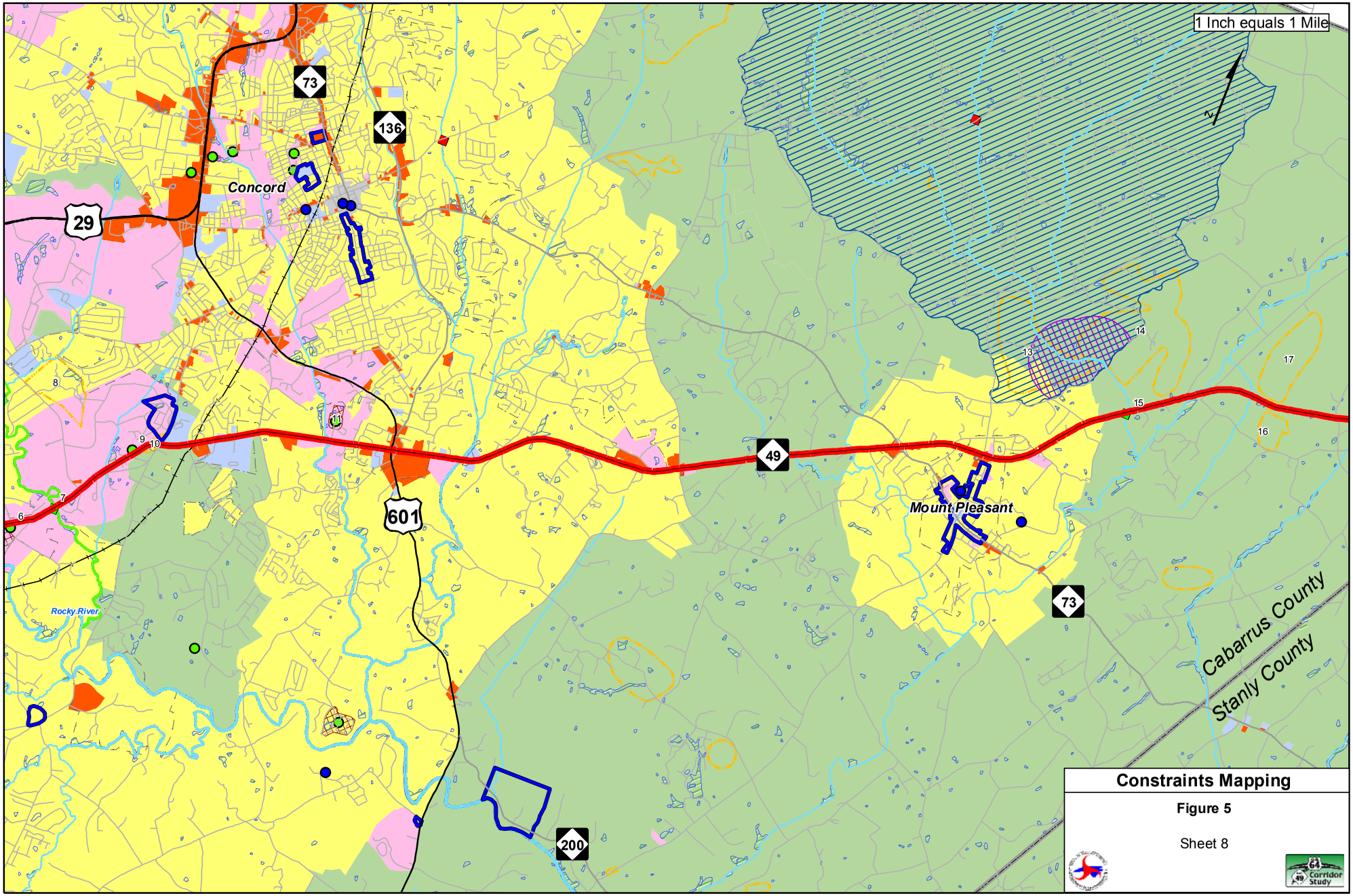

1 Inch equals 1 Mile
N
North Prong Rocky River
Rocky River Reservoir
421
64
87
Siler City
38
39
40
42
43
44
46
47
Rocky River
Constraints Mapping
Figure 5
Sheet 3
64 Corridor Study

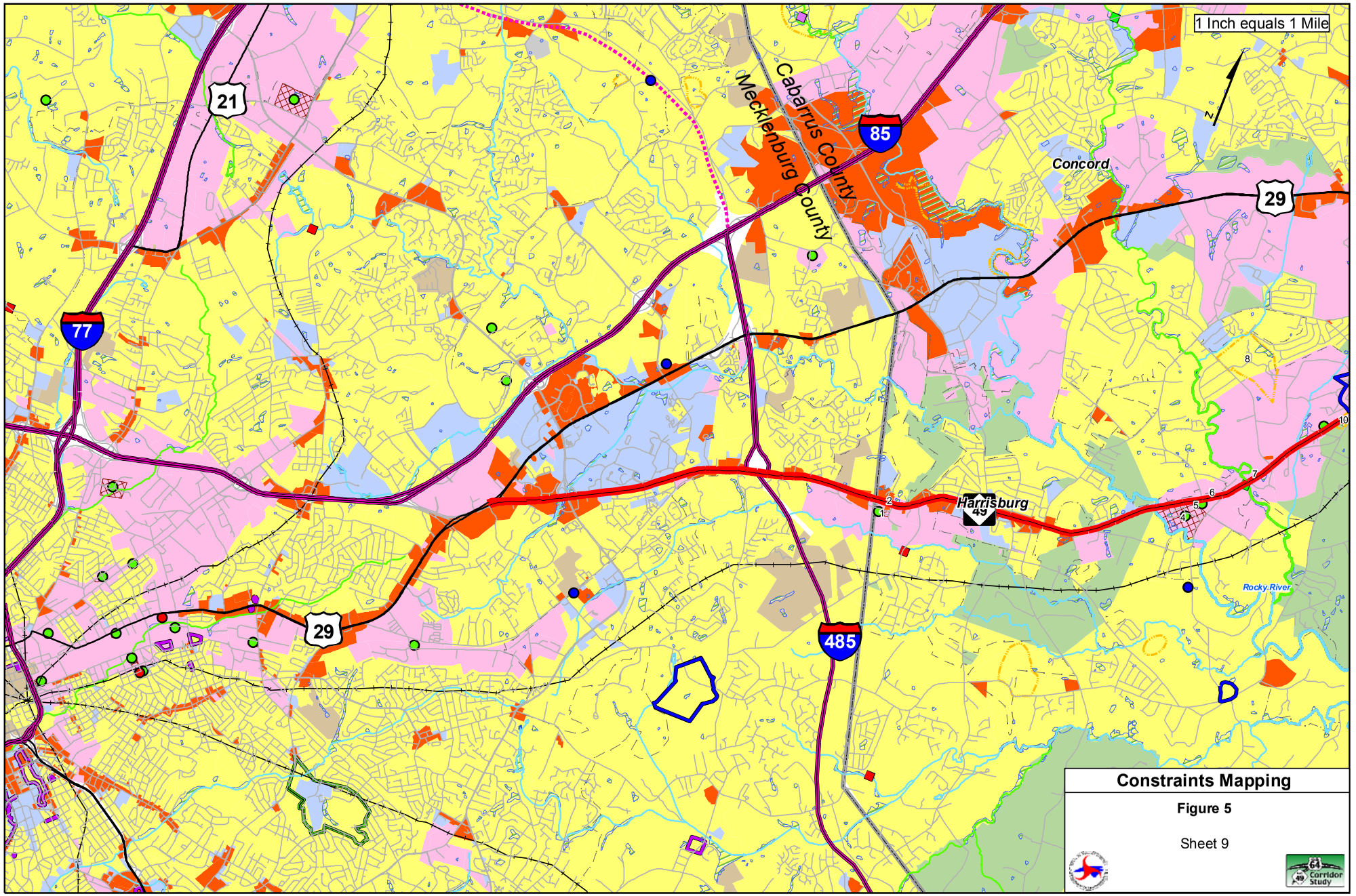

1 Inch equals 1 Mile
North Prong Rocky River
Rocky River Reservoir
Rocky River
N
Staley
Randolph County
Chatham County
421
49
Sandy Creek
22
64
Franklinville
Ramseur
Siler City
38
DEEP RIVER
42
Constraints Mapping
Figure 5
Sheet 4

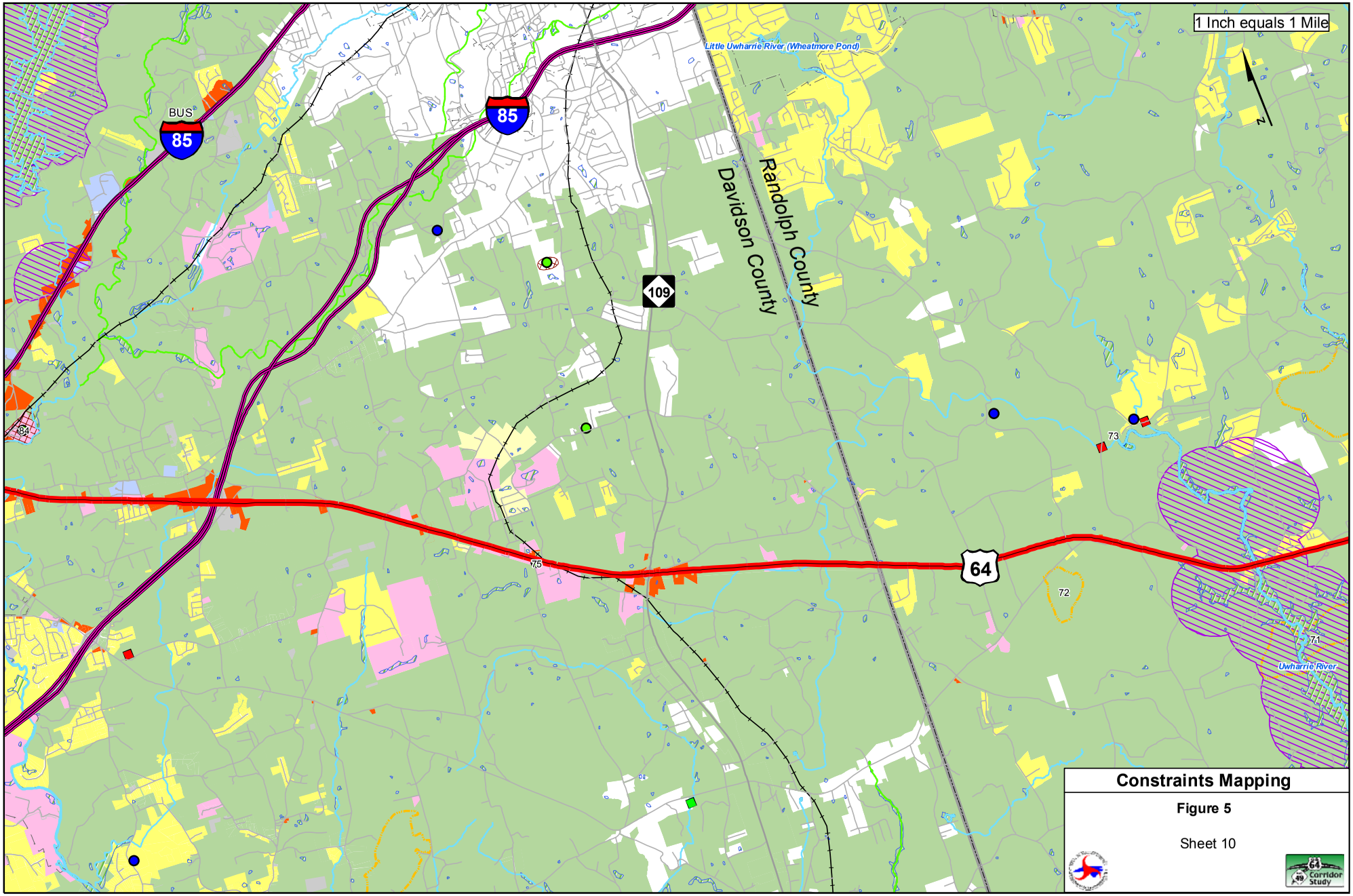

1 Inch equals 1 Mile
N
DEEP RIVER
22
Franklinville
Back Creek (Back Creek Lake)
64
Back Creek
Asheboro
64
BUS
220
220
42
159
49
Uwharrie River
Uwharrie NF
Constraints Mapping
Figure 5
Sheet 5

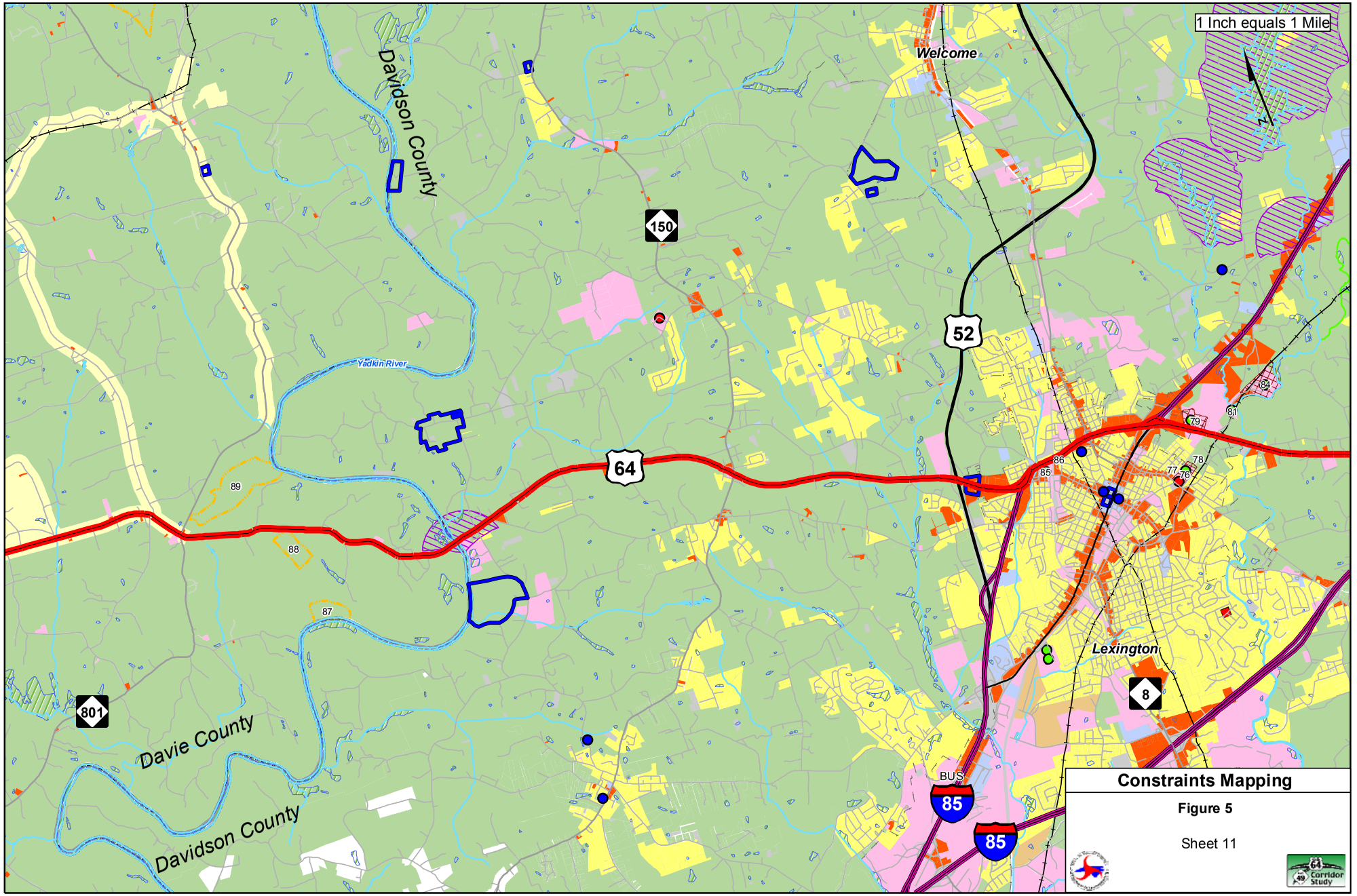

1 Inch equals 1 Mile
N
Denton
109
47
Davidson County
Randolph County
8
49
23
24
25
26
27
22
Uwharrie River
Yadkin River
Montgomery County
Constraints Mapping
Figure 5
Sheet 6
64
49
Corridor Study

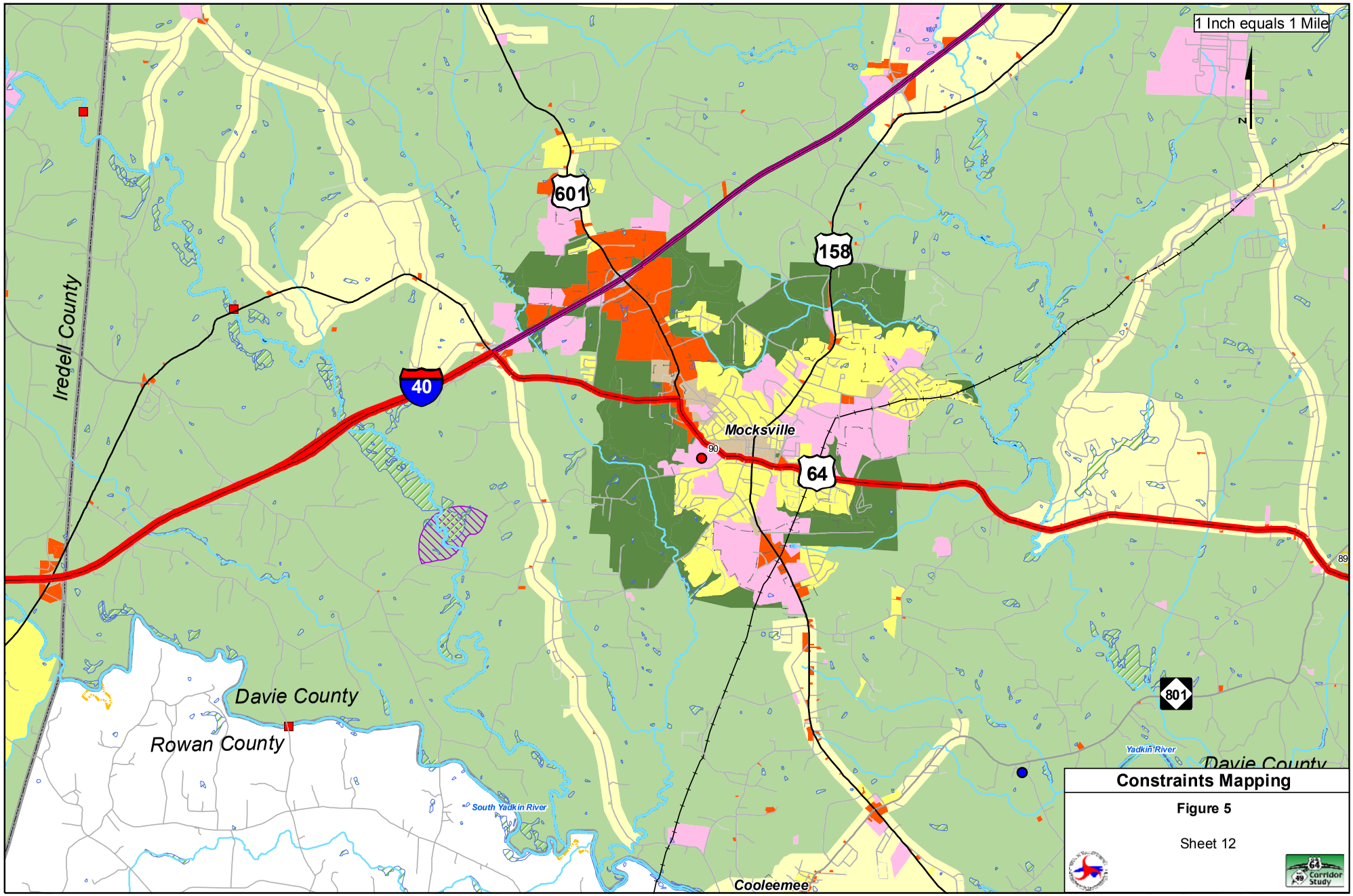

1 Inch equals 1 Mile
Davidson County
Cabarrus County
Stanly County
Rowan County
Davidson County
Yadkin River (including lower portion of High Rock Lake, Tuckertown Lake, Badin Lake)
52
49
8
740
Richfield
New London
17
16
18
19
20
Cabarrus County
Stanly County
Constraints Mapping
Figure 5
Sheet 7


1 Inch equals 1 Mile
73
136
29
Concord
49
601
200
Mount Pleasant
Rocky River
Cabarrus County
Stanly County
Constraints Mapping
Figure 5
Sheet 8


1 Inch equals 1 Mile
N
Mecklenburg County
Cabarrus County
Concord
Harrisburg
Rocky River
21
77
85
29
485
49
Constraints Mapping
Figure 5
Sheet 9


1 Inch equals 1 Mile
N
Little Uwharrie River (Wheatmore Pond)
BUS
85
85
109
Davidson County
Randolph County
64
64A
73
72
71
75
Uwharrie River
Constraints Mapping
Figure 5
Sheet 10


1 Inch equals 1 Mile
Welcome
Davidson County
150
52
Yadkin River
64
89
88
87
801
Davie County
Davidson County
Lexington
8
BUS
85
85
Constraints Mapping
Figure 5
Sheet 11


1 Inch equals 1 Mile
N
601
158
40
64
801
Iredell County
Davie County
Rowan County
Mocksville
Cooleemee
South Yadkin River
Yadkin River
Davie County
Constraints Mapping
Figure 5
Sheet 12
64 Corridor Study

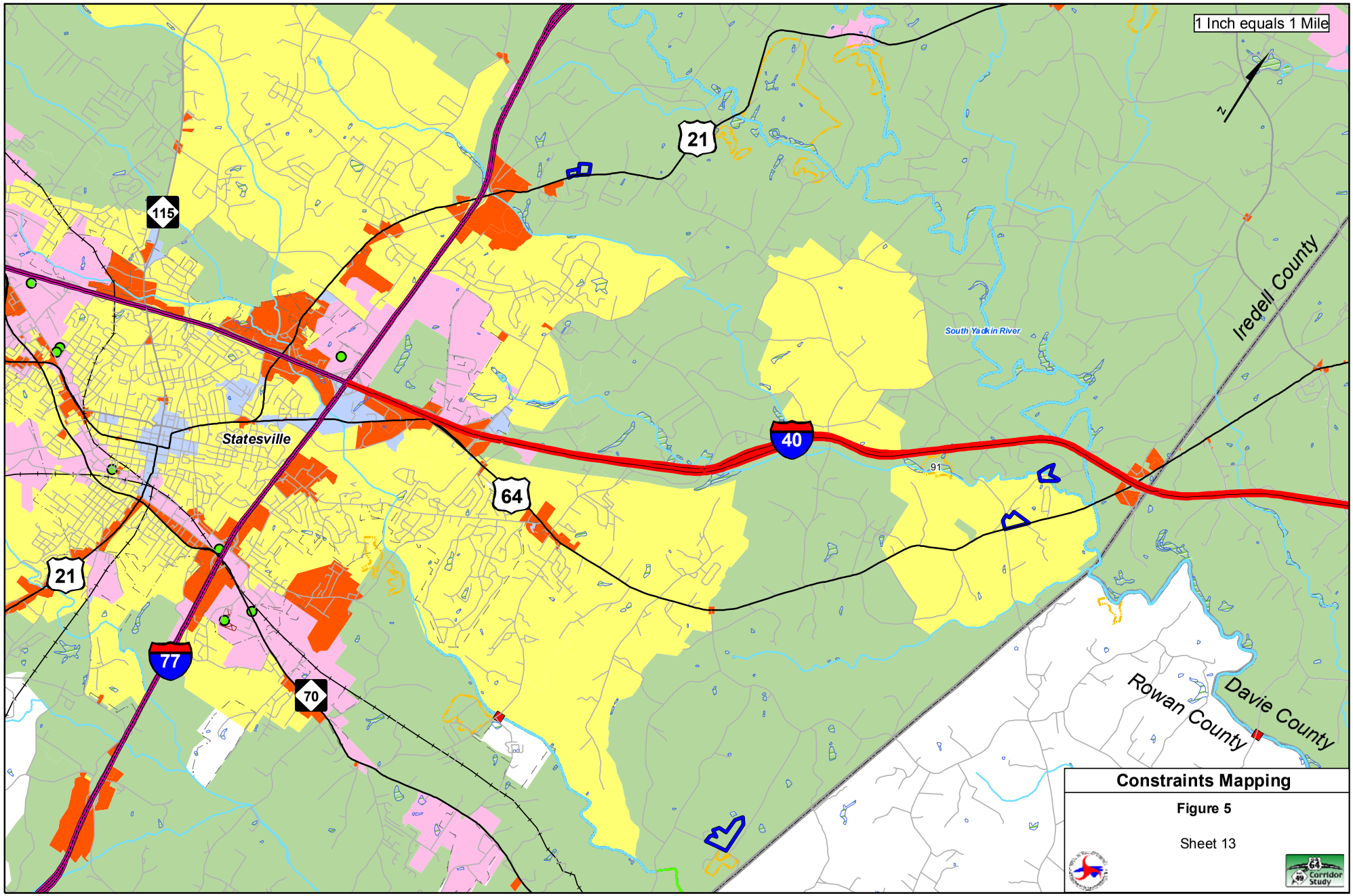

1 Inch equals 1 Mile
N
21
115
Statesville
64
40
21
77
70
South Yadkin River
Iredell County
Rowan County
Davie County
Constraints Mapping
Figure 5
Sheet 13

Figure 6: NCDOT TIP Projects Along US 64 and NC 49

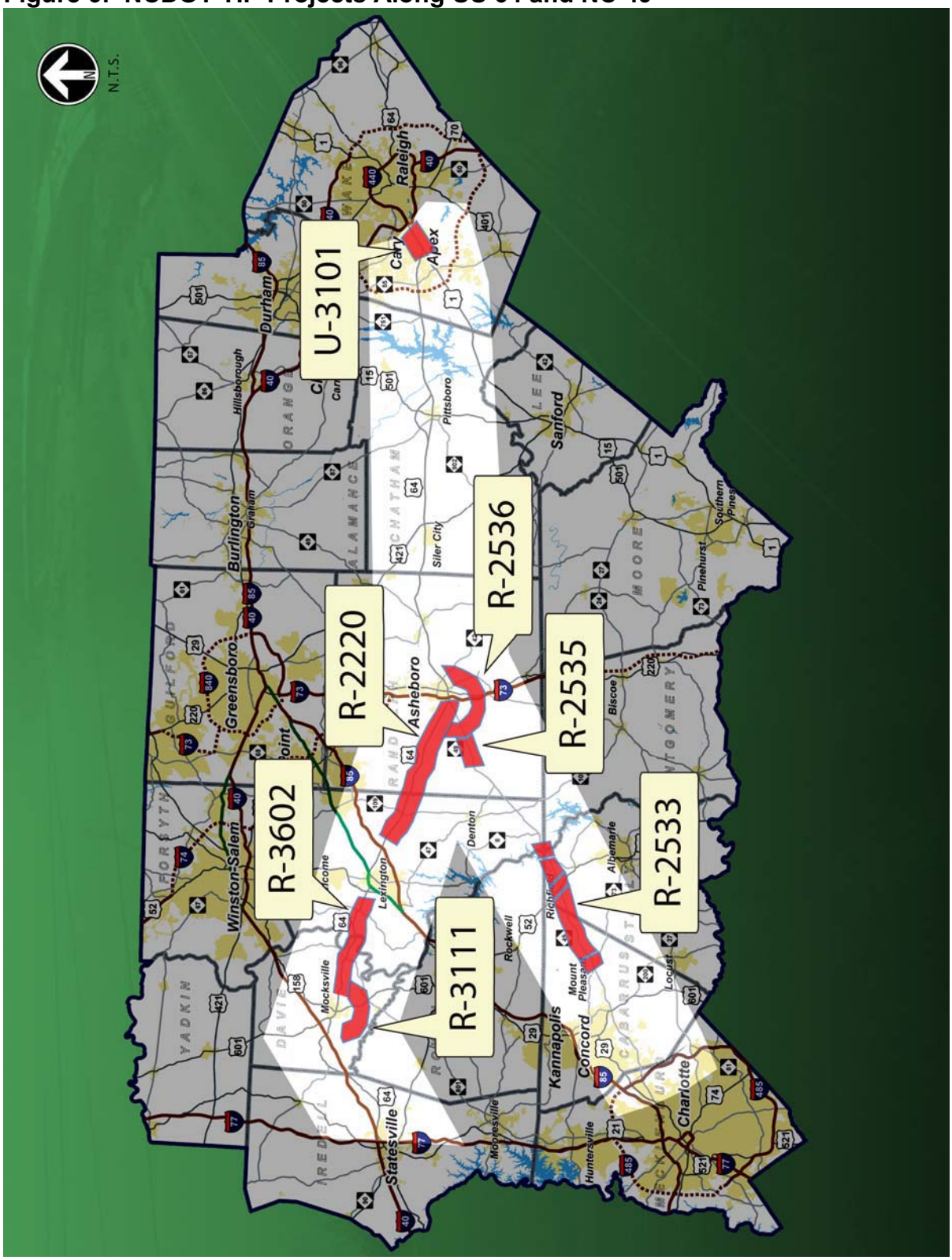


Figure 7: 2002 Average Annual Daily Traffic Volumes

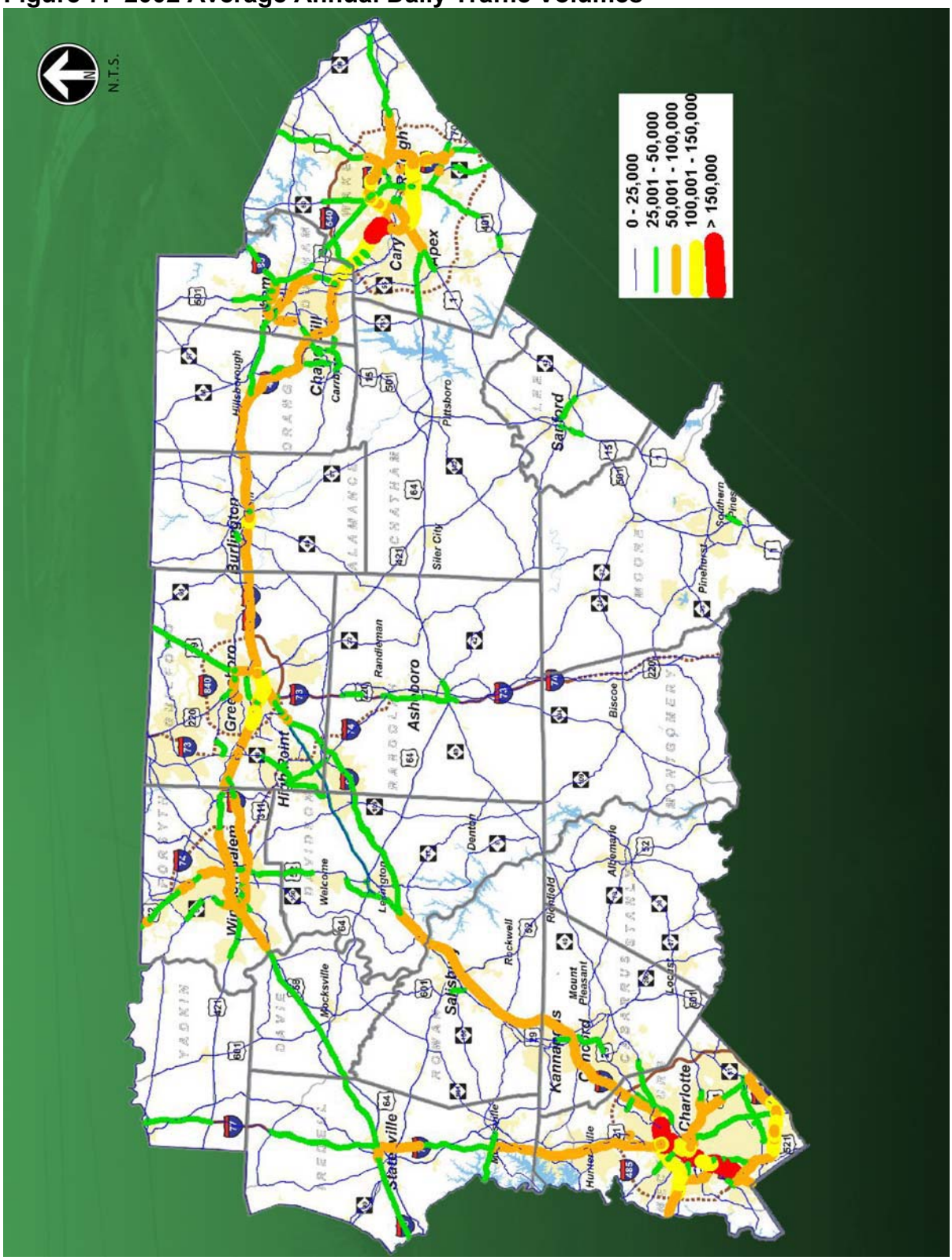


Figure 8: 2002 Truck Percentages

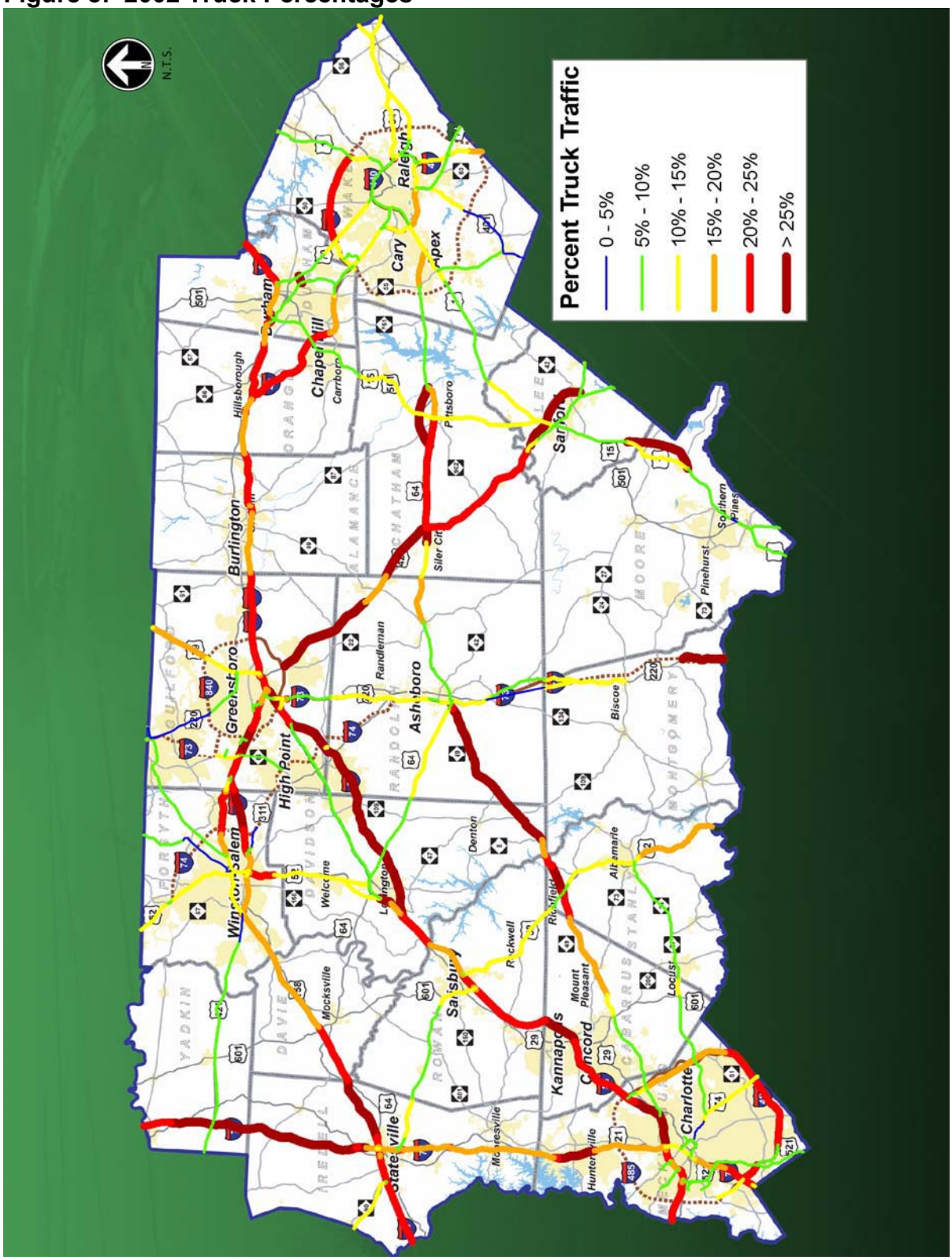


Figure 9: Summary 2002 Level of Service Values

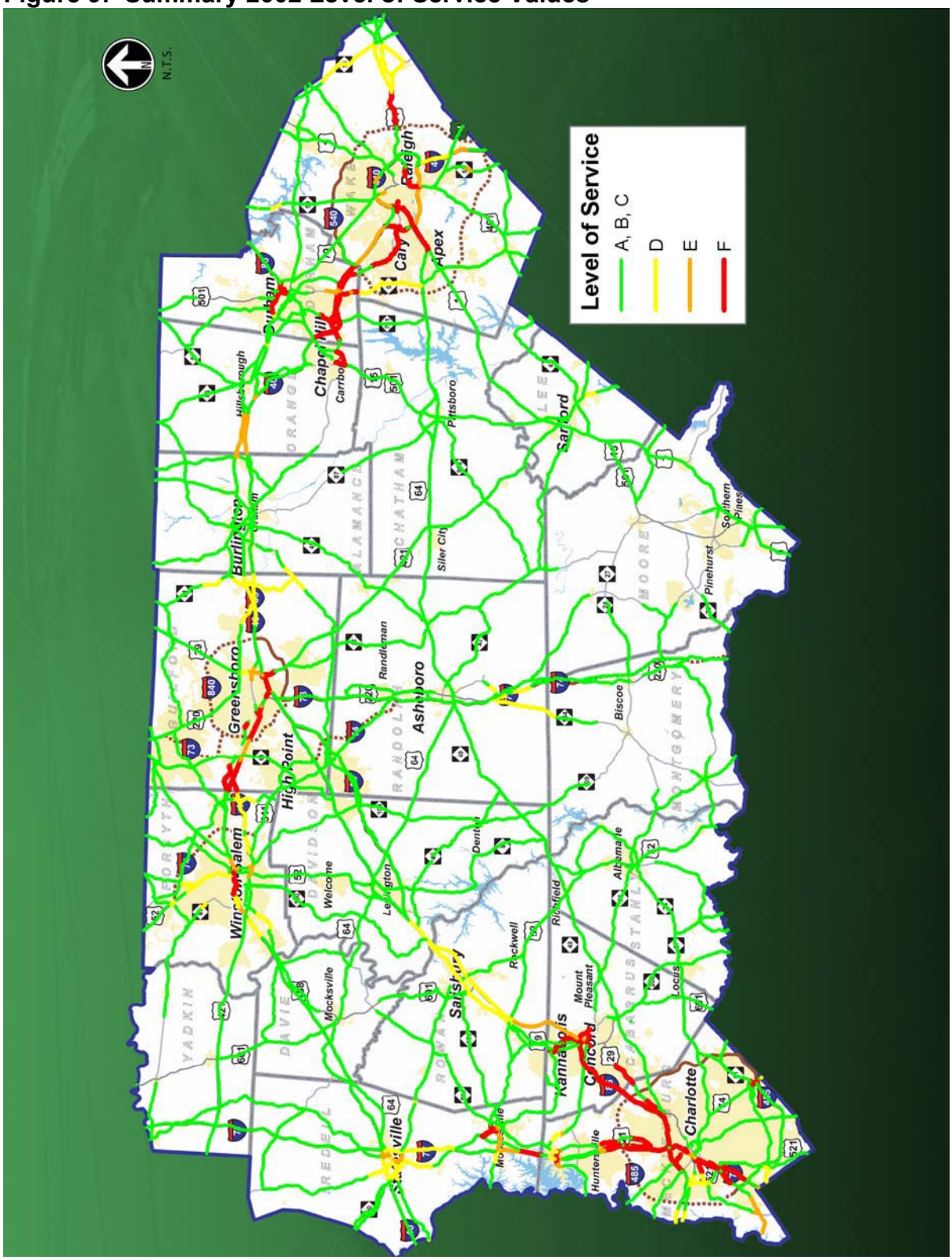


Figure 10: Year 2030 Levels of Service and Volume Range

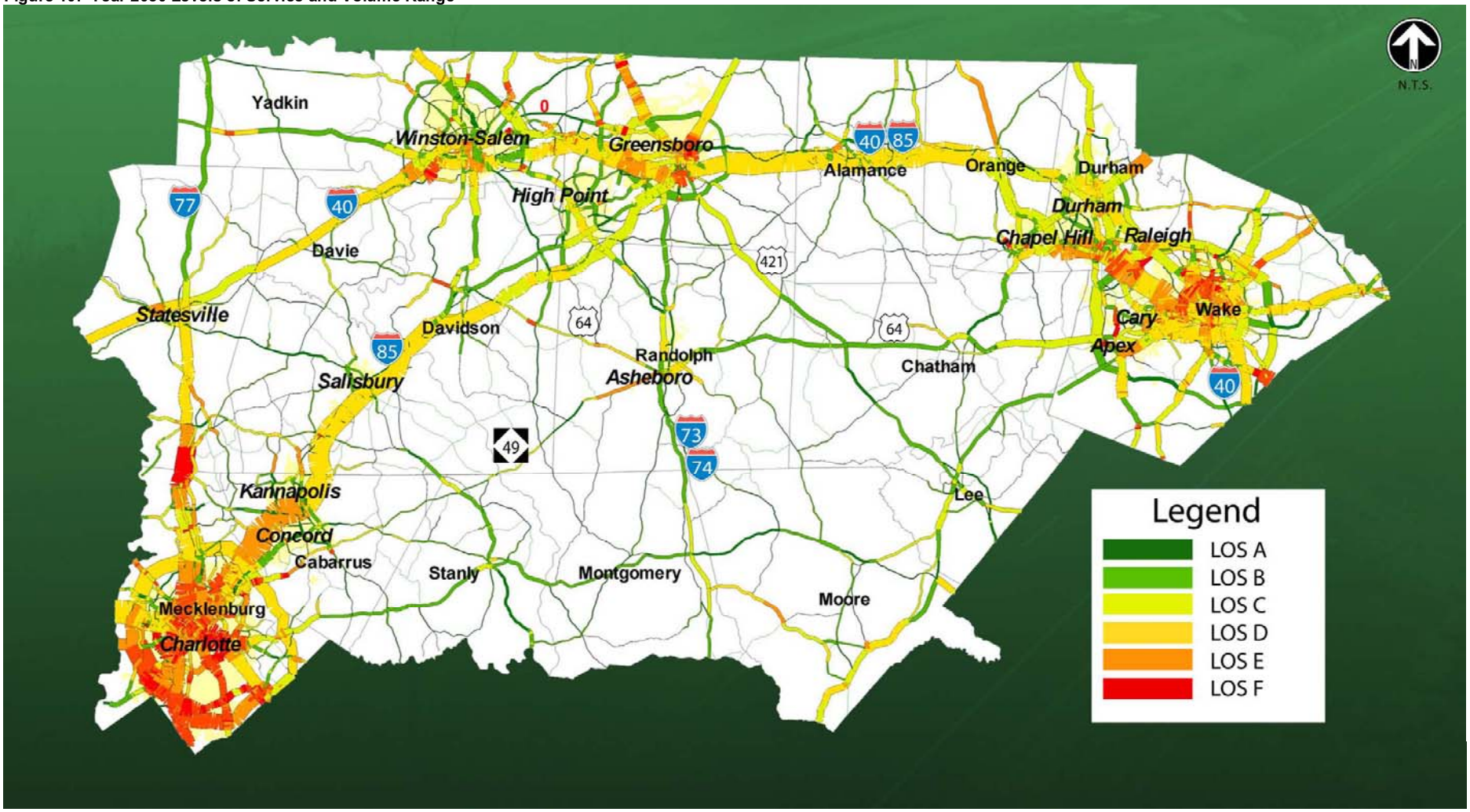
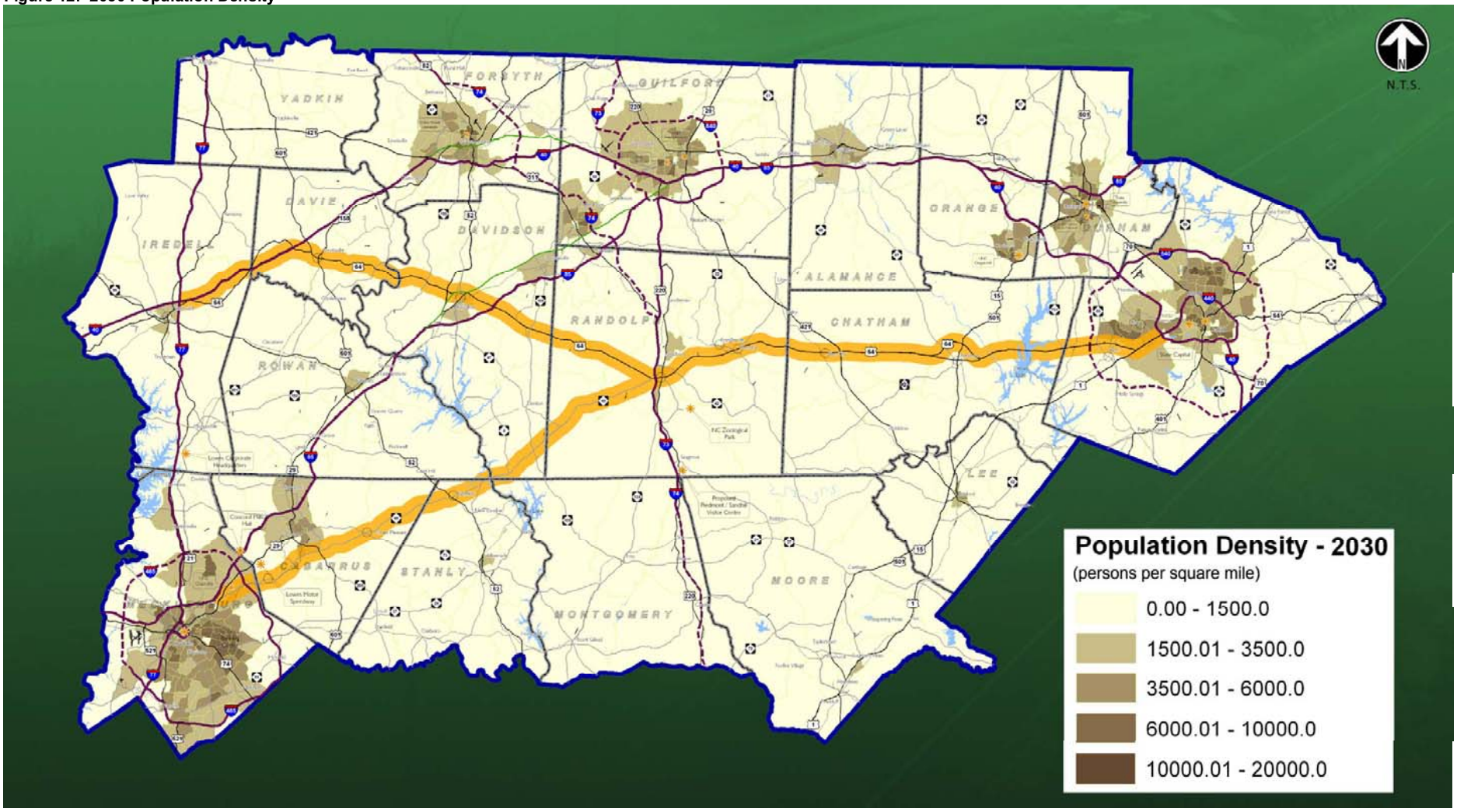


Figure 11: 2000 Population Density

Figure 12: 2030 Population Density



APPENDIX
ENVIRONMENTAL FEATURES INVENTORY

Environmental Constraints Map – Descriptions of Numbered Features

Feature Number on Figure 3.11	Feature Type	Description	Federal/State Status (Where Applicable)*
1	Superfund Areas	Galvin Industries, Inc.	
2	Unregulated Hazardous Sites (Superfund)	Olin Corp. Ecusta Paper & Film Group	
3	Natural Heritage Element Occurrence	Villosa Vaughaniana (Carolina Creekshell – Mollusk)	E
4	Superfund Areas	Mineral Research and Development Corp.	
5	Unregulated Hazardous Sites (Superfund)	Harrisburg Battery	
6	Unregulated Hazardous Sites (Superfund)	FL Steel Corp.	
7	Natural Heritage Element Occurrence	Etheostoma Collis Population 1 (Carolina Darter [Central Piedmont Population] – Fish)	SC
8	Significant Natural Heritage Areas	Frank Lisk Park	
9	Unregulated Hazardous Sites (Superfund)	Lee County Landfill	
10	Significant Natural Heritage Areas	Concord Ring Dike/Jackson School Natural Area	
11	Superfund Areas	Brey McNar Wastewater Treatment Plan (WWTP)	
12	Unregulated Hazardous Sites (Superfund)	Goldsboro Coal and Gas Plant #1	
13	Significant Natural Heritage Areas	Charity Church Hardwood Forest	
14	Significant Natural Heritage Areas	Dutch Buffalo Creek Dam	
15	Natural Heritage Element Occurrence	Etheostoma Collis Population 1 (Carolina Darter [Central Piedmont Population] – Fish)	SC
16	Significant Natural Heritage Areas	Butcher Branch Forest	
17	Significant Natural Heritage Areas	Lower Butcher Branch Depression Swamps	
18	Parks	Richfield Park	
19	Significant Natural Heritage Areas	New London Ridges	
20	Natural Heritage Element Occurrence	Haliaeetus Leucocephalus (Bald Eagle – Bird)	T
21	Parks	Uwharrie National Forest	
22	Significant Natural Heritage Areas	Beaverdam Creek/Grassy Fork Creek	
23	Natural Heritage Element Occurrence	Alasmidonta Varicosa (Brook Floater – Mollusk)	E
24	Significant Natural Heritage Areas	Second Creek Slopes	

Environmental Constraints Map – Descriptions of Numbered Features

Feature Number on Figure 3.11	Feature Type	Description	Federal/State Status (Where Applicable)*
25	Significant Natural Heritage Areas	Cody Mountain	
26	Significant Natural Heritage Areas	Toms Creek Basic Forest	
27	Natural Heritage Element Occurrence	Alasmidonta Varicosa (Brook Floater – Mollusk)	E
28	Significant Natural Heritage Areas	Uwharrie River Aquatic Habitat	
29	Natural Heritage Element Occurrence	Villosa Vaughaniana (Carolina Creekshell – Mollusk)	E
30	Superfund Areas	Union Carbide Corp.	
31	Unregulated Hazardous Sites (Superfund)	Sorrell Landfill	
32	Superfund Areas	Jung Corp	
33	Unregulated Hazardous Sites (Superfund)	Ethan Allen Furniture	
34	Superfund Areas	General Electric Co.	
35	Unregulated Hazardous Sites (Superfund)	Harrelson Rubber Co, Inc.	
36	Superfund Areas	Harrelson Rubber Co, Inc.	
37	Unregulated Hazardous Sites (Superfund)	Aycock Property	
38	Significant Natural Heritage Areas	Donnelly Hardpan Bog	
39	Natural Heritage Element Occurrence	Hemidactylium Scutatum (Four-Toed Salamander – Amphibian)	SC
40	Superfund Areas	Harrelson Rubber Co.	
41	Unregulated Hazardous Sites (Superfund)	Grant Creek Regional Wastewater Treatment Plant (WWTP)	
42	Natural Heritage Element Occurrence	Villosa Vaughaniana (Carolina Creekshell – Mollusk)	E
43	Significant Natural Heritage Areas	Rocky River Basalt Bluffs and Levees	
44	Superfund Areas	Chatham County Landfill	
45	Unregulated Hazardous Sites (Superfund)	Gray Farm Site	
46	Natural Heritage Element Occurrence	Hemidactylium Scutatum (Four-Toed Salamander – Amphibian)	SC
47	Significant Natural Heritage Areas	Lessler Montmorillonite Forest	
48	Natural Heritage Element Occurrence	Cambarus Davidi (Carolina Ladle Crayfish – Crustacean)	SR
49	Significant Natural Heritage Areas	Pittsboro Firetower Wilderness	
50	Significant Natural Heritage Areas	Duke Forest Haw River Levees and Bluffs	

Environmental Constraints Map – Descriptions of Numbered Features

Feature Number on Figure 3.11	Feature Type	Description	Federal/State Status (Where Applicable)*
51	Significant Natural Heritage Areas	Duke Forest Haw River Levees and Bluffs	
52	Significant Natural Heritage Areas	Haw River Aquatic Habitat	
53	Natural Heritage Element Occurrence	Notropis Mekistocholas (Cape Fear Shiner – Fish)	E
54	Natural Heritage Element Occurrence	Alasmidonta Varicosa (Brook Floater – Mollusk)	E
54	Natural Heritage Element Occurrence	Lampsilis Cariosa (Yellow Lampmussel – Mollusk)	E
55	Natural Heritage Element Occurrence	Gomphus Septima (Septima's Clubtail – Insect)	SR
56	Natural Heritage Element Occurrence	Haliaeetus Leucocephalus (Bald Eagle – Bird)	T
57	Significant Natural Heritage Areas	Parkers Creek Ridges	
58	Parks	Jordan Lake State Recreation Area	
59	Historic Study List Districts	HT Lawrence Farm – Circa 1898 Tobacco Farm	
60	Natural Heritage Element Occurrence	Haliaeetus Leucocephalus (Bald Eagle – Bird)	T
61	Significant Natural Heritage Areas	White Oak Creek Floodplain	
62	Superfund Areas	Pierce (Lynn) Property	
63	Unregulated Hazardous Sites (Superfund)	Romarco Ltd	
64	Regulated Hazardous Waste Facilities		
65	Natural Heritage Element Occurrence	Hemidactylium Scutatum (Four-Toed Salamander – Amphibian)	SC
66	Significant Natural Heritage Areas	Hemlock Bluffs State Natural Area	
67	Natural Heritage Element Occurrence	Lampsilis Radiata Radiata (Eastern Lampmussel – Mollusk)	T
68	Significant Natural Heritage Areas	Cable Creek Headwaters	
69	Significant Natural Heritage Areas	Back Creek Ravines	
70	Significant Natural Heritage Areas	Ridges Mountain	
71	Significant Natural Heritage Areas	Camp Woodfield Forests	
72	Significant Natural Heritage Areas	Westfield Church Basic Forest	
73	Natural Heritage Element Occurrence	Villosa Delumbis (Eastern Creekshell – Mollusk)	SR

Environmental Constraints Map – Descriptions of Numbered Features

Feature Number on Figure 3.11	Feature Type	Description	Federal/State Status (Where Applicable)*
74	Unregulated Hazardous Sites (Superfund)	Burke County School Property	
75	Superfund Areas	Burlington Furniture/Lumber Plant #1	
76	Superfund Areas	Burlington Furniture/Cent Main	
77	Regulated Hazardous Waste Facilities		
78	Unregulated Hazardous Sites (Superfund)	Southern Resins	
79	Superfund Areas	Battery Tech	
80	Unregulated Hazardous Sites (Superfund)	Lexington Municipal Landfill	
81	Superfund Areas	Lexington Coal Gas Plant	
82	Unregulated Hazardous Sites (Superfund)	Edgecombe County Landfill	
83	Unregulated Hazardous Sites (Superfund)	Martins Creek Road	
84	Superfund Areas	Lexington Municipal Landfill	
85	Superfund Areas	Raleigh Road Furniture Corp.	
86	Unregulated Hazardous Sites (Superfund)	Howard Johnsons/Crabtree Valley	
87	Significant Natural Heritage Areas	Cooleemee Plantation/Adkin River Slopes	
88	Significant Natural Heritage Areas	Cooleemee Plantation/Orbicular Diorite Area	
89	Significant Natural Heritage Areas	St. Johns School Bluffs	
90	Regulated Hazardous Waste Facilities		
91	Significant Natural Heritage Areas	Cool Springs Fen	

* E=Endangered (federal), T=Threatened (federal), SC=Species of Special Concern (federal)
SR=Significantly Rare (state).

Source: North Carolina Center for Geographic Information and Analysis Database (February 11, 2004)