

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 COMPREHENSIVE LAND USE AND TRANSPORTATION PLANNING

3.1.1 Existing Land Use

General County Land Use Patterns. Over the last twenty years, Cleveland County has experienced accelerated urbanization due, in part, to its proximity to Gaston and Mecklenburg counties (see Exhibit 3-1). Yet, while new development and an evolving economic base have brought changes to land use patterns (including the conversion of some agricultural lands to other uses), the county remains largely rural in character.

As depicted in Table 3-1, the amount of land in agricultural use dropped from 75 percent of the county's total area in 1975 to about 33 percent in 1995. Although three quarters of Cleveland County's population still resides in rural places, only 1,056 people lived on farms in 1990 (for a more detailed discussion, see Section 3.2.1). Rural, low density, non-agricultural uses now occupy more than half of the county's land, and generally correspond with areas lacking public water and sewer service, or areas in which development is limited by the presence of environmentally sensitive or mountainous lands (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 24). Development in these areas typically consists of dispersed, single-family dwelling units.

**Table 3-1
CLEVELAND COUNTY LAND USE**

| 1995 Land Use | Acres | % of Total County Area |
|-----------------------|----------------|-----------------------------------|
| Residential | 30,373 | 10.1% |
| Commercial | 1,858 | 0.6% |
| Industrial | 3,165 | 1.1% |
| Community Facilities | 1,223 | 0.4% |
| Open Space/Recreation | 866 | 0.3% |
| Agricultural*** | 97,822 | 32.6% |
| Rural Low Density | 164,314 | 54.8% |
| TOTAL | 299,621 | 100.0% |

| 1975 Land Use | Acres | % of Total County Area |
|----------------------------|----------------|-----------------------------------|
| Municipal Planning Areas* | 32,405 | 10.8% |
| Residential | 5,940 | 2.0% |
| Commercial | 691 | 0.2% |
| Industrial | 859 | 0.3% |
| Social/Cultural | 1,401 | 0.5% |
| Transportation & Utilities | 16,773 | 5.6% |
| Farmland/Forest | 225,702 | 75.3% |
| Other Undeveloped** | 15,850 | 5.3% |
| TOTAL | 299,621 | 100.0% |

* Planned areas within the municipalities of Shelby, Kings Mountain and Boiling Springs were not included in the 1975 land use breakdown; therefore, some of the land use categories for this year may be substantially underrepresented.

** Includes water bodies.

*** Table 3-2 shows agricultural land use acreage for 1997 and 2002, according to available USDA information. For comparison of land use for similar years, however, 1995 is used here.

Sources: Cleveland County Comprehensive Land Use Plan 1995-2005, Isothermal Planning and Development Commission, November 1995.
Cleveland County Land Development Plan (Update), Traffic and Planning Associates, Inc., May 1976.

Residential Uses. Residential development in 1995 accounted for ten percent of Cleveland County's land area. Roughly half of the county's housing units were concentrated in the south central region (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 9), which is dominated by the City of Shelby.

The relative convenience of southern Cleveland County to the cities of Gastonia and Charlotte has contributed to population growth in the project study area, as well as in Kings Mountain to the east, and suggests that increasing numbers of people are electing to commute greater distances to work.

The mix of housing types varies throughout the county. According to the U.S. Census, single-family residences represented nearly three-quarters of Cleveland County's 34,000 housing units in 1990; multi-family units and manufactured housing accounted for approximately 10 percent and 16 percent of the housing stock, respectively. Manufactured housing, the fastest growing housing type in the county, constituted an average of 67 percent of all building permits approved annually for residential uses between 1990 and 1995 (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, pp. 10-11). Much of the growth in manufactured housing has occurred in the northern and southeastern portions of the county, where concentrations range from 15 to 35 percent. The Shelby and Kings Mountain metropolitan areas contain much less manufactured housing (1.4 percent and 4.7 percent, respectively in 2000) than the countywide percentage of 21.7 in 2000 (Centralina Council of Governments, Cleveland County Land Use Plan April 19, 2005).

Neighborhoods and Neighborhood Stability. Residential development in the study area is concentrated in and around Shelby, as displayed on Exhibit 3-2. Many of these residential areas are traditional planned neighborhoods, while others were shaped by specific historic circumstances.

The residential sections of West Marion and South Washington streets, just outside Shelby's central business district (CBD), are part of the Uptown Shelby Historic District. The houses here were built independently over many decades, with much of the growth occurring during the textile boom at the turn of the century. They reflect a variety of architectural styles, both vernacular and formal. While these neighborhoods were not strictly exclusive, they were home to many of Shelby's most prominent industrialists, professionals, and political leaders during the late nineteenth and early twentieth centuries (Jenny Hughes, Uptown Shelby Historic District, pers. comm., September 11, 1996). The current residential population is socio-economically mixed, and many of the homes in these well-preserved neighborhoods continue in the ownership of the families who built them (Genevieve and Timothy Keller, Land and Community Associates, Charlottesville, Virginia, National Register of Historic Places Inventory Nomination Form, Central Shelby Historic District, January 1983, pp. 1-2).

During the first quarter of the twentieth century, as textile mills multiplied across the North Carolina Piedmont, tracts of simple frame houses were constructed adjacent to these mills to house textile workers. Today, remnants of "mill villages", some of them largely intact, are in ample evidence throughout Shelby. The neighborhoods that have grown from former mill villages are generally marked by high racial integration and moderate to low income levels.

The traditionally African-American community of Light Oak resembles a mill village, but its history is separate from that of the textile industry. When changes in the economy and federal policies in the 1930s and 1940s severely curbed the demand for agricultural labor, many sharecroppers and tenant farmers migrated to cities and towns in search of new opportunities. For African-American people, such a move could be challenging. During the era of segregation, there were few neighborhoods in Shelby which both welcomed African-American residents and had sufficient housing and space for a growing population. The majority of Shelby's African-American population resided in a neighborhood along Frederick Street in the north of town; for families desiring less crowded conditions, the only choices were isolated areas completely separated from existing white neighborhoods (Tropzie McCluney, pers. comm., March 6, 1997). Light Oak was one such place. Situated to the east of NC 180, the community began as a small collection of frame houses bordered by cotton fields. Some Light Oak residents found work in the fields of neighboring farmers, while others were teachers, ministers, domestic workers, nursing assistants, and other service providers.

Over time, the surrounding farms became defunct and were replaced with residential developments. Most of the houses seen in Light Oak today were built in the late 1950s and early 1960s as part of a government-subsidized, low-income development. In later years, more affluent African-American neighborhoods were developed to the north and east of Light Oak. After Moss Lake was created in the 1970s, the presence of new waterfront property lured many middle- and upper-middle-class residents to the area.

Despite the growth in population and income levels in areas east of Shelby, Light Oak continues to be an isolated place. Abandoned and derelict houses testify to the decline and troubled times that have beset Light Oak since the mid-1970s when drugs and crime were introduced to the

area. Many long-time residents who could afford to move have done so; others who remain are working to restore the neighborhood's character.

Most of the neighborhoods within or near Shelby's existing city limits came into being as traditional planned subdivisions in the decades after World War II. Their physical and socioeconomic characteristics vary. Most of these neighborhoods are predominantly white, but there are middle-class neighborhoods within or near the city limits which are predominantly African-American, including the Friendship Road subdivision (SR 1933) and an area between Elizabeth Avenue (SR 2052) and Oak Grove Road (SR 2033).

During the late 1960s and early 1970s, several moderate- to lower-income, single- and multi-family housing developments were built in Shelby to the south of US 74. Most of these developments are government subsidized, and all of them are predominantly African-American (Hal Mason, City of Shelby Community Development Department, pers. comm., September 11, 1996). They include the Sedgefield, Olsen Court, and Ramblewood developments near Plaster Park; and the Holly Oak, Meadows, and Heritage Oaks developments off Eaves Road (SR 1100). The latter is a single-family housing subdivision currently under construction, which is subsidized by a Community Development Block Grant.

Two places outside Shelby that have experienced considerable subdivision development in recent years are Moss Lake and Boiling Springs, which are becoming thriving bedroom communities. Subdivisions can also be found in the countryside surrounding Shelby. These developments are generally rather small and modestly priced; however, larger (and in some cases

more expensive) subdivisions are becoming more common in rural and semi-rural Cleveland County.

Other rural residential development takes the form of scattered farms and isolated clusters of homes, many of which are owned and occupied by different branches of the same families. Although these are highly dispersed and do not constitute traditional planned neighborhoods, they are a very stable part of the residential character of the study area.

Commercial Uses. Commercial uses in Cleveland County are generally located within municipalities, sometimes mixed with industrial development. The county's highest concentration of commercial establishments is in the center of Shelby, spreading outward from the intersection of Lafayette Street and US 74 Business (NC Department of Commerce, Division of Community Assistance, Asheville Regional Office, Land Development Plan, Shelby, North Carolina, November 1994, p. 12). Beyond this central business district (CBD), commercial uses are prevalent along South Lafayette Street (NC 18 south), NC 180, Grover Street, and the US 74 Bypass (see Exhibit 3-2). These corridors include some areas that have traditionally been residential, but are undergoing transition to commercial use.

Prominent commercial uses along the existing US 74 Bypass include automobile dealerships, shopping centers, franchise restaurants, manufactured housing sales lots, and motels. Commercial land uses in central Shelby consist primarily of specialty retail shops and office space, much of which is associated with city and county government and other community institutions. The Cleveland Memorial Hospital on Grover Street is the center of a "medical district". The hospital, which has a staff of approximately one thousand, receives more than ten

thousand patients annually, and has attracted many auxiliary retailers, outpatient services, and professional offices to the vicinity (Public Relations Office, Cleveland Memorial Hospital, pers. comm., July 1996).

Industrial Uses. Industrial uses in Cleveland County tend to be located near major roads, interchanges, and rail lines where there is easy access to freight transportation. The county's highest concentrations of industry are along two corridors: 1) southwest of Kings Mountain, follows I-85, US 29, and the Norfolk Southern rail line; and 2) just west of Shelby along Washburn Switch Road (SR 1313) and the Norfolk Southern and CSX rail lines (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 22, 24). Industrial uses within the study area are also common along or in the vicinity of existing US 74; on Grover Street along the CSX rail line; in downtown Shelby at Morgan Street and the Norfolk Southern rail line; and on NC 180 (see Exhibit 3-2).

Although textiles historically have dominated manufacturing in Cleveland County, the region's industrial base has become considerably more diverse in the last fifteen to twenty years (Peggy Bridges, Cleveland County Chamber, pers. comm., June 7, 1996). Shelby is home to manufacturers of an assortment of metal, concrete, lumber, and plastic products; printing and publishing operations; machinery and equipment manufacturers; and furniture makers. Among the largest manufacturers in Shelby are producers of capacitors, refrigeration compressors, yarns and fabrics, fiberglass, and transportation equipment (Cleveland County Chamber, Cleveland County Manufacturers Directory).

Agricultural Uses. About one third of Cleveland County's land area is farmland, much of which is concentrated in the north and west. As displayed in Table 3-2, agricultural uses are varied, but livestock farms far outnumber any other single type. Typical agricultural uses within the study area include beef cattle and cow/calf operations, and croplands producing combinations of cotton, corn, wheat, and soybeans (Stephen G. Gibson, Agricultural Extension Agent, NC Cooperative Extension Service, Cleveland County Center, pers. comm., June 30, 1996). Most of the study area farms are sole proprietorships or partnerships; frequently, land is rented by the farmer from another party. The study area contains no corporate farm chains.

3.1.2 Land Use Planning

Zoning. Cleveland County adopted countywide zoning in October 2000. No significant changes were made to the zoning code as a result of this countywide application, except for the application of a one-acre minimum lot size to all lots located in a water supply watershed ordinance.

Cleveland County has discussed the creation of a countywide Land Use Guidance System Ordinance, which would classify all unzoned, unincorporated land as an "open district"; however, it has not been formally implemented to date and is used as a guide rather than as a mandate of enforcement (William McCarter, Director, Cleveland County Planning and Mapping, pers. comm., July 11, 2007). If this ordinance is ever be put into effect, development proposals involving certain changes in existing land use, particularly changes from agricultural or residential uses to commercial or industrial uses, would be required to submit to a special approval process (William McCarter, Director, Cleveland County Planning and Mapping, pers. comm., June 21, 1996).

Table 3-2
CLEVELAND COUNTY AGRICULTURAL LAND USE

| Land Area by Type | 2002 | 1997 | Percent of total county area 2002 | Percent change 1997- 2002 |
|-------------------------------------|---------|---------|-----------------------------------|---------------------------|
| | Acres | Acres | | |
| TOTAL AREA, CLEVELAND COUNTY | 299,621 | | 100 % | |
| Total Farm Area | 117,092 | 114,965 | 39.1 % | 1.9 % |
| Cropland | 65,846 | 64,937 | 22.0 % | 1.4 % |
| • Harvested | 32,424 | 29,803 | 10.8 % | 8.8 % |
| • Pasture and Grazing | 18,245 | 24,974 | 6.1 % | -26.9 % |
| • Other | 15,177 | 10,160 | 5.1 % | 49.4 % |

| Farms by Type | Number of Farms | | Percent Change 1997- 2002 |
|---|-----------------|------|---------------------------|
| | 2002 | 1997 | |
| Total number of farms | 1131 | 1087 | 4.0 % |
| • Oilseed and grain farming | 62 | 167 | -62.9 % |
| • Vegetable and melon farming | 19 | 17 | 11.8 % |
| • Fruit and tree nut farming | 12 | 15 | -20.0 % |
| • Greenhouse, nursery and floriculture production | 22 | 19 | 15.8 % |
| • Other crop farming | 346 | 92 | 276.1 % |
| • Beef cattle ranching and farming | 468 | 425 | 10.1 % |
| • Cattle feedlots | 1 | 8 | -87.5 % |
| • Dairy cattle and milk production | 11 | 12 | -8.3 % |
| • Hog and pig farming | 8 | 4 | 100.0 % |
| • Poultry and egg production | 57 | 40 | 42.5 % |
| • Sheep and goat farming | 23 | 10 | 130.0 % |
| • Animal aquaculture and other animal production | 102 | 55 | 85.5 % |

Source: "Census of Agriculture, 2002, 1997", US Department of Agriculture (USDA), National Agricultural Statistic Service (NASS).

Cleveland County has discussed the creation of a countywide Land Use Guidance System Ordinance, which would classify all unzoned, unincorporated land as an "open district"; however, it has not been formally implemented to date and is used as a guide rather than as a mandate of enforcement (William McCarter, Director, Cleveland County Planning and Mapping, pers. comm., July 11, 2007). If this ordinance is ever be put into effect, development proposals

involving certain changes in existing land use, particularly changes from agricultural or residential uses to commercial or industrial uses, would be required to submit to a special approval process (William McCarter, Director, Cleveland County Planning and Mapping, pers. comm., June 21, 1996).

The City of Shelby enforces zoning and subdivision ordinances within its corporate limits and extra-territorial jurisdiction (ETJ), an area extending approximately one mile (or more, in some locations) from the municipal boundary (see Exhibit 3-2). The zoning for these areas is described in Table 3-3. Districts zoned R-20 are generally those that are either not currently served by municipal sewerage or not located within any planned areas of expansion, and require home lots of sufficient size to accommodate septic and well systems safely. Much of the ETJ has been given this designation.

Watershed Protection. In accordance with statewide watershed management requirements established by the Environmental Management Commission, Cleveland County and the City of Shelby administer and enforce water supply watershed protection ordinances for watershed areas within their respective jurisdictions. Exhibit 3-14 shows the portions of two state-designated watershed protected areas that overlap the study area: Kings Mountain Reservoir and First Broad River. Areas within 0.5 mile of public drinking water supply intakes or reservoirs, where the need for pollution control is greatest, are designated "critical areas" and are more stringently regulated. Such watershed critical areas surround Shelby's drinking water intake at the First Broad River (a WS-IV water supply) near Grover Street and the Kings Mountain Reservoir (a WS-III water supply; see 3.12.3 Water Resources, *Water Quality* for a discussion of the WS-III and WS-IV designations.)

**Table 3-3
CITY OF SHELBY ZONING DISTRICTS**

| Zoning District | Description | Locations |
|------------------------|---|--|
| R20, R20-CU | Low density residential; single- and two-family dwellings; manufactured housing parks a conditional use | Predominant zoning type in ETJ |
| R10, R10-CU | Quiet, low density residential; single-family dwellings only | Mostly at western and eastern ends of city; in ETJ at lower northern section and to the east and southwest |
| R8, R8-CU | Quiet, medium density residential; single- and two-family dwellings | Throughout city, generally removed from business areas; found to a more limited extent in the ETJ |
| R6, R6-CU | Relatively high density; mixture of single-family, two-family, and multi-family dwellings | Throughout city, often skirting business areas, and to a limited extent in the ETJ |
| RO | Residential-Office District; buffer area providing for conversion of older homes into office space | Small districts located throughout city, generally near CBD; to a limited extent in the ETJ |
| NB | Neighborhood Business District; provides retail goods and services to nearby neighborhoods | Small districts located throughout zoning area adjacent to or within residential districts |
| CB | Central Business District; provides compact and efficient center for goods, services, business, government | In the center of Shelby, spreading outward from the intersection of Lafayette Street and US 74 Business |
| GB, GB2 | General Business District; fringe commercial district for retail, services, light manufacturing, warehousing | Throughout zoning area; generally along major thoroughfares and adjacent to the CBD |
| LI | Light industrial district; permits relatively quiet and clean manufacturing, warehousing | Along rail lines and major thoroughfares; concentrated in western and eastern Shelby |
| CPD | Corridor Protection District; to promote sensitive conversion of vacant land to more urban uses; permits residential uses similar to R6 | Along DeKalb Street, in the southern portions of the city |

Source: Unified Development Ordinance, City of Shelby, North Carolina, prepared by The Wooten Company for the City of Shelby, November 19, 2001.

In order to prevent the drainage of large amounts of urban stormwater into streams feeding into water intake locations, new development in watershed protected and critical areas is limited to a density of one single-family residential unit per acre (Centralina Council of Governments, Cleveland County Land Use Plan, April 19, 2005, page 9).

The City of Shelby Zoning Ordinance also contains a Watershed Overlay District applicable to all property located within the designated water supply watershed. Whenever there is a conflict between the City's Zoning Ordinance and Federal or State laws or regulations, the stricter requirements shall apply.

Future Land Use. The Cleveland County Land Use Plan (April 19, 2005) espouses future land use that proactively promotes employment opportunities, yet preserves the rural character and open spaces of the county. This document provides an update to the earlier study performed in 1995 by the Isothermal Planning and Development Commission. As anticipated, substantial growth has occurred in the county, so the 2005 plan is needed to provide firm guidance on future land use in the county.

The 2005 Plan strongly discourages the proliferation of urban sprawl in the County. One of the strongest measures called for is the elimination of the Corridor Protection Overlay District, which allows for commercial development to take place along any State or federal highway in the County. As an alternative, the Plan calls for commercial development at a series of "nodes" and other strategic areas. The Plan also calls for the promotion of economic (both residential and non-residential) development within existing incorporated areas of the County (especially the smaller-sized towns), as opposed to undeveloped areas throughout the County.

The following strategy is included in the 2005 county plan under the goal of developing and maintaining a modern, safe and efficient multi-modal transportation network that serves the needs of the County residents and persons traveling through the County.

STRATEGY T-A4: Work closely with officials from the City of Shelby for areas that lie at and near each of the proposed interchanges along the Shelby Bypass.

(NOTE: The Bypass is planned to be a limited access highway. Thus, development can only occur at or near the interchanges. The current Thoroughfare Plan shows proposed interchanges at: Buffalo Creek, NC 150, NC 18, Lafayette Street, NC 226, Washburn Switch Road, and near Plato Lee Road). With the exception of Plato Lee Road, each of these interchanges is located within the planning jurisdiction of the City of Shelby. However, in some instances, Shelby's planning jurisdiction does not extend much beyond the interchange. A coordinated planning program between the City of Shelby and Cleveland County along these highways and near these interchanges is needed to make sure that land use plans, policies, and regulations are in sync with each other.)

The City of Shelby's Land Development Plan Update 1999-2010 (December 6, 1999) was created to take into account the City's aggressive annexation program and extension of ETJ limits to accommodate changes in the corporate limits that had occurred since the 1994 Land Development Plan update. This plan includes the US 74 Shelby Bypass project as a major pending transportation project in the area that will stimulate commercial growth around intersections and access points to the bypass. At the writing of the 1999 plan, the Preferred Alternative had not been made known to the public; the plan reflects this fact, and provides a map of all of the alternates under consideration at that time. One of the main transportation growth management policies presented in the Land Management Plan is to support and encourage the completion of the US 74 Shelby Bypass project.

3.1.3 Transportation Planning

Roadway Planning. There are several transportation plans dealing with roadway needs in or related to the study area. These range from specific physical plans to general policy objectives incorporated into local land use plans.

NCDOT State Transportation Improvement Program 2007-2013 - The NCDOT State Transportation Improvement Program (TIP) is a compendium of highway, aviation, rail, public transportation, and bicycle projects planned for North Carolina. It provides information on anticipated scheduling and funding for these projects, as well as descriptions of the projects themselves. The subject project (TIP Project Number R-2707) is part of a larger plan to improve US 74 across the state; these roadway projects are discussed individually in Section 1.4.1.

Cleveland County Thoroughfare Plan - In an effort to improve and integrate Cleveland County's roadway system, a thoroughfare plan was developed by the NCDOT and was formally adopted by the NCDOT on July 12, 1996. Recommendations include the following:

- Widening of NC 150 between Shelby and Gaston County to improve level of service and create consistency with the Shelby Thoroughfare Plan (see below);
- Widening of NC 150 between Boiling Springs and Shelby to accommodate commuters between those cities, and future commercial and industrial growth;
- Widening of NC 180 between NC 226 and NC 18 to the south of Shelby and between NC 150 and NC 18 to the northeast; in tandem with the planned widening of NC 180 between NC 226 and NC 150 (TIP # U-2221) to form an improved eastern bypass of Shelby.

Other County Proposals and Policies - As part of the planning process for the TIP, the Cleveland County Transportation Partnership was formed to evaluate traffic patterns and safety concerns; its findings and recommendations are used by the State to help prioritize and schedule transportation projects. In addition to the Shelby Thoroughfare Plan (described below), the Partnership has endorsed two proposals for improvements within the study area: 1) the completion of a missing section of South Lafayette Street (NC 18 / NC 150); and 2) the improvement of East Marion Street (US 74 Business) to a three-lane curb-and-gutter section.

The Cleveland County Comprehensive Land Use Plan contains several objectives pertaining to roadway planning. It recognizes the importance of transportation access in promoting appropriate growth patterns and strengthening the local economy, and the necessity of adequate and timely upgrade and expansion of infrastructure to ensure safe and efficient transportation. At the same time, the Plan urges the protection of areas surrounding roadways and interchanges from incompatible uses. The Plan is in favor of a controlled access US 74 bypass of Shelby.

1994 Shelby Thoroughfare Plan - The most recent version of the City of Shelby Thoroughfare Plan was formally adopted by the NCDOT on November 4, 1994. The Thoroughfare Plan identifies both existing and proposed roadway facilities which are of importance to the circulation of traffic in the vicinity of Shelby (see Exhibit 1-2). The proposed US 74 Bypass, shown as a northern bypass of the city, is a major component of the Plan, providing access to northern Shelby and improving east-west movement for through traffic. The Thoroughfare Plan identifies four segments of new location roadway, which, in conjunction with existing area roads, would form a continuous loop road around the southern portion of town. This loop would intersect the existing US 74 Bypass to the west and east of the city. The Plan is described in detail in Section 1.4.2.

Commuter Patterns. Commuter patterns for the section of US 74 within Cleveland County are influenced by travel within and through the county, as well as travel between the county and other locations.

Commuter travel in large American cities most often takes place within suburbs, rather than between suburbs and the central city areas; however, small cities, such as Shelby, which are generally less congested and easier to access, tend to attract more work trips in their regions (Eno Foundation for Transportation, Inc., Commuting in America: A National Report on Commuting Patterns and Trends, 1987, p. 39). As shown in Table 3-4, over 31,000 of Cleveland County's employed residents (about 75 percent) work within the county. Since approximately 50 percent of the county's 2000 population resided in Block Numbering Areas (census tracts) traversed by or adjacent to US 74, it is probable that a proportional number of intra-county commuters regularly used this roadway and that many commuted to or within the greater Shelby area.

**Table 3-4
DAILY COMMUTING PATTERNS (YEAR 2000)**

| COUNTY | NON-RESIDENT COMMUTERS (1) | | EMPLOYED CLEVELAND RESIDENTS | |
|------------------------------|------------------------------|---------------------|------------------------------|------------------|
| | Through Cleveland County (2) | To Cleveland County | Commuting to Other County | Intra-County (3) |
| Cleveland | N/A | N/A | N/A | 29,530 |
| Buncombe | 200 | 9 | 22 | N/A |
| Rutherford | 593 | 1,988 | 980 | N/A |
| Gaston | 80 | 2,442 | 5,963 | N/A |
| Mecklenburg | 153 | 554 | 2,734 | N/A |
| TOTAL (FIVE COUNTIES) | 1,026 | 4,993 | 9,699 | 29,530 |
| TOTAL ALL COMMUTERS | N/A | 7,567 | 14,446 | 29,530 |

(1) Numbers indicate only those non-resident commuters who would be commuting to or through Cleveland County from counties to the east or the west.

(2) Routing through Cleveland County was deduced based on relative locations of counties; this information was not identified in the census data.

(3) Termed as "non-commuters" in the census data.

Sources: Commuting data for Buncombe, Cleveland, Gaston, Mecklenburg, and Rutherford Counties, 2000 census.

Table 3-4 shows that in 2000, almost 5,000 inter-county commuters employed in Cleveland County were from Rutherford, Gaston, or Mecklenburg counties; and approximately 9,675 Cleveland County residents employed in other counties worked in Rutherford, Gaston, or Mecklenburg counties. As the major west-east conveyor of traffic between these four counties, providing direct access to Gastonia and Charlotte, US 74 may be the primary route used by a substantial proportion of these commuters to access employment locations. It is also likely that a smaller group of commuters from neighboring counties passing through Cleveland County relied on US 74 to reach points east or west.

As discussed in Section 3.1.2, it has been projected that commercial and industrial corridors within and near Shelby will continue to grow, and southern Cleveland County as a whole will become increasingly residential. In the future, both inter- and intra-county traffic is likely to increase.

Safety. Safety on the existing US 74 facility is discussed in detail in Section 1.5.6.

Bicycle Plans. The NCDOT recognizes bicycles as a viable travel alternative. They are an efficient means of transportation and do not contribute to either air or noise pollution. A section of the North Carolina Bicycling Highway known as the Southern Highlands route crosses Cleveland County from west to east along NC 182, passing through the municipalities of Polkville, Lawndale, and Fallston. A portion of NC 161 south of Kings Mountain and Lake Montonia Road has been designated as a “scenic byway” by NCDOT. The entire length of NC 161 is proposed as a “scenic byway” which would include a bikeway along NC 161 and Lake Montonia Road (Centralina Council of Governments, Cleveland County Land Use Plan, April

19, 2005, page 54). Currently, the City of Shelby performs no bicycle route planning, although obsolete route signs can be found in parts of the city. There are no TIP bicycle projects in Cleveland County.

Modal Interrelationships. The following is a description of air, rail, and port facilities related to the study area via the highway system.

Airports - The Shelby Municipal Airport, located four miles southwest of Shelby, is the only airport in Cleveland County. It is a general aviation airport with a 4,300-foot paved runway and is capable of supporting various single- and twin-engine aircraft (Cleveland County Chamber and Mosher-Adams, Inc. Cleveland County, North Carolina, 1993, p. 29).

The Charlotte/Douglas International Airport, approximately 40 miles east of Shelby near US 29-74, is the main commuter and freight air carrier for Cleveland County. The airport provides over 575 regularly-scheduled flights per day to more than 150 American cities and is ranked 37th nationally for cargo volume (<http://www.charlottechamber.com>).

Rail Service - Rail service in the study area is provided by CSX Transportation (formerly Seaboard Coast Line) and Norfolk Southern (formerly Southern). As depicted on Exhibit 3-2, CSX rails in the study area extend from Lattimore to Shelby by way of Washburn Switch Road (SR 1313), passing through the city just north of the CBD and heading northeast to Waco. These rails are part of CSX's main line and are in operation seven days a week, around the clock.

The Norfolk Southern line follows a similar path from Lattimore to downtown Shelby by way of Washburn Switch Road; from there it heads southward towards Patterson Springs. Two sections

of track within the study area are not in use: 1) from US 74 southwest of Lattimore to SR 1323 and 2) from the line's divergence with the CSX line at Randolph Road (SR 1308) to their reconvergence at Grover Street (SR 1305). The Norfolk Southern line makes one grade separation crossing of US 74 near Lafayette Street (NC 150/18).

Regional passenger rail service is provided by Amtrak; the closest station to the study area is in Gastonia, 20 miles east of Shelby.

Ports - The deep-water Port of Wilmington, approximately 250 miles from Shelby, is accessed by US 74. North Carolina's largest seaport and one of the "fastest growing ports in the nation", the port has 6,768 feet of continuous wharf (<http://www.ncports.com>). Port facilities ship and receive petroleum and liquid chemical products, are used for vessel moorage, and handle dry bulk cargos such as lumber, fertilizer, salt, ore, and scrap metal.

3.2 STUDY AREA SOCIOECONOMIC CHARACTERISTICS

3.2.1 Study Area Social Characteristics

Detailed census data for the study area and environs are organized in this section by county, municipality, and block numbering area (BNA) or census tract (see Exhibit 3-3).

Population Levels and Trends. Historic and projected population data for Cleveland County and the City of Shelby are shown in Table 3-5.

Table 3-5

POPULATION DATA AND TRENDS

| Area | Population 1980 | Population 1990 | Population 2000 | Annualized | | Projected Growth | | |
|------------------|--------------------|--------------------|--------------------|-------------------------|-----------------------|------------------------|-------------------------|------------------------|
| | | | | % Change 1980 - 1990 | % Change 1990-2000 | Range of Projection | Estimated Population | Annualized % Change |
| City of Shelby | 15,310 | 14,669 | 19,477 | -0.43% | 2.88% | N/A | N/A | N/A |
| Cleveland County | 83,435 | 84,714 | 96,287 | 0.15% | 1.29% | 2000 - 2020 | 115,247 | 0.90% |
| N. CAROLINA | 5,881,766 | 6,628,637 | 8,049,313 | 1.20% | 1.96% | 2000 - 2020 | 10,895,220 | 1.53% |

Sources: "Census of Population, 1980, Characteristics of the Population, Number of Inhabitants, North Carolina," U.S. Bureau of the Census.

"Census of Population and Housing, 1990," Summary Tape File 3, U.S. Bureau of the Census.

"Census of Population and Housing, 2000," U.S. Bureau of the Census.

NC State Data Center.

Census data indicate the population of Cleveland County grew in proportion to the overall population of North Carolina between 1980 and 2000, and continued to grow at an increased rate between 1990 and 2000. A future year population projection indicates Cleveland County's growth rate may decelerate somewhat between 2000 and the year 2020.

The City of Shelby shrank in population between 1980 and 1990. The population loss can be attributed, in part, to changes in residential patterns that occurred as homes beyond the city limits became increasingly favored over the limited, aging comparatively expensive supply of urban housing. Shelby's extra-territorial jurisdiction (ETJ), which encircles the city, gained population during this period (NC Department of Commerce, Division of Community Assistance, Asheville Regional Office, Land Development Plan, Shelby, North Carolina, November 1994, p. 6). Shelby began a drive to increase its population and tax base through more aggressive annexation of areas within its ETJ, which, collectively, resulted in the addition of 2,873 acres and approximately 4,600 residents by June, 1997. By 2000, as shown in Table 3-5, Shelby's population had reached 19,477. Recent growth in multi-family housing in Shelby and efforts by neighborhood groups and the city government to protect older, in-town homes from conversion to other uses suggest that residential patterns are still evolving.

Racial Composition. As illustrated in Table 3-6, the BNA study area's nonwhite population in 2000 was proportional to that of North Carolina as a whole with just over a quarter of its residents belonging to minority groups. The average minority population of the BNA study area was 24 percent, although proportions among the individual BNAs varied considerably. One urban BNA reported a minority population of 78 percent, while another, just outside the municipal boundary, reported only seven percent. African-Americans constituted the predominant minority group, accounting for 97 percent of the study area's nonwhite population; no other minority group had a one percent or greater share of the total population.

Table 3-6

DEMOGRAPHIC CHARACTERISTICS OF STUDY AREA (2000)

| Census Tract * | Census Tract Location (1) | Total Population | % Nonwhite Population | Total Housing Units | Population Density (pop/sq mi) | % Rural Population | Per Capita Income (2) | Total Households |
|----------------|------------------------------------|------------------|-----------------------|---------------------|--------------------------------|--------------------|-----------------------|------------------|
| 9503 | E of Shelby | 9,948 | 21.5% | 3,996 | 207.9 | 77.9% | \$ 19,256 | 3,697 |
| 9506 | SE of Shelby | 9,466 | 15.4% | 3,775 | 198.7 | 87.2% | \$ 16,417 | 3,518 |
| 9507 | E of Shelby; parts of S, SE Shelby | 7,033 | 31.8% | 2,921 | 540.5 | 21.1% | \$ 21,732 | 2,740 |
| 9508 | N of Shelby | 4,216 | 20.6% | 1,726 | 254.2 | 50.5% | \$ 17,898 | 1,612 |
| 9509 | N Shelby | 3,405 | 78.7% | 1,549 | 1,133.6 | 8.3% | \$ 14,359 | 1,359 |
| 9510 | E & central Shelby | 4,168 | 48.3% | 1,923 | 1,923.9 | 0.0% | \$ 23,458 | 1,685 |
| 9511 | W & central Shelby | 3,089 | 39.3% | 1,510 | 1,761.2 | 0.0% | \$ 14,742 | 1,324 |
| 9512 | S of Shelby; parts of S, SW Shelby | 5,163 | 26.8% | 2,400 | 886.4 | 4.8% | \$ 17,422 | 2,167 |
| 9513 | W & NW of Shelby | 2,428 | 7.2% | 1,085 | 117.7 | 100.0% | \$ 19,038 | 950 |
| 9514 | W of Shelby | 6,045 | 22.3% | 2,442 | 138.0 | 100.0% | \$ 15,692 | 2,287 |
| 9515 | SW of Shelby | 8,568 | 9.5% | 3,192 | 150.3 | 57.3% | \$ 18,261 | 2,926 |
| 9516 | S of Shelby | 8,977 | 21.8% | 3,725 | 245.8 | 71.3% | \$ 15,798 | 3,441 |
| TOTAL | CENSUS TRACT STUDY AREA (4) | 72,506 | 25.2% | 30,244 | 245.1 | 55.1% | n/a | 27,706 |
| City of Shelby | N/A | 19,391 | 43.2% | 8,827 | 1219.3 (3) | 5.4% | \$18,708 | 7,894 |
| Cleveland Co. | N/A | 96,287 | 23.2% | 40,317 | 205.5 | 55.5% | \$17,395 | 37,047 |
| N. CAROLINA | N/A | 8,049,313 | 27.9% | 3,523,944 | 152.9 | 39.8% | \$20,307 | 3,133,282 |

* Census tracts are also referred to as Block Numbering Groups (BNAs).

(1) Census tracts are shown on Exhibit 3-3.

(2) 1999 data.

(3) Estimated.

(4) 'Census Tract study area' is the closest geographic census approximation of the designated study area for the purposes of demographic study.

Source: "Census of Population and Housing, 2000," Summary Tape File 3, U.S. Bureau of the Census.

Age/Sex. The median age in Cleveland County was 34.7 in 1990 and 36.5 in 2000; for North Carolina, the median ages for these years were 33.2 and 35.3, respectively. The detailed breakdown in age groups shown in Table 3-7 illustrates the population aging trends in Cleveland County. The youngest portion of the population, representing groups between the ages of zero and 34, decreased as a percentage of the total population between 1990 and 2000 and is expected to continue decreasing through 2020. The age groups experiencing the most visible growth between 1990 and 2000 were those in the upper middle section of the range, representing ages 35 through 54. As these persons age, the oldest third of the population should account for the greatest growth through 2020.

In 2000, Cleveland County had a higher percentage of females than males (51.9 percent and 48.1 percent, respectively), which mirrored the statewide population split of 51.0 percent female and 49.0 percent male.

Population Distribution. Population is distributed among three types of residential areas: urban, rural farm, and rural non-farm. An urban population is defined by the 2000 Census of Population and Housing as all persons residing in an Urbanized Area (UA), a place or collection of associated places with a population of at least 50,000 persons and a high average density; or 2,500 or more persons residing in Census designated places outside UAs. All other populations are considered rural.

Table 3-7

AGE DISTRIBUTION IN CLEVELAND COUNTY

| Age Group (years) | Population 1990 | Percent of Total Population 1990 | Population 2000 | Percent of Total Population 2000 | Change in Percentage 1990-2000 | Projected Population 2020 | Percent of Total Projected Population 2020 | Change in Percentage 2000-2020 |
|-------------------|-----------------|----------------------------------|-----------------|----------------------------------|--------------------------------|---------------------------|--|--------------------------------|
| 0-4 | 5,688 | 6.7% | 6,452 | 6.7% | 0.0% | 5,211 | 5.9% | -0.8% |
| 5-9 | 5,604 | 6.6% | 7,144 | 7.4% | 0.8% | 5,531 | 6.3% | -1.1% |
| 10-14 | 5,709 | 6.7% | 6,992 | 7.3% | 0.5% | 5,276 | 6.0% | -1.3% |
| 15-19 | 6,513 | 7.7% | 6,280 | 6.5% | -1.2% | 5,512 | 6.3% | -0.2% |
| 20-24 | 6,079 | 7.2% | 6,023 | 6.3% | -0.9% | 4,953 | 5.6% | -0.7% |
| 25-29 | 6,627 | 7.8% | 6,149 | 6.4% | -1.4% | 5,298 | 6.0% | -0.4% |
| 30-34 | 6,534 | 7.7% | 6,663 | 6.9% | -0.8% | 4,942 | 5.6% | -1.3% |
| 35-44 | 12,467 | 14.7% | 14,819 | 15.4% | 0.7% | 9,299 | 10.6% | -4.8% |
| 45-54 | 9,980 | 11.8% | 13,212 | 13.7% | 1.9% | 11,078 | 12.6% | -1.1% |
| 55-59 | 4,162 | 4.9% | 5,109 | 5.3% | 0.4% | 6,171 | 7.0% | 1.7% |
| 60-64 | 3,862 | 4.6% | 4,294 | 4.5% | -0.1% | 5,866 | 6.7% | 2.2% |
| 65-74 | 6,888 | 8.1% | 7,019 | 7.3% | -0.8% | 10,433 | 11.9% | 4.6% |
| 75-84 | 3,571 | 4.2% | 4,506 | 4.7% | 0.5% | 5,799 | 6.6% | 1.9% |
| 85+ | 1,030 | 1.2% | 1,625 | 1.7% | 0.5% | 2,368 | 2.7% | 1.0% |
| Total | 84,714 | 100.0% | 96,287 | 100.0% | | 87,737 | 100.0% | |

Note: Individual percentages may not add up to exactly 100% due to rounding.

Sources:

"Census of Population and Housing, 1990," Summary Tape File 3, U.S. Bureau of the Census.

"Census of Population and Housing, 2000," Summary Tape File 3, U.S. Bureau of the Census.

"LINC Topic Report - Population by Age, Race, and Sex" (8/22/95) for April 1, 2020 (projected) for Cleveland County

Census data from 2000 show that study area BNAs located outside the City of Shelby or along its periphery are distinctly rural, while those BNAs situated largely within the municipal boundaries are distinctly urban (see Table 3-6). In all, 55.5 percent of the study area's population lived in rural areas. The remaining 44.5 percent lived in urban areas.

Population Density. In 2000, Cleveland County contained an average of 205 persons per square mile. The state as a whole was less densely populated with an average of 153 persons per square mile. Eight of the twelve study area BNAs were more densely populated than the county as a whole and all but three were more densely populated than the state (see Table 3-6). The four most urban BNAs ranged in density from 886 persons per square mile to 1923.9 persons per square mile.

Housing and Households. There were 37,046 year-round housing units in Cleveland County in 2000, Countywide housing increased 5,009 units over the 1990 total, accompanied by a shift in the vacancy rate from 6.4 percent to 8.1 percent. The statewide vacancy rate in 2000 was 11.1 percent.

In 2000, the average household size in Cleveland County was 2.53 persons, a decrease from 2.65 persons in 1990 and closely aligned with the 2000 statewide average of 2.49. BNA Study area household size was marginally greater than the countywide level with 2.69 persons per household.

A comparison of substandard and overcrowded housing in 1990 and 2000 reveals that conditions have improved considerably in Cleveland County. Table 3-8 shows that the number of substandard units (those lacking adequate plumbing facilities) decreased 31 percent over ten years; while overcrowded units (those with more than 1.00 person per room) increased, the number of overcrowded, substandard units remained zero. The percentage of overcrowded housing in Shelby was proportional to the county's rate in 2000, while its percentage of substandard housing was nearly one-third the county rate.

Table 3-8

HOUSING CONDITIONS

| | OCCUPIED HOUSING UNITS | | | | | | | |
|------------------|------------------------|-----------|---------------------|--------|--------------|---------|--------------------------------------|-------|
| | Total Units | | Incomplete Plumbing | | Overcrowding | | Incomplete Plumbing and Overcrowding | |
| | 1990 | 2000 | 1990 | 2000 | 1990 | 2000 | 1990 | 2000 |
| City of Shelby | 6,081 | 7,880 | 23 | 16 | 125 | 233 | 0 | 0 |
| Cleveland County | 32,037 | 37,046 | 366 | 195 | 813 | 1040 | 3 | 28 |
| N. CAROLINA | 2,517,026 | 3,132,013 | 33,192 | 19,295 | 68,228 | 106,759 | 3,363 | 1,940 |

Sources: "Census of Population, 1990," US Bureau of the Census.
 "Census of Population and Housing, 2000," Summary Tape File 3, US Bureau of the Census.

3.2.2 Study Area Economic Characteristics

Median Income. In 1990, the median household income in Cleveland County was almost equal with that of the state (\$26,476 compared with \$26,647, respectively). Between 1990 and 2000, the county's median household income grew about 33 percent to \$35,283; while North Carolina's grew about 47 percent to \$39,184. During the same period, the percentage of county residents below the poverty level remained stable, with 13.27 percent in 1990 and 13.39 percent in 2000. In 2000, Shelby's poverty rate was 16.96 percent; North Carolina's was 12.35 percent.

Employment. Cleveland County's employed work force has increased more slowly than North Carolina's as a whole. Table 3-9 shows that between 1994 and 2006, the county's work force gained 1,589 members (an increase of 3.7 percent), while the state's work force increased by 21.1 percent.

Table 3-9**CLEVELAND COUNTY AND NORTH CAROLINA LABOR PROFILES**

| | 1994 | 1998 | 2002 | 2006 |
|-----------------------------|-------------|-------------|-------------|-------------|
| Civilian Labor Force | | | | |
| North Carolina | 3,672,907 | 3,985,573 | 4,210,018 | 4,464,875 |
| Total Unemployment | | | | |
| Cleveland County | 2,037 | 2,574 | 4,939 | 3,089 |
| North Carolina | 161,568 | 140,781 | 279,282 | 214,256 |
| Unemployment Rate | | | | |
| Cleveland County | 4.5% | 5.5% | 10.1% | 6.4% |
| North Carolina | 4.4% | 3.5% | 6.6% | 4.8% |
| Total Employment | | | | |
| Cleveland Co. | 43,374 | 43,828 | 43,742 | 44,963 |
| North Carolina | 3,511,339 | 3,844,792 | 3,930,736 | 4,250,619 |

Source: Civilian Labor Force Estimate Department,
North Carolina Employment Security Commission.

From 1994 to 2006, Cleveland County's unemployment rate increased by nearly 1.5 times, while the statewide unemployment rate for the same period remained relatively constant.

The breakdown by industry type for Cleveland County's labor force in Table 3-10 depicts substantial changes in manufacturing, retail trade, construction, and services. Between 2002 and 2006, the number of persons employed in manufacturing decreased by 2,109, dropping from 27 to 21 percent of the total county labor market. Meanwhile, services increased by 1,038 persons, remaining the county's largest industry.

3.3 CULTURAL RESOURCES

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified as 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally-funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and to afford the Advisory Council a reasonable opportunity to comment on such undertakings.

Table 3-10

CLEVELAND COUNTY LABOR MARKET SUMMARY

| Industry Type | Annual Average Employment 2002 | Annual Average Employment 2006 | % of Total Work Force 2006 ‡ | Jobs Gained (Lost) | % Change |
|---|--------------------------------|--------------------------------|------------------------------|--------------------|-------------|
| Manufacturing | 9,183 | 7,074 | 21.2 | (2,109) | -23.0 |
| Services | 16,030 | 17,068 | 51.2 | 1,038 | 6.5 |
| Retail Trade | 3,979 | 3,949 | 11.8 | (30) | -0.8 |
| Wholesale Trade | 1,517 | 1,394 | 4.2 | (123) | -8.1 |
| Construction | 1,485 | 1,515 | 4.5 | 30 | 2.0 |
| Transportation, Public Utility | 899 | 1,148 | 3.4 | 249 | 27.7 |
| F.I.R.E. * | 733 | 901 | 2.7 | 168 | 22.9 |
| Mining | 106 | 101 | 0.3 | (5) | 4.7 |
| Agriculture, Forestry, Fishing, & Hunting | 109 | 85 | 0.3 | (24) | -22.0 |
| Unclassified, or suppressed data | 11 | 101 | 0.3 | N/A | N/A |
| Total † | 34,052 | 33,336 | 100.0 | (716) | -2.1 |
| Government / Private Breakdown | | | | | |
| <i>Government</i> | | | | | |
| Federal (Civilian) | 204 | 192 | 0.6 | (12) | -5.9 |
| State | 865 | 992 | 3.0 | 127 | 14.7 |
| Local | 4,422 | 4,701 | 14.1 | 279 | 6.3 |
| Total Government | 5,491 | 5,885 | 17.7 | 394 | 7.2 |
| <i>Private</i> | | | | | |
| Total Work Force † | 34,052 | 33,334 | 100.0 | (718) | -2.1 |

* Finance, Insurance, and Real Estate

† Data as taken from Employment Security Commission website; totals do not always match exactly.

‡ Percentage totals may not equal 100 percent due to rounding.

Sources: "Employment and Wages in North Carolina 2002", Employment Security Commission of North Carolina, Labor Market Information Division.
 "Employment and Wages in North Carolina, 2006", Employment Security Commission of North Carolina, Labor Market Information Division.

3.3.1 Architectural Resources

The following summarizes the architectural resources investigation for the subject project. Detailed information concerning these investigations is on file at the North Carolina Department of Transportation in the following reports; these reports are appended by reference:

Phase I Architectural Reconnaissance Survey, US 74, Shelby Bypass, Cleveland County, North Carolina Department of Transportation, TIP Number R-2707, Mattson, Alexander and Associates, Inc., December 15, 1994.

Phase II Intensive Architectural Survey and Evaluations, US 74, Shelby Bypass, Cleveland County, North Carolina Department of Transportation, TIP Number R-2707, Mattson, Alexander and Associates, Inc., November 15, 1996.

Addendum, Phase II Architectural Resources and Evaluations, US 74, Shelby Bypass, Cleveland County, North Carolina Department of Transportation, TIP Number R-2707, Mattson, Alexander and Associates, Inc., June 25, 1997.

Addendum, Phase II Architectural Resources and Evaluations, US 74, Shelby Bypass, Cleveland County, North Carolina Department of Transportation, TIP Number R-2707, Mattson, Alexander and Associates, Inc., April 1, 1999.

The architectural resources investigation for this project was conducted in two phases:

Phase I - Phase I included historic research and surveys within the study area to identify properties listed in the National Register of Historic Places and properties potentially eligible for listing in the National Register. During the research phase, architectural survey files at the State Historic Preservation Office (HPO) in Raleigh were searched. A Shelby city survey was examined and local historians and property owners were interviewed. The fieldwork consisted of a windshield (drive-through) survey of the study area and site inspections of identified properties. These properties were photographed and general boundaries were established.

Phase II - The Phase II survey had three objectives: 1) to determine the area of potential effects (A.P.E.), defined as the geographical area or areas within which an undertaking may cause changes to the character or use of historic properties (see Exhibit 3-4); 2) to identify all properties within the A.P.E., which may be eligible for listing in the National Register; and 3) to evaluate those resources according to National Register criteria. Like Phase I, the Phase II survey consisted of both field investigations and historic research. The A.P.E. was determined and all standing structures 50 years of age or older within the A.P.E. were photographed and evaluated.

As a result of this research, 105 properties were surveyed. Five of these were considered worthy of further evaluation for National Register eligibility; as a result of the additional investigations, three were determined eligible for the National Register and two were determined not eligible. A fourth property, Cleveland County Bridge No. 79, was determined eligible for the National Register in 1996. A fifth property was identified and investigated in 1999, and was also determined to be eligible for the National Register. The five properties determined eligible for inclusion in the National Register of Historic Places are discussed below and the locations shown on Exhibit 3-4 (see Appendix A, Section A.2, for March 4, 1997 and June 10, 1999 NC Department of Cultural Resources letters of concurrence).

Charles C. Hamrick House - This property is located on the south side of US 74 (Dixon Boulevard) near its junction with West Warren Street in Shelby. The house is considered eligible for the National Register under Criterion C for architecture. As a notable example of late-nineteenth century farmhouse architecture in Cleveland County, it illustrates an adaptation of the traditional I-house type to suit changing tastes during the post-Civil War decades. The eligible boundaries include the existing 2.78-acre tract.

Burwell Blanton House - This property is located on the north side of US 74, 0.5 mile east of its junction with Washburn Switch Road (SR 1313) in the vicinity of Shelby. The house is considered eligible for the National Register under Criterion C for architecture as a rare and unusually imposing example of post-Civil War farmhouse architecture in Cleveland County. Its restrained decorative treatment testifies to the influence of the Italianate style in rural Cleveland County. The eligible boundaries include approximately 2 acres of the current 759-acre tract.

Coleman Blanton Farm - This property, also known as Brushy Creek Dairy Farm, is located on the west side of Chatfield Road (SR 1343) approximately 0.1 mile south of its junction with Farmville Road (SR 1342) north of Shelby. The farm was added to the North Carolina National Register Study List in 1996. It is eligible for the National Register under Criterion A for agriculture and under Criterion C for architecture. The vernacular Queen Anne farmhouse represents a particularly intact example of this domestic type and the fine collection of outbuildings illustrate the types of farm buildings erected to support dairy farming. The eligible boundary includes the two current tax parcels, which combined are 72.76 acres.

Cleveland County Bridge No. 79, First Broad River Bridge - This bridge carries two lanes of eastbound traffic along US 74 at the western city limits of Shelby. In 1996, Cleveland County Bridge No. 79 was determined eligible for listing in the National Register under Criterion C for engineering. The bridge retains a high degree of integrity and includes architectural detailing on the portals and railing which reflects the stylized classicism popular in New Deal-era designs. The boundaries of the property include only the structure and are limited to the footprint of the bridge and its abutments and piers.

Hamilton-McBrayer Farm – This property is located on the southwest side of US 74 at the junction with Broadway Road (SR 1163) near Mooresboro. The property is considered eligible for the National Register under Criterion A for agriculture, commerce and medicine. The intact farmhouse, outbuildings, and adjacent agricultural land represent a Cleveland County farmstead as it evolved through the nineteenth and early twentieth centuries. The house and outbuildings are also considered eligible under Criterion C for architecture. The residence is a substantially intact example of nineteenth-century rural domestic architecture in Cleveland County and

illustrates the transition from regional to national architectural trends in the county. The outbuildings reveal common vernacular building types and methods of construction in Cleveland County. The eligible boundaries mainly follow existing property boundaries, existing US 74, and Broadway Road right-of-way limits; and include approximately 33 acres.

3.3.2 Archaeological Resources

The following reports summarize the archaeological investigations for this project. Detailed information concerning these investigations is on file at the North Carolina Department of Transportation; these reports are appended by reference:

Novick, Lee

1997 *Archaeological and Historic Background Report for US 74 Shelby Bypass (R-2707) Study Area, Cleveland County, North Carolina*. North Carolina Department of Transportation, Raleigh.

Smith, Caleb and Erica Sanborn

2001 *Intensive Archaeological Survey of the Proposed US 74 (Shelby) Bypass, Cleveland County, North Carolina*. Federal Aid Project No. NHF-74(14); TIP R-2707. Report prepared for the North Carolina Department of Transportation, Raleigh. New South Associates, Stone Mountain, Georgia.

The North Carolina State Historic Preservation Office (HPO) first requested an archaeological survey of the proposed improvements to US 74 on January 5, 1995 (see letter in Appendix A.1). The archaeological and historical background report (Novick 1997) recommended that an archaeological survey be conducted within the preferred alternative. HPO agreed with this recommendation on October 28, 1997 (see letter in Appendix A.2). A Scope of Work for the proposed archaeological survey was submitted to the HPO on January 20, 1998 and accepted on February 18, 1998 (see letter in Appendix A.2). An archaeological field survey of the preferred alternative was conducted from October 1999 to March 2000 and identified 17 archaeological sites (Smith and Sanborn 2001). All 17 sites were recommended ineligible for the NRHP. The

HPO agreed with this recommendation on March 21, 2001. Therefore no further archaeological work is necessary for this project.

3.4 COMMUNITY FACILITIES

The cities of Shelby, Boiling Springs, and Kings Mountain and the smaller communities of Lattimore and Waco contain a diversity of community and public facilities.

3.4.1 Schools

There are 28 schools in Cleveland County's public school districts, 12 of which are located within the study area. These include six elementary schools, three middle / intermediate schools, two high schools, and a school for handicapped students. The study area also contains two private academies, a community college, a Baptist college, and a private university. Study area schools are shown on Exhibit 3-5.

3.4.2 Parks and Recreational Facilities

The federal and state governments do not manage any park or recreation lands in or adjacent to the US 74/Shelby Bypass study area. None of the National Parks located in North Carolina are in the vicinity of the study area (U.S. Parks and Recreation, pers. comm., July 16, 1996). South Carolina's Cowpens National Battlefield and Kings Mountain National Military Park, in the counties of Cherokee and York, respectively, are the closest National Parks. The nearest National Forests are the Pisgah National Forest, which covers portions of several counties to the northwest of Cleveland County, and the Sumter National Forest, southeast of Spartanburg, South Carolina (see Exhibit 3-1 for regional context) (Ray Johns, U.S. Forest Service, Asheville Branch Office, pers. comm., July 16, 1996). There are currently no federally designated Wild and Scenic Rivers in Cleveland County, nor any Federal Wildlife Refuges (John Ellis, U.S. Fish and Wildlife

Service, Raleigh Branch Office, pers. comm., July 10, 1996). There are no parks or recreational facilities under the North Carolina Division of Parks and Recreation's jurisdiction (Bayard Alcorn, Planning Officer, NC Department of Environment and Natural Resources, Division of Parks and Recreation, letter, August 15, 1996). The two closest State Parks are the South Mountain State Park, to the north in Burke County, and the Crowders Mountain State Park, immediately to the east in Gaston County.

There are many local public and private parks and recreational facilities located in the study area (see Exhibit 3-5). The largest public recreational facility in the study area is Moss Lake, a 1,600-acre reservoir owned by the City of Kings Mountain that offers swimming and boating. The largest park in Shelby is the City Park complex, located on West Sumter Street. City Park is comprised of 150 acres of ball fields, playground, picnic areas, aquatics center, nine hole golf course, tennis courts, outdoor volleyball and croquet court, horseshoes, and a sitting garden (<http://www.cityofshelby.com>). In addition to the eight parks managed by the municipal Parks and Recreation Department, the City of Shelby owns several other properties that are open to the public, including Optimist Park, which contains a lighted ballfield. Most schools within the study area also include small playgrounds or athletic fields.

Privately owned and operated recreational facilities in the study area include a lake club and four golf courses, three of which are open to the public with payment of a greens fee. The Cleveland County YMCA, has moved to Cherryville Road in Shelby, where its facilities include swimming, racquetball, and basketball (Shelby YMCA, pers. comm., September 19, 1996). Private institutions such as Gardner-Webb University and certain local churches also have recreational facilities that may be open to the public on a limited basis.

3.4.3 Churches and Cemeteries

The study area contains approximately 90 churches of various sizes and religious denominations. There are also a substantial number of cemeteries located throughout the study area; these include church cemeteries, nonsectarian "commercial" cemeteries, and family plots. Several of these cemeteries, particularly family graveyards, were identified by study area residents. It is anticipated that there are older family graveyards within the study area which have not been recorded or otherwise noted on available mapping, or which are too overgrown or deteriorated to be identified from surface investigations. Churches and cemetery locations within the study area are shown in Exhibit 3-5.

3.4.4 Fire Protection, Police, and EMS Services

There are sixteen fire districts in Cleveland County, nine of which provide fire protection within the study area. Study area fire protection facilities consist of the following stations:

- Boiling Springs City Volunteer Fire Department - East College Avenue, Boiling Springs
- Boiling Springs Rural Volunteer Fire Department - Boiling Springs
- City of Shelby Fire Department - West Grover Street Station, Shelby
- City of Shelby Fire Department - Charles Street Station, Shelby
- City of Shelby Fire Department - Kings Road Station, Shelby
- Cleveland Volunteer Fire Department - East Graham Street, Shelby
- Number 7 Township Volunteer Fire Department - Lattimore
- Oak Grove Volunteer Fire Department - Oak Grove Road, Kings Mountain
- Shanghai Volunteer Fire Department - NC 150 South
- Waco Volunteer Fire Department - Waco

Study area police stations are at the following locations:

- Shelby Police Department, main station - South Lafayette Street, Shelby
- Shelby Police Department, satellite station - Buffalo Street, Shelby
- Cleveland County Sheriff's Department - Justice Place, Shelby
- Boiling Springs Police Department - South Main Street, Boiling Springs

There are four emergency rescue districts in Cleveland County. Those with facilities within the study area are:

- Boiling Springs Life Saving and Rescue Unit - North Main Street, Boiling Springs
- Shelby Life Saving and Rescue Unit - West Marion Street, Shelby

Study area fire protection, police, and EMS facilities are displayed in Exhibit 3-5.

3.4.5 Other Community Facilities and Features

There are two hospitals in the study area: Cleveland Regional Medical Center, a 261-bed hospital on East Grover Street with convalescent care and outpatient facilities at separate locations nearby (<http://www.carolinashhealthcare.org>); and Crawley Memorial Hospital, a 60-bed hospital on West College Avenue in Boiling Springs (see Exhibit 3-5) (Cleveland County Chamber and Mosher-Adams, Inc. Cleveland County, North Carolina, 1993, p. 21).

Both Cleveland County and the City of Shelby maintain several offices and facilities in Shelby which provide the various functions of their governments. For the most part, these are located in the center of town; however, there are several maintenance and operations facilities at the periphery of the city, particularly along Grover Street (NC 18) and Airport Road (SR 1926). There are also some North Carolina state government facilities along Kemper Road (SR 2063), including the Cleveland Correctional Center. Each of the remaining study area towns -- Boiling Springs, Lattimore, and Waco -- has a town hall which houses its municipal functions.

The Cleveland County library system consists of two branch libraries. Cleveland Memorial Library, on Howie Drive in Shelby, is the only one located within the study area.

The US Postal Service has post offices in each of the study area towns at the following locations:

- Boiling Springs - 101 North Main Street
- Lattimore - 306 East Main Street
- Shelby - 405 South Dekalb Street
- Waco - 107 North Mulberry Street

Lithia Springs, a natural mineral spring in northern Shelby at the end of Springbrook Drive (SR 1843) (see Exhibit 3-5), is a very unusual community feature. The spring water is reputed to have special curative properties and has been a local folk remedy since the last century (Jack Rippy, pers. comm., August 15, 1996). To this day, many community residents and others throughout the region drink the water regularly and make periodic visits to collect it in jugs. The picturesque, wooded site is privately owned, but open to the public.

3.5 UTILITIES

3.5.1 Electric Power

Electric power is provided to the study area by Duke Power Company. Depending on their locations, customers either purchase electricity directly from Duke Power or from the cities of Shelby or Kings Mountain, which buy power wholesale from Duke Power and sell it retail to their municipal residents (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 25). Several high voltage, cross-country electrical transmission lines traverse the study area (see Exhibit 3-6). Power line right-of-way widths within the area vary from 64 to 200 feet.

The Rutherford Electric Membership Corporation, which provides electric power in parts of Cleveland County, has no lines within the study area (Les Davis, Rutherford Electric Membership Corporation, pers. comm., May 13, 1996).

3.5.2 Water Service

Water service is provided to the majority of the study area by the Cleveland County Sanitary District and the Shelby and Kings Mountain municipal water systems. In parts of the study area not served by these systems, water needs are met through private wells at individual residences and businesses.

The Cleveland County Sanitary District serves seven municipalities and many unincorporated parts of the county, providing approximately 13,000 households and businesses with an average of 2.3 million gallons per day (mgd) (Ann White, Cleveland County Sanitary District, pers. comm., August 23, 1996). The Sanitary District draws 3 million gallons of raw water per day from the First Broad River at a site 7.5 miles north of Shelby; it also purchases water from the City of Shelby when necessary. As shown in Exhibit 3-7, Cleveland County's facilities in the study area include three pump stations; three water tanks of 500,000, 350,000, and 100,000 gallons; and water lines of up to 12 inches.

The Shelby municipal water system has approximately 23,000 customers. Shelby draws its water from the First Broad River, with two raw water pump stations located at Grover Street, about 11 miles north of US 74. The raw water treatment facility processes an average of 6 mgd by means of a high rate filter; its maximum treatment capacity was recently expanded from 10 mgd to 14 mgd. Shelby's water distribution facilities in the study area include two raw water pumps; three raw water reservoirs of 5, 6, and 8 million gallons; an 8 million gallon clear well; a water plant; a water tank of 500,000 gallons; and water lines of up to 16 inches in diameter. A one million gallon water storage tank in eastern Shelby is also planned (Harlow Brown, City of Shelby Utility Department, pers. comm., August 22, 1996).

A small portion of the eastern end of the study area is served by the Kings Mountain municipal water system. The city draws its raw water from the Kings Mountain Reservoir (also known as Moss Lake); 8 mgd is treated at a plant located on Oak Grove Road (SR 2033) just south of the reservoir (Walt Ollis, Water Resource Director, City of Kings Mountain, letter, October 8, 1996).

3.5.3 Sewer Service

Municipal wastewater treatment in the study area is provided in Shelby, Kings Mountain, and Boiling Springs. Other residents within the study area -- including those in the municipalities of Lattimore, Waco, and Patterson Springs -- rely on individual septic systems for wastewater treatment and disposal.

The Shelby sewer system, shown in Exhibit 3-8, serves approximately 18,000 users, including nearly all of those within the city's extra-territorial jurisdiction (ETJ) (Harlow Brown, City of Shelby Utility Department, pers. comm., August 22, 1996). The treatment facility is located 2.5 miles south of the city limits on a tributary of the First Broad River. The plant has a capacity of 6 mgd with provisions to expand the capacity to 8.5 mgd. Average daily flow is approximately 3.5 mgd.

The Kings Mountain wastewater system extends into the eastern end of the study area, with a treatment facility (Pilot Creek Wastewater Plant) located just north of US 74 (see Exhibit 3-8). The activated sludge plant treats approximately 4 mgd, with a capacity of 6 mgd (Walt Ollis, Water Resource Director, City of Kings Mountain, letter, October 8, 1996).

Municipal wastewater discharge sites and other point source dischargers within the study area are shown in Exhibit 3-14, and additional information is presented in Section 3.12.3 (Water Resources, Water Quality).

3.5.4 Natural Gas

The cities of Shelby and Kings Mountain buy gas wholesale from Transco Inc. and sell it retail to their residents (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 25). Elsewhere, gas is available to individual homes and businesses through private propane services. Major natural gas transmission and distribution lines are shown on Exhibit 3-9.

3.5.5 Communications

Local telephone service to the study area is provided by BellSouth; long distance facilities within the study area are owned by AT&T. The study area is traversed by several major toll (long distance) and exchange (local) cables.

Cable sizes and modes installation (aerial/buried) are as follows:

- US 74 (west to east):
- Buried fiber optic cable (18-fiber) from the western terminus of the study area to SR 1161
 - Aerial fiber optic cable (18-fiber) and aerial copper cable (400-pair) from SR 1161 to NC 226
 - Aerial copper cable (400-pair) from SR 1161 to SR 1313
 - Aerial fiber optic cable (12- to 18-fiber) originating 1,640 feet east of SR 2201 and leading eastward; at Buffalo Creek the line splits from US 74 and follows a parallel path approximately 1,310 feet to the north of the highway

- Aerial copper cable (400-pair) to the north of and parallel to US 74 starting at easternmost subscriber carrier cabinet and heading eastward
 - Buried AT&T fiber optic cable (36-fiber) from Buffalo Creek eastward along an electrical transmission line right-of-way towards SR 1001
- SR 1162:
- Aerial fiber optic cable (48-fibers)
 - Buried copper cable (1,800-pair)
- SR 1313:
- Aerial copper cable (600-pair)
- NC 226 North:
- Aerial fiber optic cable (18-fiber)
 - Aerial copper cable (800-pair)
- NC 18:
- Aerial fiber optic cable (24-fiber)
 - Aerial and buried copper cable (1,500 pairs in all)
- NC 150:
- Aerial fiber optic cable (30-fiber)
- SR 2068:
- Aerial fiber optic and copper cable
- SR 2052:
- Buried copper cable (1,100-pair)
- SR 2033:
- Buried copper cable (1,100-pair)
 - Aerial fiber optic cable (48-fiber)
- SR 2047:
- Aerial fiber optic cable (48-fiber)

Exhibit 3-10 depicts areas in which fiber optic and copper toll and exchange cables are laid in underground conduits with manhole access. These conduits contain BellSouth fiber optic cable of 48 to 120 fibers, depending on location, and copper cables of 900 to 8,000 pairs.

Approximately 4,000 feet of 36-fiber AT&T fiber optic cable extending in either direction from the AT&T point of presence building (POP) is also housed in the conduits along NC 226 South, Gantt Street (SR 2520), and the existing US 74 Bypass.

3.6 AIR QUALITY

3.6.1 Air Quality Criteria

On November 15, 1990, the President of the United States signed into law the Clean Air Act Amendments (CAAA), which significantly expanded state and local transportation air quality planning requirements. The U.S. Environmental Protection Agency (EPA) developed national clean air standards to ensure compliance with the Clean Air Act. These clean air standards, called the National Ambient Air Quality Standards (NAAQS), are shown in Table 3-11(a).

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Table 3-11(a)
NATIONAL AND NORTH CAROLINA AMBIENT AIR QUALITY STANDARDS

| Pollutant/Ambient Measurement/ (Reference) | Averaging Period | Type of Summary | Primary National (Health Related) Standard | Secondary National (Welfare Related) Standard | North Carolina Standard |
|--|---------------------------|---|---|--|---|
| Total Suspended Particulate (TSP) 24 hour average | 1 year | geometric mean | (¹) | (¹) | 75 µg/m ³ |
| | 1 day | 2 nd maximum | (¹) | (¹) | 150 µg/m ³ |
| PM-2.5 24 hour average (40CFR50, App. N) | 1 year | average ² arithmetic mean | 15 µg/m ³ | 15 µg/m ³ | (³) |
| | 1 day | average ² 98 th percentile | 65 µg/m ³ | 65 µg/m ³ | (³) |
| Particulate Matter – 10 24 hour average (40CFR50, App. N) | 1 year | average ² arithmetic mean | Revoked in 2006 | | |
| | 1 day | average ² 99 th percentile ⁴ | 150 µg/m ³ | 150 µg/m ³ | 150 µg/m ³ |
| Carbon Monoxide 1 hour average | 8 hours | 2 nd maximum | 9 ppm (10 mg/m ³) | | 9 ppm (10 mg/m ³) |
| | 1 hour | 2 nd maximum | 35 ppm (40 mg/m ³) | | 35 ppm (40 mg/m ³) |
| Ozone 1 hour average (40CFR50, App. I) | 1 hour | expected ⁵ 2 nd maximum | 0.12 ppm ⁽⁶⁾ (235 µg/m ³) | 0.12 ppm ⁽⁶⁾ (235 µg/m ³) | 0.12 ppm ⁽⁶⁾ (235 µg/m ³) |
| | 8 hours | average ⁷ arithmetic mean 4 th maximum | 0.08 ppm ⁽⁶⁾ (157 µg/m ³) | 0.08 ppm ⁽⁶⁾ (157 µg/m ³) | (³) |
| Sulfur Dioxide 1 hour average | 1 year | arithmetic mean | 0.03 ppm (80 µg/m ³) | | 0.03 ppm (80 µg/m ³) |
| | 1 day | 2 nd maximum | 0.14 ppm (365 µg/m ³) | | 0.14 ppm (365 µg/m ³) |
| | 3 hours (non-overlapping) | 2 nd maximum | | 0.5 ppm (1.3 µg/m ³) | 0.5 ppm (1.3 µg/m ³) |
| Nitrogen Dioxide 1 hour average | 1 year | arithmetic mean | 0.053 ppm (100 µg/m ³) | 0.053 ppm (100 µg/m ³) | 0.053 ppm (100 µg/m ³) |
| Lead 24 hour average | 1 quarter | arithmetic mean | 1.5 µg/m ³ | 1.5 µg/m ³ | 1.5 µg/m ³ |
| ug/m ³ = micrograms per cubic meter ppm = parts per million | | | mg/m ³ = milligrams per cubic meter | | |
| Notes: 1. In 1987, National standards for PM-10 replaced those of TSP. 2. Arithmetic mean over the 3 most current years. 3. North Carolina probably will adopt the new national standard which became effective July, 1997. 4. In July, 1997, this percentage-based statistic replaced the 2 nd maximum. 5. Determined by adjusting for incomplete days and averaging over the most recent 3 consecutive, complete years. 6. The 8-hour national standard, effective in July, 1997, probably will replace the 1-hour standard. 7. Arithmetic mean value over the most recent 3 consecutive, complete years. | | | | | |
| Source: North Carolina Department of Environment & Natural Resources, Division of Air Quality | | | | | |

The State Implementation Plan (SIP) is administered by the North Carolina Department of Environment and Natural Resources (DENR) for the implementation, maintenance, and enforcement of the national standards within North Carolina. In accordance with the CAAA, all regulatory regions within the state that are in compliance with the NAAQS are designated as "attainment areas"; regions that have failed to meet the NAAQS for one or more criteria pollutants are designated as "nonattainment areas". There are no monitoring stations for pollutants in Cleveland County; in this type of situation, monitoring data from adjacent counties is checked to determine if there is a potential for non-attainment for any NAAQS pollutants in Cleveland County (see Table 3-11(b)). Cleveland County has been determined to have ambient air quality that is in attainment of the NAAQS for all regulated pollutants.

3.6.2 Pollutants

Motor vehicles are known to emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), sulfur dioxide (SO₂) particulates, and lead (Pb), listed in order of decreasing emission rates. The methods used to measure the effect of a project on the ambient air quality depend on the pollutants to be considered and the location of the project. The air quality impact of highway projects in rural areas can be assessed using simplified procedures. Projects in urban non-attainment areas can require very detailed analysis. The US 74 project area is located in a rural attainment area; thus, a more complex urban analysis is not required.

Table 3-11(b)

NEAREST NAAQS MONITORING DATA FOR CLEVELAND COUNTY (2006)

| Pollutant | Monitor Location (County) | Type of Summary | Reported Level | NAAQS Standard |
|-----------------------------|----------------------------------|---------------------------------------|------------------------|-----------------------|
| Carbon Monoxide (8-Hour) | Mecklenburg | 2 nd Max | 2.3 ppm | 9 ppm |
| Carbon Monoxide (1-Hour) | Mecklenburg | 2 nd Max | 3.0 ppm | 35 ppm |
| Sulfur Dioxide | Mecklenburg | Annual mean | 0.003 ppm | 0.03 ppm |
| | Mecklenburg | 24-hour (2 nd Max) | 0.013 ppm | 0.14 ppm |
| Nitrogen Dioxide | Mecklenburg | Annual mean | 0.013 ppm | 0.053 ppm |
| Ozone (1-Hour) | Lincoln | 2 nd Max | 0.113 ppm | 0.12 ppm |
| Ozone (8-Hour) | Lincoln | 4 th Max | 0.082 ppm | 0.08 ppm |
| Particulate Matter (PM-10) | Mecklenburg | 24-hour (2 nd Max) | 62 µg/m ³ | 150 µg/m ³ |
| Particulate Matter (PM-2.5) | Gaston | 24-hour (98 th percentile) | 30 µg/m ³ | 65 µg/m ³ |
| | Gaston | Annual mean | 14.3 µg/m ³ | 15 µg/m ³ |
| Lead (24-Hour Avg.) | N/A | N/A | N/A | 1.5 µg/m ³ |

Carbon Monoxide. Carbon monoxide is the primary pollutant emitted by automobiles. Automobiles are considered to be the primary source of CO pollution in Cleveland County. Therefore, the focus of this air quality analysis will be on carbon monoxide levels in the project area.

In order to determine the CO levels at a particular point near a highway, two sources need to be considered: local and background. The local CO source is emitted from cars operating on roads near the receptor (i.e., within 100 meters). The background source is due to CO emissions from cars operating on roads further than 100 meters away from the receptor. The one-hour background source used was an area-wide average of 1.8 parts per million (ppm) developed by the North Carolina Department of Environment and Natural Resources (NCDENR). The eight-

hour background source used was 1.1 ppm. The local CO concentrations were determined using line source computer modeling.

Hydrocarbons, Nitrogen Oxides, and Ozone. Automobiles are generally regarded as significant sources of hydrocarbons and nitrogen oxides. Hydrocarbons and nitrogen oxides emitted from cars are carried into the atmosphere, where they react with sunlight to form ozone and nitrogen dioxide.

The photochemical reactions that form ozone and nitrogen dioxide require several hours to occur. For this reason, the peak levels of ozone generally occur 10 to 20 kilometers downwind of the source of hydrocarbon emissions. Presently, Cleveland County is in attainment for nitrogen dioxide; it cannot be determined whether or not the county is in attainment for ozone. Urban areas as a whole are regarded as sources of hydrocarbons rather than individual streets and highways.

Since there are no large urban areas within at least 10 miles of the study area, it is not perceived that hydrocarbons and nitrogen oxides will present a problem in the project area.

Particulate Matter and Sulfur Dioxide. Automobiles are not generally regarded as significant sources of particulate matter and sulfur dioxide. Nationwide, highway sources account for less than seven percent of particulate matter emissions and less than two percent of sulfur dioxide emissions. Particulate matter and sulfur dioxide emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Air quality standards for particulate matter and sulfur dioxide are being met in Cleveland County. There is no reason to

suspect that traffic on the project will cause air quality standards for particulate matter and sulfur dioxide to be exceeded.

Lead. Automobiles emit lead as a result of burning gasoline containing tetraethyl lead which is added by refineries to increase the octane rating of the fuel. New cars with catalytic converters burn unleaded gasoline, eliminating lead emissions. The Clean Air Act Amendments of 1990 made the sale, supply, or transport of leaded gasoline or gasoline additives unlawful after December 31, 1995. The overall average lead content of gasoline in 1974 was 2 grams per gallon; it is currently 0.0 grams per gallon (Dwayne Scott, NC Department of Agriculture, Motor Fuels Department, pers. comm., January 22, 1993). Air quality standards for lead are currently being met in Cleveland County, and there is no reason to expect that traffic on the project will cause the NAAQS for lead to be exceeded.

3.6.3 Methodology

Line Source Computer Modeling. In this analysis, the line source computer model CAL3QHC was used to determine local CO concentration components. CAL3QHC is a computer program developed by the California Department of Transportation for the FHWA. The model is recommended by the U.S. EPA for calculating CO concentrations near highways. The model requires the following data:

- Highway configuration, including link coordinates, roadway width, number of lanes, elevations and traffic.
- Receptor data, including coordinates and elevations.
- Meteorological data, including wind speed, mixing height, wind direction, and atmospheric stability.

- Carbon monoxide emissions data, which are obtained from the MOBILE5A computer program.

The following roadway configuration data were used:

- Roadway configurations were based on proposed typical sections,
- A 320-foot right-of-way was used for the mainline and 100-foot rights-of-way were used for ramps, and
- A typical diamond interchange design was used for interchange locations.

The receptor locations were selected where worst case pollution concentrations were expected to occur. Receptors were located at the edge of the rights-of-way as close to the "worst case" intersection as possible.

The conditions modeled represent the worst-case one-hour CO concentrations for the peak traffic hour. An atmospheric stability classification of E was used in accordance with U.S. EPA and state recommendations for modeling rural areas. A wind speed of one (1) meter/second was used as the worst-case wind speed and 36 different wind directions were analyzed. A minimum mixing height of 1000 meters was used, as recommended by the NCDENR.

CO Emission Rates. CO emission factors were calculated for roadways in the project area using the MOBILE5A computer program. Emission factors were calculated for the years 2001 and 2025 (note: year 2025 carbon monoxide emission factors used are actually those for year 2020, due to the fact that the MOBILE5A emission program would not generate data beyond the year 2020). The program categorizes vehicles into eight types: 1) light-duty gasoline-powered vehicles, 2) light-duty gasoline-powered trucks under 6,000 pounds, 3) light-duty gasoline-powered trucks between 6,000 and 8,500 pounds, 4) heavy-duty gasoline-powered trucks, 5)

light-duty diesel-powered vehicles, 6) light-duty diesel-powered trucks, 7) heavy-duty diesel-powered trucks, and 8) motorcycles. The vehicle mix percentages, the registration and mileage accrual distributions, and the percent hot starts and cold starts with and without catalyst used in this analysis were based on national statistics. The minimum ambient temperature of 49° F was used as the worst-case ambient temperature. The average route speed for the proposed project was assumed to be 55 miles per hour (mph) based on the freeway nature of its design.

Table 3-12 shows the calculated CO emission factors for the years 2001 and 2025 for route speeds of 35 mph, 45 mph and 55 mph. The CO emission factors decrease in future years because of the introduction of more pollution-controlled vehicles and the removal of older cars from the national fleet. CO emission factors also decrease at higher speeds because of more efficient engine operation.

Table 3-12

**CARBON MONOXIDE EMISSION FACTORS
FOR SELECTED YEARS**

| VEHICLE SPEED (mph) | EMISSION FACTOR | |
|------------------------------------|------------------------|-------------------|
| | Year 2001 | Year 2025* |
| 55 | 12.94 | 10.08 |
| 45 | 13.67 | 10.92 |
| 35 | 17.73 | 15.20 |

* Carbon monoxide emission factors used are actually those for year 2020, due to the fact that the MOBILE5A emission program would not generate data beyond the year 2020.

3.7 NOISE

3.7.1 Noise Criteria

The Federal Highway Administration (FHWA) has established noise abatement criteria for highway projects. These criteria identify noise levels, over and above which noise abatement measures should be considered. These criteria are expressed in terms of an equivalent steady-state sound level, which contains the same acoustic energy in an hour as the time varying sound level [Leq(h)]. The sound level is A-weighted and measured in decibels (dBA). These criteria are identified in Table 3-13. The exterior Leq(h) criterion is 67 dBA for most common land uses such as residences, schools, churches, libraries, hospitals and parks.

The procedures for determining highway noise impacts are derived from Part 772, Title 23 of the Code of Federal Regulations.

FHWA guidelines dictate that receptors exposed to noise levels approaching or exceeding 67 dBA (72 dBA for commercial) or experiencing substantial noise increases should be considered for mitigation. NCDOT guidelines consider 66 dBA for residential receptors and 71 dBA for commercial receptors as levels approaching FHWA noise abatement criteria. The NCDOT definition of a substantial noise increase has changed during the course of this project. At the time of the Tier 2 detailed study alternative noise analyses, the NCDOT defined a substantial increase as being 15 dBA or more where existing noise levels were 50 dBA or less and 10 dBA or more where existing noise levels were greater than 50 dBA.

Table 3-13

**FHWA NOISE ABATEMENT CRITERIA
Hourly A-Weighted Sound Level - Decibels (dBA)**

| <u>ACTIVITY CATEGORY</u> | <u>Leq (h)</u> | <u>DESCRIPTION OF ACTIVITY CATEGORY</u> |
|---------------------------------|-----------------------|--|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose |
| B | 67 (Exterior) | Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, hospitals |
| C | 72 (Exterior) | Developed lands, properties or activities not included in Categories A or B above |
| D | --- | Undeveloped lands |
| E | 52 (Interiors) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, auditoriums |

SOURCE: 23 CFR, Part 772

For the analysis of the Preferred Alternative, the following NCDOT definition of substantial noise increase was in effect:

| Existing Noise Levels in Leq(h) | Increase in dBA from Existing Noise Levels to Future Noise Levels |
|--|--|
| >= 55 | >= 10 |
| 54 | >= 11 |
| 53 | >= 12 |
| 52 | >= 13 |
| 51 | >= 14 |
| <= 50 | >= 15 |

Construction noise impacts must also be considered.

3.7.2 Ambient Noise Levels

In order to determine the impact of future increasing noise levels, it is necessary to know existing noise levels at receptors along the proposed roadway. Representative ambient noise measurements were taken at various locations along the proposed alternatives. These receptors were selected based on the following criteria:

- * Maximum expected impacts from one or more project alternatives.
- * Noise sensitivity of land use.
- * Representation of other sites with similar characteristics.
- * Degree of coverage of study area.

The existing noise levels were recorded for 20-minute periods; traffic was counted and classified during this period. Measurements were taken during anticipated peak hours in order to observe worst case existing noise levels. Measurements were recorded along a perpendicular line from the nearest roadway at distances of 25 feet. These receptor locations were used to estimate ambient noise levels along the length of the project.

For the analysis of the Tier 2 detailed study alternatives, the traffic noise prediction model, STAMINA/OPTIMA 2.0, was used with existing geometric and traffic conditions to calibrate noise level calculations to actual noise measurements; the calculated noise levels were within -1.8 to +1.7 dBA of the actual measured existing noise levels for all measurement locations. For the design noise analysis of the Preferred Alternative, the traffic noise prediction model Traffic

Noise Model Version 2.5 (TNM 2.5) was used to calibrate existing noise levels; the calculated noise levels were within -4.1 to 2.3 dBA of the actual measured existing noise levels for all measurement locations. For each analysis, these differences were used to calibrate the noise model results relative to each modeling location.

The measurement sites, along with their ambient noise levels, are listed in Tables 3-14(a) and (b) for the Tier 2 detailed study alternatives and for the Preferred Alternative, respectively; measurement locations are shown on Exhibits 3-11(a) and (b) for the Tier 2 detailed study alternatives and for the Preferred Alternative, respectively.

Table 3-14(a)
MONITORED AMBIENT NOISE LEVELS AT SAMPLE LOCATIONS
(Tier 2 Detailed Study Alternatives)

| SITE # | TYPE AREA | NEAREST ROAD | DISTANCE (feet) | AMBIENT NOISE LEVEL (LEQ dBA) * |
|---------------|------------------|---------------------|------------------------|--|
| 1 | Residential | SR 2052 | 25 | 63.7 |
| 2 | Commercial | NC 150 | 25 | 67.9 |
| 3 | Church | NC 180 | 25 | 67.6 |
| 4 | Residential | NC 18 | 25 | 69.9 |
| 5 | Residential | SR 1005 | 25 | 61.4 |
| 6 | Church | NC 226 | 25 | 68.1 |
| 7 | Church | SR 1313 | 25 | 66.6 |
| 8 | Commercial | SR 1315 | 25 | 61.5 |
| 9 | Residential | SR 1161 | 25 | 61.0 |
| 10 | Residential | SR 1162 | 25 | 62.1 |
| 11 | Commercial | US 74 | 25 | 73.4 |
| 12 | Commercial | US 74 | 25 | 70.3 |
| 13 | Commercial | US 74 | 50 | 68.1 |

* The monitored values were used to estimate the ambient noise levels at all receptors.

Table 3-14(b)

**MONITORED AMBIENT NOISE LEVELS AT SAMPLE LOCATIONS
(Preferred Alternative)**

| Site # | Type Area | Nearest Road | Distance (Feet) | Ambient Noise Level (LEQ dBA)* |
|---------------|------------------|---------------------|------------------------|---------------------------------------|
| M1 | Residential | US 74/SR 2245 | 25 | 74.6 |
| M2 | Residential | US 74/SR 1162 | 25 | 74.2 |
| M3 | Residential | NC 150 | 25 | 72.1 |
| M4 | Residential | NC 180 | 25 | 71.0 |
| M5 | Residential | NC 180 | 25 | 70.9 |
| M6 | Residential | SR 2052 | 25 | 68.0 |
| M7 | Residential | SR 1005 | 25 | 64.0 |
| M8 | Residential | NC 226 | 25 | 69.2 |
| M9 | Church | SR 1313 | 25 | 66.8 |
| M10 | Residential | NC 18 | 25 | 68.6 |
| M11 | Residential | SR 1827 | 25 | 57.2 |
| M12 | Residential | SR 1850 | 25 | 61.9 |
| M13 | Residential | US 74/Kimbrell Rd. | 25 | 73.1 |
| M14 | Residential | SR 1315 | 25 | 66.7 |
| M15 | Residential | SR 2067 | 25 | 53.5 |
| M16 | Residential | SR 2047 | 25 | 61.7 |
| M17 | Residential | SR 1161 | 25 | 62.5 |
| M18 | Residential | SR 1320 | 25 | 56.5 |
| M19 | Residential | SR 1314 | 25 | 60.8 |

* The monitored values were used to estimate the ambient noise levels at all receptors.

Note: Ambient noise levels for the Preferred Alternative were taken in 2007.

3.8 HAZARDOUS MATERIALS SITES/UNDERGROUND STORAGE TANKS

The relationship between hazardous materials sites and roadway development is not readily evident until site disruption occurs. The disruption of hazardous materials sites during roadway construction can sometimes have a detrimental effect on surface waters, groundwater, soils, vegetation, wildlife, and human health and welfare. For this reason, potential hazardous material sites in the study area were evaluated. The Resource Conservation and Recovery Act of 1976 defines hazardous materials as "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may:

- a) Cause or significantly contribute to an increase in mortality or in serious irreversible or incapacitating reversible illnesses or,
- b) Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed."

Hazardous material sites are regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Hazardous materials sites can include hazardous materials disposal areas such as landfills and wastewater treatment plants; commercial enterprises which dispense or generate hazardous materials, such as service stations, other automotive-related businesses, and dry cleaners; and industrial operations, which may use hazardous materials in industrial processes or produce them as by-products. Service stations are generally one of the predominant types of potential hazardous materials sites; they may also pose several problems. Older underground storage tanks (USTs), which were not designed to provide long-term containment, may eventually deteriorate, leaking gasoline into the surrounding soil. Service stations which were abandoned or converted to other uses may have all exterior evidence of former function removed, although the USTs remain; the presence and scope of ground contamination is not realized until excavation for construction or other activities is in progress. Clean-up operations for these and other sites can be very time-consuming and costly.

A field reconnaissance of the study area was performed, and a files search of all appropriate federal and state agencies was conducted to determine if any known environmental hazards are present in the project study area. The results of these studies are summarized in the November 25, 1996 NCDOT "GeoEnvironmental Impact Study Hazardous Materials Evaluation" report. A total of 29 sites (14 operational UST facilities, 11 non-operational UST facilities, and four other

sites) were identified in this report. Two additional sites were identified during the course of this study through other sources. The 12 of these identified sites which are within the Tier 2 detailed study alternative corridors are described in Table 3-15. Exhibit 3-12 indicates the locations of these 12 sites by number, and identifies other sites which were deemed to be outside of the immediate sphere of influence of the Tier 2 detailed study alternative corridors.

3.9 TOPOGRAPHY, SOILS, AND GEOLOGY

3.9.1 Topography

Cleveland County is situated in the western Piedmont physiographic province, which is characterized by gently sloping or rolling terrain drained by small streams. Approximate countywide elevations range from 660 feet along the banks of the First Broad River and Buffalo Creek to 2,820 feet in the mountainous northwestern corner of the county. As shown in Table 3-16, sample elevations in the study area range from approximately 640 feet to 980 feet, with an average elevation of 820 feet.

Where slopes of 15 percent or greater occur, development can be limited by the increased cost of grading, erosion and sedimentation control, and other aspects of construction. Only two relatively small parts of Cleveland County, located at its extreme northwestern and southeastern corners, are characterized by slopes of 30 percent or greater and therefore are considered too steep for all but recreational use (Isothermal Planning and Development Commission, Cleveland Comprehensive Land Use Plan 1995-2005, November 1995, p. 18). In the study area, slopes of 15 percent or more are found in places along the banks of the First Broad River, which abuts Shelby's western boundary.

**Table 3-15
POTENTIAL HAZARDOUS MATERIALS SITES/USTS IN THE STUDY AREA**

| SITE #¹ | TYPE OF FACILITY | OPERATIONAL/ ACTIVE?² | STATUS |
|---------------------------|--|---|--|
| 1 | Gasoline station/ convenience store | Yes | Includes 3 active USTs; site does not appear to be under remediation. |
| 2 | Gasoline station/ convenience store | Yes | There is 1 active UST on site, 6 USTs were previously removed from the site; contamination is evident and site is under remediation. |
| 21 | Gasoline station | No | Includes 1 out-of-service UST, and possibly others; site does not appear to be under remediation. |
| 22 | Gasoline station | No | Any USTs were apparently previously removed from the site; site does not appear to be under remediation. |
| 23 | Gasoline station/ service garage | No | 2 USTs were previously removed from the site; site does not appear to be under remediation. |
| 24 | Gasoline station/ convenience store | Yes | Includes 3 active USTs; site does not appear to be under remediation. |
| 25 | Gasoline station | No | Any USTs were apparently previously removed from the site; the groundwater under the site is under active remediation. |
| 26 | Kings Mountain Landfill | No | Is closed; potential for hazardous materials at this site is very high, due to the fact that there were few regulatory restrictions on the types of waste accepted at this landfill when it was operational. |
| 28 | Auto Junk Yard | Yes | Associated with a car repair business. |
| 29 | Auto Junk Yard | Yes | Associated with a truck sales business. |
| 30 | Landfill | No | Household waste dump (active in the 1950's and 1960's) |
| 31 | Auto Junk Yard | Yes | Operated by an auto parts business |

Note: Only sites within Tier 2 detailed study alternative corridors are included on this table.

¹ See Exhibit 3-12 for location.

² Refers to the status of the business which resulted in the presence of the hazardous materials elements, **not** the status of the business currently occupying the site, if different.

Table 3-16
SUMMARY OF STUDY AREA ELEVATIONS

| FEATURE | LOCATION | ELEVATION (above MSL) |
|-------------------------------------|--|----------------------------------|
| Western project terminus | At existing US 74 near SR 1162 | 800 |
| SR 1313 | Near Washburn | 900-920 |
| | At existing US 74 and SR 1151 | 860 |
| NC 226 | North of Shelby | 800-840 |
| | At existing US 74 | 760 |
| First Broad River (stream banks) | North of Shelby (near SR 1005) | 700 |
| | At existing US 74 | 680-700 |
| US 74 Bypass | Junction of US 74 Business (West) | 760 |
| Downtown Shelby | At US 74 Business and NC 18 | 880 |
| NC 18/150 | At existing US 74 Bypass | 860 |
| NC 18 | North of Shelby | 960-980 |
| NC 150 | Northeast of Shelby (at junction with NC 180) | 940 |
| US 74 Bypass | Junction of US 74 Business (East) | 840 |
| NC 180 | Near SR 2052 | 940 |
| Moss Lake | West side bank | 740 |
| Buffalo Creek (stream banks) | At existing US 74 | 640 |
| Eastern project terminus | At existing US 74 near SR 1001 | 860 |

MSL = mean sea level

Source: US Geological Survey 7.5-minute (1:24,000) quadrangle maps - Boiling Springs North, Shelby, Waco, and Grover.

Note: Elevations are approximate; metric elevations were generated through conversion of the English unit contour elevations from the maps and rounded off to the nearest 5 meters.

3.9.2 Soils

Soils in the study area are classified by the United States Department of Agriculture Natural Resources Conservation Service (NRCS) into general soil map units, broad areas that have distinctive patterns of soils, relief, and drainage. Each unit is named for the major soils it contains but also consists of several minor soils. Smaller classifications of soils making one general unit may be found in other units but in different patterns. The soils in any one general soil map unit may differ from place to place in slope, depth, drainage, and other characteristics.

Cleveland County soils are grouped into six general soil map units, three of which are found in the study area: 1) the Cecil-Pacolet-Applying Association, consisting of sandy loam or sandy clay loams found on well drained or eroded slopes; 2) the Grover-Madison Association characteristic of gravelly sandy loams found on steeper slopes; and 3) the Chewacla-Wehadkee Association dominated by soils with hydric inclusions found within floodplain reaches along Beaverdam Creek, Buffalo Creek, First Broad River, and numerous smaller tributaries (Environmental Services, Inc., Natural Systems Report, Proposed US 74 Route, Shelby Bypass R-2707, August 1996, p. 6). In general, these soil associations are moderately to severely sloping and can support a range of land uses fairly well. Characteristics of individual soil series are presented in Table 3-17.

Hydric Soils - Hydric soils are those that are saturated, flooded, or ponded by overflowing streams or runoff for a specified minimum period of time (usually one week) during the growing season. They are generally associated with floodplain bottomlands and are used as indicators of wetland areas in conjunction with other factors. Wetlands are discussed in Section 3.13.1.

Table 3-17
STUDY AREA SOILS SUMMARY

| | Code | Soil Series | Slope | General Characteristics |
|---------------------------|-------------|------------------------------|--------------|--|
| Non-Hydric Soils: | 36B | Appling sandy loam | 1-6% | Very deep, well drained soil with low shrink-swell potential and moderate permeability. |
| | 97B | Bethlehem sandy clay loam | 2-8% | Moderately deep, well drained soil with low shrink-swell potential and moderate permeability |
| | 3B | Cecil sandy loam | 2-8% | Very deep, well drained soil with low shrink-swell potential and moderate permeability. |
| | 38D | Grover gravelly sandy loam | 15-30% | Very deep, well drained soil with low shrink-swell potential and moderate permeability. |
| | 59B | Helena sandy loam | 1-8% | Very deep, moderately well drained soil with low to high shrink-swell potential and slow permeability. |
| | 39B | Madison sandy loam | 2-8% | Very deep, well drained soil with moderate shrink-swell potential and moderate permeability. |
| | 3C | Pacolet sandy loam | 8-15% | Very deep, well drained soil with moderate shrink-swell potential and moderate permeability. |
| | 68C2 | Saw gravelly sandy clay loam | 2-8% | Moderately deep, well drained soil with low shrink-swell potential and moderate permeability. |
| | 36C | Wedowee sandy loam | 6-15% | Very deep, well drained soil with moderate shrink-swell potential and moderate permeability. |
| Hydric Inclusions: | 544B | Altavista sandy loam | 2-6% | Very deep, moderately well drained soil with low shrink-swell potential and moderate permeability. |
| | 4A | Chewacla | 0-2% | Very deep, somewhat poorly drained soil with low shrink-swell potential and moderate permeability. |
| Hydric Soils: | 8A | Wehadkee loam | 0-2% | Very deep, poorly drained soil with low shrink-swell potential and moderate permeability. |
| | 59B | Worsham loam | 1-6% | Very deep, poorly drained soil with moderate shrink-swell potential and very slow permeability. |

Prime, Important, and Unique Farmlands - These are soils identified as having good potential for food and fiber production; these are discussed in greater detail in Section 3.10.

3.9.3 Geology

The Piedmont physiographic province, of which Cleveland County is part, lies between the Blue Ridge Mountains and the Coastal Plain. It is an uplifted peneplain, a raised formation with a shallow relief of extensively eroded, rounded hills and long, low ridges. Standing above this surface are isolated mountainous remnants called monadnocks, which have been exposed by the erosion of less resistant rock around them. The Piedmont is composed mainly of metamorphic rocks, those originally of igneous or sedimentary origin which have been altered by pressures and temperatures deep underground to form rocks of greater crystallinity and hardness (William F. Wilson, et. al., NC Department of Environment and Natural Resources, North Carolina Geological Survey Section Educational Series No. 4 – North Carolina Geology and Mineral Resources: A Foundation for Progress, 1980). Gneiss and schist are two typical types of metamorphic rocks in North Carolina.

Similar rock types, structures, and areal distributions in the Piedmont are divisible into parallel geologic belts oriented from southwest to northeast. Cleveland County lies almost entirely within the Inner Piedmont belt, a zone of very high metamorphic intensity containing a great variety of complexly mixed mica gneisses and schists with lesser amounts of hornblende gneiss and schist (NC Department of Environment and Natural Resources, Division of Land Resources, “Geological Map of North Carolina,” 1985). The county is scattered with pegmatite dikes, thin slabs of coarse grained intrusive igneous rock, some of which contain spodumene (lithium ore)

and other valuable minerals. In the northeast and southeast there are moderately large areas of intrusive metamorphosed granite.

3.10 PRIME, IMPORTANT, AND UNIQUE FARMLANDS

Prime, important, and unique farmlands represent soils designated by the US Department of Agriculture Natural Resources Conservation Service (NRCS) as having a good potential for food and fiber production. Existing agricultural uses may or may not occur on these soils, since special status farmlands are identified by soil type rather than land use. Exceptions to this are water or land occupied by an urban use, neither of which is considered to be a special status farmland even if the soil type has been identified as such.

3.10.1 Prime Farmlands

Prime farmland soils, as defined by the US Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that result in the highest yields of crops with minimal amounts of effort. Farming these soils results in the least damage to the environment as well. Prime farmland soils usually get adequate moisture from precipitation or irrigation; are located in an area of favorable temperature and growing season; have an acceptable acidity or alkalinity level; harbor few or no rocks; are permeable to water and air; are not flooded, saturated with water for long periods, or excessively erodible; and generally have slopes from zero to eight percent.

All soil series in Cleveland County, except the Saluda and Ashe series, are potentially prime farmlands where slopes are less than eight percent (Andy Goodwin, Cleveland County Soil Survey, Natural Resources Conservation Service, pers. comm., December 3, 1996). The predominant prime farmland soils in the study area are Cecil sandy clay loam, two to eight percent slopes, eroded; and Appling sandy loam, one to six percent slopes. Common crops for these soils are corn, tobacco, soybeans, cotton, and small grains.

3.10.2 State and Locally Important Farmlands

Farmland of state and local importance consists of soils which, for one or more reasons, do not meet the requirements for prime farmland. These soils may be sloping, wet, or droughty, yet are still suited to producing high-yield crops economically with proper management. Like prime farmland, important farmland is extensive in Cleveland County and commonly supports many of the same crops.

3.10.3 Unique Farmlands

A unique farmland is that which is suitable for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed. In North Carolina, soils on which blueberries are produced meet these requirements. Drained phases of the Leon, Lynn Haven, and Murville series are the only soils in this category. None of these soils are found in the project study area.

3.11 MINERAL RESOURCES

Cleveland County contains a portion of the Tin-Spodumene Belt, a narrow, 30-mile strip rich in pegmatites containing the largest block of economically recoverable lithium minerals in the western hemisphere (Sam D. Broadhurst, North Carolina Department of Conservation and Development, Division of Mineral Resources, Information Circular 15: Lithium Resources of North Carolina, 1956, page 1). The belt extends from Grover through Kings Mountain and northward into Gaston and Lincoln counties. Currently, however, there are no companies that mine lithium in Cleveland County. Although the Cyprus Foote Mineral Company of Kings Mountain has an active mining permit, its activities are restricted at this time to processing imported lithium and lithium compounds (Cyprus Foote Mineral Company, Kings Mountain, pers. comm., July 15, 1996).

The mineral resources commonly mined in Cleveland County are sand, gravel, mica, and feldspar. Most mining operations are clustered in the southeastern portion of the county; however, there are a number in or near the study area, all of which are primarily sand producers. Table 3-18 shows all mines within a 9-mile radius of downtown Shelby.

Table 3-18**MINING OPERATIONS IN THE STUDY AREA AND VICINITY**

| Mine | Location | Commodity | Area (Acres) |
|-------------------------|--------------------------------|---------------------------|---------------------|
| Lawndale Pit | NC 182, Lawndale | sand dipping | 2.0 |
| McDaniel Sand Farm | First Broad River, Lawndale | sand dredging | 6.5 |
| Double Shoals | Double Shoals Road (SR 1809) | sand dipping | 9.5 |
| First Broad River* | Metcalf Road (SR 1850) | sand dipping | 5.0 |
| Metcalf Road Pit | Metcalf Road (SR 1850) | sand dredging | 5.0 |
| Moss Lake | northwest end of Moss Lake | sand dredging | 76.5 |
| Buffalo Valley Mine | US 74 east of Shelby | sand, gravel, feldspar | 22.9 |
| Buffalo Creek McBray | Pleasant Hill Road (SR 1103) | sand dipping | 4.0 |
| Sand Pit # 126 | Buffalo Creek, south of NC 226 | sand dipping | 3.5 |
| Chapman Sand #1 | Broad River near SC border | sand dredging | 10.0 |
| Broad River Mine | Broad River near SC border | sand dipping | 23.0 |

* Inactive

Sources: Jeffrey C. Reid et al, "Permitted Active and Inactive Mining Operations in North Carolina as of June, 1994", North Carolina Geological Survey Open-File Report 94-4, 1994.

Tony L. Sample, Land Quality Section, Division of Land Resources, NCDENR, pers. comm. July 12, 1996.

3.12 NATURAL RESOURCES

This section provides a summary of natural resources information for the study area. The following documents for this project which provide greater detail on natural resources issues (including water resource issues) are on file at the North Carolina Department of Transportation; these are appended by reference:

- Natural Systems Report, Proposed US Route 74, Shelby Bypass R-2707, Environmental Services, Inc., August 1996.
- Wetland and Stream Evaluation and Protected Species Survey, US 74 Bypass, Shelby, Cleveland County, North Carolina (T.I.P. No. R-2707), Environmental Services, Inc., October 2000.
- Hydraulic Technical Memorandum, De Leuw, Cather & Company (now Parsons Transportation Group, Inc.), October 1997.

3.12.1 Plant Communities

The study area is located in a region of mutable land use. Much of the land outside of the highly developed US 74 corridor is cleared for agricultural uses. Within the study area, seven broad classifications of plant communities are recognized. These classifications have been derived from the Classification of the Natural Communities of North Carolina (Third Approximation) by Schafale and Weakley. The classifications are broad groupings of the more specific classifications contained in the Schafale and Weakley document and account for the variations of species between and among classifications. These include hardwood forest (HW), pine plantation (PP), pine/hardwoods (PHW), successional land (SUC), agricultural land (AG), urban/disturbed land (UD), and mesic forest (MF). Each of these communities is briefly described below.

Hardwood Forest (HW). Hardwood forests in the study area are characterized by a canopy dominated by a mixture of hardwoods with occasional pines. These forests are found in continuous tracts or as smaller blocks between fields, along slopes, or as buffers around residential areas. Species composition varies from nearly pure hardwoods to areas where pine comprises up to 30 percent of the canopy. Dominant species consist of American beech (*Fagus grandifolia*), tulip tree (*Liriodendron tulipifera*), post oak (*Quercus stellata*), northern red oak (*Q. rubra*), white oak (*Q. alba*), shortleaf pine (*Pinus echinata*), loblolly pine (*P. taeda*), Virginia pine (*P. virginiana*), sourwood (*Oxydendrum arboreum*), and various hickories (*Carya* spp.). The subcanopy includes black gum (*Nyssa sylvatica*), American holly (*Ilex opaca*), and flowering dogwood (*Cornus florida*). Shrubs vary according to the site and herbs tend to be sparse due to dense canopy development.

Pine Plantation (PP). Pine plantations are silvicultural areas planted for pulpwood or timber production. Pine stands planted for conservation purposes or for wind breaks have been included in this community. Plantations primarily consist of Virginia pine, shortleaf pine, or loblolly pine.

Pine/Hardwood Forest (PHW). Pine-mixed hardwood forest, a seral stage in woodland development, is characterized by canopy where pines share dominance with developing hardwood species. Species composition also varies with landscape position, slope, and drainage. The dominant tree species generally consist of white oak, scarlet oak (*Quercus coccinea*), northern red oak, blackjack oak (*Quercus marilandica*), post oak, sourwood, hickories, loblolly pine, shortleaf pine, and Virginia pine. The subcanopy usually includes black gum, American holly, flowering dogwood, and seedlings of canopy species. Shrubs vary according to the site and may include redbud (*Cercis canadensis*), strawberry bush (*Euonymus americanus*),

arrowwood (*Viburnum rafinesquianum*), and blueberry (*Vaccinium* spp.). Herbs include heartleaf (*Hexastylis* spp.) and, spotted wintergreen (*Chimaphila maculata*); woody vines include Christmas fern (*Polystichum acrostichoides*), greenbriers (*Smilax* spp.), poison ivy (*Toxicodendron radicans*), and other vines. These forests are found in continuous tracts or, more frequently, as smaller blocks between fields, along slopes, or as buffers around residential areas.

Agricultural (AG). Agriculture is an important industry in the project area and accounts for much of the land use. Principal crops include corn (*Zea mays*), wheat (*Triticum* sp.), other cereal grains, and soybean (*Glycine max*). Pasturage is used to support dairy farms and there are several chicken and turkey operations in the project area.

Urban/Disturbed Areas (UD). Urban/disturbed areas include industrial sites, farm buildings, housing developments, maintained rights-of-way, pond and roadside margins, and areas of lawn and horticultural plantings. Some areas become overrun with invasive or weedy species when left untended. Commonly observed species include broom sedge (*Andropogon virginicus*) and other grasses, multiflora rose (*Rosa multiflora*), blackberries (*Rubus* spp.), kudzu (*Pueraria lobata*), and Japanese honeysuckle (*Lonicera japonica*).

Successional Land (SUC). This designation includes lands dominated by early successional vegetation resulting from various disturbances to the plant communities. These early successional lands include recently timbered areas and fallow agricultural fields in the process of regeneration. Recently timbered areas generally support shrubs and saplings of previous canopy species, as well as invasive herbs and vines such as blackberries, dog fennel (*Eupatorium capillifolium*), golden rods (*Solidago* spp.), Japanese honeysuckle, and greenbriers.

Regenerating fields typically support similar invasive herbs and vines along with saplings and shrubs of pioneering species.

Mesic Forest (MF). Mesic forests are found on lower slopes, in shaded ravines, and along water courses. As with the upland hardwoods, this community varies in species compositions depending on local conditions. Sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), tulip tree, river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), and American sycamore (*Platanus occidentalis*) are the most common trees. Willow (*Salix* spp.) is found along some streams. The understory is composed of canopy species mixed with ironwood (*Carpinus caroliniana*). Chinese privet (*Ligustrum sinense*), tag alder (*Alnus serrulata*), and deciduous holly (*Ilex decidua*), and several species of vines are found in the shrub layer. Common herbs include jointhead arthraxon (*Arthraxon hispidus*), Nepal microstegium (*Microstegium vimineum*), beggar-ticks (*Bidens* spp.), beggar's lice (*Desmodium* spp.), and spotted touch-me-nots (*Impatiens capensis*).

3.12.2 Wildlife

Terrestrial Communities. The study area consists of a mosaic of agricultural fields, scattered forested areas, and developed urban pockets. Clearing and conversion of large tracts of land for agricultural uses has eliminated some cover and protection for wildlife. The remaining forested systems offer necessary components (food, water, cover) to support a number of species typical of the western Piedmont region of the state. Woodland strips bordering small tributaries complement existing ecotones and may serve as travel corridors among habitat areas. Mammals noted or expected within the study area (based on literature review) include gray squirrel

(*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), eastern mole (*Scalopus aquaticus*), southeastern shrew (*Sorex longirostris*), eastern chipmunk (*Tamias striatus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and white-footed mouse (*Peromyscus leucopus*). Muskrat (*Ondatra zibethicus*) and mink (*Mustela vison*) may be found near ponds and streams in the study area. The patchwork mosaic of cultivated fields, successional areas, and forested cover provide white-tailed deer (*Odocoileus virginianus*) with excellent food resources and reproductive potential.

The common bird species that occur in the study area are typical of rural communities in the western Piedmont region of North Carolina where a patchwork of habitat types is available. Resident populations are anticipated in areas where better cover and protection is provided. Bird sightings within the study area were numerous. Common species included northern flicker (*Colaptes auratus*), American robin (*Turdus migratorius*), rufus-sided towhee (*Pipilo erythrophthalmus*), northern cardinal (*Cardinalis cardinalis*), red-bellied woodpecker (*Melanerpes carolinus*), blue jay (*Cyanocitta cristata*), mockingbird (*Mimus polyglottos*), Carolina wren (*Thryothorus ludovicianus*), Carolina chickadee (*Parus carolinensis*), tufted titmouse (*Parus bicolor*), wood thrush (*Hylocichla mustelina*), common crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), and various warblers, vireos, and sparrows (Potter *et al.* 1980).

Reptiles and amphibians known to occur in the region include the eastern box turtle (*Terrapene carolina*), which inhabits all forest lands within the study area. The eastern fence lizard

(*Sceloporus undulatus*), southeastern five-lined skink (*Eumeces inexpectatus*), and six-lined racerunner (*Cnemidophorus sexlineatus*) are found in open and disturbed areas. Pine/hardwood forest within the study area serves as habitat for the corn snake (*Elaphe guttata*) and scarlet kingsnake (*Lampropeltis triangulum*). Mesic and hardwood forest are habitat for the timber rattlesnake (*Crotalus horridus*), American toad (*Bufo americana*), pickerel frog (*Rana palustris*), northern cricket frog (*Acris crepitans*), and two-lined salamander (*Eurycea bislineata*) (Palmer and Braswell 1995, Martof *et al.* 1980).

Aquatic Communities. Many of the streams crossed in the project area provide adequate habitat for the propagation of aquatic wildlife. The larger streams, such as First Broad River and Buffalo Creek, are expected to support a diverse fishery which offers good sport fishing (Fish 1968). Redfin pickerel (*Esox americanus*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redbreast sunfish (*L. auritus*), and white catfish (*Ictalurus catus*) are common gamefish typically found in Piedmont rivers and large streams. Nongame species expected to occur in study area streams include golden shiner (*Notemigonus crysoleucas*), bluehead chub (*Nocomis leptcephalus*), satinfin shiner (*Notropis analostanus*), spottail shiner (*N. hudsonius*), creek chub (*Semotilus atromaculatus*), and speckled killifish (*Fundulus rathbuni*) (Menhinick 1991). In addition, some of the small tributaries and drainage ditches were found to support mosquitofish (*Gambusia* spp.).

Streams in the study area also provide suitable riparian and benthic habitat for a variety of amphibians and aquatic reptiles such as the eastern newt (*Notophthalmus viridescens*), northern dusky salamander (*Desmognanthus fuscus*), snapping turtle (*Chelydra serpentina*), painted turtle

(*Chrysemys picta*), and northern water snake (*Nerodia fasciata*). Limited populations of blue gill and largemouth bass may be found in small ponds situated in the study area. Snapping turtle, green frog (*Rana clamitans*) and southern leopard frogs (*R. sphenoccephala*) are also expected to inhabit small ponds.

3.12.3 Water Resources

Surface Waters. Creeks and tributaries within the project area are part of the Broad River Basin (USGS Hydrologic Unit #03050105). Best usage classifications and stream index numbers (SIN) follow Classifications and Water Quality Standards Assigned to the Waters of the Broad River Basin (DEHNR 1993, updated 1998). Principal streams and water bodies within the project study area include: Sandy Run Creek (SIN 9-46), Beaverdam Creek (SIN 9-50-32), Brushy Creek (SIN 9-50-29), First Broad River (SIN 9-50-18.5), Kings Mountain Reservoir/Moss Lake (SIN 9-53-2.9), Buffalo Creek (SIN 9-53-5), and Hickory Creek (SIN 9-14), as well as unnamed tributaries to Potts Creek (SIN 9-53-6-3) and Beason Creek (SIN 9-53-8).

The First Broad River and its principal tributaries, Brushy Creek and Hickory Creek, are located in the west-central portion of the study area. These large systems have bottoms composed of sand and gravel or rocks, and have moderate flow rates. The First Broad River and its tributaries represent the largest drainage system within the study area.

Beaverdam Creek and its seven unnamed tributaries are located in the western portion of the study area. Beaverdam Creek is a moderate flowing stream with a bottom composition of gravel

and rock. The Beaverdam Creek system is the second largest drainage system within the study area.

Immediately northeast of the study area is Buffalo Creek and its principal tributaries Long Creek and Suck Creek, which were dammed to create Kings Mountain Reservoir (now called Moss Lake). The upper reaches of Buffalo and Long Creeks are moderate- to fast-flowing streams with forested buffers along stream channels.

Potts Creek and Muddy Creek are tributaries to Buffalo Creek below the Kings Mountain Reservoir dam. These systems have moderate to fast flow rates and receive non-point source pollution inputs from agricultural and urban lands.

Streams identified during evaluation of Tier 2 detailed study alternatives are shown in Exhibit 3-13.

Floodplains and Floodways. Floodplain and floodway information for Cleveland County is provided by the National Flood Insurance Program, under the auspices of the Federal Emergency Management Agency (FEMA); previously, the US Department of Housing and Urban Development, Federal Insurance Administration had jurisdiction over the National Flood Insurance Program.

Existing Major Drainage Structures - There are 16 existing major drainage structures located on US 74 in the study area, serving the major study area drainageways. These are summarized in Table 3-19.

Table 3-19

SUMMARY OF HYDRAULIC STRUCTURES ALONG EXISTING US 74

| SITE # | WATERWAY | STRUCTURE LENGTH OR SIZE, TYPE | |
|--------|-------------------------|--------------------------------|--------|
| | | Length or Size | Type |
| EC1 | Sandy Run Creek Trib. | 2 - 8' x 8' | RCBC |
| EC2 | Unnamed Creek | 1 - 3' x 4' | RCBC |
| EB2 | Beaverdam Creek | 75' | Bridge |
| EC3 | Beaverdam Creek | 3 - 12' x 10' | RCBC |
| EC4 | Beaverdam Creek Trib. | 1 - 4' x 6' | RCBC |
| EC5 | Unnamed Creek | 2 - 8' x 10' | RCBC |
| EB3 | Brushy Creek | 157' | Bridge |
| EB4 | Brushy Creek | 250' | Bridge |
| EB5 | First Broad River | 330' | Bridge |
| EB6 | First Broad River | 331' | Bridge |
| EC6 | First Broad River Trib. | 1 - 7' x 7' | RCBC |
| EC7 | Unnamed Creek | 2 - 7' x 7' | RCBC |
| EC8 | Hickory Creek | 3 - 10' x 18' | RCBC |
| EC9 | Unnamed Creek | 1 - 8' x 8' | RCBC |
| EB7 | Buffalo Creek | 315' | Bridge |
| EB8 | Buffalo Creek | 315' | Bridge |

Note: Sites are listed in order along US 74 from west to east; see Exhibit 4-2 for locations of these structures.

RCBC = reinforced concrete box culvert

EB = existing bridge

EC = existing culvert

Floodplains - Floodplain information for the study area is available through FEMA in the form of Flood Insurance Rate Maps prepared for the National Flood Insurance Program.

Additional information is provided in the Flood Insurance Studies for Cleveland County and the City of Shelby. Exhibit 3-13 indicates the locations of the various flood zones shown on the FEMA mapping; these zones are defined as follows:

Zone A includes special flood hazard areas inundated by 100-year flood for which base flood elevations have not been determined.

Zone AE includes special flood hazard areas inundated by 100-year flood for which base flood elevations have been determined.

Zone X includes areas determined to be outside the 500-year floodplain.

Streams which have corresponding flood hazard areas include Beaverdam Creek and tributary; Brushy Creek; the First Broad River and Tributaries B-1, B-1-1, B-2, and B-3; Hickory Creek and Tributaries H-1, H-2, H-3, and H-4; Buffalo Creek; Muddy Fork; and Moss Lake.

Floodways - Floodways are defined as the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without increasing the level and extent of flood heights.

FEMA has published Flood Insurance Studies for both unincorporated Cleveland County and the City of Shelby. According to the Cleveland County study, no FEMA-regulated floodways are

located in the unincorporated portions of the study area. In the study area within the City of Shelby, the following streams include FEMA-regulated floodways:

| | |
|---------------------|---------------|
| Hickory Creek - | Main creek |
| | Tributary H-2 |
| | Tributary H-3 |
| | Tributary H-4 |
| First Broad River - | Tributary B-2 |

No other FEMA-regulated floodways are located in the project area.

Exhibit 3-13 sheet 3 of 4 shows the Hickory Creek floodway, and the location of the cross sections in the vicinity of US 74 used by FEMA to perform these floodway studies.

Water Quality. Water quality concerns in the study area include both surface water and groundwater quality; wastewater dischargers along area waterways have an influence on surface water quality.

Surface Waters - General surface water classifications in North Carolina (NCAC T15: 02B.0301c) are designated by five separate fresh water, three tidal salt water, and four supplemental classifications. Generally, any existing stream, including unnamed streams which do not appear on the State list of stream classifications, is assigned the same classification as that assigned to the stream into which it flows (see Exhibit 3-13).

Sandy Run Creek, Beaverdam Creek, Brushy Creek, Hickory Creek, Potts Creek, Beason Creek and Buffalo Creek have a best usage classification of C. The classification of C indicates fresh waters suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation

and agriculture. Secondary recreation refers to any activity involving human body contact with water on an infrequent or incidental basis. The unnamed tributaries of these waters have no individual SIN or best usage classification and therefore share the SIN and best usage classification of their respective receiving waters.

The First Broad River, which represents the largest drainage system within the study area, has a best usage classification of WS-IV CA. This classification indicates waters protected as water supplies in moderately to highly developed watersheds, with new development being somewhat limited. Point source discharges of treated wastewater are permitted, and local programs to control nonpoint source discharge of pollution are required. These waters are suitable for all Class C uses (fish and wildlife propagation, secondary recreation, agriculture). Under a WS-IV classification, the affected area is divided into two regulatory zones. The supplemental classification CA, Critical Area (also referred to as a Water Quality Critical Area, or WQCA), is defined as the land area within two miles upstream and draining to water supplies from normal pool elevation of reservoirs or to a river/stream intake (see Exhibit 3-14). The Critical Area does not include land areas downstream of the river supply intake, or if the intake is in a reservoir, downstream of the reservoir's dam. The Critical Area has rules more stringent than those in the remainder of the watershed or Protected Area. The rest of the watershed or Protected Area, whichever applies, comprises the other regulatory zones. The First Broad River has twenty-four unnamed tributaries within the study area. These unnamed tributaries have no individual SIN or best usage classification and therefore share the SIN and best usage classification of their receiving waters.

Kings Mountain Reservoir (Moss Lake) has a best usage classification of WS-III CA and also includes a WQCA (see Exhibit 3-14). The classification WS-III indicates waters protected as

water supplies which are generally low to moderately developed watersheds; point source discharges of treated wastewater are permitted, and local programs to control non-point source discharge of pollution are required. These waters are suitable for all Class C uses. The reservoir's fifteen unnamed tributaries share the SIN and best usage classification of the reservoir.

There are no High Quality Waters (HQWs) within the study area.

Wastewater - The 37 wastewater dischargers within the project area include 8 National Pollution Discharge Elimination System (NPDES) individual dischargers and 29 general permit dischargers. The individual dischargers are more stringently monitored and controlled due to the fact that they are more substantial sources of wastewater than the general permit dischargers. The dischargers are identified in Table 3-20 and on Exhibit 3-14.

BENTHIC MACROINVERTEBRATE AMBIENT NETWORK - The Benthic Macroinvertebrate Ambient Network (BMAN) addresses long-term trends in water quality at fixed monitoring stations through sampling for selected benthic macroinvertebrates. Seven BMAN stations are located within or near the study area; three stations are on Brushy Creek, two on Hickory Creek, one on Buffalo Creek, and one on Muddy Creek. In addition, within or near the study area, there are four permitted discharge sites (Brushy Creek, Hickory Creek, Potts Creek, and Buffalo Creek). Those BMAN stations which are within or near the project area are shown on Exhibit 3-14.

The three BMAN stations located on Brushy Creek are located above and below Metals America (Formerly Chase Brass and Copper). Two stations are located approximately 0.6 mile southeast of the junction of Old Boiling Springs Road (SR 1123) and US 74. The third BMAN station is located adjacent to US 74 at Brushy Creek. Water quality at all of these sites is rated overall as

Fair (DWQ 1991). In addition, PPG Industries discharges treated industrial waste into Brushy Creek north (upstream) of US 74 and has a permitted discharge of 1.3 million gallons per day (mgd) (DWQ 1989). Industrial non-point source and permitted discharges are the primary sources of water quality degradation within this portion of the Brushy Creek system.

Two BMAN stations are located on Hickory Creek south of the study area. The first is at Christopher Drive (SR 1110); the water quality at this site has an overall rating of Fair. The second BMAN station is located downstream of the Shelby Wastewater Treatment Plant (WWTP), approximately 2,000 feet downstream of the junction of Christopher Drive and NC 18. Water quality at this site has an overall rating of Poor. The Shelby WWTP has a permitted discharge of 6.0 mgd (DWQ 1989). Given the difference in water quality above and below the Shelby WWTP, it is apparent that the WWTP is the primary source of water quality degradation downstream of the plant.

One BMAN station is located on Buffalo Creek at US 74. Water quality at this site has an overall rating of Fair (DWQ 1991). Celanese Fiber discharges treated industrial waste waters into Buffalo Creek downstream of the study area, and has a permitted discharge of 0.9 mgd (DWQ 1989). Water quality within this portion of Buffalo Creek appears to be influenced more by permitted industrial waste discharge than non-point source pollution from agricultural and urban lands.

Table 3-20

NPDES INDIVIDUAL AND GENERAL PERMIT DISCHARGERS IN THE STUDY AREA

| Site ID on Exhibit 3-14 | Permit Number (DWQ) | Permit Number (EPA) | Facility | Receiving Stream | Discharge (MGD) | Type of Discharge |
|-------------------------|---------------------|---------------------|---|---------------------|-----------------|-------------------|
| 1 | --- | NCG170071 | Artee Wrapspun | Beaverdam Creek | N/A | General |
| 2 | NCG100051 | NCG100051 | Auto Parts of Shelby | Hickory Creek | N/A | General |
| 3 | NCG050132 | NCG050132 | Azdel, Inc. | Beaverdam Creek | N/A | General |
| 4 | NCG030091 | NCG030091 | Baldor Electric Company (Reliance) | Beason Creek | N/A | General |
| 5 | NCG020095 | NCG020095 | Buffalo Valley Mine | Buffalo Creek | N/A | General |
| 6 | NCG080700 | NCG080700 | City of Shelby Vehicle Maintenance Facility | First Broad River | N/A | General |
| 7 | NCG120072 | NCG120072 | Cleveland County Municipal Solid Waste Facility | Kings Mt. Reservoir | N/A | General |
| 8 | NCG200426 | NCG200426 | Cleveland County Recycling Facility | Kings Mt. Reservoir | N/A | General |
| 9 | --- | NCG030296 | Commercial Intertech Corporation | Kings Mt. Reservoir | N/A | General |
| 10 | NCG140050 | NCG140050 | Concrete Supply Company – Shelby | First Broad River | N/A | General |
| 11 | NCG030257 | NCG030257 | Copeland Corporation | Hickory Creek | N/A | General |
| 12 | NCG030258 | NCG030258 | Curtiss-Wright Controls, Inc. | Sugar Branch | N/A | General |
| 13 | NCG140134 | NCG140134 | Dedmon’s Transit Concrete Mix | First Broad River | N/A | General |
| 14 | NCG170037 | NCG170037 | Dacey Fabrics Inc. | First Broad River | N/A | General |
| 15 | --- | NCG170178 | Doran Mills, LLC | First Broad River | N/A | General |
| 16 | NCG110040 | NCG110040 | First Broad River WWTP (Shelby) | First Broad River | N/A | General |
| 17 | --- | NCG500595 | Four Leaf Textiles, LLC | Kings Mt. Reservoir | N/A | General |
| 18 | --- | NCG040261 | Glaize Components | First Broad River | N/A | General |
| 19 | --- | NCG070062 | Hairfield Vault Company | Hickory Creek | N/A | General |

Table 3-20

NPDES INDIVIDUAL AND GENERAL PERMIT DISCHARGERS IN THE STUDY AREA

| Site ID on Exhibit 3-14 | Permit Number (DWQ) | Permit Number (EPA) | Facility | Receiving Stream | Discharge (MGD) | Type of Discharge |
|--------------------------------|----------------------------|----------------------------|---------------------------------------|-------------------------|------------------------|--------------------------|
| 20 | NCG030170 | NCG500221 | Metalsamerica, Inc. | Sugar Branch | N/A | General |
| 21 | NCG080778 | NCG080778 | Republic Services of NC, LLC | Hickory Creek | N/A | General |
| 22 | NCG550065 | NCG550065 | Roger Dixon Residence | Hickory Creek | N/A | General |
| 23 | NCG080326 | NCG080326 | Royster Transport Company | Hickory Creek | N/A | General |
| 24 | NCG020462 | NCG020462 | Shelby Quarry | First Broad River | N/A | General |
| 25 | NCG500121 | NCG500121 | Shelby Yarn Company | First Broad River | N/A | General |
| 26 | NCG500273 | NCG500273 | Shelby Yarn Company Hwy. 150 Plant | Kings Mt. Reservoir | N/A | General |
| 27 | NCG080169 | NCG080169 | UPS | Hickory Creek | N/A | General |
| 28 | NCG140124 | NCG140124 | Wellington Hamrick | Beaverdam Creek | N/A | General |
| 29 | NCG140340 | NCG140340 | Wellington Hamrick | Beaverdam Creek | N/A | General |
| A | NC0027197 | NC0027197 | City of Shelby WTP | First Broad River | Not limited | Individual |
| B | NC0024538 | NC0024538 | City of Shelby WWTP | First Broad River | 6 | Individual |
| C | NC0020737 | NC0020737 | Pilot Creek WWTP (Kings Mountain) | Buffalo Creek | 6 | Individual |
| D | NC0004685 | NCG070015 | PPG Industries Fiber Glass Products | Beaverdam Creek | 1.3 | Individual |
| E | NC0030481 | NC0030481 | Ramseur Washerette | Beaverdam Creek | 0.0056 | Individual |
| F | NC0005061 | NCG050170 | Smurfit - Stone Container Enterprises | Beaverdam Creek | 0.01 | Individual |
| G | NC0042293 | NC0042293 | Specialty Lighting | Beaverdam Creek | 0.01 | Individual |
| H | NC0063797 | NC0063797 | Whispering Pines Rest Home | Sugar Branch | 0.0025 | Individual |

Groundwater Resources - Groundwater is the portion of water beneath the earth's surface that can be collected with wells or tunnels, or that flows naturally to the earth's surface via seeps or springs. Underground formations bearing groundwater in sufficiently usable quantities are called aquifers. There are no EPA-designated sole source aquifers in the state of North Carolina. A few residents in the project area obtain their water supply from groundwater wells.

3.13 JURISDICTIONAL ISSUES

3.13.1 Wetlands and Surface Waters

Section 404 of the Clean Water Act (CWA) requires regulation of discharge into "waters of the United States". Although the principal administrative agency of the CWA is the US Environmental Agency (EPA), the Corps of Engineers (COE) has major responsibility for implementation, permitting, and enforcement of provisions of the Act. The COE regulatory program is defined in 33 CFR parts 320-330.

The following documents for this project which provide greater detail on natural resources issues are on file at the North Carolina Department of Transportation; these are appended by reference:

- Natural Systems Report, Proposed US Route 74, Shelby Bypass R-2707, Environmental Services, Inc., August 1996.
- Wetland and Stream Evaluation and Protected Species Survey, US 74 Bypass, Shelby, Cleveland County, North Carolina (T.I.P. No. R-2707), Environmental Services, Inc., October 2000.
- Hydraulic Technical Memorandum, De Leuw, Cather & Company (now Parsons Transportation Group, Inc.), October 1997.

Water bodies such as rivers, lakes, and streams are subject to jurisdictional consideration under the Section 404 program. However, by regulation, wetlands are also considered "waters of the United States". Wetlands are described as:

Those areas that are inundated or saturated by groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. (33 CFR 328.3(b) [1986]).

Wetlands are defined by the presence of three criteria: hydrophytic vegetation, hydric soils, and evidence of wetland hydrology during the growing season (Department of the Army 1987). Open water systems and wetlands receive similar treatment and consideration with respect to Section 404 review.

Most of the jurisdictional systems in the study area consist of surface waters in bank-to-bank streams or isolated ponds. Principal waterways include First Broad River, Brushy Creek, Beaverdam Creek, Buffalo Creek, Hickory Creek, Muddy Folk Creek and Potts Creek. These systems are classified on NWI mapping as riverine, lower perennial, permanently flooded systems with unconsolidated bottoms (R2UBH). Perennial streams typically contain flowing water year-round. The locations of the jurisdictional areas identified in conjunction with the Tier 2 detailed study alternatives are shown on Exhibit 3-13.

A number of shallow water ponds and farm impoundments are scattered throughout the landscape (palustrine open water [POW]). The primary function of these water bodies is to serve as water supply sources for agriculture use. The small ponds provide few wetland functions

because of their size, limited distribution, and lack of continuity with other wetland communities. These ponds may provide higher water quality enhancement functions if they receive much upland runoff and thus act as a retention pond. These water bodies usually have abundant fish population (diversity is unknown) and are optimal habitat for migratory and wading birds.

Wetlands in the study area are classified on NWI mapping as palustrine forested, deciduous systems (PF01), as defined by Cowardin *et al.* (1979). These wetlands are generally concentrated within riparian fringes of streams and creeks. In communities where flooding is seasonal, the forested wetlands are composed of a mix of typical hardwood species adapted to wetland hydrology. These include species such as sweetgum, American sycamore, red maple, and tulip tree. However, the vegetative composition varies with degree of disturbance and may be dominated by shrubs or young trees.

Although limited in extent, these palustrine wetlands are functionally valuable ecosystems. The position of these wetlands adjacent to drainages provides these communities the opportunity to function as receptors of upland runoff. In addition, these wetlands function as buffers during times of flooding, which reduces runoff rates and allows for increased absorption and infiltration. In urbanized areas, these wetlands frequently represent the last remnants of "natural" conditions and become valuable educational, aesthetic, and recreational resources.

Table 3-21 indicates the surface water and wetland sites identified within the corridors of Tier 2 detailed study alternatives. The area shown for each site is for the entire site area within the corridor. Chapter 4 includes more concise information concerning surface water and wetland impacts.

Table 3-21

SURFACE WATER / WETLAND SITES

| SITE # | STREAM NAME (1) | TYPE OF SITE | | | AREA OF SITE (acres) (4) |
|--------|--------------------------------|--------------|---------|--------------------|--------------------------|
| | | Wetland | POW (2) | Surface Waters (3) | |
| 1 | UT of Sandy Run | | | X | 0.37 |
| 2 | UT of Beaverdam Creek | | | X | 0.84 |
| 3 | UT of Beaverdam Creek | | | X | 0.44 |
| 3W | UT of Beaverdam Creek | X | | | 0.96 |
| 4 | UT of Beaverdam Creek | | | X | 0.07 |
| 5 | UT of Beaverdam Creek | | | X | 0.17 |
| 5P | UT of Beaverdam Creek | | X | | 1.04 |
| 6 | UT of Beaverdam Creek | | | X | 0.17 |
| 7 | UT of Brushy Creek | | | X | 0.07 |
| 8 | Brushy Creek | | | X | 0.84 |
| 9 | UT of Brushy Creek | | | X | 0.57 |
| 9A | UT of Brushy Creek | | | X | 0.13 |
| 9B | UT of Brushy Creek | | | X | 0.23 |
| 10 | First Broad River | | | X | 7.46 |
| 11 | UT of First Broad River | | | X | 0.79 |
| 12 | UT of First Broad River | | | X | 0.07 |
| 13 | UT of First Broad River | | | X | 0.07 |
| 14 | UT of First Broad River | | | X | 0.17 |
| 14P | UT of First Broad River | | X | | 1.36 |
| 15 | UT of First Broad River | | | X | 2.35 |
| 16 | UT of Long Creek | | | X | 0.02 |
| 17 | UT of Long Creek | | | X | 0.007 |
| 18 | UT of Long Creek | | | X | 0.10 |
| 19 | UT of Long Creek | | | X | 0.05 |
| 19P | UT of Long Creek | | X | | 2.72 |
| 20 | UT of Long Creek | | | X | 0.02 |
| 21 | UT of Kings Mountain Reservoir | | | X | 0.05 |
| 22 | UT of Kings Mountain Reservoir | | | X | 0.02 |
| 23 | UT of Kings Mountain Reservoir | | | X | 0.05 |
| 25 | UT of Buffalo Creek | | | X | 0.35 |
| 26 | UT of Buffalo Creek | | | X | 0.12 |
| 26P | UT of Buffalo Creek | | X | | 1.21 |
| 27 | UT of Buffalo Creek | | | X | 0.25 |
| 28 | Buffalo Creek | | | X | 0.54 |
| 28W | Buffalo Creek | X | | | 1.58 |
| 29 | UT of Buffalo Creek | | | X | 1.43 |
| 30 | Buffalo Creek | | | X | 1.36 |
| 31 | UT of Sandy Run | | | X | 0.67 |
| 32 | UT of Beaverdam Creek | | | X | 0.02 |
| 34 | UT of Beaverdam Creek | | | X | 0.15 |
| 35 | UT of Beaverdam Creek | | | X | 0.10 |
| 36 | UT of Beaverdam Creek | | | X | 0.20 |
| 37 | Beaverdam Creek | | | X | 0.57 |
| 37W | Beaverdam Creek | X | | | 7.09 |
| 38 | UT of Beaverdam Creek | | | X | 0.44 |
| 39 | UT of Beaverdam Creek | | | X | 0.05 |
| 40 | UT of Little Creek | | | X | 0.15 |
| 41 | Brushy Creek | | | X | 0.91 |

Table 3-21

SURFACE WATER / WETLAND SITES

| SITE # | STREAM NAME (1) | TYPE OF SITE | | | AREA OF SITE (acres) (4) |
|--------|--------------------------------|--------------|---------|--------------------|--------------------------|
| | | Wetland | POW (2) | Surface Waters (3) | |
| 42 | Brushy Creek | | | X | 1.66 |
| 43 | UT of Brushy Creek | | | X | 0.62 |
| 44 | First Broad River | | | X | 1.24 |
| 45 | UT of First Broad River | | | X | 0.10 |
| 46 | UT of First Broad River | | | X | 0.10 |
| 46P | UT of First Broad River | | X | | 1.09 |
| 47 | UT of First Broad River | | | X | 0.12 |
| 48 | UT of First Broad River | | | X | 0.07 |
| 49 | UT of First Broad River | | | X | 0.07 |
| 49P | UT of First Broad River | | X | | 0.32 |
| 50 | UT of Hickory Creek | | | X | 0.10 |
| 50P | UT of Hickory Creek | | X | | 0.32 |
| 51 | UT of Hickory Creek | | | X | 0.17 |
| 52 | UT of Hickory Creek | | | X | 0.10 |
| 52P | UT of Hickory Creek | | X | | 2.20 |
| 53 | UT of Kings Mountain Reservoir | | | X | 0.02 |
| 54 | UT of Buffalo Creek | | | X | 0.05 |
| 55 | UT of Buffalo Creek | | | X | 0.07 |
| 58 | UT of Buffalo Creek | | | X | 0.37 |
| 60 | UT of Buffalo Creek | | | X | 0.07 |
| 61 | Buffalo Creek | | | X | 1.36 |
| 62 | UT of Buffalo Creek | | | X | 0.02 |
| 63 | UT of Potts Creek | | | X | 0.02 |
| 64 | UT of Potts Creek | | | X | 0.020 |
| 82 | Brushy Creek | | | X | 1.31 |
| 83 | UT of First Broad River | | | X | 0.32 |
| 84 | UT of Beaverdam Creek | | | X | 0.05 |
| 85 | UT of First Broad River | | | X | 0.15 |
| 86 | First Broad River | | | X | 0.86 |
| 87 | UT of Potts Creek | | | X | 0.15 |
| 88 | UT of Potts Creek | | | X | 0.05 |
| 89 | UT of Potts Creek | | | X | 0.020 |
| 89P | UT of Potts Creek | | X | | 0.99 |
| 90 | UT of Potts Creek | | | X | 0.10 |
| 91 | Muddy Fork | | | X | 0.79 |
| 92 | Potts Creek | | | X | 0.52 |

- (1) UT = Unnamed tributary
- (2) POW = Palustrine Open Water (ponds and impoundments)
- (3) Stream crossing
- (4) Area of site is corridor-wide area.

3.13.2 Protected Species

Federal Species. Species with federal classifications of Endangered (E), Threatened (T), Proposed Endangered, or Proposed Threatened are protected under the Endangered Species Act of 1973, as amended (16 USC 1531 *et seq.*). The Fish and Wildlife Service (FWS) revised the list of protected species effective May 10, 2007. This list also includes a category of species designated as "federal species of concern" (FSC). The FSC designation provides no federal protection for the species listed. The following federally protected and FSC species are listed for Cleveland County.

| <u>Common Name</u> | | <u>Scientific Name</u> | <u>Potential Habitat</u> |
|--------------------------|------|------------------------------|--------------------------|
| Dwarf-flowered heartleaf | T | <i>Hexastylis naniflora</i> | Yes |
| Sweet pinesap | FSC | <i>Monotropsis odorata</i> | Yes |
| Carolina saxifrage | FSC | <i>Saxifraga caroliniana</i> | No |
| Torrey's mountain-mint | FSC* | <i>Pycnanthemum torrei</i> | Unknown |

T = Threatened; a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

FSC = Federal Species of Concern; an informal term referring to those species which may be in need of concentrated conservation actions.

FSC*= Federal Species of Concern; however, the record of this species is historic; the last observance of the species in Cleveland county was 50 years ago.

Descriptions follow of the four species identified herein; however, only the dwarf-flowered heartleaf is addressed in Chapter 4, due to the fact that it is the only one of the four species afforded federal protection.

Dwarf-Flowered Heartleaf (*Hexastylis naniflora*) -T - The dwarf-flowered heartleaf is a small, spicy-smelling, rhizomatous perennial herb. The long-stalked evergreen leaves (6 inches in length) are leathery, heart-shaped, and mottled with white (Kral 1983). The solitary purplish flower is jug-shaped, fleshy and firm, and has three triangular lobes. Flower and fruits appear in April and early May, usually under leaf litter (Cooper *et al.* 1977). Preferred habitat is north-facing slopes of rich deciduous forest, usually associated with mountain laurel in acidic, sandy loam soils (Kral 1983). Dwarf-flowered heartleaf is known in the Piedmont of North and South Carolina (Kral 1983).

Sweet Pinesap (*Monotropsis odorata*) - FSC - The sweet pinesap is listed for North Carolina as a candidate species as well as federally as a Federal Species of Concern (FSC). The Natural Heritage Program List of Rare Plant Species of North Carolina (Amoroso 1997) indicates its habitat as “dry forests and bluffs”. Weakley (1993) indicates the habitat as “dry to mesic upland woods, especially slopes or bluffs with abundant heaths, often *Rhododendron maximum*”. The flowers are very fragrant and may be the only way to locate the plants since the small flowering plants are often covered with leaf litter. Flowering may take place either from September to November or February to April (Weakley 1993).

Carolina Saxifrage (*Saxifraga caroliniana*) - FSC - The Carolina saxifrage is listed for North Carolina as a candidate species as well as federally as a Federal Species of Concern (FSC). The Natural Heritage Program List of Rare Plant Species of North Carolina (Amoroso 1997) indicates its habitat as “high to middle elevation moist cliffs and rock outcrops”. Kral (1983) indicates the habitat as “cool, shaded surfaces of acidic rocks and rooted in a thin mantle of

highly humified detritus mixed with moss. Substrate (is) usually very moist, often with spray from plunging water or seepage”. The terrain is steep. The overstory consists of hemlock, white pine, and hardwoods; the shrub layer is usually made up of ericaceous plants.

Torrey’s Mountain-Mint (*Pycnanthemum torrei*) – FSC* - Torrey’s mountain-mint is listed for North Carolina as well as federally as a Federal Species of Concern, with a historical record (not observed in Cleveland county for 50 years.) It is a perennial herb, commonly 25-31 inches in height, but sometimes as tall as 3.25 feet. It has small, clustered flowers and thin leaves. Its habitat is noted as dry upland forests, thickets, dry-mesic barrens, upland meadows, dry, rocky woods, and edges of sandstone glades (Gleason, H.A. & Cronquist, A., 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. Second Edition. The New York Botanical Garden. Bronx, NY). The habitat for this species as it is found in North Carolina is in the mountains and in the Piedmont, in rich woods, and usually rock such as gabbro or diabase. Some sites seem to have been maintained in the past as opened areas, probably by fire and other activities. (University of Minnesota Herbarium, Weakley, 1994.)

State Species. Species of mammals, birds, reptiles, amphibians, and plants with the North Carolina status of Endangered (E), Threatened (T), or Special Concern (SC) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202.12 *et seq.*). A review of NHP records indicated that no state-listed species are known to occur within one mile of the study area corridors.

3.13.3 Unique Natural Areas

There are no designated rare or unique natural areas identified within the study area according to Natural Heritage Program records.

3.13.4 Rivers and Streams

Outstanding Resource Waters. No rivers in the study area are currently designated, or proposed for designation, as Outstanding Resource Waters.

Wild and Scenic Rivers (Federal). No rivers in the study area are currently designated, or proposed for designation, as Wild and Scenic as denoted under the federal Wild and Scenic Rivers Act of 1968 (Pub. L. No. 90-542, 82 Stat. 906; codified and amended at 16 U.S.C. 1217-1287 (1982)).

Natural and Scenic Rivers (State). No rivers in the study area are currently designated, or proposed for designation, as NC Natural and Scenic Rivers under the Natural and Scenic Rivers Act of 1971 (G.S. 113A-30).

Trout Streams. No streams in the immediate project area are classified as being Trout Streams, i.e., being suitable for natural trout propagation and maintenance of stocked trout. The nearest designated Trout Streams are in the northwestern portion of Cleveland County, near Casar; these include several tributaries of the First Broad River in this area.

3.14 VISUAL AND AESTHETIC VALUES OF THE STUDY AREA

The visual character of the study area is shaped by its basic pattern of development, which consists of a moderately dense, low-rise, urban center that gradually gives way to rural countryside.

Shelby's central business district (CBD), which contains most of the city's municipal and office buildings, is built around a traditional courthouse square that lends it a picturesque, small-town ambience. The downtown area is surrounded by a variety of older, tree-lined neighborhoods, community and recreational facilities, and smaller shopping areas. Several newer commercial corridors have developed on the outskirts of the downtown core, including the existing US 74 Bypass and sections of US 74 Business, NC 180, and NC 18. The existing US 74 Bypass, the largest and most heavily commercialized of these corridors, is a strip development with low-rise business and industrial buildings, and prominent billboards and illuminated signs.

On the fringes of the city are newer, more isolated developments, primarily subdivisions and small commercial uses, surrounded by rural residences and gently rolling landscape with great stretches of cleared fields and stands of trees. Some larger scale industrial enterprises exist along Washburn Switch Road (SR 1313) between Shelby and Lattimore. Beyond these areas, the landscape is increasingly agrarian in character and is interspersed with some heavily wooded areas, particularly near Brushy Creek and the First Broad River.

NC 226 Scenic Byway - Recognized by the NCDOT for its aesthetic qualities and access to natural, cultural, and historic points of interest, the NC 226 Scenic Byway epitomizes Cleveland County's rural charm. The Byway begins at Ramseur Church Road (SR 1811), approximately

3.5 miles northwest of Shelby, and continues northward into Rutherford and McDowell Counties. Because the route is not considered a primary tourist destination, it is not subject to federal billboard regulations and there are no state or local land use policies or controls pertaining to Scenic Byways (Robert Kapetsky, NC Scenic Byways Program, pers. comm., May 14, 1996). However, since it is a goal of the Cleveland County Land Use Plan to increase tourism through the protection and enhancement of areas of natural beauty and historic significance, the recognition and promotion associated with the Scenic Byway designation could encourage local communities and jurisdictions to take steps toward protecting the road's unique character.