



L C
R T

Purpose and Need

Lowcountry Rapid Transit

Berkeley-Charleston-Dorchester Council of Governments

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1 Introduction

This document provides an overview of the proposed Lowcountry Rapid Transit (LCRT) Project, describes the purpose of the proposed project, and explains the need for transportation improvements within the corridor. In the National Environmental Policy Act (NEPA) framework, a project's purpose and need state the intention of the study and outlines the underlying conditions that motivate it. Together, the purpose and need provide the rationale and justification for undertaking a major Federal action. It forms the basis for the range of alternatives and establishes a framework for defining the goals and objectives against which alternatives are measured and selected in the environmental document.

2 Project Description

As one of the most important and congested corridors in South Carolina, the I-26 corridor is a vital link connecting Lowcountry communities to the rest of the region. In response to rapid growth in the Lowcountry's population and economy, the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) commissioned an analysis to identify a viable transportation alternative as part of an overall strategy to help reduce traffic congestion and improve mobility in the region. The 2015 I-26 Fixed Guideway Alternative Analysis, also known as *i-26ALT*, was initiated to identify and evaluate a fixed guideway transit alternative for the I-26 corridor between Charleston, North Charleston, and Summerville to improve and enhance regional mobility. The *i-26ALT* study was a cooperative initiative of the BCDCOG, Charleston Area Regional Transportation Authority (CARTA), TriCounty Link, the South Carolina Department of Transportation (SCDOT), and the Federal Transit Administration (FTA). The *i-26ALT* study concluded that bus rapid transit (BRT) along the US 78 and US 52 corridor, running parallel to I-26, was the preferred transit alternative to move forward into project development. As the administrator and planner for the region's public transit, BCDCOG will lead this effort and oversee the planning, construction and implementation of the project.

The *i-26ALT* study preferred transit alternative is known as the LCRT. The LCRT is a proposed 26-mile BRT corridor extending from Charleston to Summerville, South Carolina parallel to I-26. The study area for the LCRT was defined by using a half-mile buffer around the recommended alignment from the *i-26ALT* study, illustrated on Figure A1. The northern end of the study near Summerville was expanded beyond the half-mile buffer to include consideration of alignment options that could connect to key destinations. On the southern end of the study area in the Charleston Peninsula, the study area extends to Broad Street.

2.1 Demographics of the LCRT corridor

The Charleston region saw a 22 percent increase in population between 2000 and 2010, and that trend is projected to continue, with a forecasted 57 percent increase in population and a 41 percent increase in employment over the next 25 years. The LCRT study area falls within three counties, multiple municipalities, and makes up 22 percent of the region's population and 34 percent of the region's employment. As growth continues along this capacity constrained corridor, alternative transportation modes, such as transit, become a higher priority.

Within the LCRT corridor, cultural and economic diversity are pronounced. This section provides an overview and description of demographic factors that influence demand for transit. The section focuses on population and employment data as well as concentrations of populations that generally rely on transit to reach destination such as employment, educational centers, and shopping. Please refer to the figures in Appendix A for maps presenting the project area demographics. Existing demographics in the study area have been documented using the Census Bureau’s American Community Survey (ACS) data for 2013-2017. Future conditions are documented using the BCDCOG’s regional travel demand model for the horizon year 2040. The demographic categories are illustrated using density (e.g., population per square mile) as opposed to totals, as this is a more appropriate indicator for transportation demand analysis.

Compared to Berkeley, Charleston, and Dorchester counties, the study area outpaces the region in its proportions of several demographic categories known to contribute to transit dependency. As summarized in Table 1, the population density in the study area is nearly 10 times that of the counties as a whole, the minority share in the study area population is one and a half times that of the overall region (53 percent versus 36 percent), the share of the population below poverty in the study area is nearly twice that of the region (26 percent versus 14 percent), and the share of households without access to a vehicle in the study area is over twice that of the region (13 percent versus 6 percent).

Table 1 Study area Demographic Comparison

	Total population	Population per square mile	Percent under 18	Percent over 64	Percent minority	Percent disabled	Percent below poverty	Percent zero-auto households
Study area	85,326	2,239	21%	10%	53%	12%	26%	13%
Berkeley, Charleston, and Dorchester counties	744,195	235	22%	14%	36%	12%	14%	6%

Source: American Community Survey Five-Year Estimates (2013-2017)

The demographic data show densities for most categories listed are highest in downtown Charleston, with pockets of higher densities in North Charleston along University Boulevard and Rivers Avenue, and in Ladson on the north side of I-26.

Future population density trends remain consistent with existing densities, with downtown Charleston and areas of North Charleston continuing to represent the highest densities. Notably, high population densities are also projected on the Magnolia site adjacent to I-26 and the Ashley River, where a mixed-use development is being planned.

Population densities in the study area are highest in downtown Charleston, with pockets of higher densities in the Charleston Heights and Whipper Barony areas of North Charleston along University Boulevard and Rivers Avenue, and in Ladson on the north side of I-26.

Employment locations are common origins and destinations for transit trips. Existing employment densities are highest in downtown Charleston where major employment centers such as the Medical University of South Carolina (MUSC) are located. Areas of high and moderate employment densities are also concentrated in the portion of the study area from the Northwoods Mall to Ashley Junction in North Charleston.

Future employment density trends remain largely unchanged from current conditions with downtown Charleston and the above-noted portions of North Charleston still featuring the highest densities.

For the purpose of transportation analysis, the term minority refers to any population that does not identify as non-Hispanic white. Minority populations utilize transit services at higher rates than non-minority populations. Minority population densities are highest in downtown Charleston, between Dorchester Road and I-26, and the Charleston Heights and Park Circle areas of North Charleston.

Zero vehicle households must use alternative transportation modes such as transit to meet their mobility needs and persons below poverty are also less likely to have access to private automobiles and thus have a higher propensity to use transit services; densities for these metrics are highest in downtown Charleston and the Charleston Heights and Whipper Barony areas of North Charleston.

Persons with disabilities often have mobility limitations and are thus reliant on alternative transportation modes such as transit; densities for persons with disabilities are highest in downtown Charleston, the Charleston Heights area of North Charleston, Hanahan, and the areas along University Boulevard and Rivers Avenue in North Charleston.

Individuals under 18 years of age are typically more reliant on transit services as they may not be licensed to drive and/or lack access to a private vehicle; densities for this metric are highest in downtown Charleston, the Windsor Place and Whipper Barony areas of North Charleston, and along University Boulevard and Rivers Avenue in North Charleston.

Individuals over the age of 64 years of age are more likely to have mobility limitations and thus rely on alternative transportation modes such as transit to access destinations; densities for this metric are highest in downtown Charleston, with pockets of moderate densities spread throughout North Charleston.

Existing and forecasted populations along the corridor illustrate transit ridership potential in the densely populated locations along the LCRT corridor.

2.2 Transportation Demand

The corridor is central to the economic activity of the metropolitan area, linking the residential areas east and west of the corridor with the employment centers, medical facilities, colleges and commercial activities downtown and along the corridor. Commuting patterns are a source of significant travel demand in the corridors and travel times are slow. In 2018, average daily

vehicular traffic accounts for as many as 38,900 trips on Rivers Avenue and as much as 92,000 trips on I-26.

2.2.1 Activity centers

The LCRT corridor extends approximately 26 miles from Summerville through North Charleston to downtown Charleston, along a primary commuting route that includes multiple educational, medical and other key activity centers. These generate a large number of trips each day. These activity centers include:

- Colleges including College of Charleston, Trident Technical College, and Charleston Southern University
- Major medical facilities including MUSC, and MUSC Health Medical Center, and Roper Saint Francis Healthcare
- Cultural sites and facilities and recreational areas – Upper King Street Design and Dining District, Charleston Museum and Charleston Visitor Center, North Charleston Wannamaker County Park, downtown Summerville, and Coastal Carolina Fairgrounds/Exchange Park
- Shopping hubs - North Main Market/Azalea Square, Northwoods Mall area
- Transportation hubs - North Charleston Intermodal Transportation Center (SUPERSTOP)
- Employment centers – MUSC, College of Charleston, Roper Saint Francis Healthcare

As population and employment in the region continue to grow, the number of miles that residents travel to and from jobs, schools, shopping and community services also increases. With increasing numbers of vehicles using the region’s transportation system, roads become increasingly congested. Many of the main thoroughfares in the Summerville, North Charleston and Charleston areas exceed the capacity of the facility on a daily basis and particularly during AM and PM peak hours. The result is congestion, delay, and higher than average crash rates.

Level of service (LOS) is a method of measuring the vehicle-carrying capacity of a street or freeway. When the capacity of a road is exceeded, the result is congestion, delay, and a poor level of service. LOS is represented by a letter “grade” ranging from A for excellent conditions – that is, traffic is light and free-flowing – to F for failure conditions – that is, extremely congested, gridlock traffic. LOS B through LOS E describe progressively worse traffic conditions. Typically, in urban areas, such as Charleston, LOS E and F are considered to be unacceptable operating conditions and LOS D and above are generally considered acceptable.

Based on the BCDCOG Travel Demand Model, on a daily basis, approximately 15% of the current roads within the project corridor currently operate at LOS E or LOS



Figure 1 Definition of level of service

F. However, by 2040 those number of roads that operate a LOS E or F is expected to increase by 91.8%; this includes a 67% increase along US 78, a 13.6% increase along US 78/Rivers Avenue. Approximately 45% of the I-26 corridor within the study area will operate at LOS E or F on a daily basis.

In addition to congestion, segments of primary roadways within the corridor exhibit crash rates that are higher than the Charleston County average. Crash rates are the number of crashes per 1 million vehicle miles traveled (VMT). Approximately five miles of Rivers Avenue between Ashley Phosphate Road and Piggly Wiggly Drive had a crash rate of 6.6 in 2017, compared to the Charleston County crash rate of 4.2. Another two-mile segment of Rivers Avenue between Piggly Wiggly Drive to Carner Avenue also had higher crash rate than the county, with a rate of 5.4 in 2017.

2.3 Purpose and Need

This project purpose and need has been developed to guide the development of alternatives and as an evaluation measure for comparing alternatives. This purpose and need also helps define the scope of the project and is the foundation of the development of the goals and objectives, discussed in Section 2.3.3.

2.3.1 Purpose – What will the project accomplish?

The purpose of the LCRT project is to provide transit service along the 26-mile corridor connecting Summerville, North Charleston, and Charleston that will:

- Improve mobility, accessibility, and connectivity of the transit system and region;
- Promote a cost effective and accessible transit alternative;
- Support land use and transit objectives in the region.

2.3.2 Needs – Why is the project needed?

In order to address the transportation challenges faced by the region and within the LCRT corridor, a premium transit solution is needed. This solution must address the following needs:

Improve mobility and connectivity within the region

The continued population and employment growth of the region puts ever increasing demand on the transportation system that serves the area and the roadway network is increasingly congested. This results in increased travel times and reduced reliability of the transportation system between Summerville and downtown Charleston. These roadways provide access for residents, visitors and the workforce traveling to major activity and employment centers with the corridor. As discussed in the previous section, some populations within the corridor have a high propensity for transit use.

The project is needed to optimize regional mobility and connectivity between Summerville, North Charleston and Charleston by providing multi-modal improvements that result in faster and more reliable travel through the corridor.

By enhancing the transit facilities and amenities that connect employment and educational hubs, residential areas, shopping areas, civic resources, historic districts, cultural landmarks,

and entertainment venues in the region, the project would further improve mobility and accessibility for the people who live, work, and visit the Charleston area.

Provide a cost effective and accessible transit alternative

Although the existing bus service for the area, CARTA, has a diverse ridership base of commuters, tourists, students and other customers that use the system, approximately 70 percent of its customers are transit-dependent. In addition, with growing traffic congestion throughout the service area, CARTA has experienced a decline in on-time performance and reliability on many of its most heavily traveled routes, including the LCRT corridor.

There is a growing need in the corridor to serve populations likely to use transit and expand transportation options for transit-dependent populations, including providing reliable and consistent service. Providing additional transit service to these populations within the LCRT corridor will enhance both mobility and economic opportunities for all transit users through improved access to major activity centers and employment.

Support local transit and land use objectives

Existing development and the natural environment limit the ability to widen the roadways to accommodate additional travel lanes, to support the increasing mobility needs as population continues to grow. If left unmanaged, this rapid growth will not only continue to constrain the corridor mobility but will also result in sprawling development, which would lead to the reduction of open space and natural areas. Local land use plans call for focused, compact development to manage future growth and reduce continued sprawl, but this requires the support of high-quality, dependable transportation infrastructure solutions/options.

The introduction of a premium transit service in the corridor would also be in support of local land use plans already in place for the corridor that include upgrading transit options in the region, including:

- ***I-26ALT***

The i-26ALT study was initiated by the Charleston Area Transportation Study (CHATS) to identify a fixed guideway transit alternative for the I-26 Corridor connecting Charleston, North Charleston, and Summerville. The study was conducted over 15 months beginning in 2014 to consider the effects of alternative transit investments in the corridor and to develop the best transit system for the region given current resources. BRT is being used as the mode choice for this EA because it was identified as the preferred transit alternative by the i-26ALT planning efforts.

- ***BCDCOG Long Range Transportation Plan***

As the region continues to grow and evolve, it is essential that investments in transit be made to provide mobility alternatives for all residents and visitors. Closely coordinated transit and land use planning initiatives will help manage the region's anticipated growth in a sustainable and equitable manner. This Plan envisions the development of new high capacity transit corridors linking key employment and activity centers, supported by enhanced local and commuter express transit service throughout the region. Investment in transit benefits all travelers in the Charleston region. High quality public transportation

benefits not only those who depend on it for daily travel, but also helps attract new riders. Building transit ridership also benefits auto commuters by taking cars off the road and thereby reducing congestion. Closely coordinated transit and land use planning will help promote effective growth management policies and outcomes. Transit Oriented Development around future transit hubs will serve as a catalyst for attracting and retaining ridership and reducing congestion.¹

- ***BCDCOG Our Region Our Plan, the 2040 Transit Vision Plan***

As a result of the Our Region Our Plan (OROP) process, the 2040 Transit Vision Plan set a policy objective to establish a comprehensive transit system that attracts new riders, connects major centers, reduces congestion on major arterials, enhances affordability, protects the natural environment, provides for sustainability of the region, and provides a viable alternative to personal automobile travel. OROP indicates that continued population growth presents challenges such as preserving the region's natural resources, maintaining affordable housing, and providing reasonable mobility options that lessen environmental impacts and lost productivity. Strategies to help overcome these challenges include:

- Encouraging mixed-use, compact development within existing activity centers and coordinating transportation planning and land use to allow for natural areas interspersed between human developments
- Increasing employment and educational opportunities in professional, high-tech fields to help support the region economically
- Creating a robust transportation system, to include freight and transit, that supports communities and nurtures businesses

OROP proposed a set of rapid transit corridors linking key activity nodes throughout the Charleston region². "By coordinating land use and transportation planning at the regional level, we will address housing, transportation mobility, and land use issues and successfully achieve our goals such as encouraging compact development patterns while also ensuring the efficient use of fiscal resources, reducing congestion, and lowering transportation and living costs"³.

Transportation has a significant impact on the affordability of housing in the Lowcountry, but it also affects other aspects of our communities and built environment. Notably, it has significant impact on the character of our communities, the economic development opportunities available to us, and the regional resources that we have access to, including agricultural lands. In short, transportation and land use are highly interrelated⁴.

Transportation resources determine the region's access to housing, jobs, schools, natural resources, and other goods and services. Likewise, the density and location of development influences regional travel and partly determines the transportation options available to a

¹ BCDCOG LRTP Chapter 5 Public Transportation

² BCDCOG LRTP Chapter 5 Public Transportation

³ BCDCOG Our Region Our Plan, Plan Summary

⁴ BCDCOG Our Region Our Plan, Chapter 1, p. 1-7

community, such as whether alternative transportation modes like bus rapid transit are feasible. Coordinated transportation and land use fosters communities and neighborhoods that serve people of different ages and incomes, help protect our critical ecosystems and open space, create economic opportunity and expand transportation options and modes available to the region. While developers' response to the market will ultimately influence where development occurs, coordinating land use and transportation planning provides an opportunity for local communities to encourage the development it desires while at the same time ensuring fiscal resources are used efficiently and effectively, congestion is reduced, transportation and living costs are lowered.⁵

In coordinating land use and transportation, existing communities will be better able to balance their needs, desires, and priorities. The region will also be better poised for growth as our efforts will illustrate to developers and businesses alike that we value growth, that we are proactive, and that we have anticipated the hard questions and are prepared to make tough decisions to realize our future. This requires that local governments and transportation agencies continue to be engaged partners in local decision making, establishing proactive, coordinated and consistent plans and policies that will guide land use and transportation decisions while taking into account local conditions, context, and priorities.⁶

- ***Charleston County Comprehensive Plan***

The *2018 Charleston County Comprehensive Plan* (CCCP; Charleston County Council 2018) covers the majority of the project study area. The CCCP presents particular elements designed to accomplish the county's vision regarding the pattern, quality, and intensity of land uses; the provision of public facilities and services; economic development; availability of housing; and preservation of natural and cultural resources. The CCCP places an emphasis for growth to occur within the Urban Growth Boundary (UGB), an area overlapping the LCRT study area where substantial infrastructure and services exist. The CCCP encourages compact growth in already developed areas, redevelopment, and infill of existing vacant sites inside the UGB, particularly where employment and residential density are the greatest, and discourages development in low-growth areas. The CCCP promotes intermodal transportation systems such as Park-and-Ride facilities, walking and bicycling paths, and BRT. Specifically, the CCCP mentions that, as a result of the BCDCOG-led 15-month study to identify a transit alternative to enhance regional mobility along the I-26 corridor between Summerville and Charleston, BRT along the Rivers Avenue corridor (i.e., the Project) was recommended to provide this need.

- ***City of Charleston Neck Master Plan***

The objective for the Partnership for Prosperity project is to produce an integrated strategic Master Plan that respects and knits together the various planning and engineering components of transportation, urban design, land use and economic development into a unified whole. This unified planning and design framework provides clear guidance to state and local agencies, community stakeholders, the general public and the private sector about

⁵ BCDCOG Our Region Our Plan, Chapter 1, p. 1-7

⁶ BCDCOG Our Region Our Plan, Chapter 1, p. 1-7

the vision for the Neck area, and the strategies and priorities necessary to achieve desired outcomes that can transform the community toward a more sustainable, livable and economically vital part of the region.⁷

Connectivity facilitates pedestrian or vehicular movement within the community by providing opportunities for people to reach a variety of destinations from a given point. To accomplish this, the Neck area should be connected by a functional interconnected network of streets and blocks. This network should be maintained and improved in ways that accommodate various modes of transportation balanced with the needs of pedestrians. Connectivity should enhance linkages to surrounding neighborhoods and other areas, especially public services (such as schools, transit, and civic uses) and amenities (such as parks, water bodies, and natural open spaces).⁸

Transportation is ultimately about access. Where there is access, commerce and other activities can happen. On a larger scale, a multimodal transportation network is essential to the local and regional economy of the Neck area. Land use and transportation are symbiotic. Development density and location influence travel patterns, and in turn, the degree of access and mobility options provided by the transportation system can influence land use and development trends. Urban design can facilitate travel choices and alternatives to driving or someone having to rely on friends and family to drive them.⁹

- ***Berkeley County Comprehensive Plan***

The 2010 Berkeley County Comprehensive Plan serves as a guide for growth and development for the next 15 to 20 years and delineates a Principal Growth Area (PGA) that partially overlaps the LCRT study area and includes larger incorporated towns and some rural areas experiencing transitional development west of US 17A. The BCCP envisions development of the PGA focused around existing and identified town centers and emphasizes infill and redevelopment of land within the PGA to promote accessible activity centers with connections to nearby neighborhoods.

A number of projects for infrastructure and capital facilities, including enhanced transit, are contained in the adopted CHATS LRTP and Capital Improvements Program for Berkeley County. The Plan envisions improved public transit as a development incentive and a means to equalize access to jobs and amenities.

2.3.3 Goals and Objectives – What are the metrics of the project?

The needs outlined above were translated into the goals and objectives for the LCRT corridor in the Table 2. These goals and objectives will be used to evaluate the alternatives under consideration.

⁷ Neck Master Plan, Chapter 1, p. 14

⁸ Neck Master Plan, Chapter 5, p. 86

⁹ Neck Master Plan, Chapter 6, p. 125

Table 2 Goals and Objectives

Need	Goals and Objectives
Improve mobility and connectivity in the region;	<ul style="list-style-type: none"> • Improve local and regional mobility (bus running time/speeds; reliability) • Establish connections between residential areas, employment centers, and activity centers • Improved mobility to Enterprise/Opportunity Zones
Promote a cost effective and accessible transit alternative;	<ul style="list-style-type: none"> • Create multi-modal system; travel choice • Cost and Implementation Logistics
Support local transit and land use objectives;	<ul style="list-style-type: none"> • Support economic development plans along the corridor (improve access to jobs, transit centers) • Promote livable, transit oriented development • Minimize environmental impacts and promote a healthy human environment

ATTACHMENT 1 - MAPS

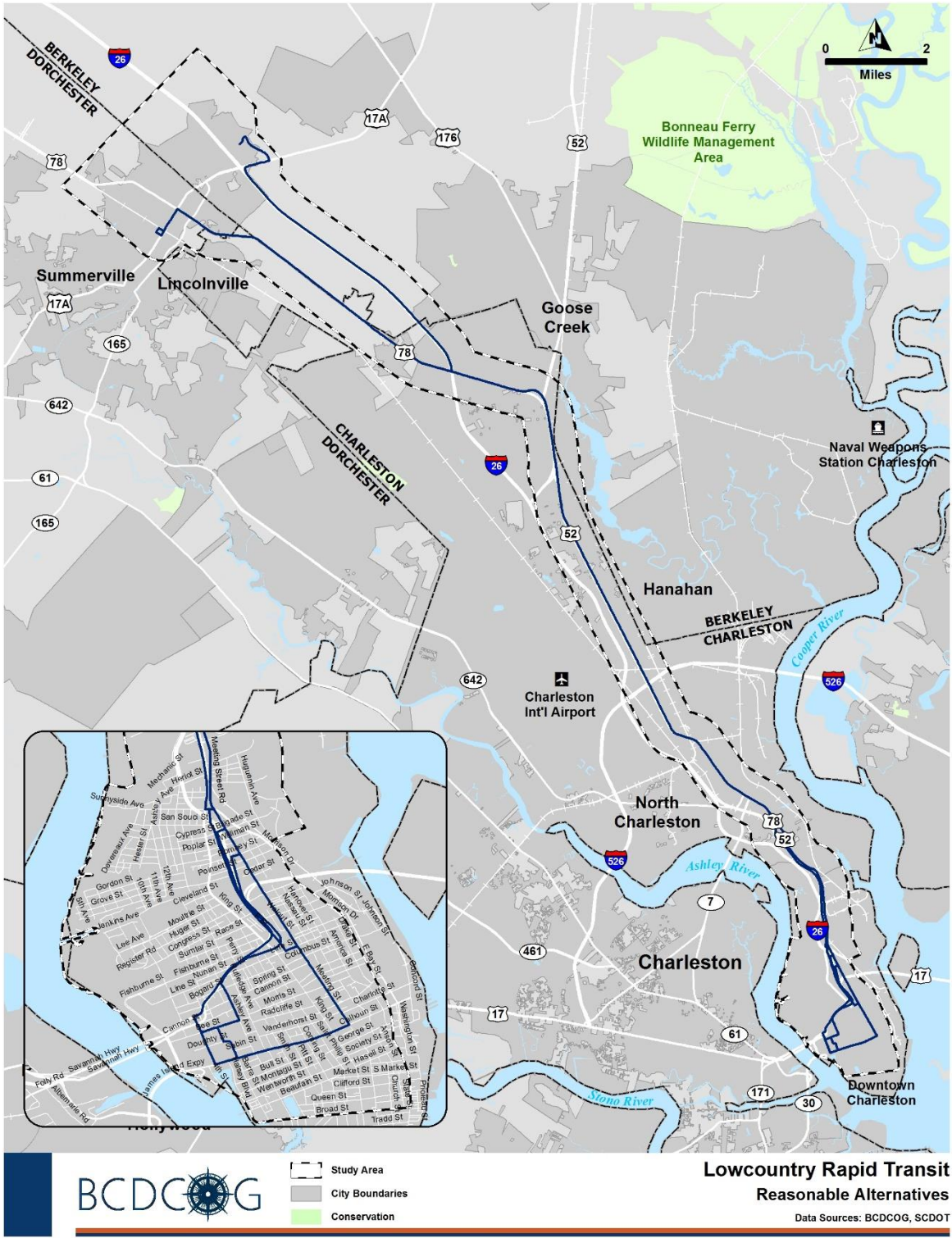


Figure A 1 LCRT Study Area

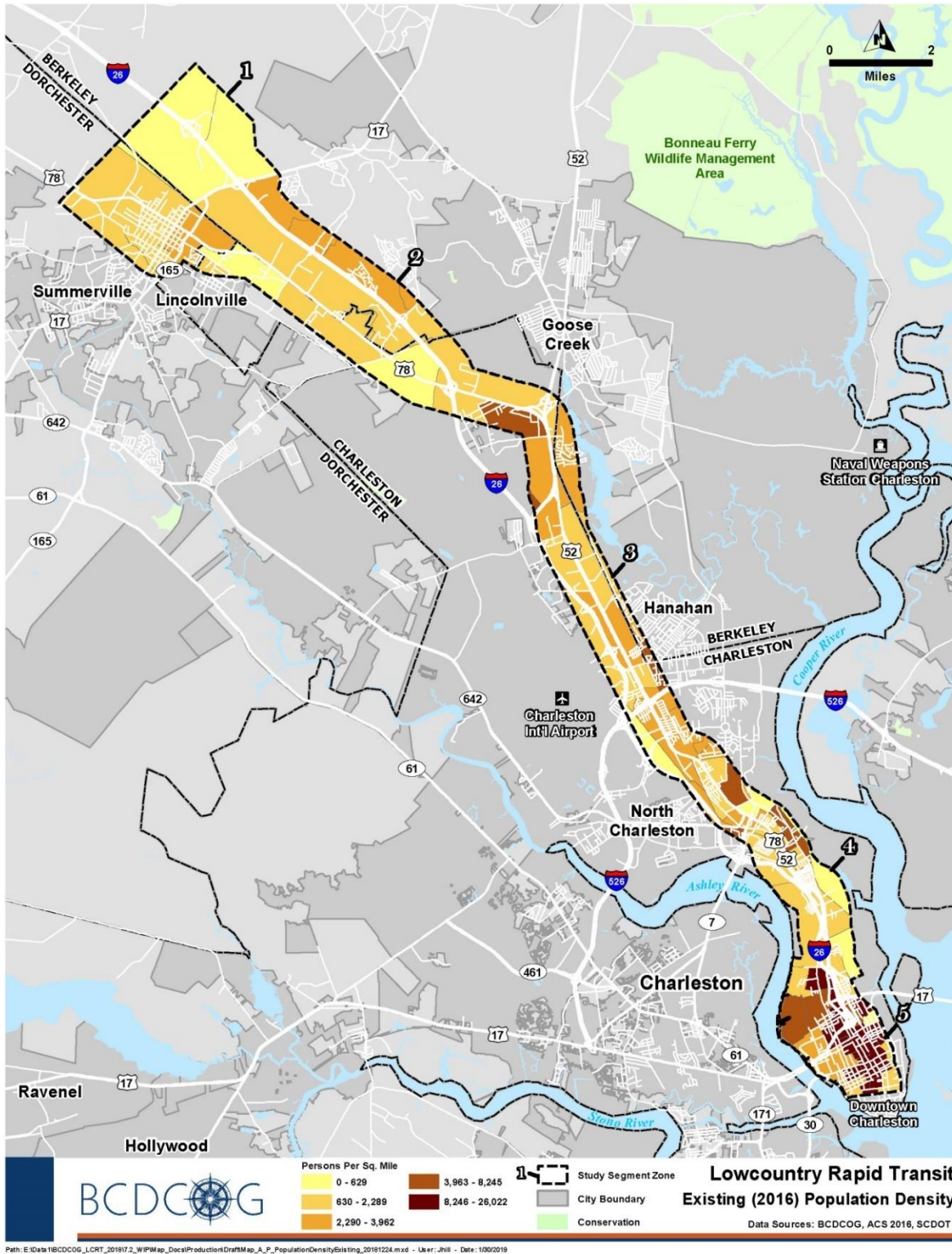


Figure A 1 Existing (2016) Population Density

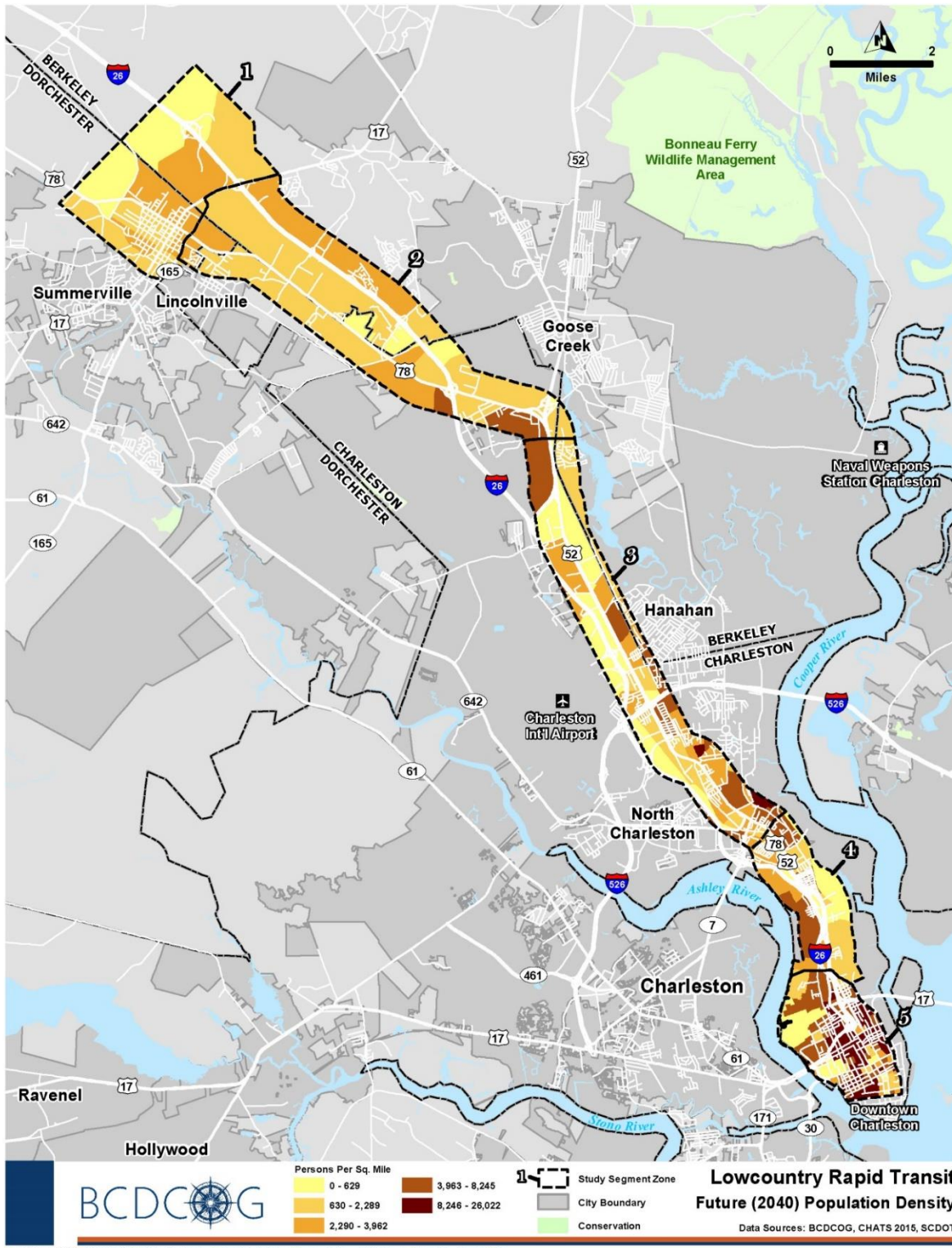


Figure A 2 Future (2040) Population Density

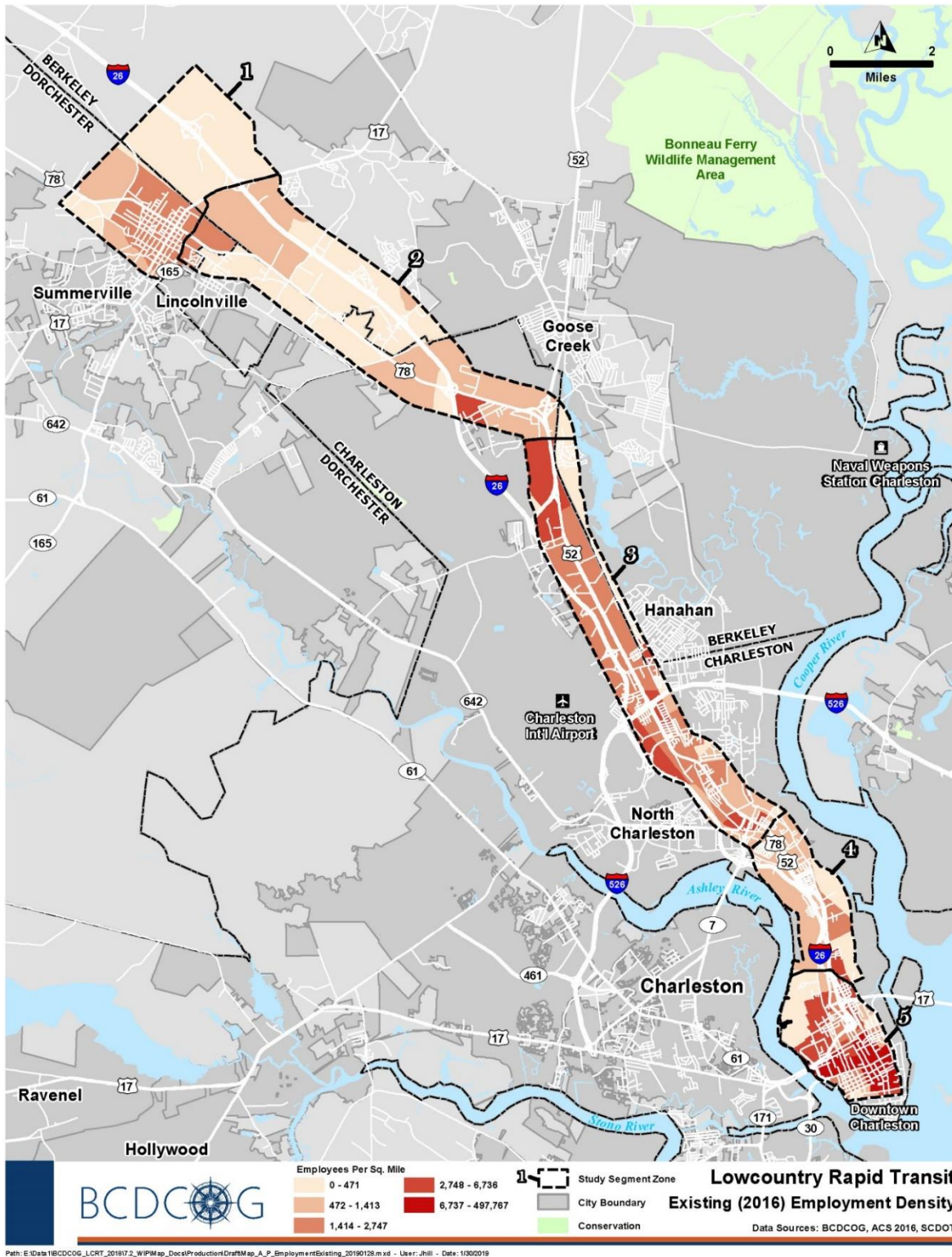


Figure A 3 Existing (2016) Employment Density

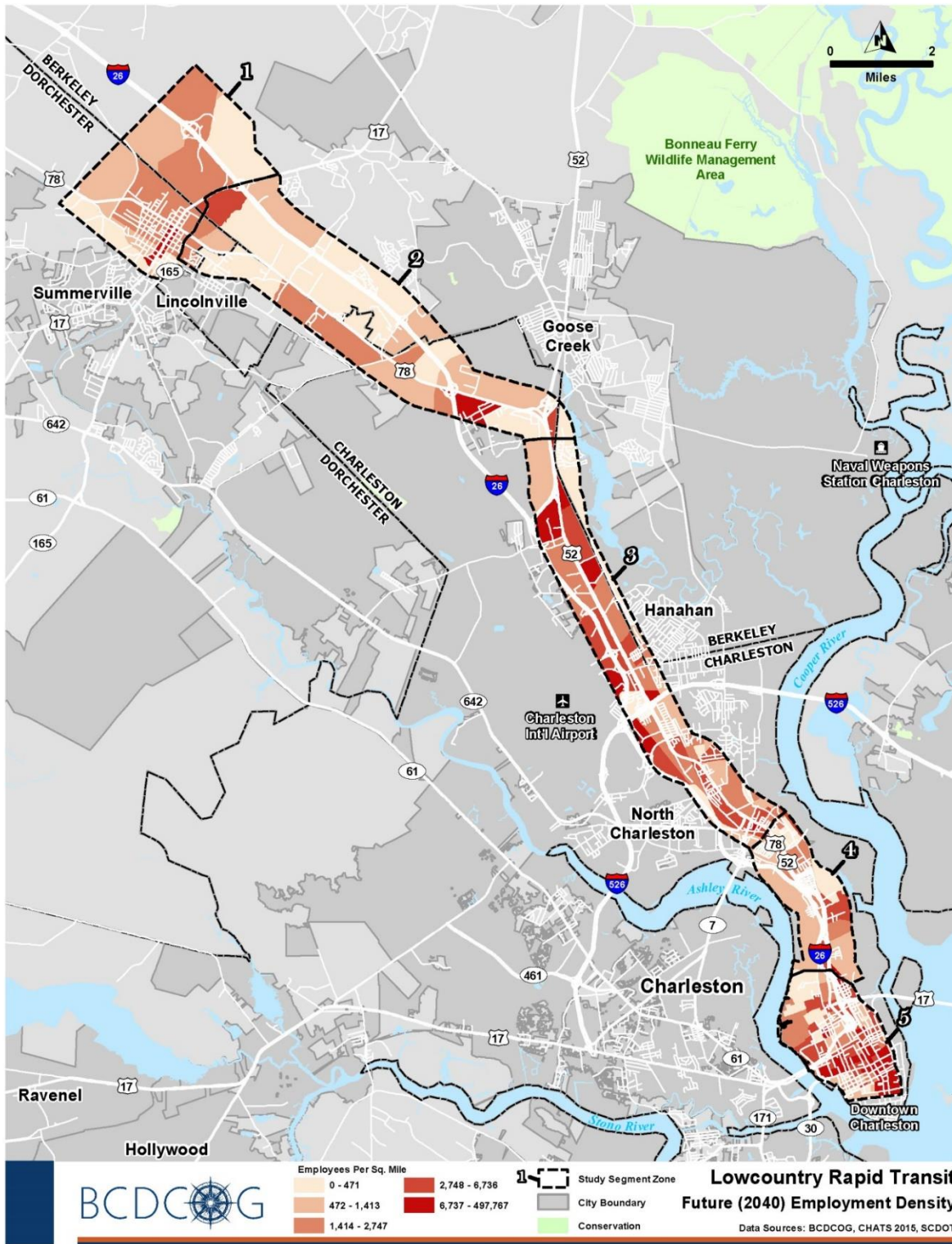


Figure A 4 Future (2040) Employment Density

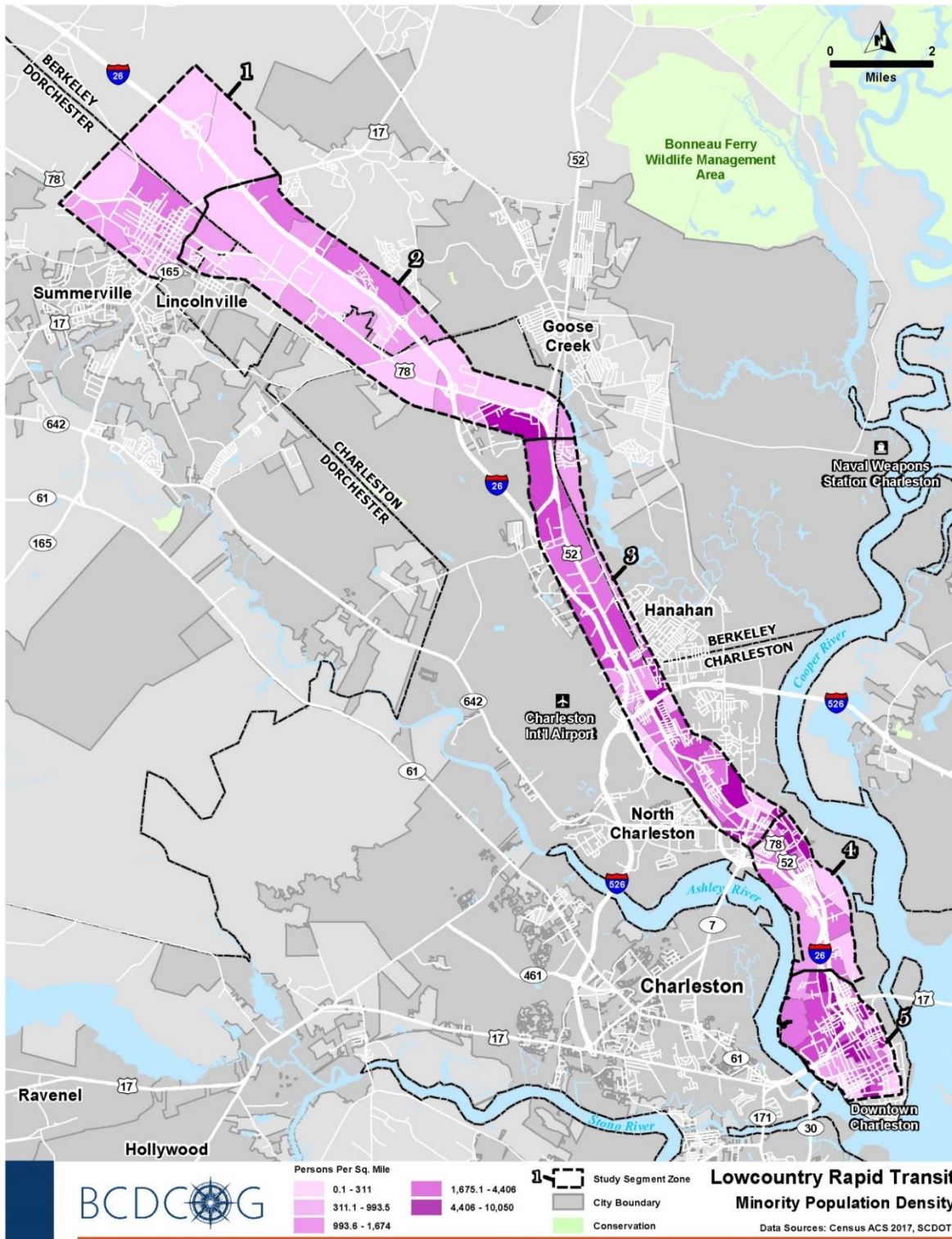


Figure A 5 Minority Population Density

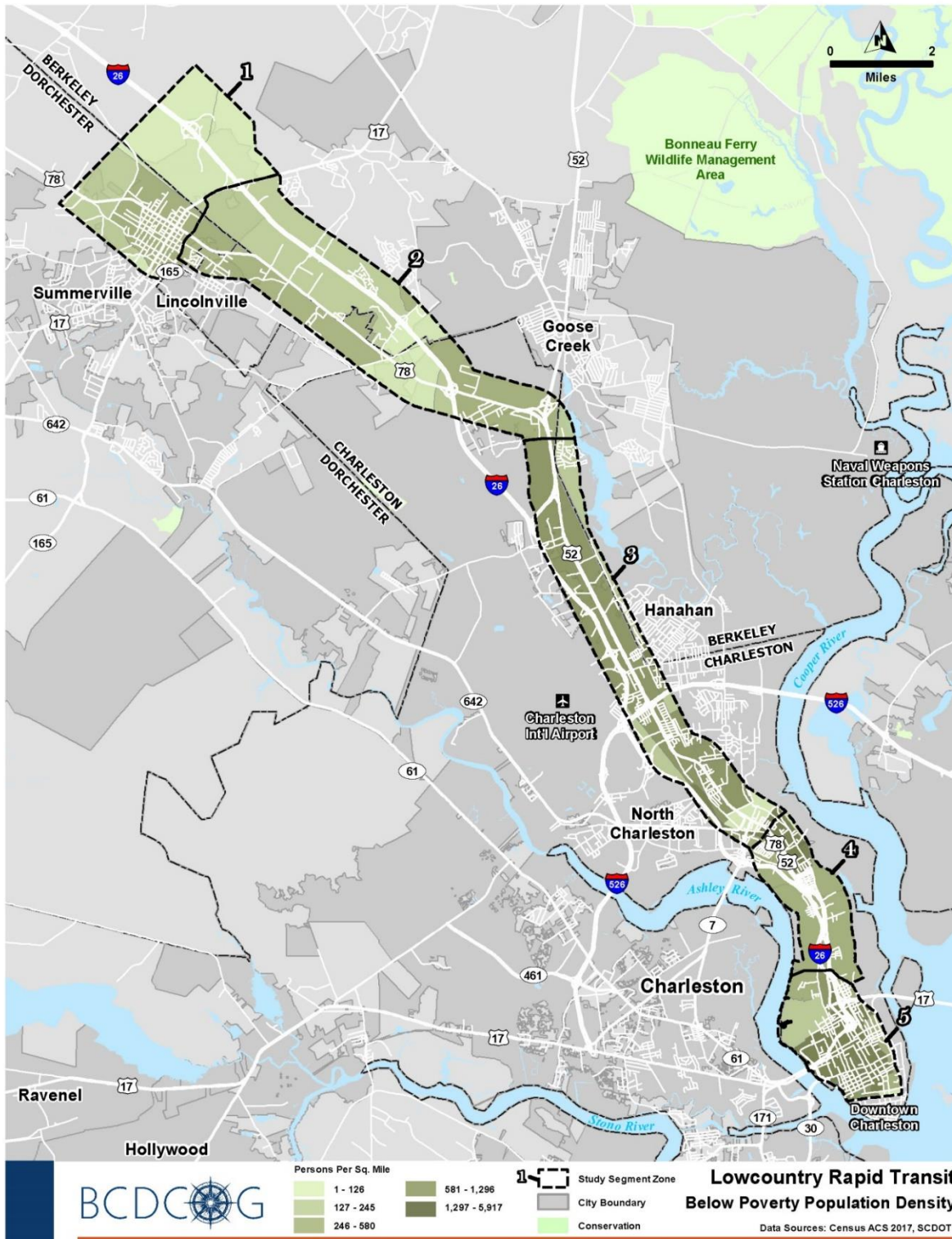


Figure A 6 Below Poverty Population Density

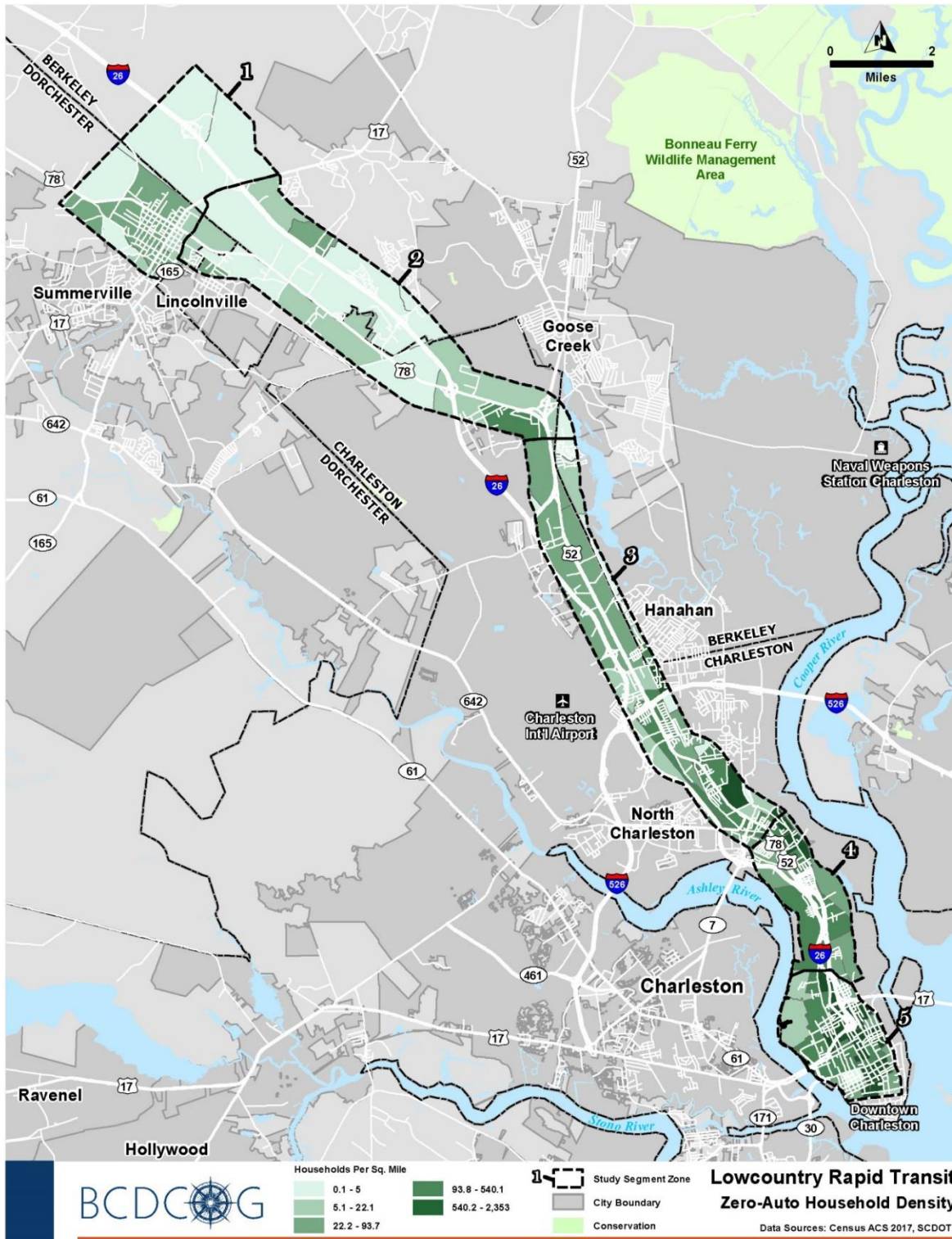


Figure A 7 Zero-Auto Household Density

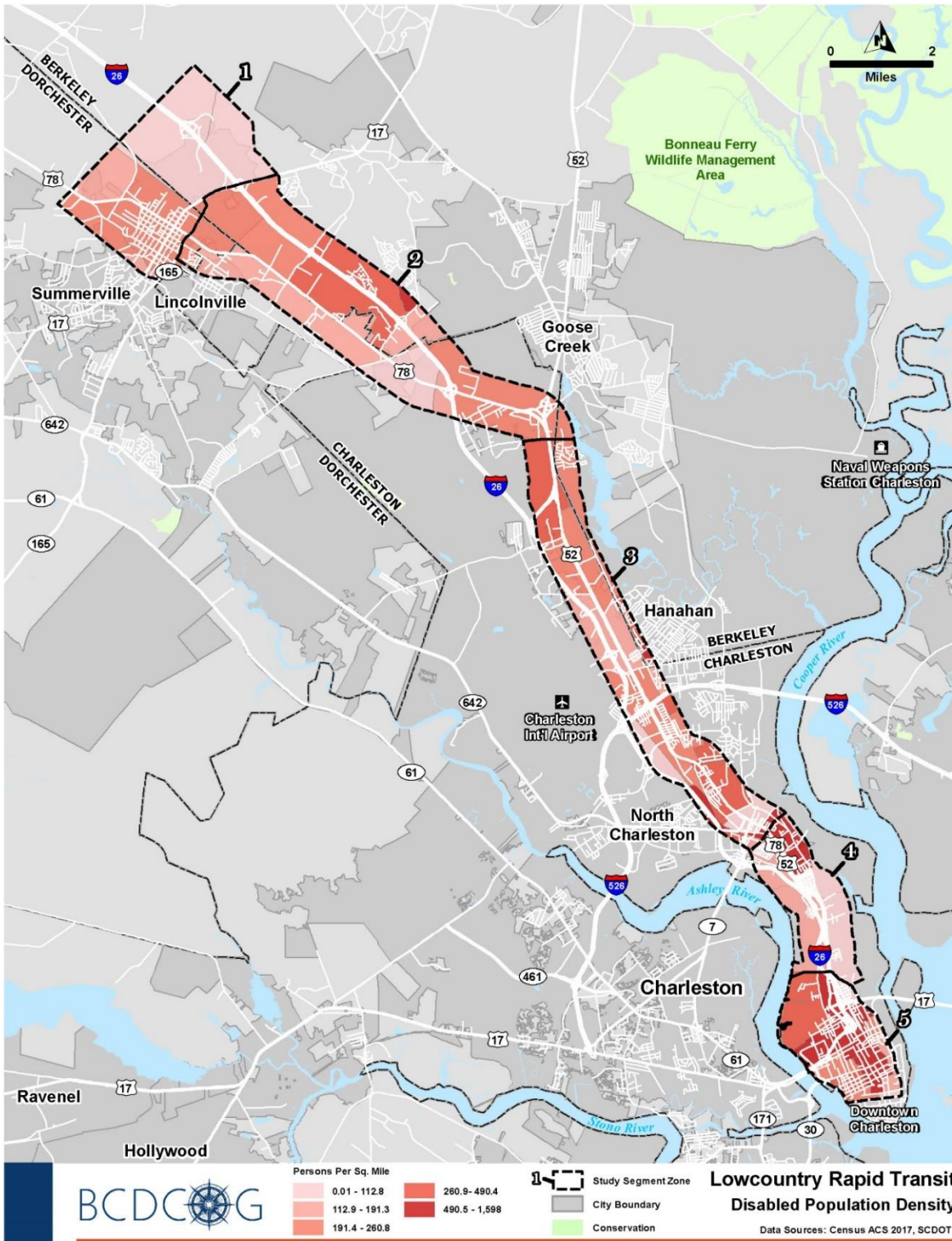


Figure A 8 Disabled Population Density

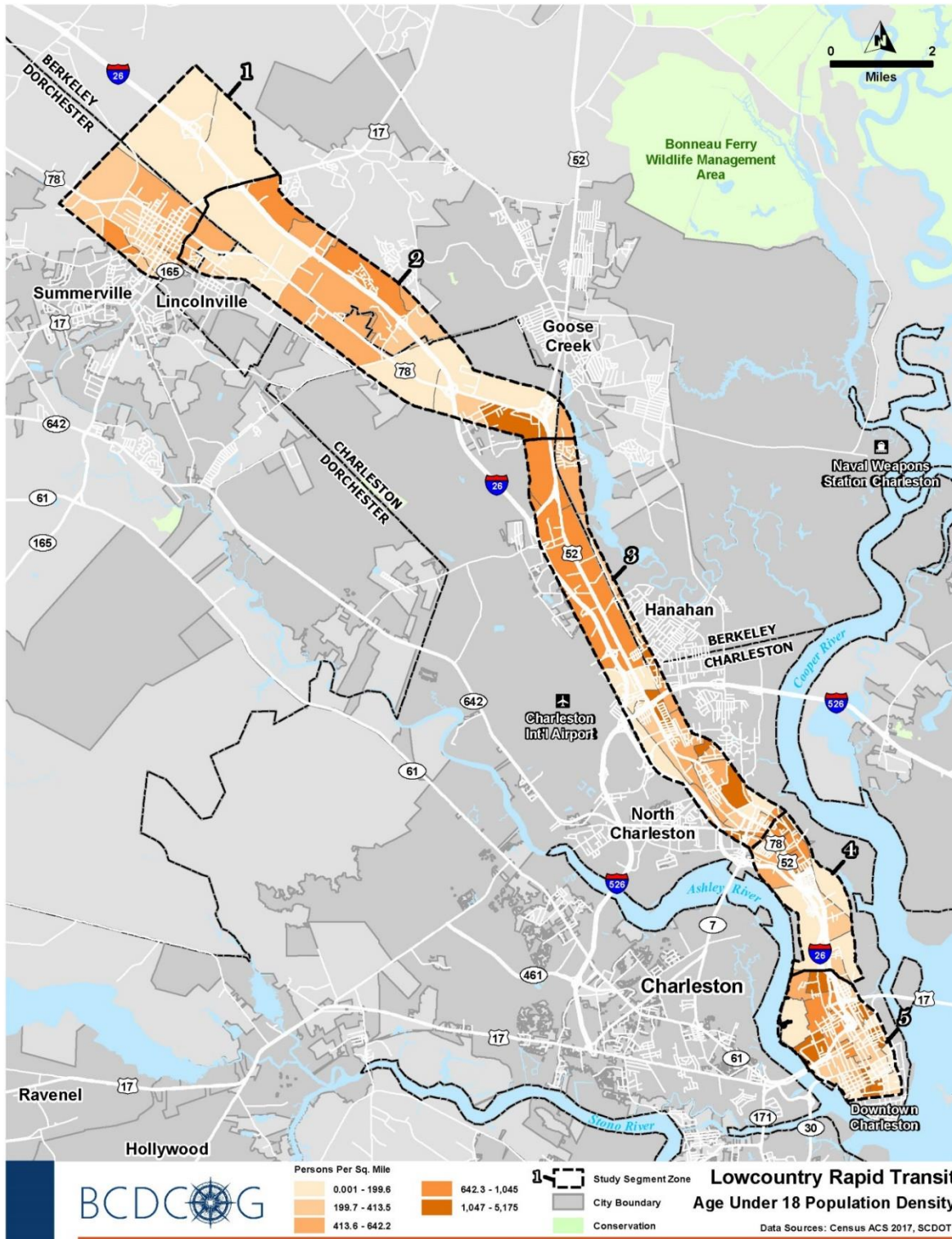


Figure A 9 Age Under 18 Population Density

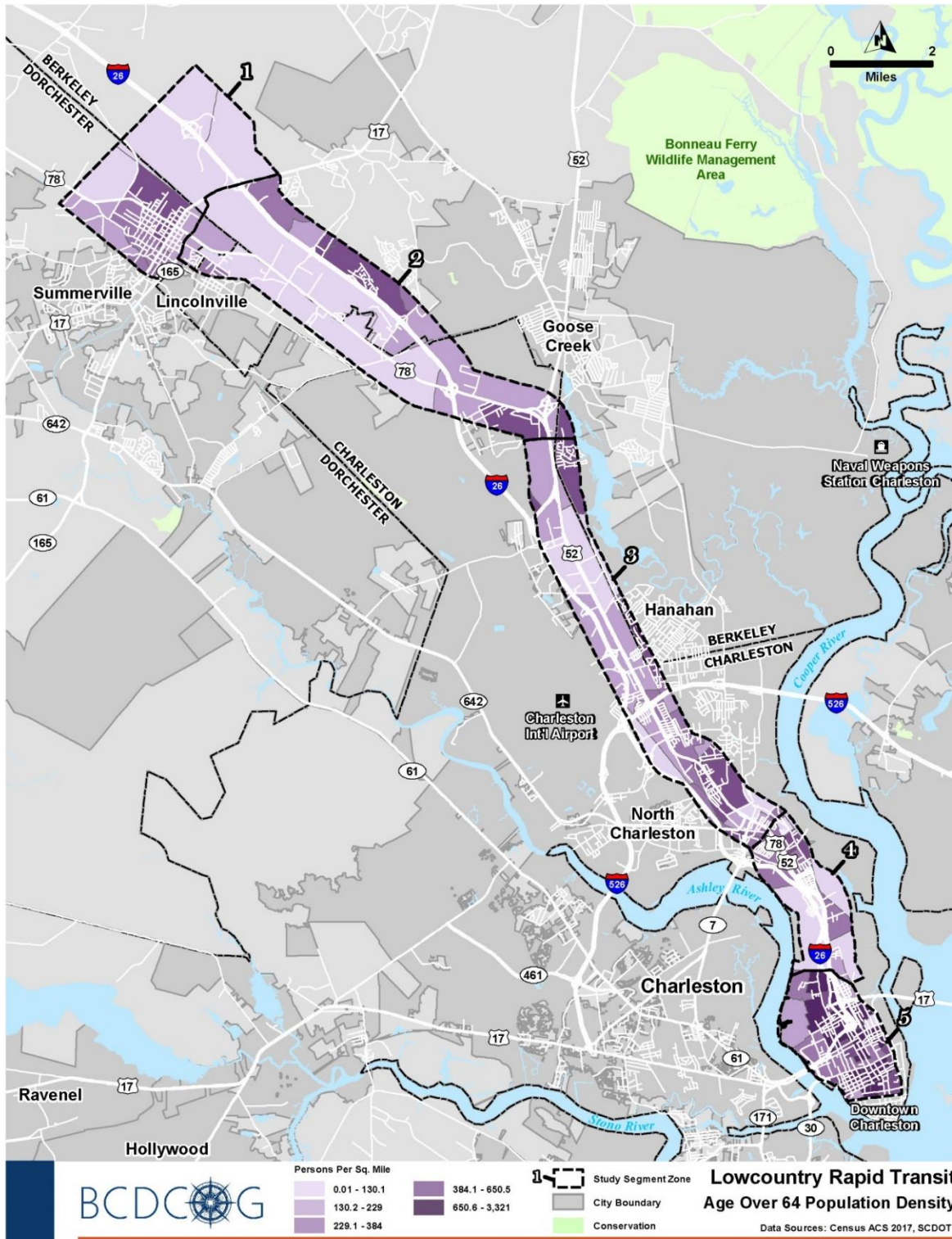


Figure A 10 Age Over 64 Population Density