This Technical Memorandum #1 for the Washington County Thoroughfare Plan provides an inventory of the existing transportation system in rural Washington County, Tennessee. Included in this inventory are descriptions of the existing roadway network, existing multi-modal facilities, existing and design year traffic, an existing year and design year capacity analysis, and a safety analysis.

Washington County Thoroughfare Plan

Technical Memorandum #1:
Transporation System Inventory

By:

THE CORRADINO GROUP
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For:

TDOT

Project Planning Division
& Washingon County, TN

August 2013

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1.0 INTRODUCTION

This Technical Memorandum #1 for the Washington County Thoroughfare Plan provides an inventory of the existing transportation system in rural Washington County, Tennessee. Included are descriptions of the existing roadway network, existing multi-modal facilities, existing and design year traffic, an existing year and design year capacity analysis, and a safety analysis. The study area includes roadways under the jurisdiction of the Washington County Highway Department. Therefore, the study area includes all of Washington County, excluding areas within the city limits of Johnson City and Jonesborough. A Vicinity Map is provided in **Figure 1.1 Vicinity Map**. All roadways within the study area that are classified as collectors and above, excluding the Interstate system, are included in this inventory. This covers over two hundred and sixty four (264) centerline miles of roadway. Interstates are excluded from the study because improvements along these routes would generally originate from the State or relevant Metropolitan Planning Organization, and not from the County. The majority of the Interstate routes are within areas that have been annexed by the city of Johnson City, but approximately four (4) miles of I-81 falls within the study area in northwest Washington County.

The Washington County Thoroughfare Plan represents a comprehensive transportation planning document for the rural portion of the county, including the analysis of the state and county maintained road systems. It will provide short- and long-term plans for improvements to the roadway infrastructure of Washington County to complement the long range planning process of the Johnson City Metropolitan Transportation Planning Organization (JCMTPO) and the Kingsport Metropolitan Transportation Planning Organization (KMTPO). JCMTPO is responsible for planning for the urbanized portion of Washington and Carter Counties, as well as part of the Town of Unicoi. KMTPO covers a small portion of northern Washington County.

The purpose of the Washington County Thoroughfare Plan is to establish a realistic set of multi-modal transportation improvements that can be prioritized and programmed between now and the design year of 2040 for rural Washington County. Analysis has taken into account where growth is occurring and where it is expected to continue to occur, based on the anticipated expansion of water and sewer infrastructure, general growth patterns, and the availability of developable land with good access. Together, the availability of piped water, sanitary sewers, and good roads provide the opportunity for development. Examining these indicators points to roadway improvements necessary to support development and encourage regional economic growth. Bicycle/pedestrian improvements will be considered in conjunction with all road improvements.

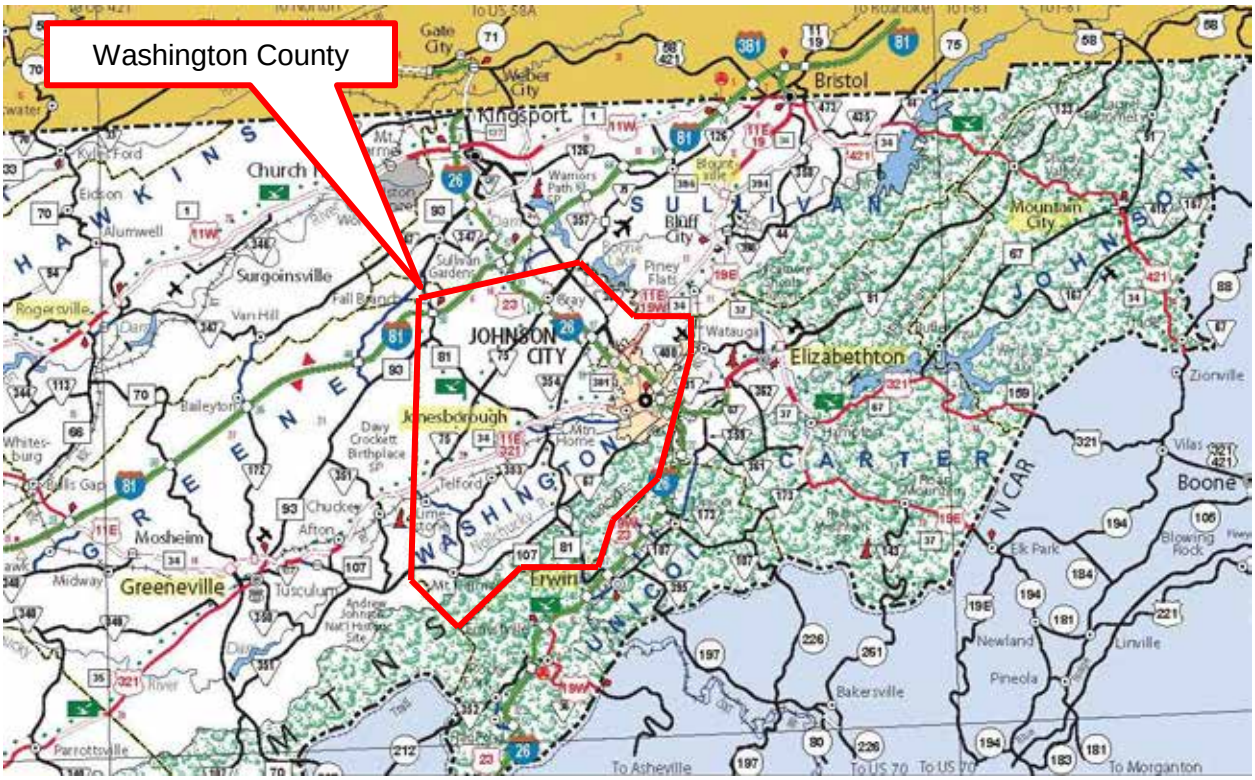

FIGURE 1.1: VICINITY MAP
Source: Official 2011 Transportation Map (Tennessee)

2.0 EXISTING TRANSPORTATION NETWORK

2.1 EXISTING ROADWAY NETWORK

The area's first roads led to Jonesborough and later Johnson City. Because Washington County has some of the oldest roads in Tennessee, many were constructed before modern design standards were developed. The dominant ridge and valley terrain means many roads follow the southwest-to-northeast alignment of the topography. Such roads are straighter and more amenable to improvement than roads that run "across the grain". The latter have more horizontal and vertical deficiencies. In addition, the topography and the long history of roadway development have led to a roadway system that has many discontinuities.

I-26 and I-81 provide the primary links beyond Washington County. I-26 has a strong unifying effect within the county and region because it cuts the grain of the topography and links Johnson City, the Gray area, and Kingsport.

There are nine (9) State Routes within the study area; SR 34 (US 11E), SR 36, SR 67, SR 75, SR 81, SR 93, SR 107, SR 353, and SR 354. All but SR 34 (US 11E) are primarily two-lane roadways. Less than thirteen (13) miles of the over two hundred and sixty-four (264) miles of roadway inventoried are multilane highways. A map of the State Routes within the study area is provided in **Figure 2.1: State Routes in Washington County**.

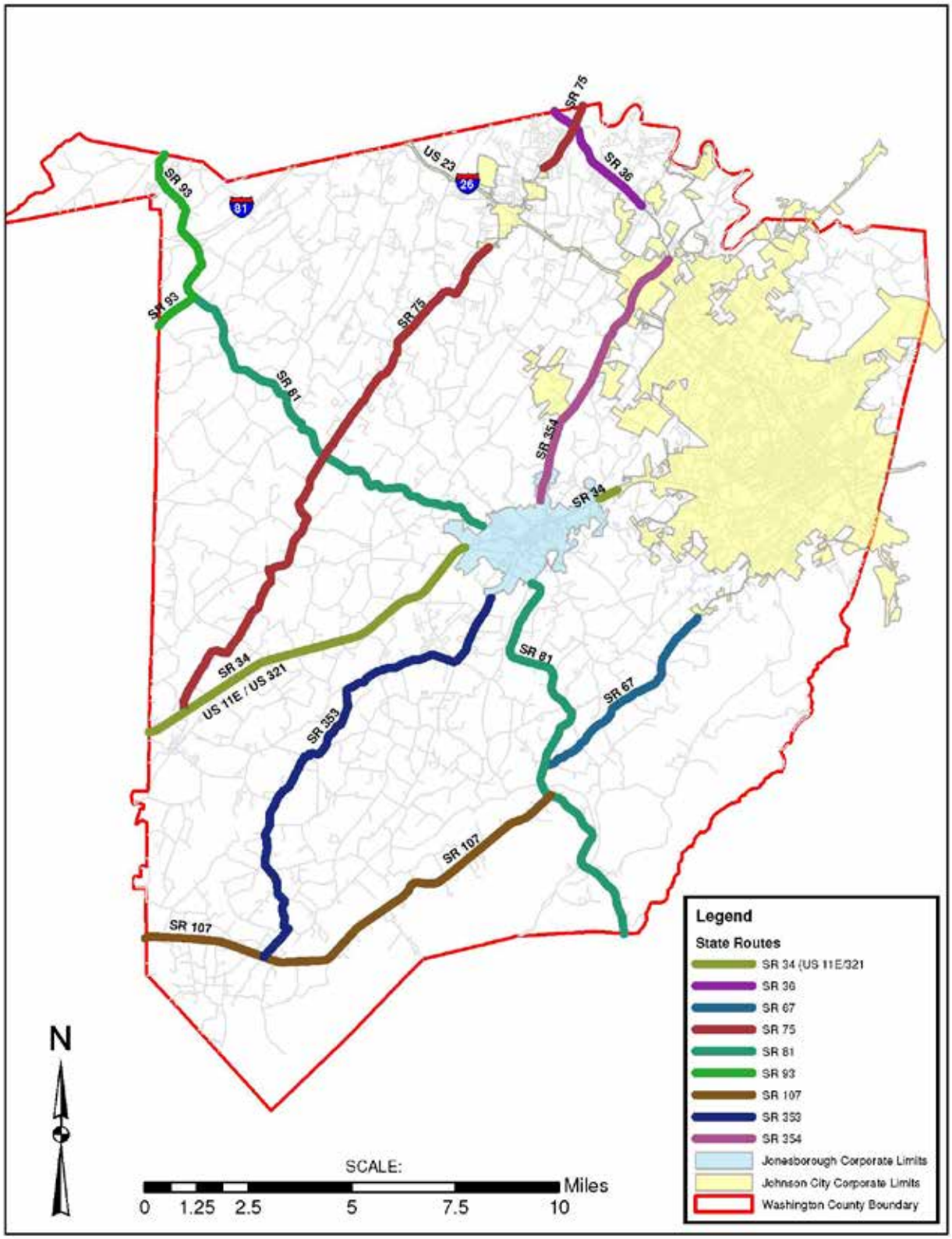

FIGURE 2.1: STATE ROUTES IN WASHINGTON COUNTY
Source: The Corradino Group

SR 34 (US 11E) is a multilane highway and is the primary east-west corridor through the middle of Washington County. SR 36 is located in the northeast corner of the county, parallel with I-26. SR 67 is a northeast-southwest route in the southeastern quadrant of the county that connects Johnson City with SR 81. It is located on the periphery of the Cherokee National Forest. SR 75 is primarily a two-lane highway that runs diagonally across the county from SR 34 (US 11E) to Gray. SR 75 includes a multilane segment in the Gray area. SR 81 is the primary north-south route through the west-central portion of the county. SR 93 is located in the northwest corner of the county. SR 107 is a northeast-southwest route located in the southwest portion of the county on the periphery of the Cherokee National Forest. SR 353 is a northeast-southwest route that connects Jonesborough with SR 107. SR 354 is a northeast-southwest route that connects the northern portion of Johnson City with Jonesborough.

The roadways within the study area are summarized below and in **Figures 2.2** through **2.12**. Detailed descriptions of each roadway segment are provided in the **Data Collection** section at the end of this Technical Memorandum.

§ As demonstrated in **Figure 2.2: Travel Lanes**, the majority of roads in the study area are two travel lanes wide. The only extensive multilane highway in the study area is SR 34 (US 11E). The terrain within the study area is rolling to mountainous. This leads to few passing zones being located within the study area.

§ As demonstrated in **Figure 2.3: Lane Width**, the majority of roads in the study area have travel lanes that are 10 feet wide or less. For comparison, a standard highway lane width is twelve (12) feet.

§ As demonstrated in **Figure 2.4: Shoulder Width**, the majority of the roads in the study area have shoulders that are three (3) feet or less in width. The paved portion of the shoulders is generally narrower. Paved shoulder widths of four (4) feet are recommended to accommodate bicyclists, and shoulder widths of ten (10) feet are needed to accommodate disabled vehicles, to allow a vehicle to pull off the road to allow emergency vehicles to pass, or to allow vehicles to safely pass mail delivery vehicles.

§ As demonstrated in **Figure 2.5: Speed Limit**, the speed limits of the roads in the study area are generally forty-five (45) miles per hour or lower. Additionally, the terrain within the study area is rolling hills to mountainous. This leads to the majority of the roadways having sharp horizontal and vertical curves. Supplemental speed signs with slower recommended speeds are located generously throughout the study area. Therefore, the actual safe travel speed along the majority of the roadways is considerably less than the posted speed limits.

§ As demonstrated in **Figure 2.6: Right-of-Way Width**, the width of existing Right-of-Way (ROW) varies considerably throughout the study area, from thirty (30) feet to three hundred (300) feet. In general, at least thirty-six (36) feet of ROW is needed to provide a low-speed, ten (10) foot, clear zone along both sides of a two-lane roadway. At least forty-four (44) feet of ROW is needed to provide a high speed, thirty (30) foot, clear zone along both sides of a two-lane roadway. At least one hundred and forty (140) feet of ROW is needed for a divided highway.

§ Horizontal curves that have estimated safe travel speeds ten (10) miles per hour or less below the posted speed limit are mapped in **Figure 2.7: Horizontal Curve Speed Differential**. Curves with high speed differentials compared to the posted speed limit are a safety concern because unfamiliar drivers will likely attempt to negotiate the curve at a faster

speed than its design allows. This will lead to a higher occurrence of vehicles departing the roadway. More than twenty-five percent (25%) of fatal crashes are associated with a horizontal curve, and the vast majority of these crashes are roadway departures[1]. The curve radius information for the roadways in Washington County was accessed from TDOT's TRIMS GIS database. It was assumed for planning purposes that each curve has a superelevation of six (6) percent. Utilizing AASHTO Guidance, the safe travel speed of each curve was calculated. The safe travel speed of the curves was compared to the posted speed limit along each route. The curves with high speed differentials are located throughout Washington County, with a concentration along SR 81 north of Jonesborough. Horizontal curve data are provided in the **Data Collection** section at the end of this Technical Memorandum.

§ Safe vehicular operations speed based upon stopping sight distance (SSD) was provided by TDOT via their TRIMS GIS database. Locations that have estimated safe travel speeds ten (10) miles per hour or less below the posted speed limit are mapped in **Figure 2.8: Stopping Sight Distance Speed Differential**. Locations with high SSD speed differentials from the posted speed limit are a safety concern because the sight distance at every point along a roadway should be at least that needed for a driver or vehicle to stop. The locations with high SSD speed differentials are located throughout Washington County. SSD data are provided in the **Data Collection** section at the end of this Technical Memorandum.

§ The horizontal curve data and SSD data, discussed above, are mapped on **Figure 2.9: Horizontal Curve & Stopping Sight Distance Speed Differential.**

§ There are no (0) signalized intersections in the unincorporated area of Washington County, which excludes Jonesborough and Johnson City, but includes the unincorporated community of Gray. One (1) signalized intersection location is planned for completion in 2014 and is mapped in **Figure 2.10: Signalized Intersections in Washington County**. It is listed in **Table 2.1: Signalized Intersections in Washington County**. It will be maintained by Johnson City.

TABLE 2.1: SIGNALIZED INTERSECTIONS IN WASHINGTON COUNTY

Map #	Mainline	Crossroad
1	SR 36 (Kingsport Highway)	Oak Grove Road

Source: The Corradino Group

§ The Functional Classification of the roadways is mapped in **Figure 2.11: Functional Classification Map** and **Figure 2.12: Functional Classification Inset**. SR 34 is classified as a Rural Other Principal Arterial outside of Johnson City's Urbanized Area Boundary (UAB) and as an Urban Other Principal Arterial within the UAB. In general, all the other State Routes within the study area are classified as either a Rural Minor Arterial or a Rural Major Collector outside of the UAB and as Urban Minor Arterials within the UAB. All of the non-State Routes are Rural Minor Collectors outside of the UAB and Urban Collectors within the UAB.

[1] Federal Highway Administration, Horizontal Curve Safety, http://safety.fhwa.dot.gov/roadway_dept/horicurves/

In summary, there are few high-speed roads in the study area. SR 34 (US 11E) is the only high-speed multilane facility outside of the Johnson City Urban Growth Boundary. SR 34 (US 11E) is an east-west route that bisects the county. There is no high-speed north-south route in the western half of the county. There are few bicycle or pedestrian-friendly routes in the study area. Many locations have safe operational speeds, based upon horizontal curvature and stopping sight distance, below the posted speed limits.

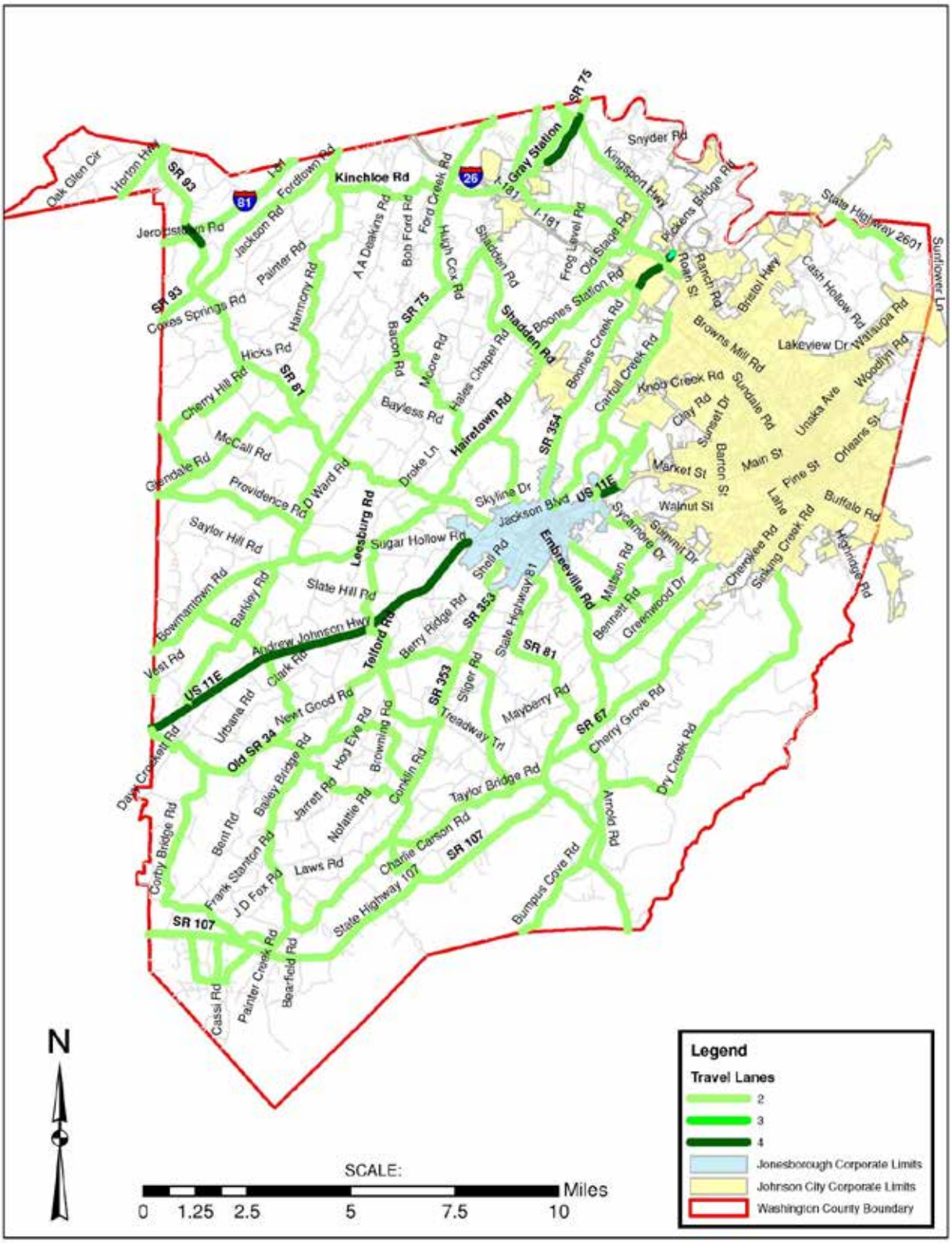

FIGURE 2.2: TRAVEL LANES
Source: The Corradino Group with Data from TDOT's TRIMS Database

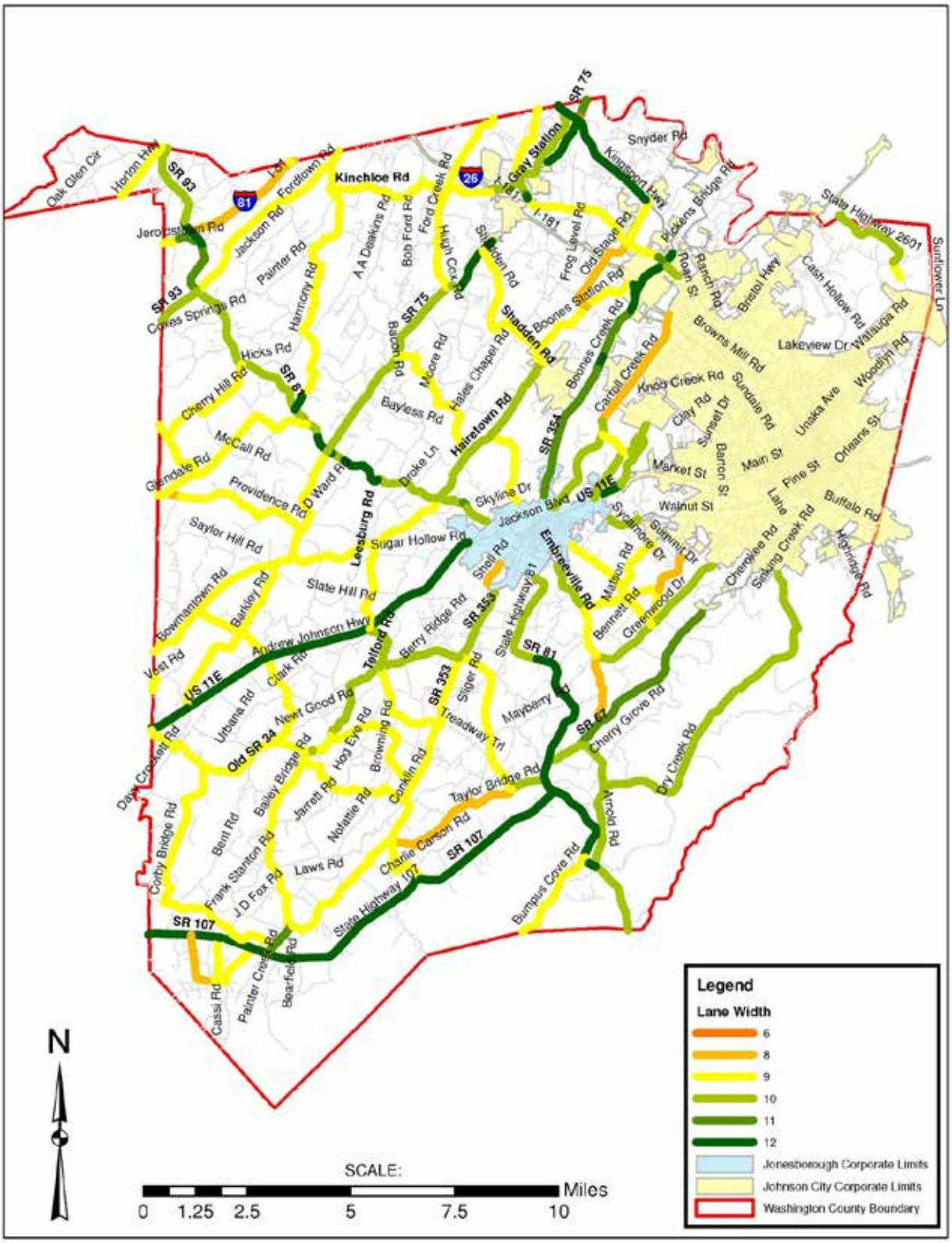

FIGURE 2.3: LANE WIDTH
Source: The Corradino Group with Data from TDOT's TRIMS Database

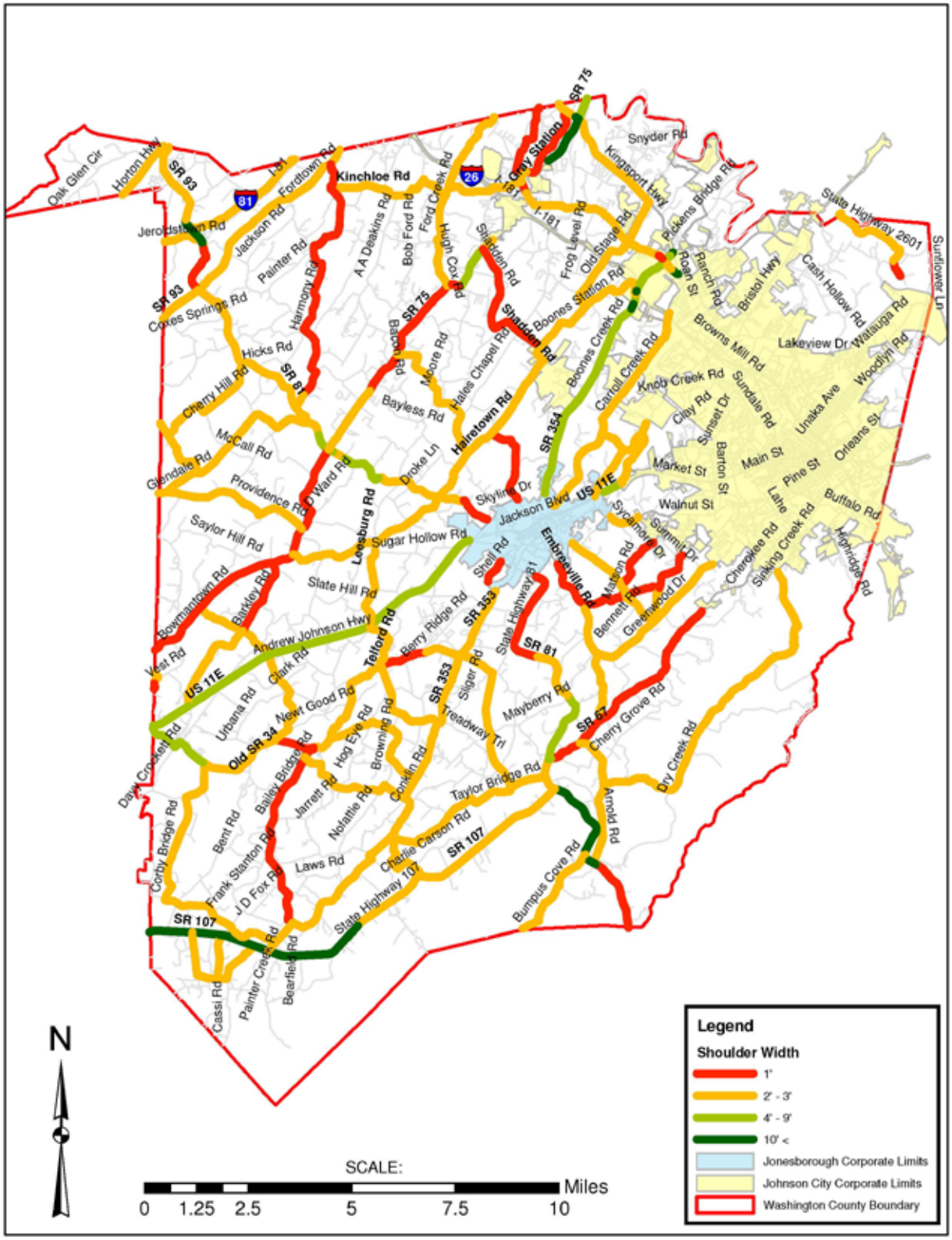

FIGURE 2.4: SHOULDER WIDTH
Source: The Corradino Group with Data from TDOT's TRIMS Database

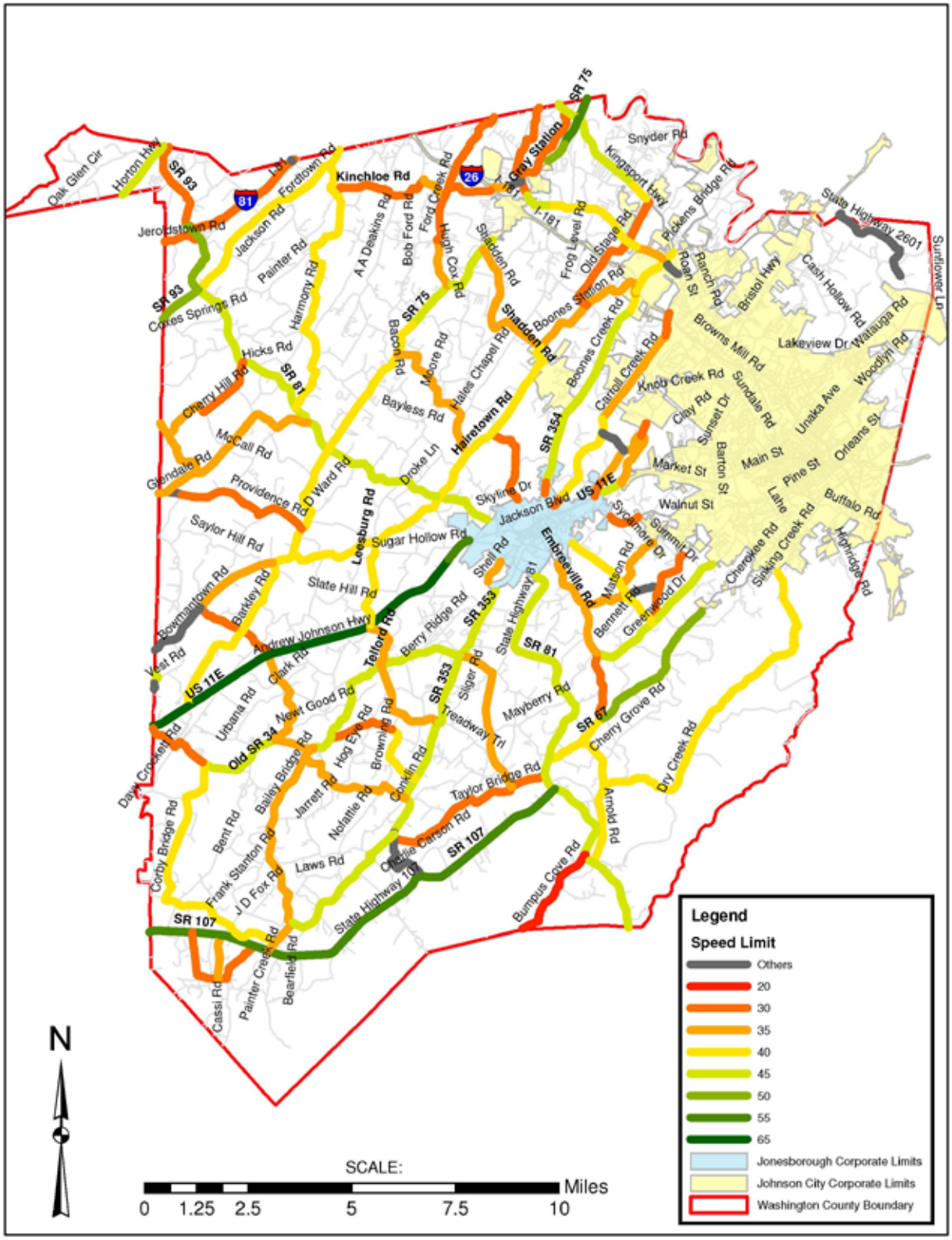

FIGURE 2.5: SPEED LIMIT
Source: The Corradino Group with Data from TDOT's TRIMS Database

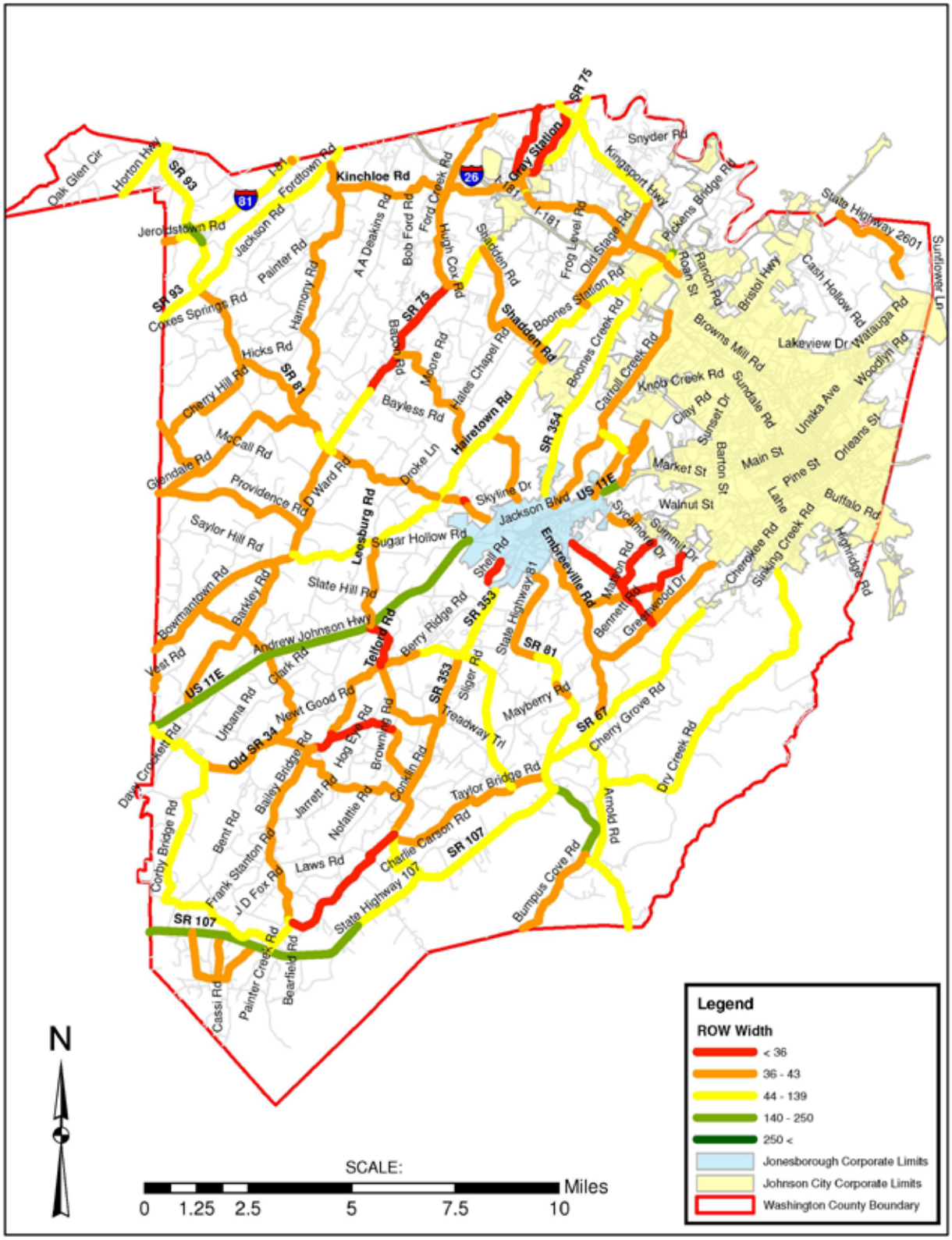

FIGURE 2.6: RIGHT-OF-WAY WIDTH
Source: The Corradino Group with Data from TDOT's TRIMS Database

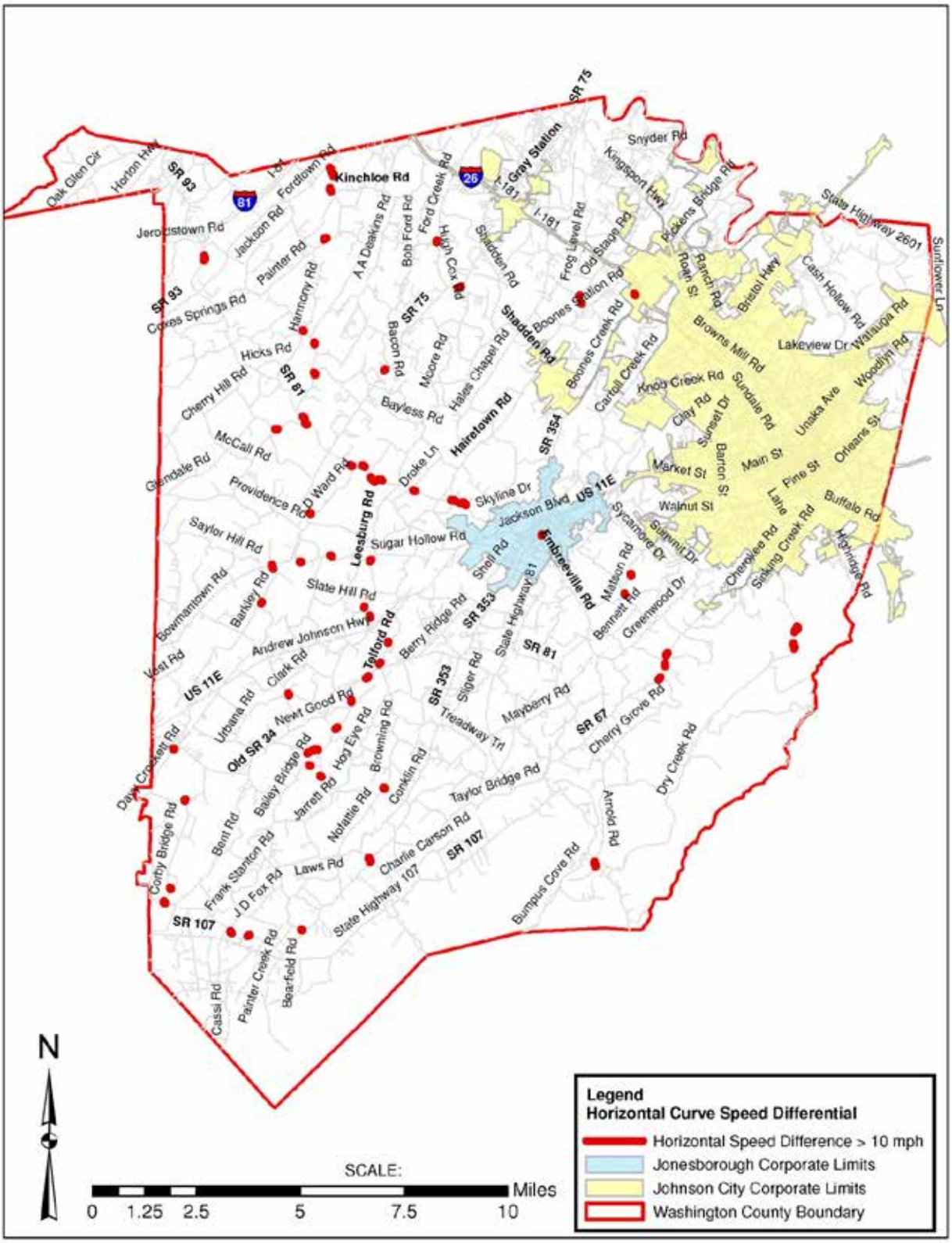

FIGURE 2.7: HORIZONTAL CURVE SPEED DIFFERENTIAL
Source: The Corradino Group with Data from TDOT's TRIMS Database

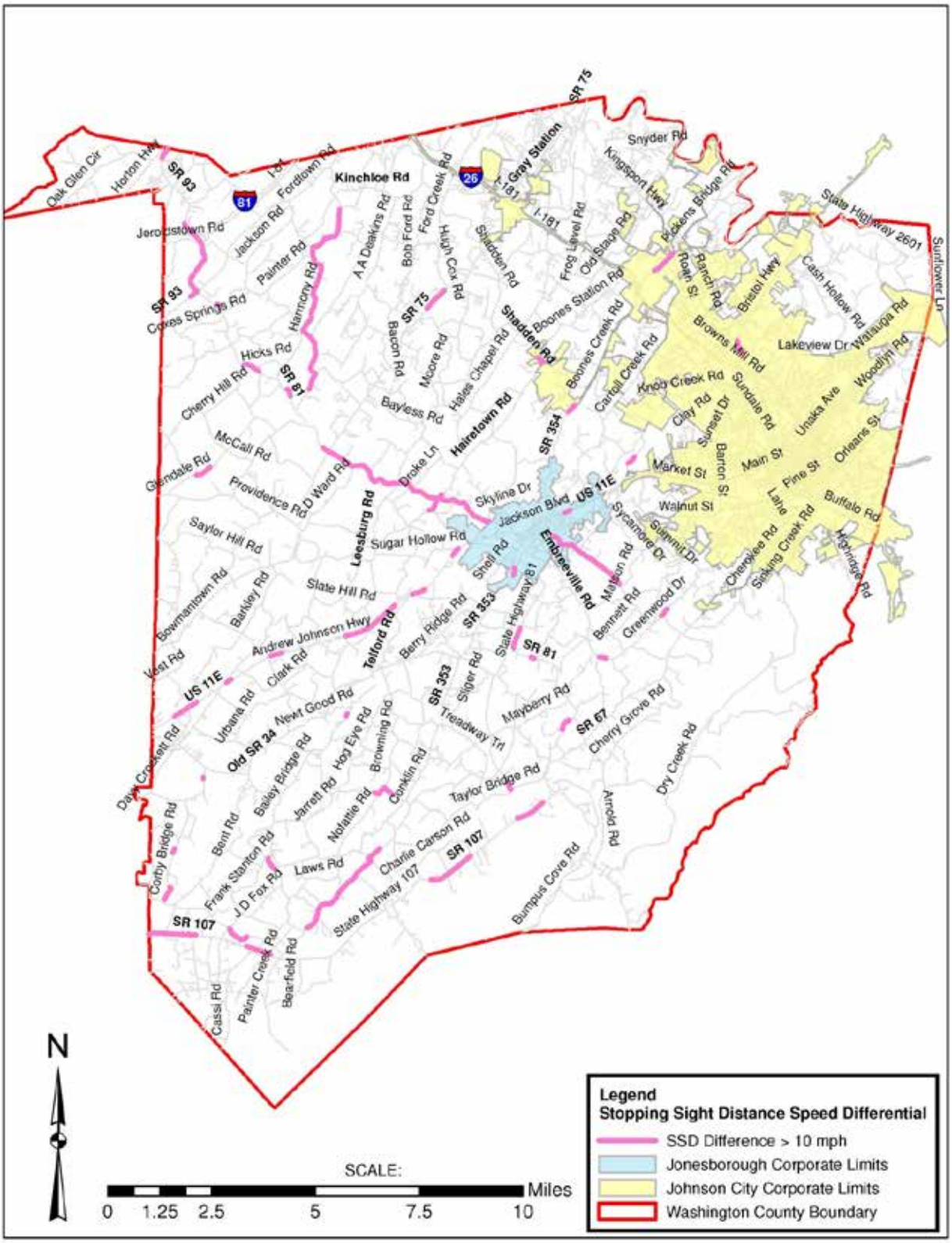

FIGURE 2.8: STOPPING SIGHT DISTANCE SPEED DIFFERENTIAL
Source: The Corradino Group with Data from TDOT's TRIMS Database

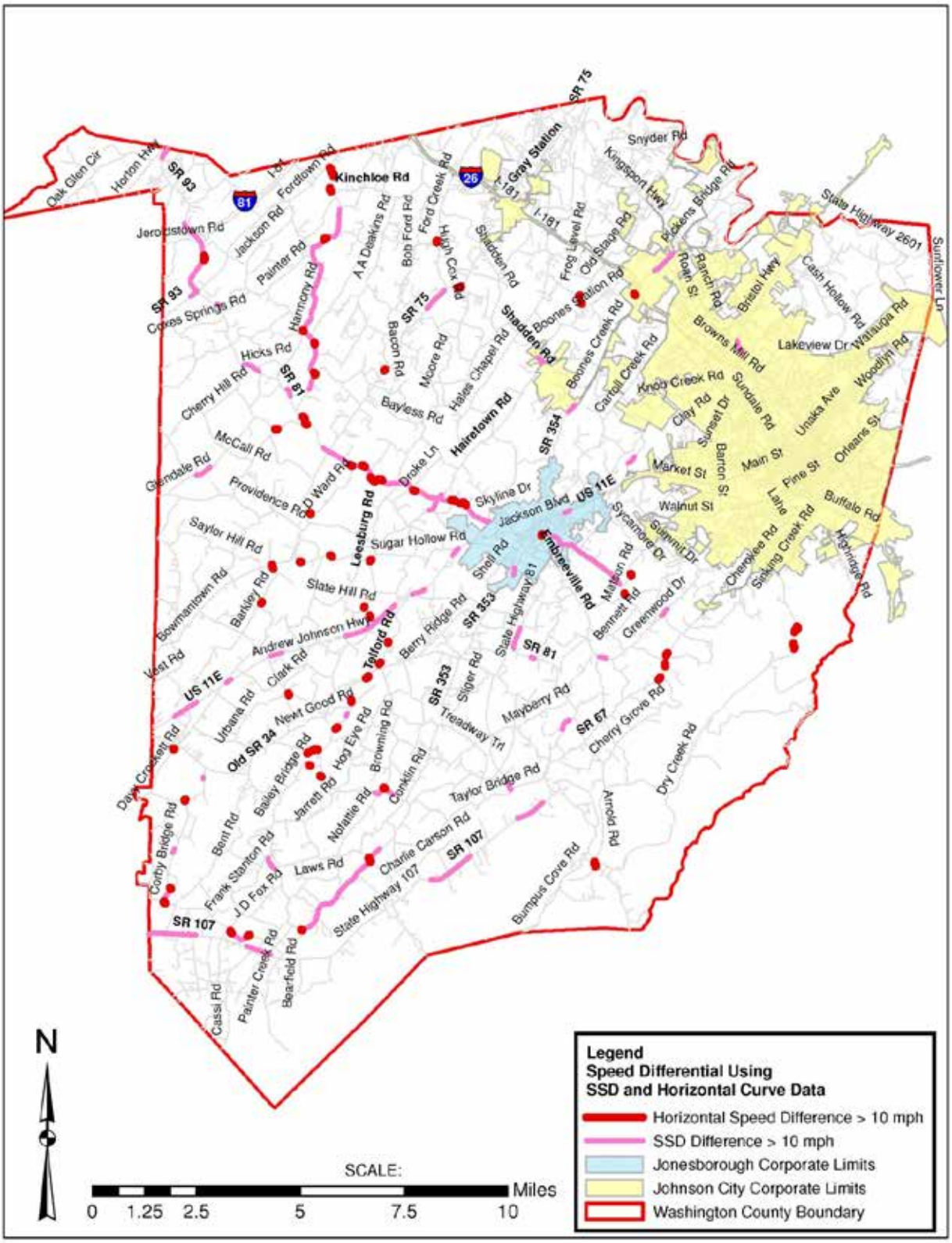

FIGURE 2.9: HORIZONTAL CURVE & STOPPING SIGHT DISTANCE SPEED DIFFERENTIAL
Source: The Corradino Group with Data from TDOT's TRIMS Database

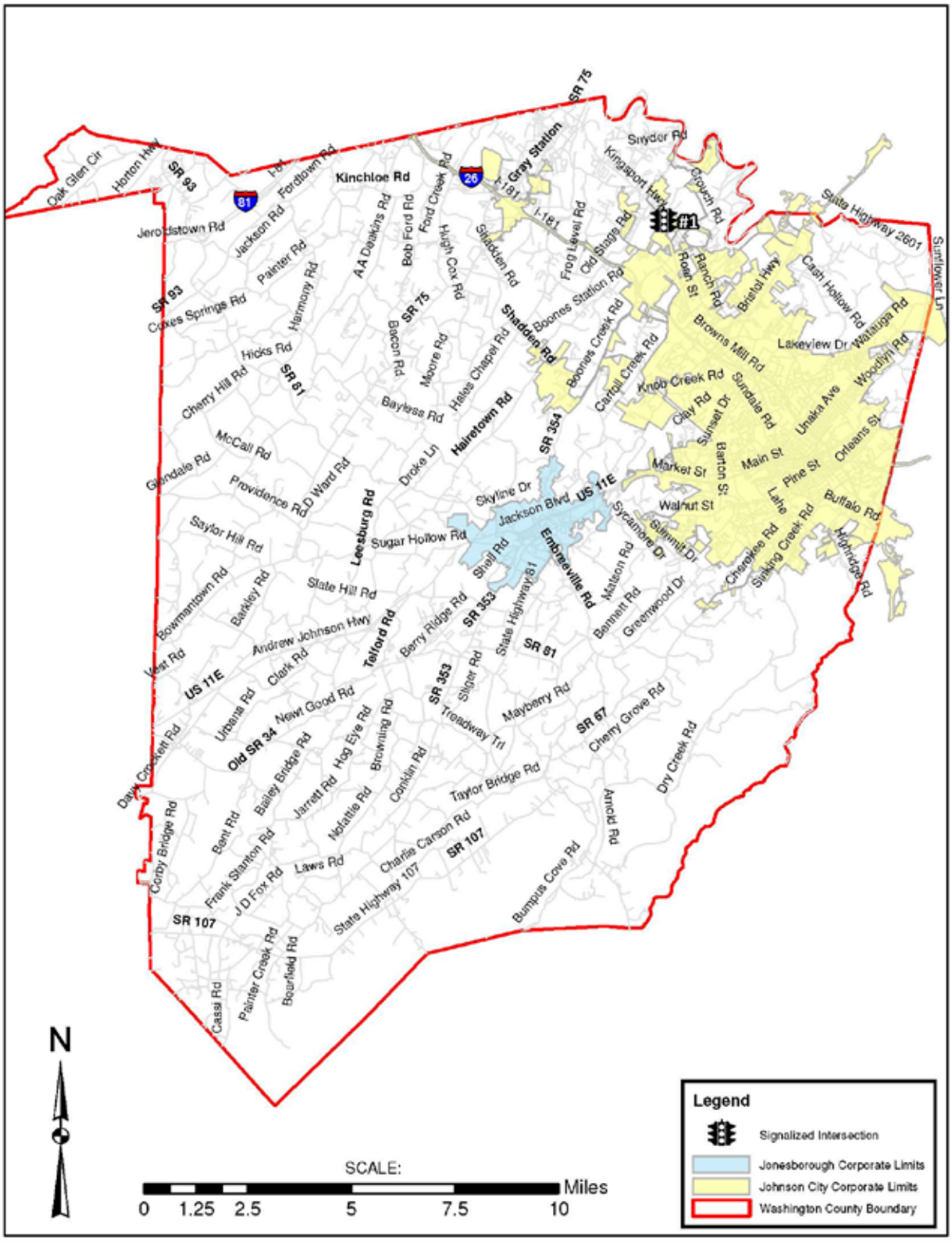

FIGURE 2.10: SIGNALIZED INTERSECTIONS IN WASHINGTON COUNTY
Source: The Corradino Group

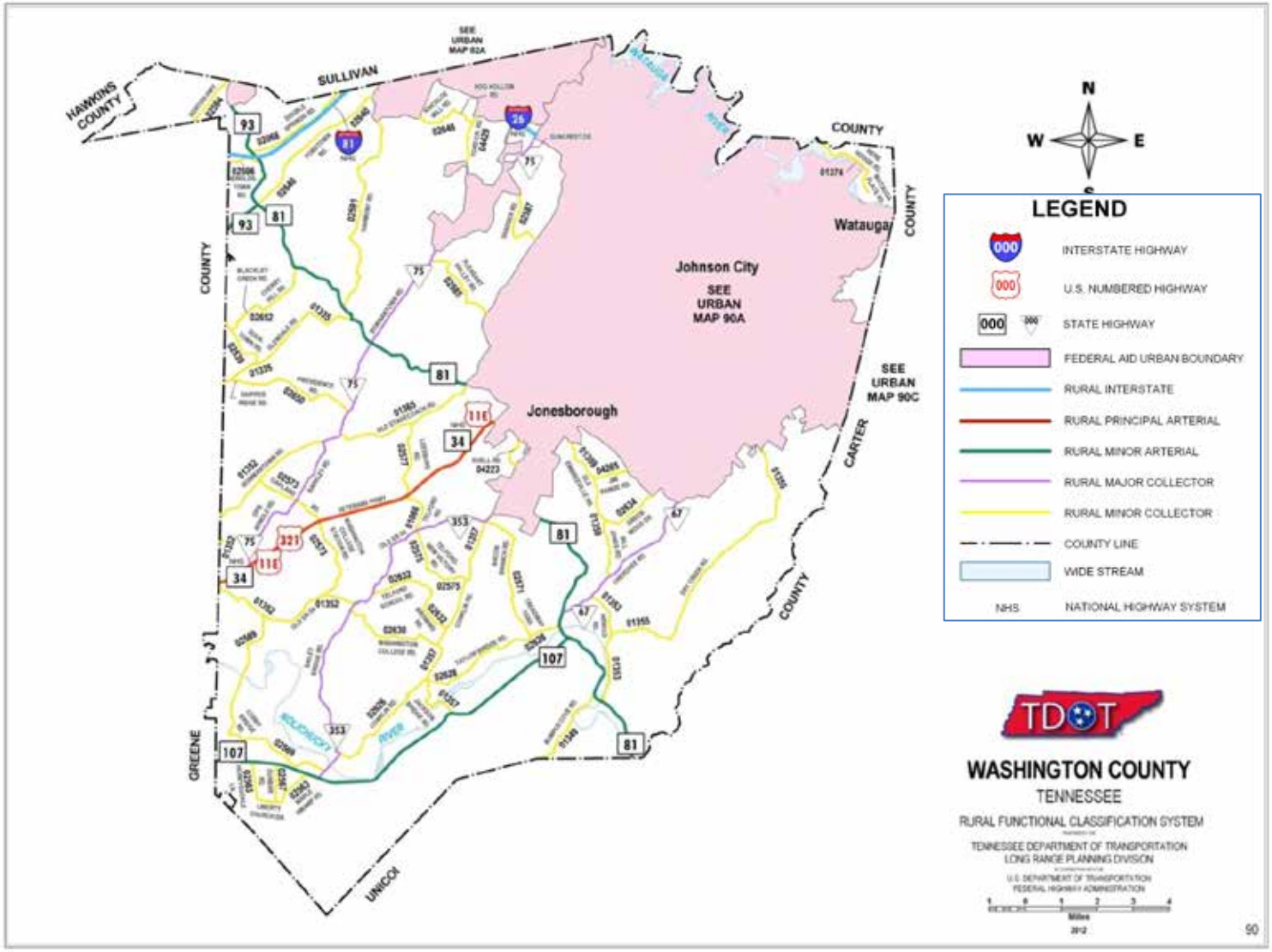

FIGURE 2.11: FUNCTIONAL CLASSIFICATION MAP
Source: TDOT Long Range Planning Division

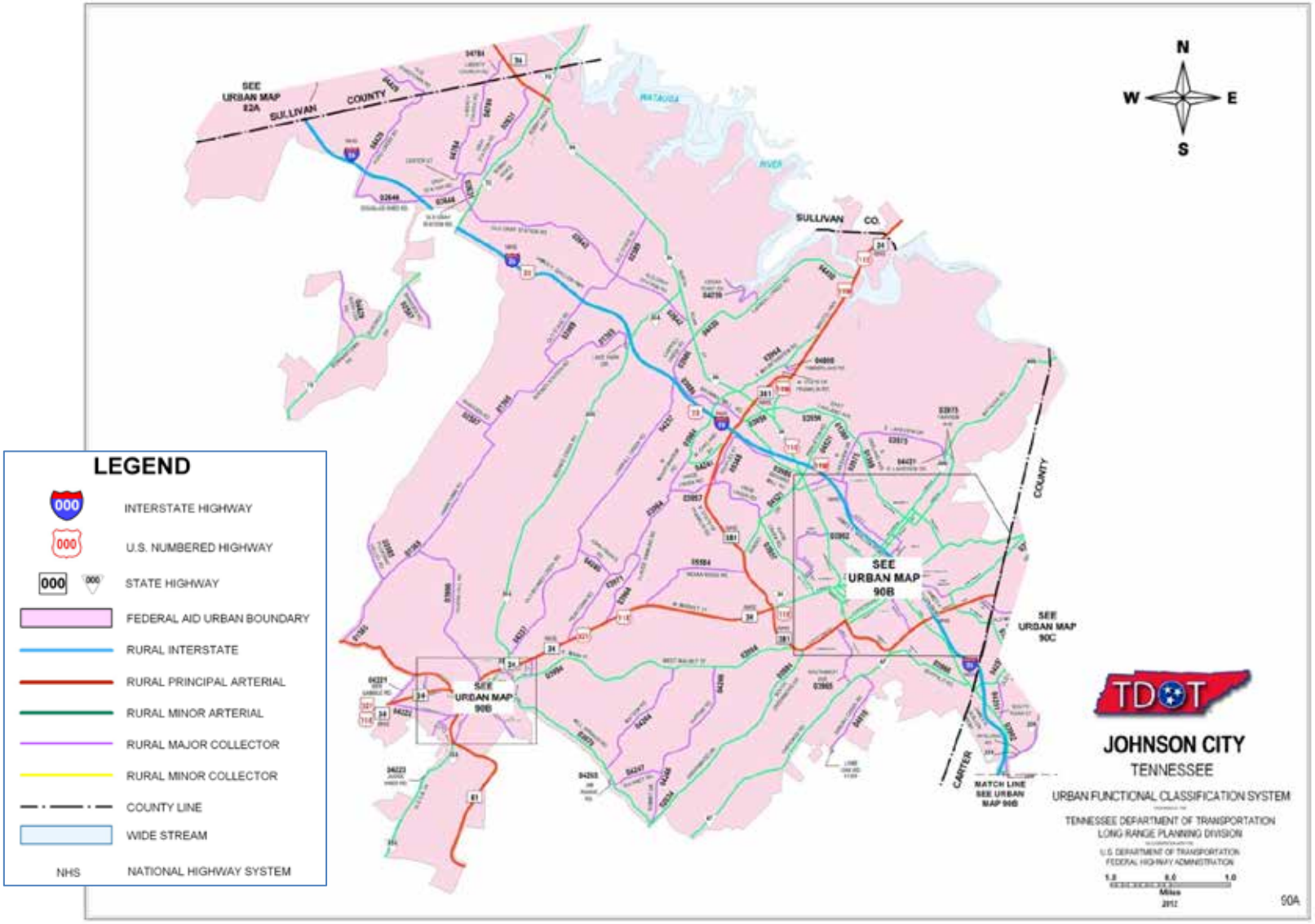

FIGURE 2.12: FUNCTIONAL CLASSIFICATION INSET
Source: TDOT Long Range Planning Division

2.2 EXISTING MULTI-MODAL NETWORK

Pedestrian facilities, bikeways, airports, rail networks, intermodal facilities, transit, and inland waterways are discussed in the following sections. The multimodal facilities are mapped in **Figure 2.13: Bikeways** and **Figure 2.15: Multimodal Facilities**.

2.2.1 Pedestrian Facilities

There are few pedestrian facilities in rural Washington County. The need for pedestrian facilities is generally limited by the rural nature of the study area. In general, the need is concentrated near a few generators, including churches and schools.

2.2.2 Bikeways

Existing and planned bicycle facilities in rural Washington County include:

- A section of the Kingsport MTPO's "Proposed Secondary Loop" that dips into Washington County along the north edge of I-81 (on Double Springs Road), then follows SR 93 north through Fall Branch; and,
- "Trails" for pedestrian and bicycle use in the Transportation Element of Johnson City's Comprehensive Plan. Many of these trails are proposed at this point (**See Figure 2.13: Bikeways**). Three (3) proposed routes extend into the county southwest towards Jonesborough along SR 354, SR 34, and Old Jonesborough Road; and,
- A series of TDOT mapped "Mountain Trails." These have been marked with bike route signage, and TDOT's web site offers route descriptions.[2]
    - Route A5 meanders over a dozen roads through south Washington County from Davy Crockett Road at the Greene County line to Jonesborough.
    - Route B1 begins in Jonesborough and connects north via Tavern Hill Road to Route B2, which continues north along Hairetown Road, Shadden Road Douglas Shed Road and Hog Hollow Road; and
    - Route B5 which connects Erwin in Unicoi County with Jonesborough via SR 81 (along the Nolichucky River), and a number of roads, including, Arnold Road, Cherry Grove Road, and Old Embreeville Road.
- A proposed Chattanooga to Mountain City State Bike Route that follows SR 34 and SR 400 across Washington County.

TDOT's "Bicycle and Pedestrian Policy"[3] calls for integration of bicycle and pedestrian facilities into new construction and reconstruction through design features appropriate for the context and function of the transportation facility. TDOT's Long Range Plan "Pedestrian and Bicycle Element"[4] calls for 4-foot shoulders for roads carrying more than 2,000 vehicles a day at speeds of 35 mph, but does not speak directly to roads carrying fewer vehicles. Where speeds exceed 50 mph, the shoulders should be eight (8) feet. Based upon these design criteria, the rural highways and local roads in Washington County are generally not suitable for use by bicyclists. In general the shoulder widths in the rural portions of the county are less than two (2) feet wide and the speed limits are 40 mph or greater.

[2] http://www.tdot.state.tn.us/bikeped/routes.htm
[3] http://www.tdot.state.tn.us/bikeped/pdfs/policy.pdf
[4] http://www.tdot.state.tn.us/plango/pdfs/plan/BicyclePed.pdf

TDOT has developed a Bicycle Level of Service (BLOS) analysis of State Routes throughout Tennessee. The analysis is provided in the "Update of Tennessee's State Bicycle Route Plan[5]." The analysis considers roadway characteristics such as lane width, shoulder width, speed limit, average daily traffic volume (ADT), and number of trucks on the roadway segment. These characteristics are each weighted differently based on the research conducted for the *Highway Capacity Manual 2010*. BLOS scores range from A to F. General characteristics of each BLOS score are demonstrated in **Table 2.2: Bicycle Level of Service (BLOS)**.

The BLOS results of TDOT's analysis in Washington County are shown in **Figure 2.14: Washington County BLOS**. This analysis can be used to identify the State Highways that make the best connection between destinations. BLOS not only shows where cycling is acceptable today, but also where roadway improvements are required to provide a safe cycling route on the desired state highway bicycle route system.

[5] http://www.tdot.state.tn.us/bikeped/plan.htm

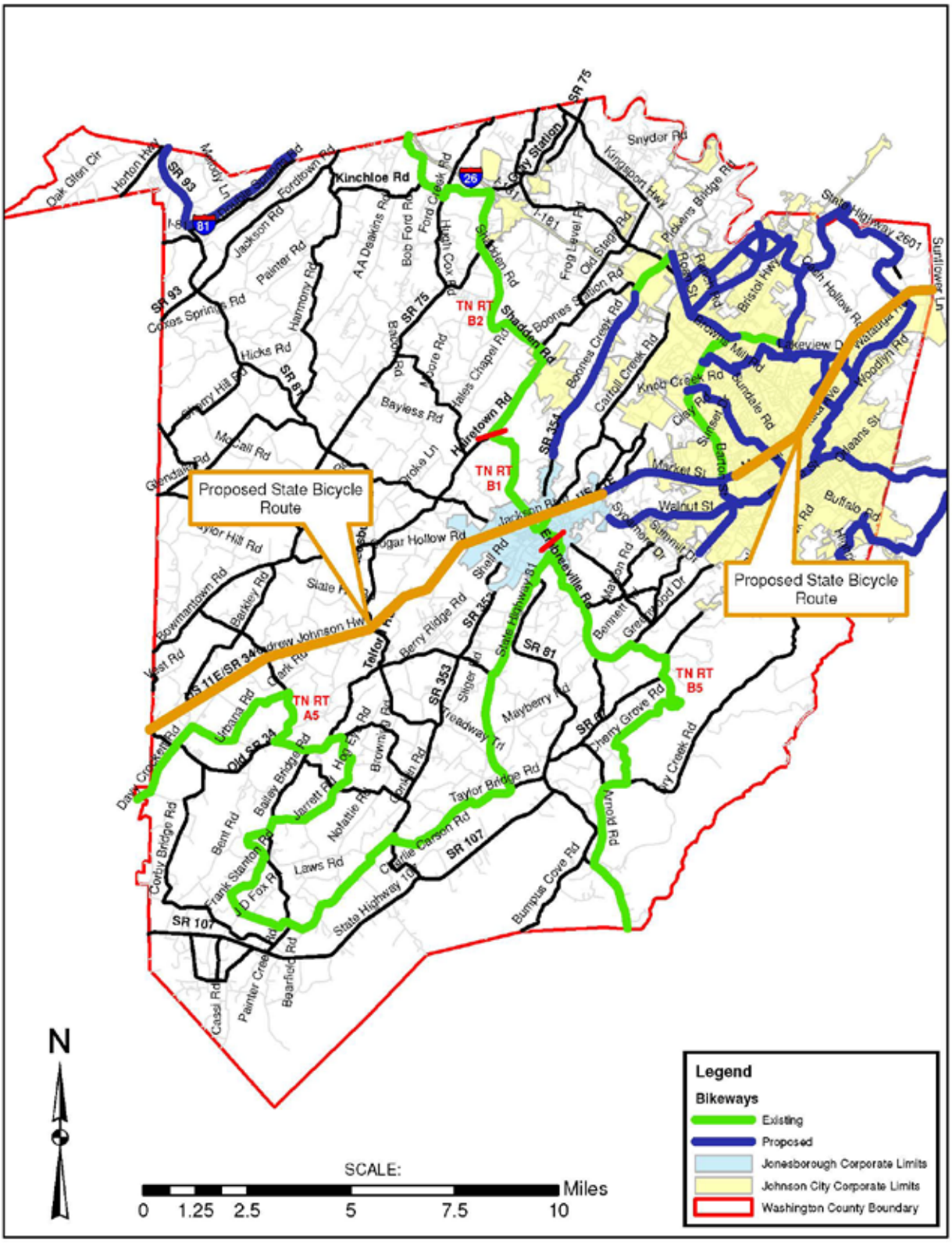

FIGURE 2.13: BIKEWAYS
Source: The Corradino Group

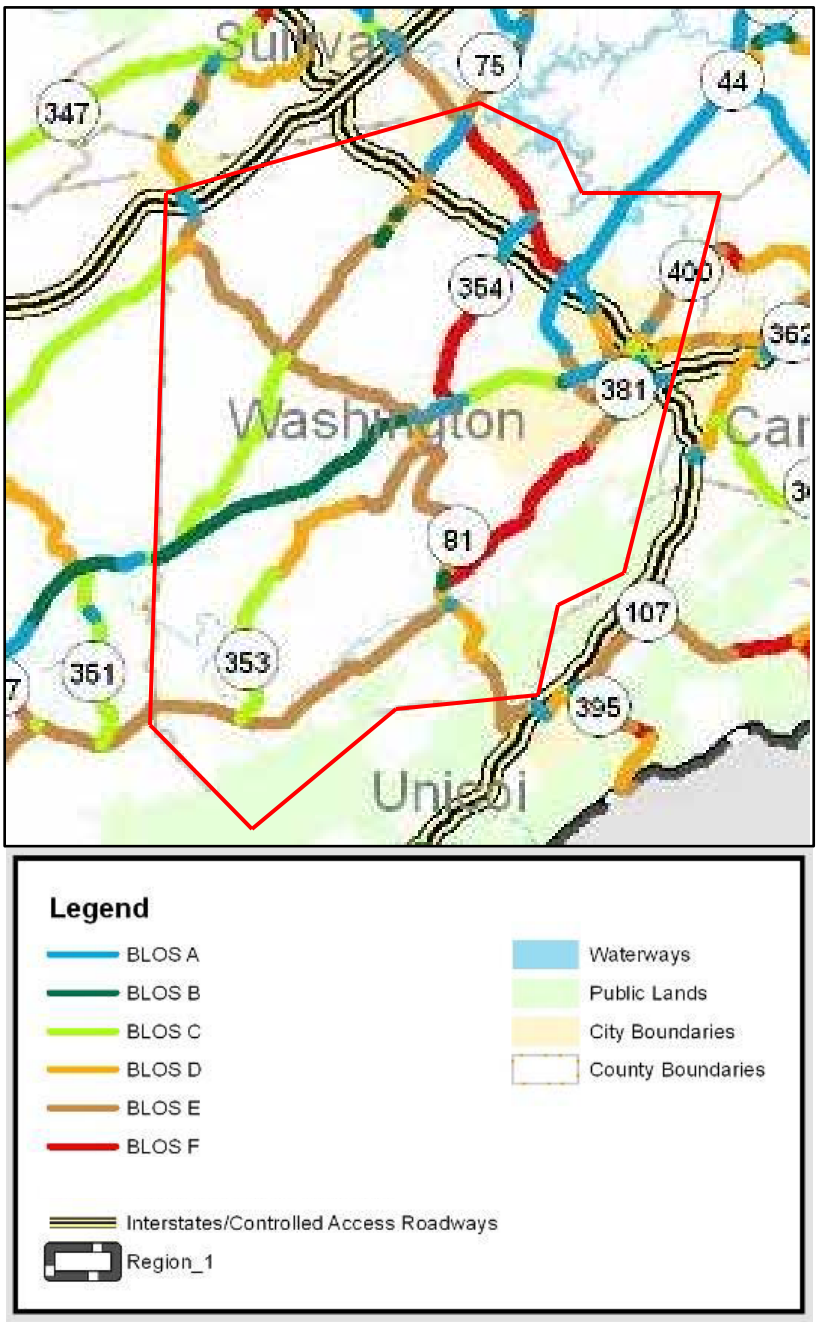

FIGURE 2.14: WASHINGTON COUNTY BICYCLE LEVEL OF SERVICE
Source: Update of Tennessee's State Bicycle Route Plan, Technical Memorandum 2

TABLE 2.2: BICYCLE LEVEL OF SERVICE (BLOS)

Source: Update of Tennessee's State Bicycle Route Plan, Technical Memorandum 1

2.2.3 Airports

Tri-Cities Regional Airport is located fifteen (15) minutes from Johnson City. The airport is serviced by Allegiant Air, American Eagle, Delta Connection, and US Airways Express. Non-stop flights to five hubs (Atlanta, Charlotte, Chicago, Orlando and Tampa) are available. Connecting flights offer service to over 80 international destinations. Two runways are present, with dimensions of 8000 feet by 150 feet and 4,447 feet by 150 feet. Both runways are asphalt.

Air Cargo services are provided at the Tri-Cities Regional Airport. A 13,000 square-foot cargo facility with 174,000 square feet of cargo apron; 4,000 linear feet of parallel taxiway and new cargo apron connector are present. The airport has a Foreign Trade Zone designation. Airborne Express and DHL provide guaranteed overnight delivery service, and freight services also are provided on passenger aircraft.[6] The location of the Tri-Cities Regional Airport is mapped in **Figure 2.15: Multimodal Facilities**.

2.2.4 Rail

Washington County has an extensive rail network with over two hundred and seventy-five (275) trains running through Washington County weekly. The rail network links to twenty-two (22) states in the eastern U.S. and has access to Foreign Trade Zone 204, located near the Tri-Cities Regional Airport.[7] The two primary rail providers are CSX Transportation and Norfolk Southern. CSX Transportation's tracks travel north-south from Johnson City and are generally parallel with I-26. Norfolk Sothern's tracks travel east-west and are generally parallel with SR 34 (US 11E) through the center of the county. This section of the NS line is part of the Crescent Corridor, a national endeavor by NS to move intermodal goods from east coast ports through the lower Midwest via two separate lines. In Tennessee, the line extends from Memphis to Knoxville, then on to Johnson City and Bristol. Daily express services are available both in both directions. The rail network can accommodate double-stack trains and has exceptionally high and wide clearances. With the development of the Crescent Corridor, rail traffic on the east-west NS line is expected to increase.

In the Johnson City/Elizabethton area, the East Tennessee Railway operated fourteen (14) miles of short-line railroad. In 2005 that railroad was purchased by a world-wide railroad operator, Genesee & Wyoming, Inc. Since 2005 about eight (8) miles of the railroad has been purchased by Johnson City for "interim" use as a trail. The remaining short-line railroad track continues to serve customers and interchanges with CSX Transportation and Norfolk Southern.[8] The rail lines are mapped in **Figure 2.15: Multimodal Facilities**.

There are thirty-five (35) railline-public roadway crossings in the unincorporated area of Washington County. Of these, twenty-one (21) are at-grade crossings and fourteen (14) are grade-separated crossings. The railline-public roadway crossings are listed in **Table 2.3: Railline-Public Roadway Crossings in Unincorporated Washington County** and mapped in **Figure 2.16: Railline-Public Roadway Crossings in Unincorporated Washington County**. The unincorporated area of Washington County excludes Jonesborough and Johnson City, but includes the unincorporated community of Gray.

[6] The Washington County Economic Development Council, http://www.thewcedc.com/accessible.php
[7] The Washington County Economic Development Council, http://www.thewcedc.com/accessible.php
[8] Phone call with Genesee & Wyoming, Inc., July 18, 2013.

TABLE 2.3: RAILLINE-PUBLIC ROADWAY CROSSINGS IN UNINCORPORATED WASHINGTON COUNTY

Map #	Railroad	Crossroad	At Grade (AG) or Grade Separated (GS)
1	Norfolk Southern	Hugh Story Road	GS
2	Norfolk Southern	Old State Route 34	GS
3	Norfolk Southern	Big Limestone Road	AG
4	Norfolk Southern	Urbana Road	AG
5	Norfolk Southern	Adams and Corby Road	AG
6	Norfolk Southern	Washington College Station Road	AG
7	Norfolk Southern	Rauhof Road	AG
8	Norfolk Southern	Matthews Mill Road	AG
9	Norfolk Southern	Methodist Ridge Road	AG
10	Norfolk Southern	Telford Road	AG
11	Norfolk Southern	John Howze Road	AG
12	Norfolk Southern	Spencer Smith Toad	AG
13	Norfolk Southern	Sand Valley Road	AG
14	Norfolk Southern	Susong Drive	AG
15	Norfolk Southern	Upper Sand Valley Road	AG
16	Norfolk Southern	Nathan Lynn Lane	AG
17	Norfolk Southern	Dalewood Drive	AG
18	Norfolk Southern	Woodlyn Road	AG
19	CSX	Fairridge Road	GS
20	CSX	Carroll Creek Road	GS
21	CSX	Grass Valley Road	AG
22	CSX	Boones Station Road	AG
23	CSX	Boone Road	GS
24	CSX	Old Stage Road	AG
25	CSX	Harwood Road	GS
26	CSX	Old Gray Station Road	GS
27	CSX	Free Hill Road	GS
28	CSX	Roy Martin Road	GS
29	CSX	Bob Davis Road	GS
30	CSX	SR 75	GS
31	CSX	Gray Station Road	GS
32	CSX	Spurgeon Lane	AG
33	CSX	Liberty Church Road	GS
34	CSX	Kitzmiller Road	GS
35	CSX	Ford Creek Road	AG

Source: The Corradino Group

2.2.5 Intermodal Facilities

There is no rail truck intermodal facility that handles cargo containers in Washington County. The intermodal Transportation Directory lists Comtrak Logistics in Chattanooga as the only intermodal trucking firm in East Tennessee.[9]

TDOT's Tennessee Rail System Plan (April 2003) notes in *Task 6, Rail Freight Intermodal Facility Needs and Rail System Connections* that an Eastern Tennessee Intermodal Facility may be needed to facilitate intermodal freight transfers for Eastbound Outbound and Westbound Inbound Interstate freight. The Tennessee Rail System Plan recommended that an analysis be conducted to *"identify and develop a preliminary plan for the construction of an intermodal facility in Eastern Tennessee preferably located near Knoxville. Preliminary discussions have focused on the transformation of an existing "hump yard" in Knoxville to an intermodal facility."* The idea in the System Plan was to eliminate concerns associated with a new location by using an existing location. However, since that time, NS has considered developing a site along their existing line in the New Market area (Jefferson County). Such a development would be consistent with their Crescent Corridor development. NS has indicated it may move ahead with the project if market conditions are correct, and they have purchased land there.

The Tri-Cities Airport provides air cargo services, including freight forwarding via truck, and has plans for improved air cargo services. Airport infrastructure is traditionally addressed by individual airports in conjunction with the Federal Aviation Administration (FAA) through airport master plans. These adhere to strict FAA guidelines in forecasting, planning, and design. Primary funding typically comes from FAA with local matches provided by the airport authority.

Associated with the Tri-Cities Airport is Foreign Trade Zone 204. The FTZ offers importers exclusive benefits only available to zone users. Parcels are available and this intermodal sector is expected to grow. Both the Johnson City and Kingsport MPOs recognize this insofar as road development is concerned. SR 75 is being widened to four lanes north of SR 36 to provide better access to the airport. Other improvements are being made outside Washington County.

2.2.6 Transit

Transit service is provided within Johnson City by Johnson City Transit (JCT). Outside the urbanized area there is a Rural Transportation Program (Federal Transit Administration funding through 49 United States Code Chapter 53 Public Transportation, Section 5311 "Formula Grants for Other than Urbanized Areas"). The operator (Section 5311 recipient) in upper northeast Tennessee is Northeast Tennessee Rural Public Transit (NET Trans). The service area is Carter, Greene, Johnson, Hawkins, Sullivan, Washington and Unicoi counties. Point-to-point paratransit service is provided Monday through Friday from 6:00 a.m. to 6:00 p.m., with some special services. Calls must be made by noon of the day before the scheduled trip. This service is available throughout the study area.

NET Trans provides fixed route service on seven (7) routes. Those with trips wholly within Johnson City cannot ride, but a number of NET Trans routes serve the Johnson City Transit downtown transfer center (junction), for those coming from outside the city. The following routes operate in Washington County:

§ Route 1. Elizabethton – circulates from Elizabethton to the Johnson City junction, then to Unicoi, returning by the same route.

[9] http://www.loadmatch.com/directory/results.cfm?category=trucker&state_code=TN

- Route 2. Jonesborough – operates over most of its length as a one-way loop, with a transfer to get to downtown Johnson City.
- Route 3. Kingsport – links the Kingsport fixed route service transfer point with that of Johnson City.
- Route 4. Greensville – links Greenville with the downtown Johnson City transfer point.
- Route 6. Bristol - links Bristol with the downtown Johnson City transfer point.

Greyhound provides transportation services from Johnson City to various locations across the United States. Greyhound also provides charter services and express services for package deliveries. A Greyhound station is located within the Johnson City Transit Center at 137 West Market Street, so those riding on the Net Trans routes noted above have access to the Greyhound service. Hours of operation are Monday through Friday from 8 a.m. to 5:30 p.m. and Saturday, Sunday and holidays from 8:00 a.m. to 11:59 a.m., 2:30 p.m. to 4:30 p.m., and 8:00 p.m. to 9:45 p.m. At present there are two buses eastbound and two westbound. Greyhound is ADA accessible.

Two taxi services operate in Johnson City, Mom's Taxi and WW Cab Company. WW Cab Company provides 24-hour a day services. WW Cab provides transportation to the Tri-Cities Regional Airport, as well as local and long-distance transportation. Mom's Taxi is an 18-hour a day local transportation service. Its service area is within a 600-mile radius from Johnson City. It also provides transportation service to the Tri-Cities Regional Airport.

2.2.7 Inland Waterway

The Nolichucky River along the south county edge is listed by the U.S. Army Corps of Engineers as a navigable river; however, it is not used commercially, in part due to impoundments downstream. It connects via the French Broad River to the Tennessee River, which, in turn, connects to the Tombigbee Waterway and then north to the Ohio River and south to the Gulf of Mexico. The Nolichucky River is impounded as Nolichucky Lake downstream, west of the Washington County line in Green County. The Nolichucky River is primarily used for recreational purposes and is known for white water rafting and fishing.

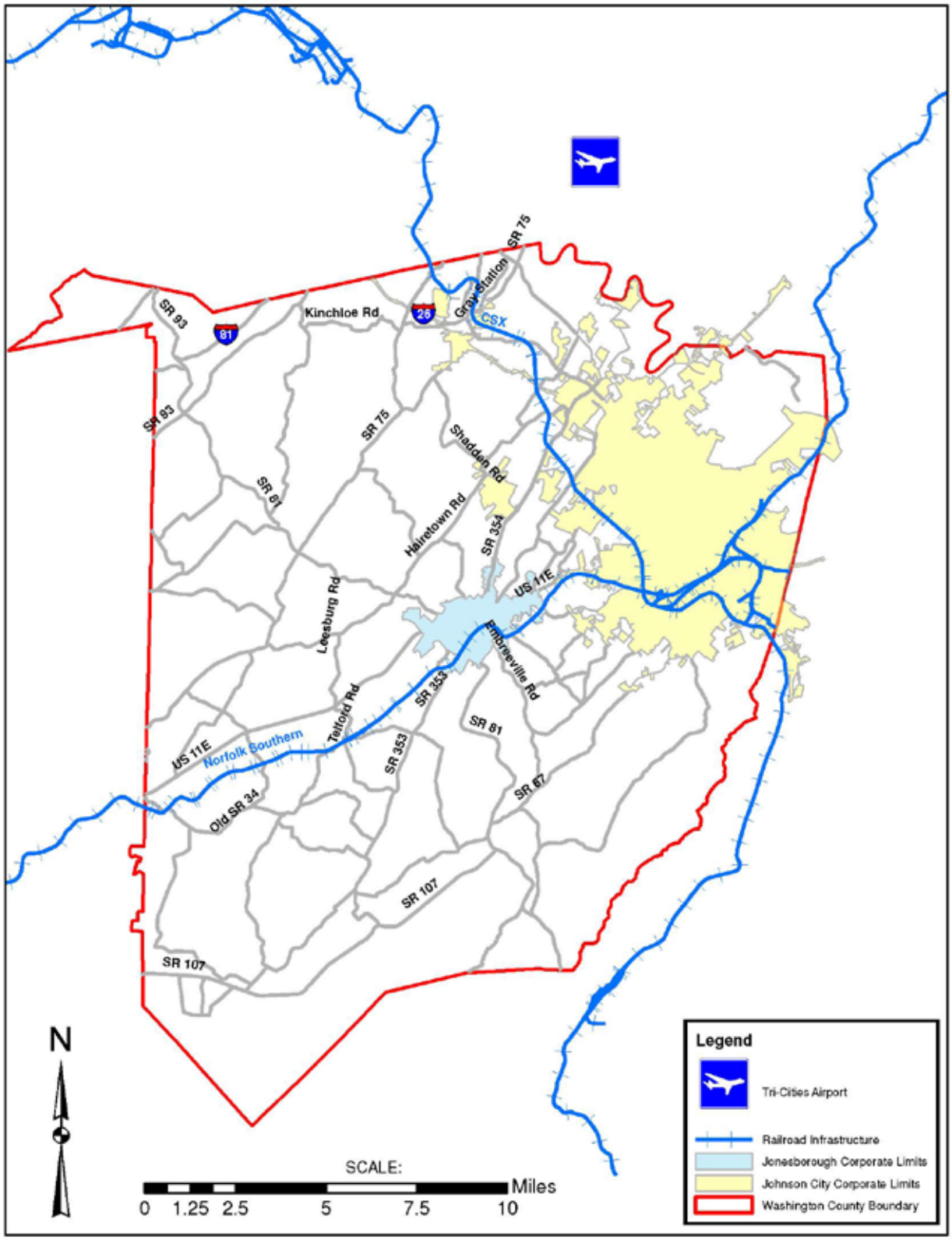

FIGURE 2.15: MULTIMODAL FACILITIES
Source: The Corradino Group

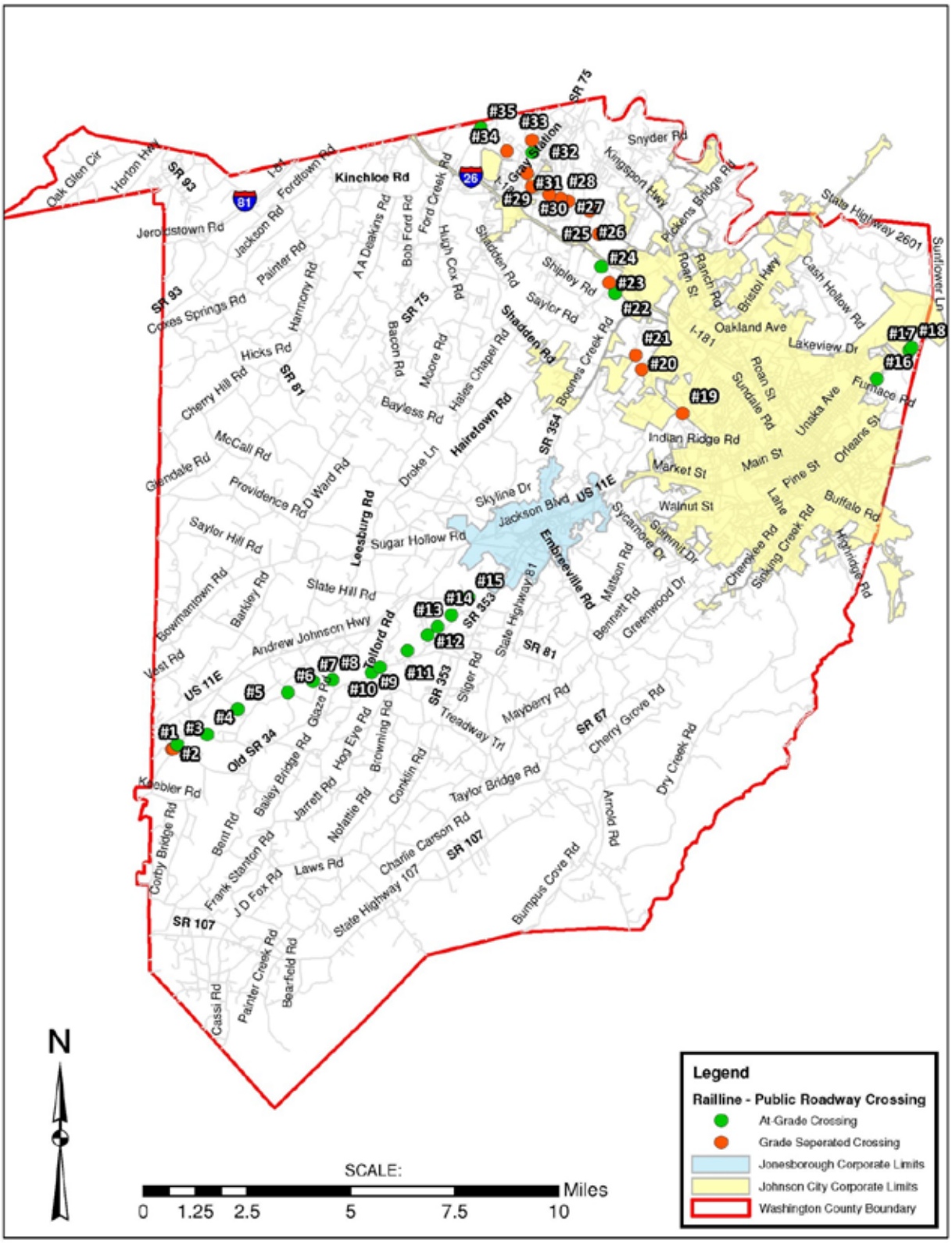

FIGURE 2.16: RAILLINE-PUBLIC ROADWAY CROSSINGS IN UNINCORPORATED WASHINGTON COUNTY

Source: The Corradino Group

3.0 TRAFFIC

The existing year (2010) and design year (2040) traffic data utilized in this study were obtained from the Johnson City Metropolitan Transportation Planning Organization's (JCMTPO) Travel Demand Model. The Travel Demand Model incorporates roadways in Washington County that are located both within and outside of the JCMTPO boundary. The JCMTPO traffic data are utilized, at TDOT's recommendation, to provide a consistent approach to traffic analysis within the region. The year 2010 was provided as the base year of the model. The year 2040 provides a thirty (30) year planning horizon.

An additional source of traffic data is TDOT's Advanced Traffic Data Analysis and Management (ADAM) database, the Annual Average Daily Traffic (AADT) book, and the Division's traffic count websites. The traffic data reported in these sources are provided by an extensive system of traffic count stations located statewide. Twenty (20) years' worth of historical count data are generally available at each traffic count station.

The traffic data within the study area are summarized below and in **Figures 3.1** through **3.4**. JCMTPO Travel Demand Model traffic projections and historical growth rate data at each count station are provided in the **Data Collection** section at the end of this Technical Memorandum.

- As can be seen in **Figure 3.1: 2010 AADT**, most roadways in the study area have AADT's less than 5,000 vehicles per day (vpd). The routes with the most traffic are SR 34 (US 11E), and routes extending from Johnson City to Jonesborough and the Gray area.
- As can be seen in **Figure 3.2: 2040 AADT**, only modest increases in traffic are predicted through the design year along the majority of routes. Most routes in 2040 still have AADT's less than 5,000 vpd. The same traffic patterns observed in the 2010 data are observed in 2040. The routes with the most traffic are SR 34 (US 11E), and routes extending from Johnson City to Jonesborough and the Gray area.
- As can be seen in **Figure 3.3: Truck Percentage**, truck traffic is heaviest along the State Routes.
- As can be seen in **Figure 3.4: Historical Traffic Growth (2001 – 2011)**, based on the past ten (10) years of count station data, the historical traffic growth rates in the county generally range from -2% to +2%. In general, the State Routes have experienced modest traffic growth, while many of the local roads have experienced modest declines. It should be noted that these historical growth rates were not utilized in the traffic projections. It was determined that the JCMTPO Travel Demand Model data was more appropriate for use. **Figure 3.4** is provided to demonstrate the geographic patterns of historical traffic growth, and not for any other use.

In summary, most roadways in the study area have AADT's less than 5,000 vpd through the design year of 2040. The routes with the most traffic are SR 34 (US 11E), and routes extending from Johnson City to Jonesborough and the Gray area. Truck traffic is heaviest along the State Routes. The higher traffic growth rates in the past ten (10) years were observed along the State Routes.

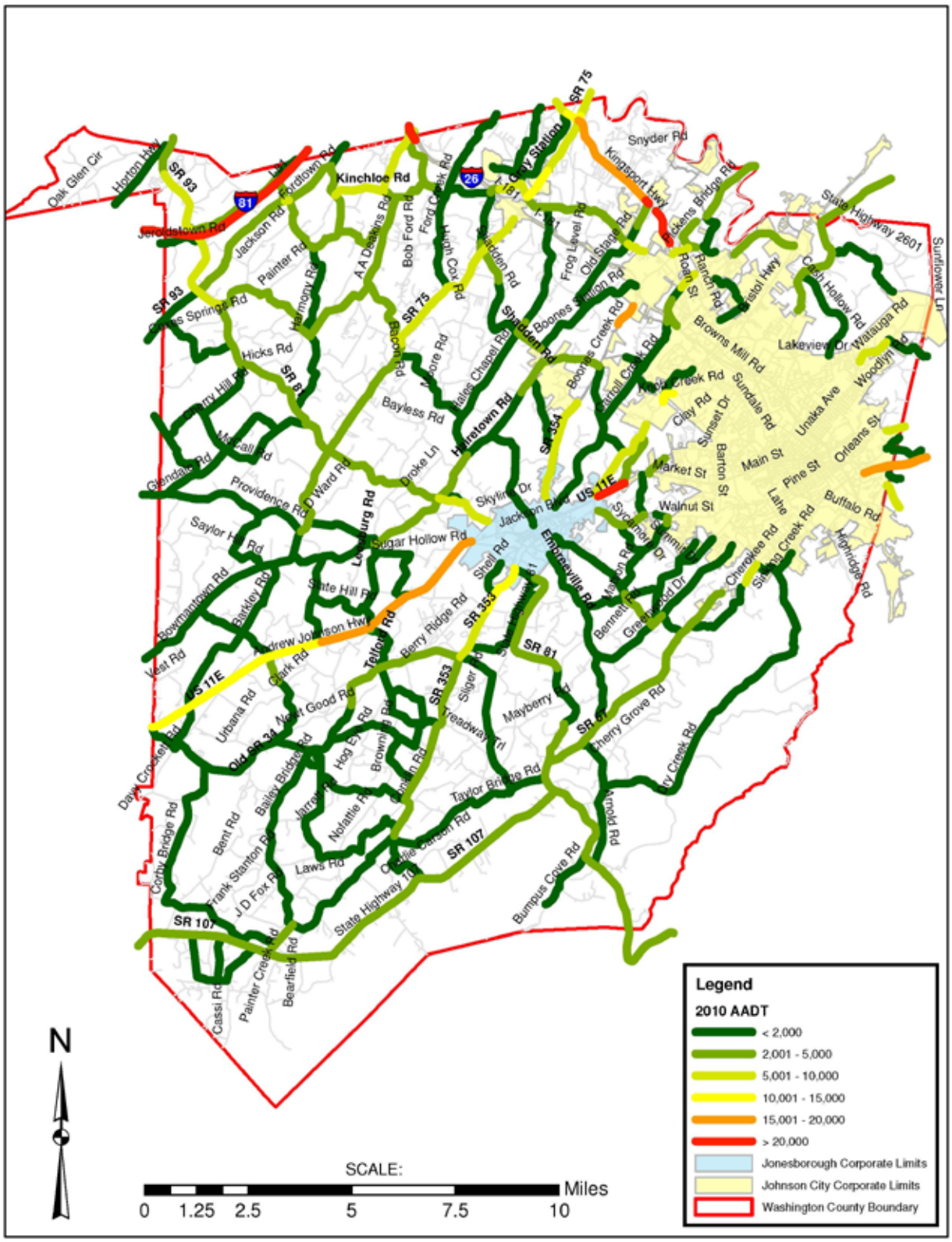

FIGURE 3.1: 2010 AADT
Source: The Corradino Group with Data from JCMTPO Travel Demand Model

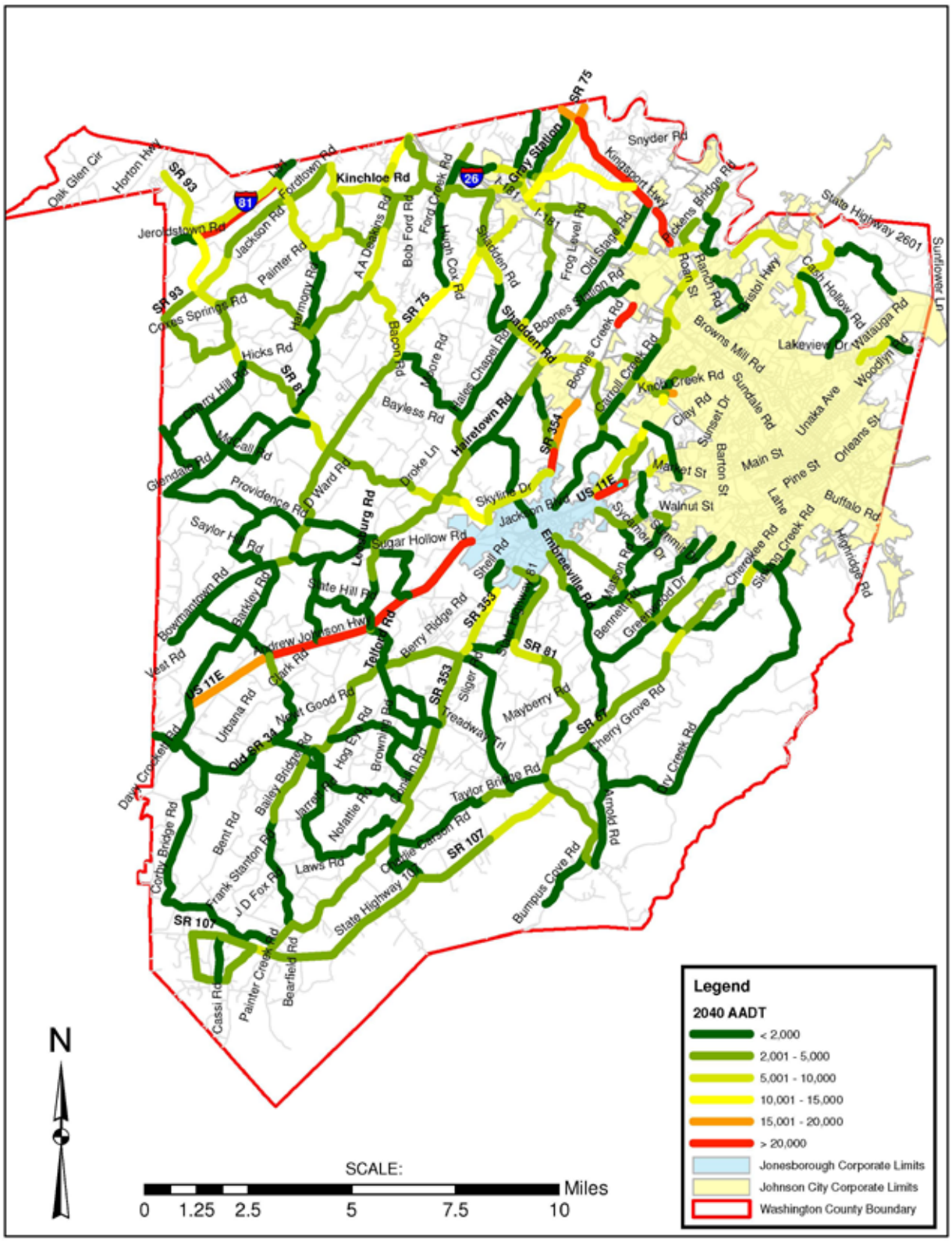

FIGURE 3.2: 2040 AADT
Source: The Corradino Group with Data from JCMTPO Travel Demand Model

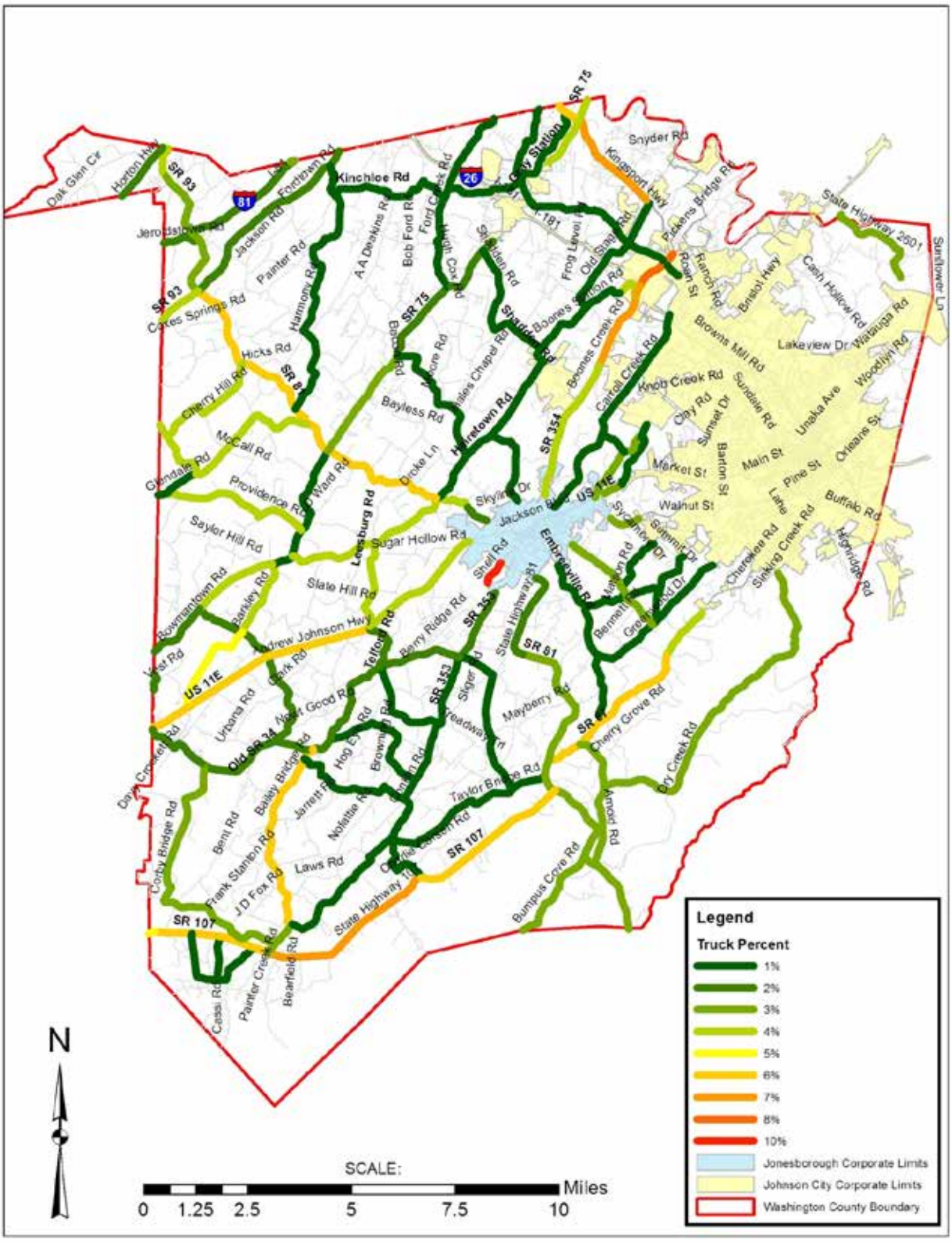

FIGURE 3.3: TRUCK PERCENTAGE
Source: The Corradino Group with Data from TDOT's ADAM Database

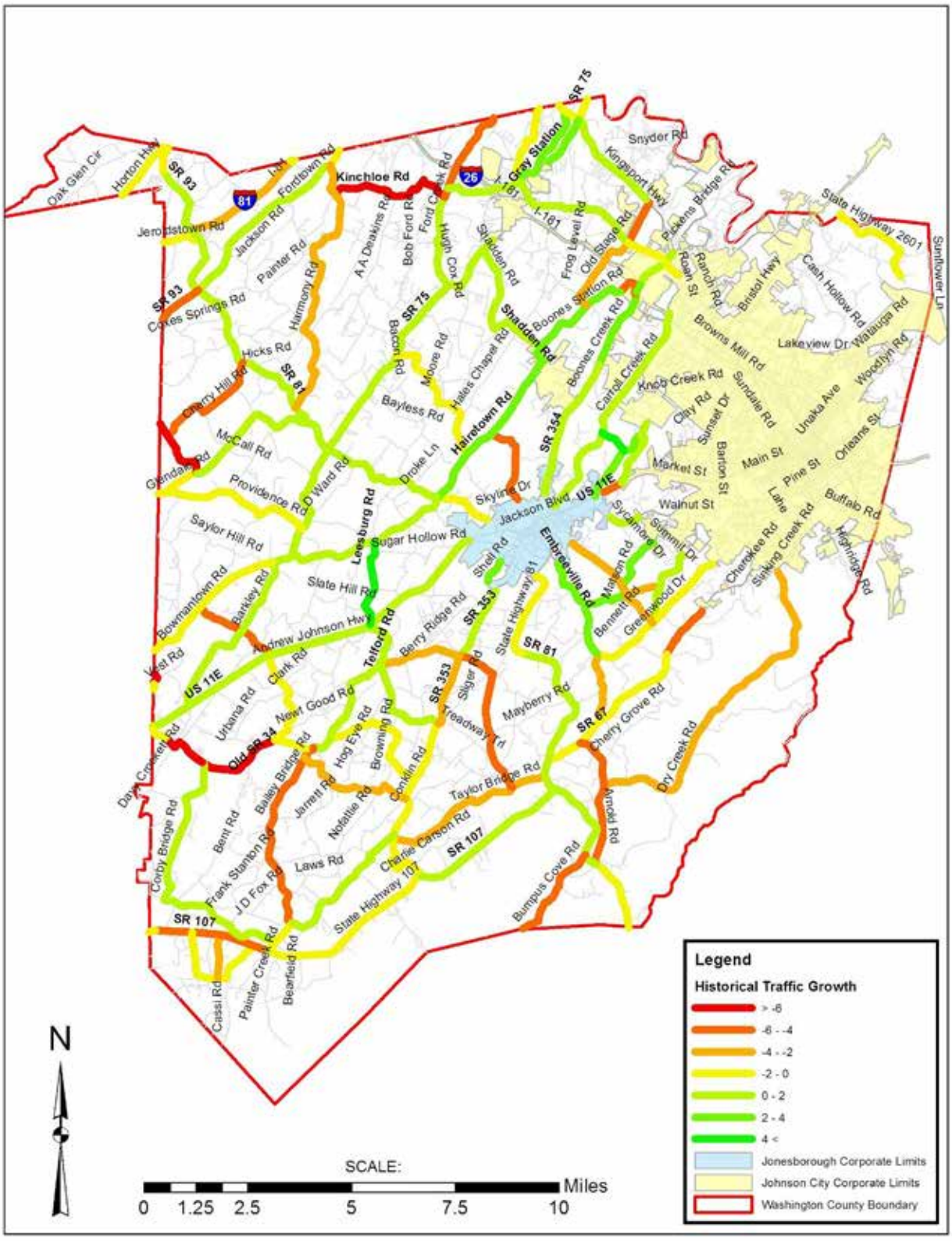

FIGURE 3.4: HISTORICAL TRAFFIC GROWTH (2001 TO 2011)
Source: The Corradino Group, TDOT ADAM Count Data

4.0 TRAFFIC CAPACITY ANALYSIS

Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS range from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Please refer to **Table 4.1: LOS Description** for a description of each LOS.

TABLE 4.1: LOS DESCRIPTION

LOS	Traffic Flow Conditions	Representative Photo
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The general level of physical and psychological comfort provided to the driver is high.	
B	Reasonable free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.	
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.	
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.	
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceed the capacity or ability of the highway to accommodate that number of vehicles. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	

Source: The Corradino Group

4.1 ROADWAY MAINLINE LOS

The existing year (2010) and design year (2040) roadway mainline LOS data utilized in this study were attained from the Johnson City Metropolitan Transportation Planning Organization's (JCMTPO) Travel Demand Model Output. The Travel Demand Model incorporates roadways in Washington County that are located both within and outside of the JCMTPO boundary. The JCMTPO LOS data was utilized at TDOT's request to provide a consistent approach to traffic analysis within the region. **Table 4.2: JCMTPO LOS Criteria** lists the LOS thresholds by functional classification that were used by the JCMTPO to evaluate the roadway network. The year 2010 was provided as the base year of the model. The year 2040 provides a thirty (30) year planning horizon. The LOS calculations include all fiscally constrained planned roadway projects listed in the JCMTPO 2040 LRTP. The LRTP projects are discussed in **Section 6 Programmed, Planned, or Studied Roadway Projects**. The LRTP projects all fall within the JCMTPO planning boundary. The LOS data are summarized in **Figure 4.1: 2010 Level of Service** and **Figure 4.2: 2040 Level of Service**. The LOS data are also listed in the **Data Collection** section at the end of this Technical Memorandum.

TABLE 4.2: JCMTPO LOS CRITERIA

Roadway Type	LOS/Roadway Average Daily Traffic Volumes				
	A	B	C	D	E
2-Lane Urban	6,500	9,700	13,800	16,150	18,700
2-Lane Rural	7,900	10,000	14,900	18,000	23,400
3-Lane	6,400	9,200	11,300	15,300	17,100
4-Lane	10,700	17,500	26,000	32,700	34,500
5-Lane	13,400	20,200	27,300	34,400	37,500
6-Lane	20,500	29,400	36,400	44,000	58,700
4-Lane Interstate	31,700	45,300	56,200	68,000	90,700
6-Lane Interstate	47,600	68,000	84,300	102,000	136,000

Source: JCMTPO 2040 LRTP Table 5-4, Highway Capacity Manual, RPM Transportation Consultants
Note: If the ADT is greater than the LOS E volume, the roadway operates at LOS F.

4.2 INTERSECTION LOS

At the request of the Washington County Highway Department, ten (10) intersections are included in the LOS calculations. The intersection locations are listed in **Table 4.3: Intersection LOS Summary**. The intersections studied are either stop controlled or signal controlled. There are no all-way stop controlled intersections or roundabouts included in the ten (10) intersections examined.

The JCMTPO LOS analysis did not include intersection analysis. For intersections, the Highway Capacity Manual defines LOS by the control delay, in seconds per vehicle. The intersection LOS calculations were developed with the Synchro Software Package (Version 8). Synchro (Version 8) produces reports consistent with the HCM 2010 methodology. **Table 4.4: Two-Way Stop Controlled LOS Criteria** and **Table 4.5: Signalized Intersection LOS Criteria** show LOS thresholds in relation control delay. The results of the LOS calculations are provided in **Figure 4.1: 2010 Level of Service** and **Figure 4.2: 2040 Level of Service**. The intersection LOS calculations are provided in the **Data Collection** section at the end of this Technical Memorandum.

TABLE 4.3: INTERSECTION LEVEL OF SERVICE SUMMARY

Washington County Thoroughfare Plan						
Intersection LOS Calculations[1]						
ID	**Primary Road**	**Cross Road**	**Intersection Type**	**Intersection Control**	**LOS 2010**	**LOS 2040**
1	Eastern Star Rd.	Hog Hollow Rd.	T	One-Way Stop	A	B
2	Ford Creek Rd.	Hog Hollow Rd.	T	One-Way Stop	B	B
3	Ford Creek Rd./ Douglas Shed Rd.	Ford Creek Rd.	T	One-Way Stop	A	B
4	Gray Station Rd.	Douglas Shed Rd.	T	One-Way Stop	B	B
5	SR 75	Roscoe Fitz Rd.	4-Legged	Two-Way Stop	F	F[3]
6	SR 75	Roy Martin Rd.	4-Legged	Signal	B	B
7	SR 75	Shadden Rd.	4-Legged	Two-Way Stop	F	F[3]
8	Boones Creek Rd. (SR 354)	Highland Church Rd./ Old Boones Creek Rd.	4-Legged	Signal	B	B
9	SR 81	SR 75	4-Legged	Two-Way Stop	B	B
10	SR 75	Hugh Cox Rd.	T	One-Way Stop	B	C

Notes:

1. The LOS were calculated by The Corradino Group utilizing the Synchro software package with the HCM 2010 methodology. For one-way stop and two-way stop controlled intersections, the HCM reports the LOS for each stop controlled approach, and not for the intersection as a whole. The LOS reported above for these control conditions is the worst performing approach to each reference intersection. For signal controlled intersections, the HCM reports the LOS for the entire intersection, and that is what is reported.
2. Year 2040 LOS utilizes a 1.0% growth per year in traffic volumes (1.3 x 2010 volumes).
3. If the intersections are signalized, the 2040 LOS are projected as follows:
   SR 75 at Roscoe Fitz Rd. B
   SR 75 at Shadden Rd. B

Source: The Corradino Group

TABLE 4.4: TWO-WAY STOP CONTROLLED LOS CRITERIA

Control Delay (s/vehicle)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	*v/c*>1.0
0–10	A	F
>10–15	B	F
>15–25	C	F
>25–35	D	F
>35–50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

Source: HCM 2010 Exhibit 19-1

TABLE 4.5: SIGNALIZED INTERSECTION LOS CRITERIA

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio[a]	
	≤1.0	>1.0
≤10	A	F
>10–20	B	F
>20–35	C	F
>35–55	D	F
>55–80	E	F
>80	F	F

Note: [a] For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

Source: HCM 2010 Exhibit 18-4

4.3 TRAFFIC CAPACITY ANALYSIS SUMMARY

In rural areas, a design year LOS C is generally accepted as adequate. As can be seen in **Figure 4.2: 2040 Level of Service**, the majority of roadways in the study area are anticipated to operate at a LOS B or better through the design year. The roadway segments with poor LOS are adjacent to Johnson City's City Limits. Roadways predicted to have poor LOS in the design year include:

- SR 34 (US 11E) between Jonesborough and Johnson City
- SR 36 (Kingsport Highway) from Johnson City north to the Washington/Sullivan County Line.

It should be noted that although the LOS are generally adequate along the routes, roadway geometrics limit safe travel speeds. Roadway geometrics, including horizontal curvature and stopping sight distance, are discussed in **Section 2.1 Existing Roadway Network**. Other than SR 34 (US 11E) and Interstates 26 and 81, there are few high speed routes within the unincorporated regions of the county. Therefore, mobility is restricted by the quality of many of the roadways within Washington County, and not by the traffic demand. Deficient roadway geometrics may also lead to safety concerns.

Of the ten (10) intersections analyzed, only two are projected to operate poorly by the design year of 2040. These two intersections are SR 75 at Roscoe Fitz Road and SR 75 at Shadden Road. Both these intersections are stop sign controlled. Both intersections will operate adequately through the design year if they are signalized. No additional geometric improvements are required at either intersection.

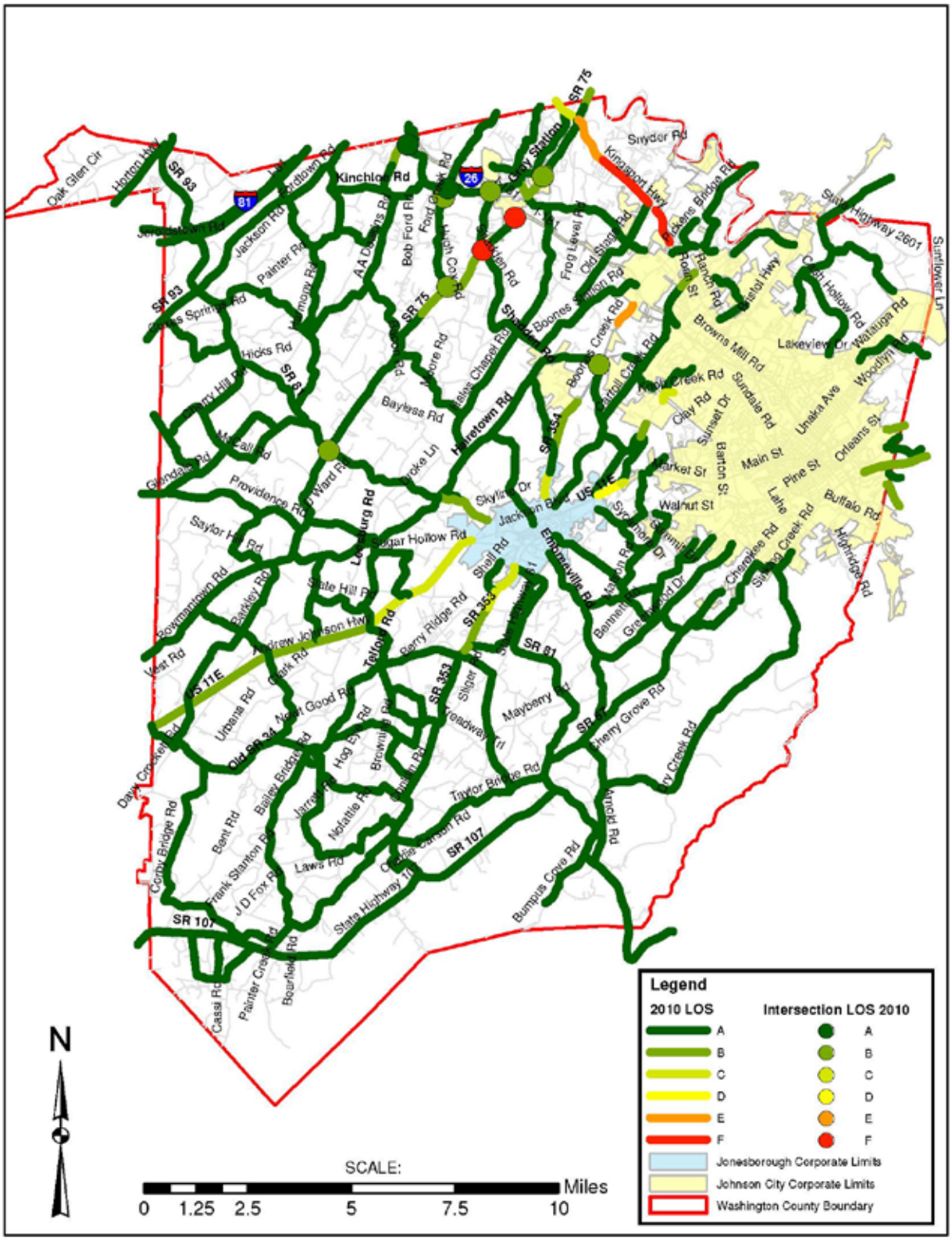

FIGURE 4.1: 2010 LEVEL OF SERVICE
The Corradino Group with Data from JCMTPO Travel Demand Model

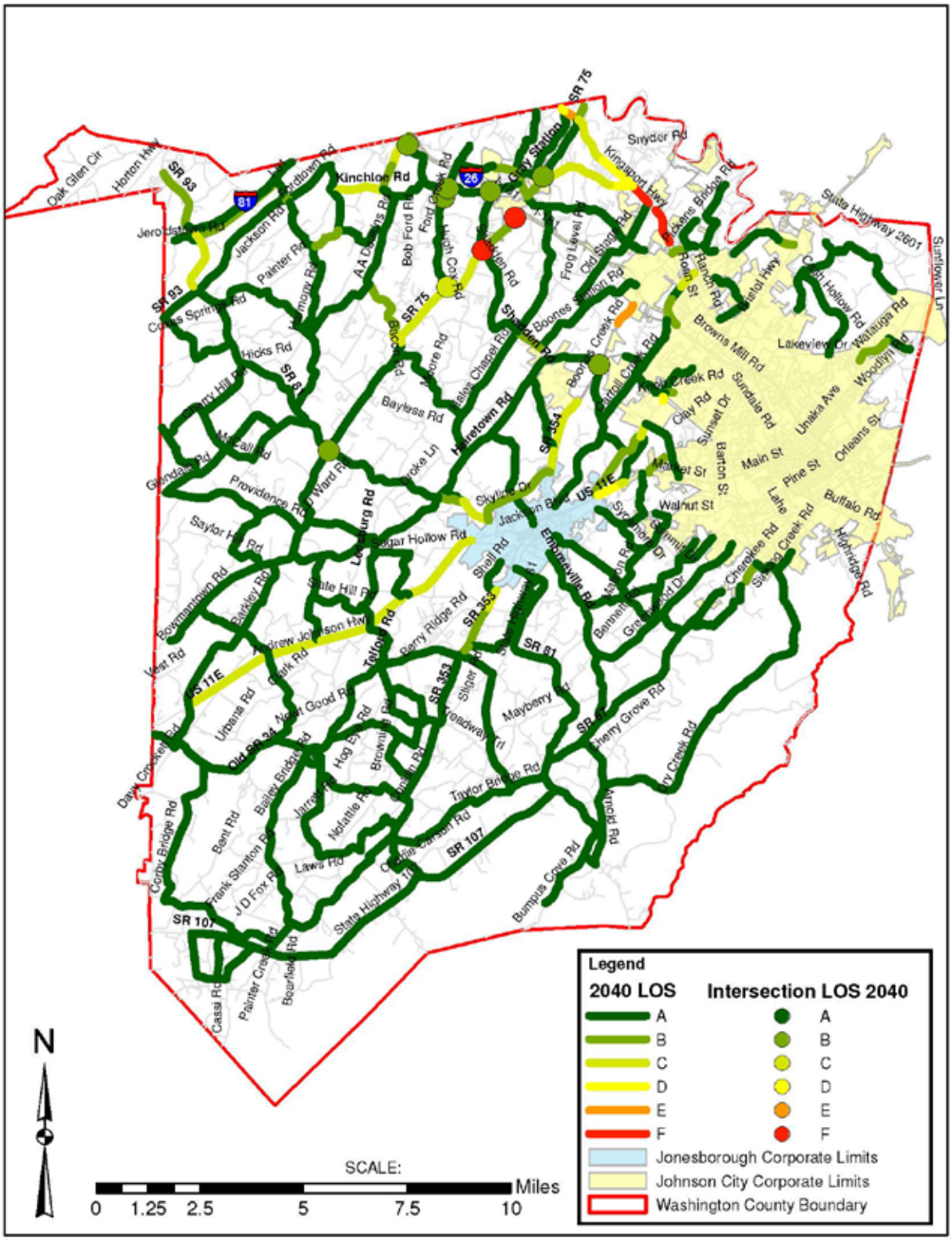

FIGURE 4.2: 2040 LEVEL OF SERVICE
The Corradino Group with Data from JCMTPO Travel Demand Model

5.0 SAFETY ANALYSIS

Locations in Washington County that are under study by TDOT's Project Safety Office were provided for this technical memorandum. The study data date from 2009 to 2011. These locations were initiated following the completion of the most current Highway Safety Improvement Program (HSIP) list. The projects included on this list have been determined through crash data analyses to be in need of safety improvements due to either having an actual to critical (a/c) crash ratio above a designated point, or other criteria including the presence of fatal or incapacitating injury crashes.

Table 5.1: Roadways Under Study by TDOT for Safety Improvements provides a list of the locations in Washington County that are under study, or have recently been under study, by TDOT's Project Safety Office for safety improvements. A location's presence on the HSIP list indicates a safety improvement is likely needed at the respective location. **Table 5.1** provides the type of improvement being considered at each location. In general, the improvements are roadway signing and striping upgrades. **Table 5.1** also notes the project status. Once safety improvements have been constructed, TDOT monitors, or tracks, the project to determine of the safety improvements have had the desired effect. If the safety of the route has not been improved, more substantial measures may be justified. These locations are mapped in **Figure 5.1: Roadways Under Study for Safety Improvements**.

Additionally, TDOT initiated a Local Road Safety Project Study. This study noted safety needs in a multicounty area and found several route sections in need of additional signing, striping, and guardrail installations. The locations are listed in **Table 5.2: Summary of Local Road Safety Projects** and mapped in **Figure 5.1**. A location's presence in this study also indicates a safety improvement is likely needed at the respective location.

The safety improvements implemented from these two studies will be monitored for three (3) years after their construction. If the safety of the locations is not improved, additional improvements may be warranted.

Additionally, staff from the Washington County Highway Department noted several locations with perceived safety deficiencies. These locations may be investigated further in the development of the Washington County Thoroughfare Plan. The locations are mapped in **Figure 5.1** and listed below.

Location	**Safety Concern**
§ Hog Hollow at Ford Creek Road	Sight distance at the intersection
§ SR 75 at Hugh Cox Road	Sharp horizontal curves and poor sight distance, located near Daniel Boone High School
§ Greenwood Drive near Rock Church Road	Sharp horizontal curves
§ Old State Route 34 at David Crockett High School	Lack of turn lanes at the school

TABLE 5.1: ROADWAYS UNDER STUDY BY TDOT FOR SAFETY IMPROVEMENTS

Map #	Route	Road Name	Termini	Description	Status
1	Local	Jackson Bridge Rd./ Conklin Road	Extent of Road (L.M. 0.00 to 5.00)	Minor paving, minor earthwork, tree removal, signing, striping	Constructed/ Tracking Project
2	SR 67		SR 81 to Cherokee Mountain Rd. (L.M. 0.00 to 4.06)	Signing, striping, tree trimming, gravel shoulder improvements	Constructed/ Tracking Project
3	SR 400		At Watauga Avenue	Signing, striping, vegetation removal	Constructed/ Tracking Project
4	SR 81		SR 81 at Old Persimmon Ridge Rd. (L.M. 11.98 to 12.14)	Signing, striping, relocate a private driveway	No further action, city may do work
5	SR 81		Five Points Intersection with SR 353 (L.M. 11.52 to 11.57)	ROW, utility relocation, earthwork, pavement, signing, guardrail	ROW phase
6	SR 34	Andrew Johnson Highway	Intersection at Persimmon Ridge Rd/Ben Gamble Rd.	Separate turn movements, install a traffic signal	Constructed/ Tracking Project
7	SR 353		Conklin Rd. to Old SR 34 (L.M. 0.91 to 5.78)	Signing, guardrail, and raised pavement markers	Constructed/ Tracking Project
8	SR 353		Conklin Rd. to Old SR 34 (L.M. 0.00)	Guardrail and replace concrete bridge rail	Environment al phase
9	Local	South Cherokee St.	South Cherokee St. at Woodrow St. (L.M. 0.62)	Paving, signing, striping, and guardrail	Constructed/ Tracking Project
10	Local	Old Gray Station Road	Old Gray Station Rd. near Buckingham Rd. (L.M. 4.14 to 4.24)	Signing, striping, guardrail	Constructed/ Tracking Project
11	SR 93		SR 93 at Fall Branch Elementary School (L.M. 3.14 to 3.61)	Install flashing beacon, striping, signing	Constructed/ Tracking Project
12	Local Route 1066	Telford Road	SR 353 to SR 34 (L.M. 1.35)	ROW, earthwork, clearing, paving, signing, striping, guardrail	ROW phase
13	Local Route 1355	Dry Creek Road	From Arnold Rd. to near Sinking Creek Rd.		Draft phase
14	SR 34	Andrew Johnson Highway	At SR 354, Boone's Creek Road	Second left-turn lane on SR 34, and second receiving lane on SR 354. Remove channelized right turn lane and bring under signal control.	Environ-mental phase

Source: The Corradino Group with Data from TDOT Project Safety Office's Master Safety List

TABLE 5.2: SUMMARY OF LOCAL ROAD SAFETY PROJECTS

Map #	Route	Road Name	Termini	Description	Status
15	Local	Greenwood Drive	SR 81 and Old Embreeville Road	Signing, striping and guardrails	Noted in Safety Study
16	Local	Greenwood Drive	Summit Drive and Bank Saylor Road	Signing, striping and guardrails	Noted in Safety Study
17	Local	Hales Chapel Road	Pleasant Valley Road and I-26	Signing, striping and guardrails	Noted in Safety Study
18	Local	Conklin Road	SR 353 (Bailey Bridge Road) and Jackson Bridge Road	Signing, striping and guardrails	Noted in Safety Study
19	Local	Conklin Road	Washington College Rd. and Treadway Trail	Signing, striping and guardrails	Noted in Safety Study
20	Local	Arnold Road	SR 81 at the Nolichucky River and SR 67 (Cherokee Rd.)	Signing, striping and guardrails	Noted in Safety Study
21	Local	Dry Creek Road	Arnold Road and Sinking Creek Road	Signing, striping and guardrails	Noted in Safety Study

Source: Mattern & Craig Safety Study and The Corradino Group.

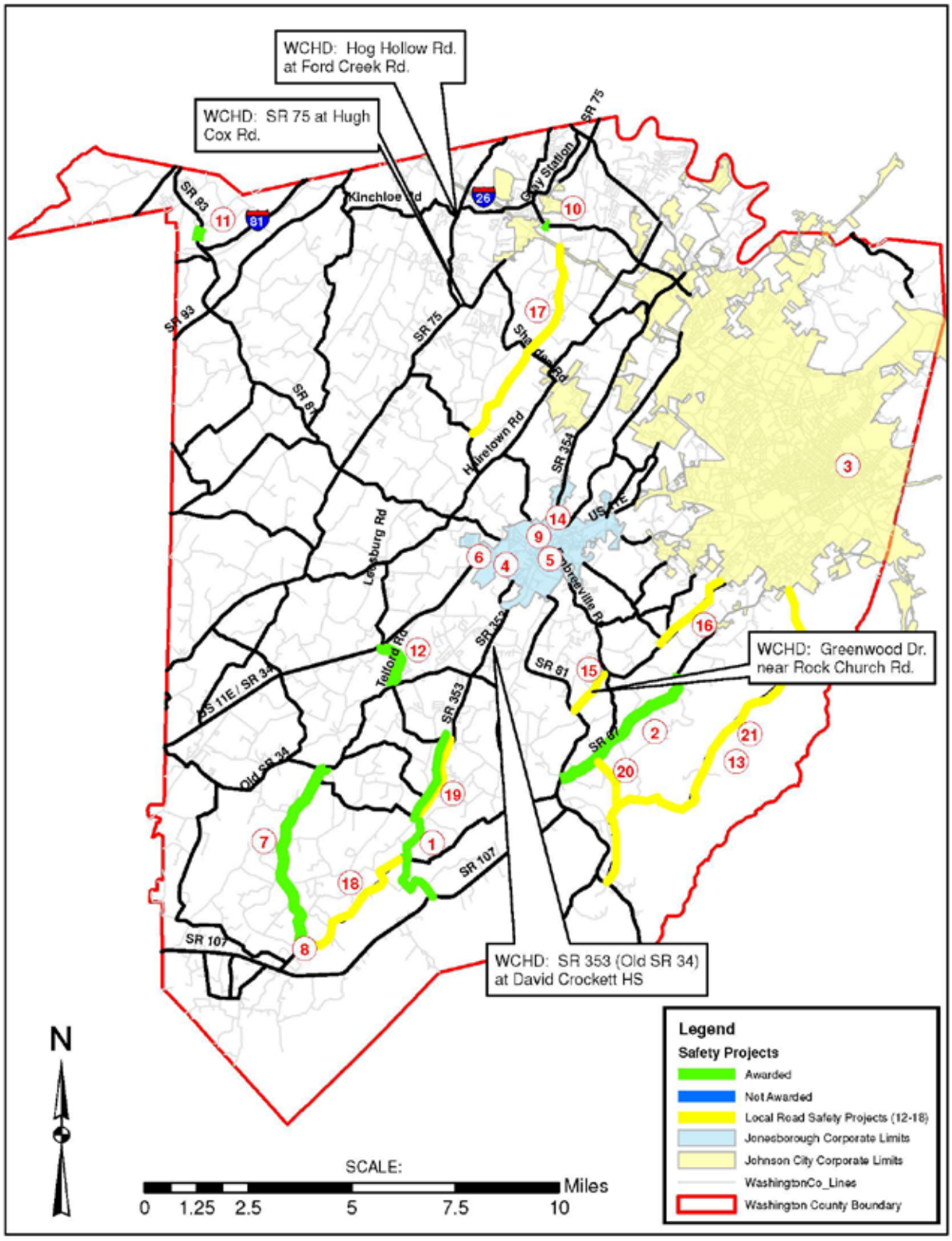

FIGURE 5.1: ROADWAYS UNDER STUDY FOR SAFETY IMPROVEMENTS
Source: The Corradino Group, TDOT's Project Safety Office, The Washington County Highway Department (WCHD) and Mattern & Craig Safety Study

6.0 PROGRAMMED, PLANNED, OR STUDIED ROADWAY IMPROVEMENTS

The Johnson City Metropolitan Transportation Planning Organization (JCMTPO) has recently adopted its 2040 Long Range Transportation Plan (LRTP). **Table 6.1: Johnson City MTPO Committed Projects in Washington County** lists the projects with committed funding in Washington County. The projects listed are either under construction or under development. **Table 6.2 Johnson City MTPO 2040 LRTP Projects in Washington County** lists the projects in the 2040 plan that are fiscally constrained. The projects listed are expected to be constructed by the year 2040. The projects listed in **Tables 6.1** and **6.2** are mapped in **Figure 6.1: Programmed, Planned, or Studied Roadway Improvements**. Most of the projects are located within Johnson City. Projects not located within Johnson City include the SR 36 widening project, the Knob Creek Road improvements, and interchange improvements at I-26 and SR 75. The SR 36 widening project will improve access to Kingsport and the Tri-Cities Airport. The Knob Creek Road improvements will span the CSX railroad and provide a link to county land in the Carroll Creek area. The reconstruction of the interchange of I-26 with SR 75 will increase traffic pressure on SR 75 further south in Washington County.

The Kingsport MTPO lists three projects in its 2035 LRTP that cross from Sullivan County into north Washington County: SR 93 turn lanes and safety improvements in Fall Branch; SR 75 to the airport (under construction); and, SR 36 widening to continue north the widening within the JCMTPO. **Table 6.3: Kingsport MTPO 2035 LRTP Projects** lists the projects. They are also mapped in **Figure 6.1: Programmed, Planned, or Studied Roadway Improvements**.

The First Tennessee Regional Planning Organization (FTRPO), in its 2010 Needs Assessment Report, calls for study of SR 107 from the Greene County line to SR 81 (based on crash rates and geometrics). It requested a Transportation Planning Report be completed by TDOT for SR 81 south from SR 107 to I-26. That study identified a range of potential actions. FTRPO also identified SR 81 from the north Jonesborough city limit to SR 93 as having lane and shoulder width needs. **Table 6.4: Summary of First Tennessee RPO Projects** lists the projects. These projects are also mapped in **Figure 6.1: Programmed, Planned, or Studied Roadway Improvements**.

TABLE 6.1: JOHNSON CITY MTPO COMMITTED PROJECTS IN WASHINGTON COUNTY

Map #	Route	Termini	Improvement Description	Status
1	Kingsport Hwy (SR 36)	SR 354 (Boone Avenue) to SR 75	Widen from 2 lanes to 5 Lanes	Under Construction
2	SR 75	SR 36 to SR 357	Widen from 2 lanes to 5 Lanes	Under Construction
3	SR 381	Intersection with Indian Ridge Road and Skyline Drive	Add turn lanes, bridge rehabilitation	Under Development
NA	Traffic Signal Upgrades in Johnson City	Intersection/ Signalization improvements at 10 locations in Johnson City	Install traffic signals	Under Development
NA	Johnson City ITS Project (formerly IVHS)	Select State Routes in Johnson City	Install ITS (sensors, TOC, etc.) for Johnson City Traffic Division	Under Development
4	I-26 Exit 13 (SR 75)	Exit 13 on I-26 (SR 75 / Suncrest Road / Bobby Hicks Highway @ I-26)	Interchange modification	Under Development
5	Traffic Circle for Mountainview Road	Intersection of Mountainview Road and Browns Mill Road	Construct a roundabout	Under Development
6	Greenline Road	Intersection of Peoples Street and Greenline Road	Intersection Improvement (Roundabout option under consideration)	Under Development
7	Knob Creek Road Extension	West of Mizpah Hills Drive to Marketplace Boulevard	Construct new 5 lane (overpass crossing CSX RR)	Under Development
8	VA Hospital Connector	West Market Street to VA Hospital	Construct new 2-lane road	Under Development
9	I-26 Exit 17 (SR 354)	Exit 17 on I-26 (SR 354 / Boones Creek Road @ I-26)	Interchange modification	Under Development
10	I-26 Exit 24 (SR 67)	Exit 24 on I-26 (SR 67 / University Parkway @ I-26)	Ramp modification	Under Development
11	SR 81 & SR 353 (Jonesborough Five Points Intersection)	Intersection of SR 81 with SR 353 with Depot Street in Jonesborough	Construct a roundabout	Under Development

Source: JCMTPO 2040 LRTP Table 5-2 and The Corradino Group

TABLE 6.2: JOHNSON CITY MTPO 2040 LRTP PROJECTS IN WASHINGTON COUNTY

Map #	Route	Termini	Improvement Description	LRTP #
12	Boones Creek Rd (SR 354)	I-26 to Highland Church Rd.	Widen existing 2 lane roadway to 4 lanes	VP-05
13	Boones Creek Rd (SR 354)	Highland Church Rd to Jonesborough Parkway	Widen existing 2 lane roadway to 4 lanes	VP-06
14	Boones Creek Rd (SR 354)	Jonesborough Parkway to US 11E	Widen existing 2 lane roadway to 4 lanes	VP-07
15	Jonesborough Parkway	Boones Creek Rd (SR 354) to US 11E	Construct new 3 lane roadway	VP-08
16	N. State of Franklin (SR 381)	I-26 to Knob Creek Rd	Widen existing 4 lane roadway to 6 lanes	VP-09
17	N. State of Franklin (SR 381)	Knob Creek Rd to Indian Ridge Rd	Widen existing 4 lane roadway to 6 lanes	VP-10
18	Bristol Hwy (SR 34)	N. State of Franklin (SR 381) to MTPO Planning Boundary	Widen existing 4/5 lane roadway to 6/7 lanes	VP-13
19	Roy Martin Rd	Gray Station Rd to Bobby Hicks Hwy (SR 75)	Reconstruct 2 lane roadway addressing geometric issues to align with Roy Martin Rd Ext	VP-15
20	Roy Martin Rd Extension	Bobby Hicks Hwy (SR 75) to Free Hill Rd	Construct new 2 lane roadway	VP-16
21	Free Hill Rd	Free Hill Rd to Kingsport Hwy (SR 36)	Reconstruct 2 lane roadway addressing geometric issues	VP-17
22	Knob Creek Rd	Mizpath Hills Dr to Boones Creek Rd (SR 354)	Widen existing 2 lane roadway to 4 lanes	VP-18
23	Watauga Rd (SR 400)	Broadway St to E Fairview Ave	Reconstruct existing 2 lane roadway to 3 lanes (adding a center turn lane)	VP-20
24	Watauga Rd (SR 400)	E Fairview Ave to Piney Flats Rd	Reconstruct existing 2 lane roadway to 3 lanes (adding a center turn lane)	VP-21
25	Bob Jobe Rd Extension	Eastern Star Rd (Bob Jobe Rd) to Ford Creek Rd	Reconstruct 2 lane roadway addressing geometric issues to align with Bob Jobe Rd Ext	VP-22
26	Bob Jobe Rd Extension	Ford Creek Rd to Center St	Construct new 2 lane roadway	VP-23
27	Hopper Rd	W Market St (US 11E) to Indian Ridge Rd	Reconstruct 2 lane roadway addressing geometric issues to align with Hopper Rd Ext	VP-24
28	Hopper Rd Ext	Indian Ridge Rd to Claude Simmons Rd	Construct new 2 lane roadway	VP-25

Source: JCMTPO 2040 LRTP Table 7-1 and The Corradino Group

TABLE 6.2: JOHNSON CITY MTPO 2040 LRTP PROJECTS IN WASHINGTON COUNTY (CONTINUED)

Map #	Route	Termini	Improvement Description	LRTP #
29	SR 75	Boonesboro Rd to US 11E	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-27
30	SR 81	Jonesborough Parkway to I-81	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-28
31	Leesburg Rd	US 11E to SR 81	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-29
32	SR 353	SR 81 to SR 107	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-30
33	SR 81	SR 353 to I-26	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-31
34	Highland Church	SR 75 to Boones Creek Rd (SR 354)	Safety/Geometric Improvements (includes paved shoulder improvements at select locations)	VP-34

Source: JCMTPO 2040 LRTP Table 7-1 and The Corradino Group

TABLE 6.3: KINGSPORT MTPO 2035 LRTP PROJECTS IN WASHINGTON COUNTY

Map #	Route	Termini	Improvement Description	Status
35	SR 93	I-81 to Washington County Line	Spot safety improvements	Committed
36	SR 75	SR 36 to SR 357	Widen from 2 lanes to 5 Lanes	Under Construction
37	SR 36	SR 75 to Washinginton County Line	Widen from 2 lanes to 5 Lanes	Planned

Source: Kingsport 2035 Draft Long Range Transportation Plan and The Corradino Group

TABLE 6.4: FIRST TENNESSEE RPO PROJECTS IN WASHINGTON COUNTY

Map #	Route	Termini	Improvement Description	Status
38	SR 107	Greene County Line to SR 81	Geometric improvements	Unknown
39	SR 81	SR 107 to Unicoi County Line	Transportation Planning Study	Study Complete
40	SR 81	Jonesborough north city limits to SR 93	Lane and shoulder width improvements	Unknown

Source: First Tennessee RPO 2013-2015 Work Program and 2010 Needs Assessment and The Corradino Group

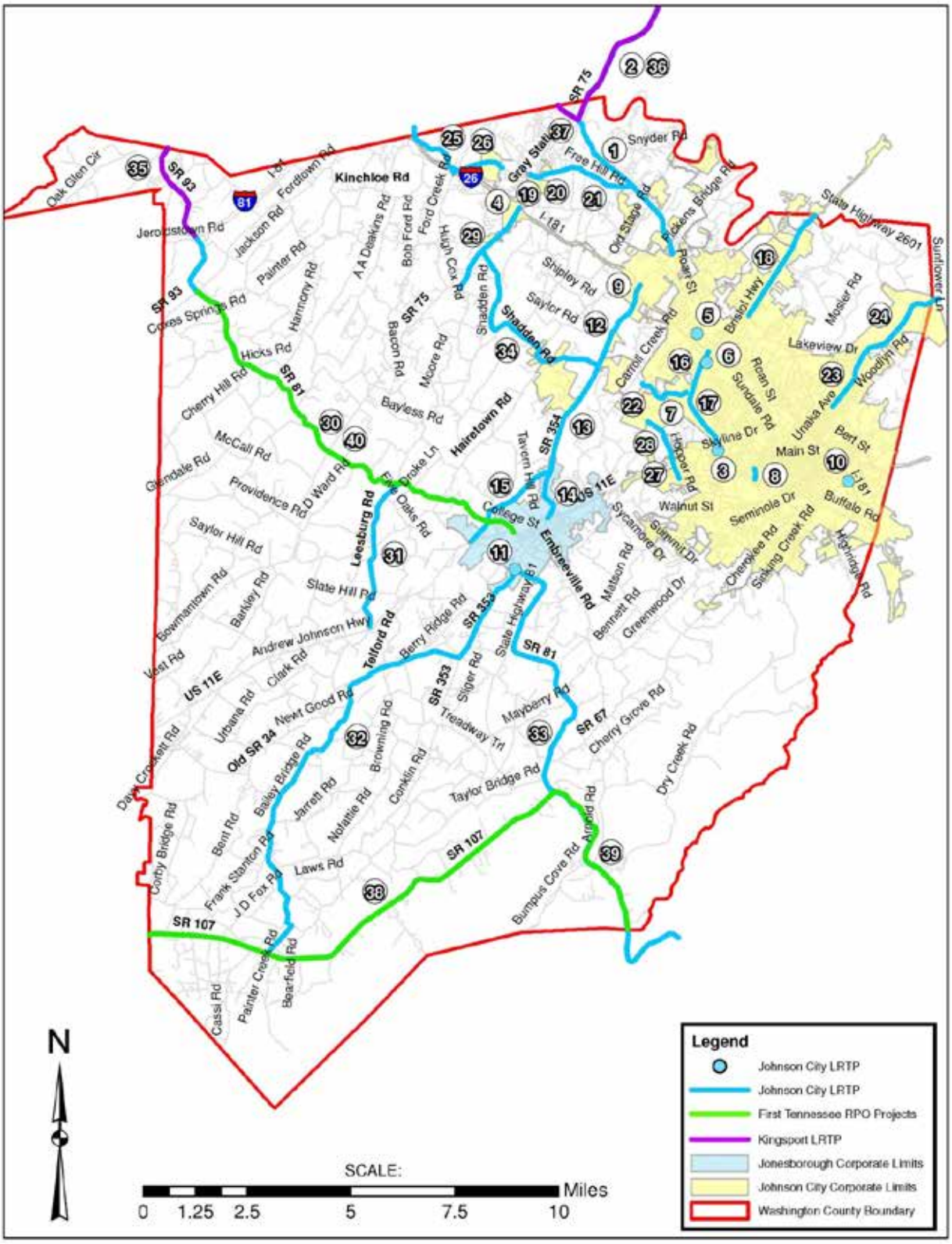

FIGURE 6.1: PROGRAMMED, PLANNED, OR STUDIED ROADWAY IMPROVEMENTS
Source: The Corradino Group

7.0 DATA COLLECTIONS

The existing roadway, existing and design year traffic, and existing and design year LOS data collections are provided on the following pages.