

**DRAFT**

# **Sandy Run Area Plan Final Report**

**April 19, 2019**

## 1. Introduction

### 1.1 Purpose of the study

The Sandy Run Area Plan is funded by the Columbia Area Transportation Study (COATS), which is the designated Metropolitan Planning Organization (MPO) for federal transportation programs for the Columbia urbanized area.

The plan reviews the area’s population and employment characteristics and changes over the past three decades, and forecasts population and employment growth. Existing land uses and transportation facilities in the area are inventoried and evaluated, and three different land use scenarios were developed to illustrate how the area may develop in the future. Two initial land use scenarios helped illustrate the different impacts of continued current growth trends compared with a very compact land use pattern; further details are provided later in the document. Based on public reaction and input to these two land use scenarios, a preferred future land use scenario and strategy was developed based on the expressed desires of community residents and leaders to preserve the rural character of Sandy Run, with key strategies based on public input gathered throughout the planning process.

The plan also identifies key opportunities and strengths to build upon in the future, which are consistent with preserving the rural character of the community while accommodating expected population and employment growth.



*Residents participate in a January planning workshop*

Existing infrastructure conditions have been reviewed and documented, in order to identify areas that are best suited for residential and employment growth. The plan results in a set of recommendations for guiding growth and providing adequate road improvements and other public infrastructure to ensure continued improvement in the quality of life in the Sandy Run Area.

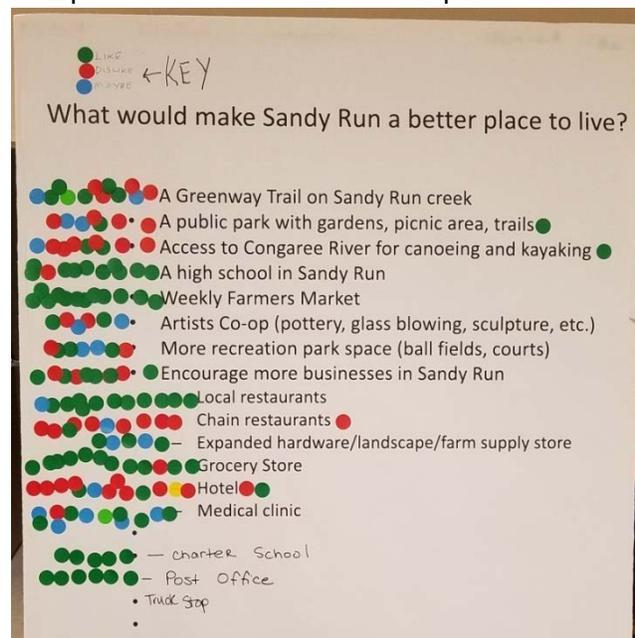
### 1.2 Summary of Project Oversight and Public Engagement

Public involvement for the plan was structured around a Project Steering Committee (PSC) that met at key points during the planning process to review concepts, findings and preliminary recommendations. Five focus groups were recruited to share insights into the key issues and

needs in the Sandy Run Community. Focus Groups were structured to represent key constituencies in the community: Industry, Small Business, Schools and Public Services, Community and Churches, and Real Estate. Appendix B lists the members of the PSC and the Focus Groups.

A half-day planning workshop was held on January 7 with the PSC, focus group members, and other key stakeholders invited by Calhoun County Officials, followed by a steering committee meeting where the initial reactions and results to the workshop input were summarized and discussed. Key activities that yielded very effective responses and direction for the plan included the following:

- reviews and discussion of the future land use maps and the anticipated distribution of population and employment growth in each of the two land use scenarios;
- a visual preference survey, where participants used red and green sticky dots to “vote” to indicate likes and dislikes of illustrations of different types of growth and development types;
- Lists of Community Needs, Transportation Needs, and Land Use changes that were voted on with red and green dots; and,
- Maps and tables of preliminary recommended transportation improvements, with comment sheets provided for suggestions and comments.



Colored sticky dots allowed residents to “vote” on plan ideas

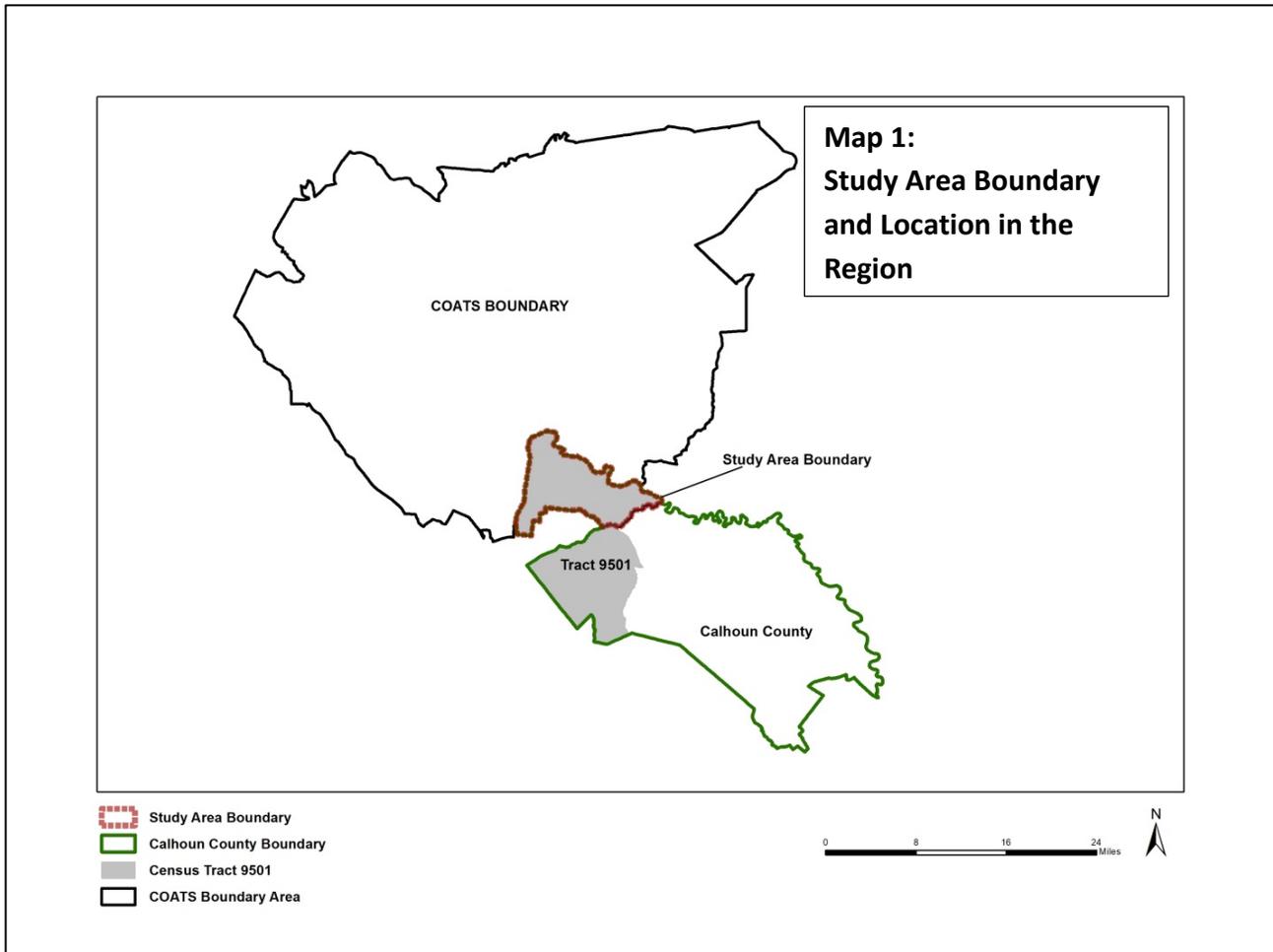
Two public meetings were held to present preliminary land use and transportation recommendations for Sandy Run. The first meeting was coordinated with and held at Mt. Moriah AME Church on March 28, to ensure effective engagement with African American residents of Sandy Run. A second public meeting was held in conjunction with the annual Sandy Run Chili Cook Off at the Sandy Run Community Center, a well-attended and widely-publicized community event.

Survey questionnaires were distributed at large employers, Sandy Run School, and local businesses, and also were posted on the Calhoun County website. Notices of public meetings were posted at local businesses, distributed via e-mail to a newsletter distribution list maintained by County Councilman John Nelson, promoted in church bulletins, and posted on the County website.

## 2. Demographic and Economic Profile

### 2.1 Maps and description of study area geography

Sandy Run was added to the COATS planning area in the early 1990s, when industrial growth in the I-26 corridor had reached a level that became regionally significant. The COATS boundary includes Block Group 1 of Census Tract 9501 in Calhoun County, as illustrated by Map 1 below.



### 2.2 Summary of Current Sandy Run Demographics

Interim Memorandum 1 provides a detailed demographic analysis of Calhoun County and Sandy, and that analysis is summarized here.

**2.2.1 Population Change**

Since 1950, Calhoun County has had very little change in population. Increased mechanization and improved productivity in farming and forestry has reduced the need for agricultural workers, and the nationwide trend of younger residents leaving rural areas to live and work in urban areas clearly has not skipped Calhoun County. The 1950 Census reported 14,753 persons in Calhoun County; in 2016, the Census Bureau estimated the county’s population to be 14,886, a net increase of 133 persons. The County population began increasing after reaching a low point in 1970 as shown in Table 1.

**Table 1**  
**Calhoun County Population, 1950 to 2016**

Year	1950	1960	1970	1980	1990	2000	2010	2016
Population	14,753	12,256	10,780	12,206	12,753	15,185	15,175	14,753

Sources: U.S Census, 1950 through 2010; Census Population Estimates 2016

While the County overall has had population growth since 1970, since 2000 all of that growth has occurred in the northern part of the county, in the Sandy Run block group and the remainder of Census Tract 9501. Table 2 illustrates this shift in population in the county. Sandy Run has grown by 15 percent, while the southern part of the county has lost three percent in population.

**Table 2**  
**Calhoun County Population Change By Area**

Year	Calhoun County	Sandy Run (Tract 9501 Blk Grp 1)	Remainder of Census Tract 9501	Remainder of Calhoun County
2000	15,185	2,108	3,092	12,093
2010	15,175	2,399	3,214	11,961
2016 Estimate	14,886	2,424	3,167	11,719
Percent Change, 2000 to 2016	-2%	15%	2%	-3%

Sources: 1990 through 2010 Census,  
2016 American Community Survey 5-year estimates

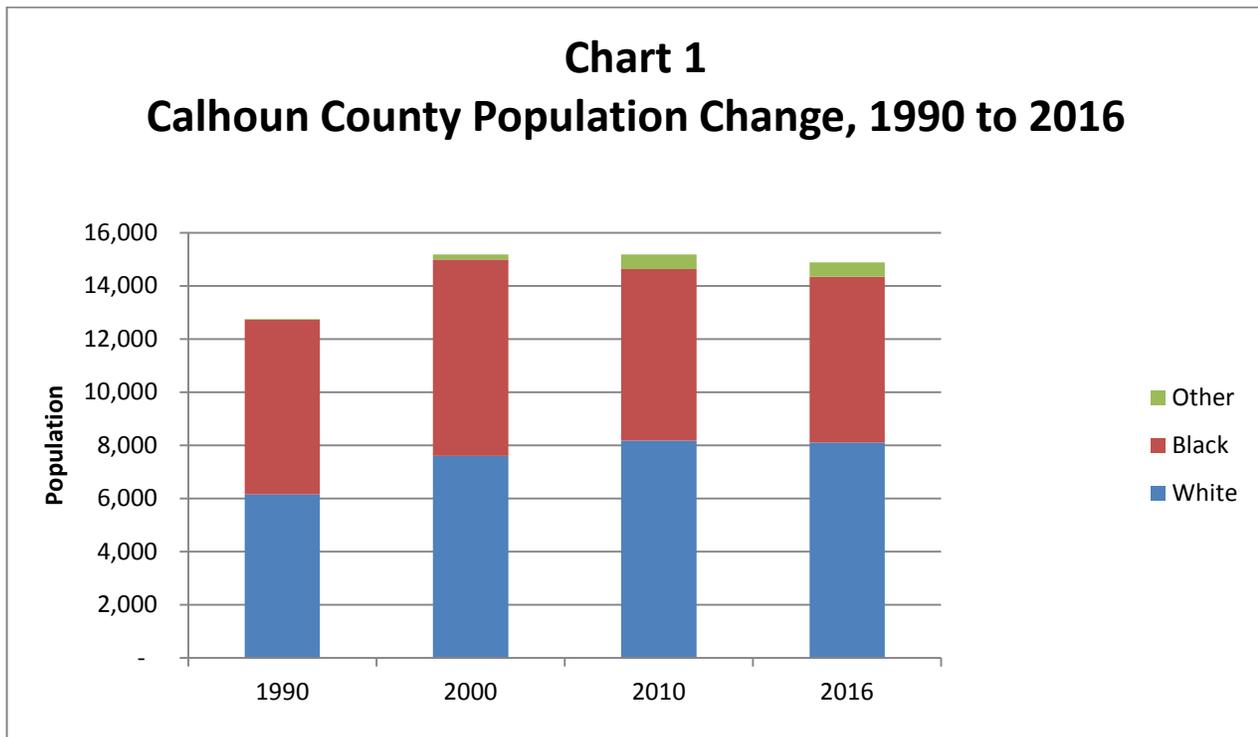
Table 3 presents changes in race, sex, median age, and Hispanic origin from 1990 through 2016. Chart 1 illustrates the change in racial composition of Calhoun County since 1990: white population has increased by about one-third, while black population has declined by five percent.

Persons of other races have increased significantly, although much of this increase is due to a change in Census options in 2010, which allows persons to report themselves as more than one race.

**Table 3**  
**Calhoun County Population Characteristics, 1990 to 2016**

Year	Total Population	White	Black	Other	Male	Female	Hispanic	Median Age
1990	12,753	6,152	6,575	26	6,042	6,711	39	33.0
2000	15,185	7,597	7,393	195	7,196	7,989	212	38.9
2010	15,175	8,177	6,459	539	7,397	7,778	458	43.4
2016	14,886	8,109	6,239	538	7,125	7,761	521	45.8
Percent Change	17%	32%	-5%	1969%	18%	16%	1236%	39%

Sources: U.S. Census 1990 – 2010  
2016 American Community Survey 5-year Estimates



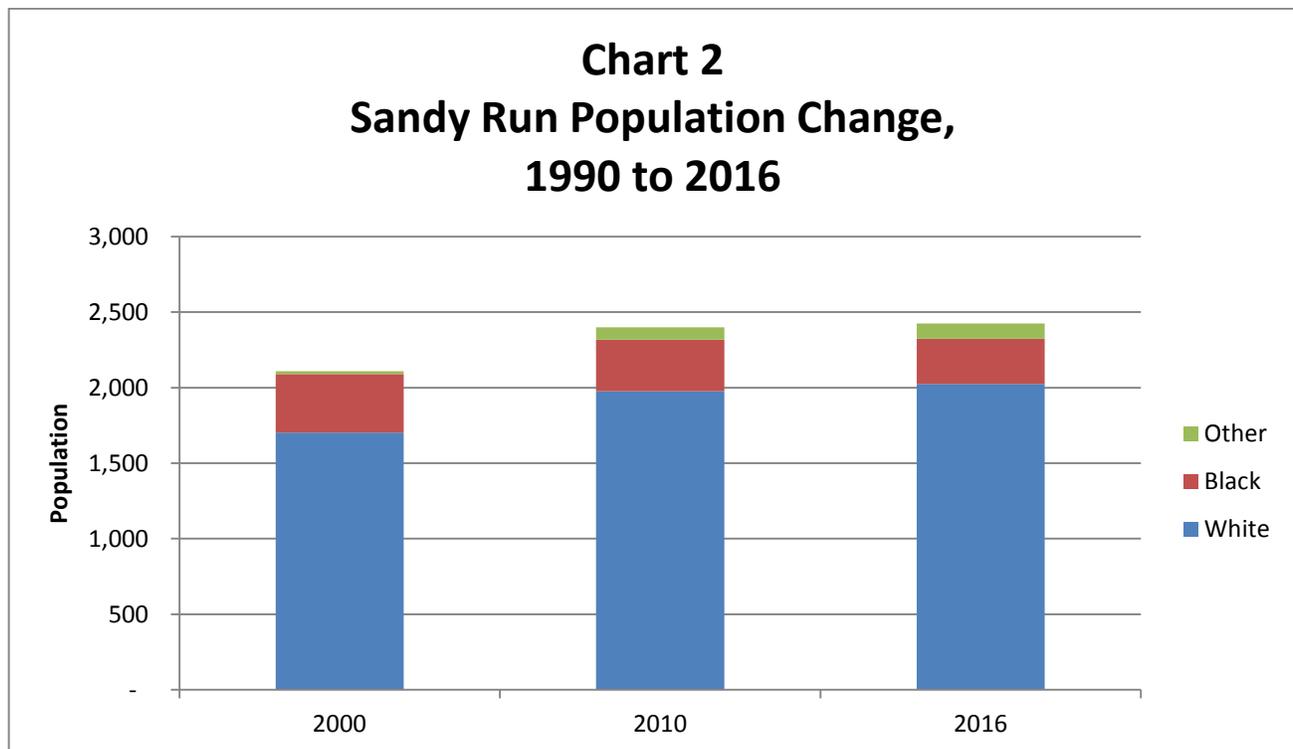
Sources: 1990 through 2010 Census, 2016 American Community Survey five-year estimates

Sandy Run has grown by 15 percent since 2000. White population increased by 19 percent, while black population declined 23 percent. Part of the decline in black population appears to be explained by the change in race reporting options in the 2000 Census; some residents now report both black and white race. Persons of more than one race and all other races are summarized in the “Other” column of Table 4. Persons of Hispanic ethnicity increased significantly as well, and are approaching five percent of the area population.

**Table 4**  
**Sandy Run Area Population Characteristics**

Year	Total Population	White	Black	Other	Male	Female	Hispanic	Median Age
2000	2,108	1,702	388	18	1,026	1,082	15	39.6
2010	2,399	1,977	341	81	1,190	1,209	46	43.8
2016	2,424	2,025	298	101	1,153	1,271	117	48.6
Pct Change	15%	19%	-23%	461%	12%	17%	680%	23%

Sources: U. S. Census 1990 to 2010  
 2016 American Community Survey 5-year estimates



Sources: 1990 through 2010 Census, 2016 American Community Survey five-year estimates

**2.2.2 Housing**

Sandy Run has added over 500 housing units since 1990, as shown in Table 8. Housing units have increased faster than population growth because average household size is decreasing, from 2.54 persons per household in 1990 to 2.37. Owner-occupied housing has declined from 91 percent in 1990 to 84 percent in 2016. The percent of units occupied has declined as well, which may indicate an increase in the number of older housing units that have been abandoned. Driving around the study area does reveal that a number of older manufactured homes are vacant.

**Table 5  
Sandy Run Area Housing**

Year	Housing units	Occupied Housing Units	Percent Occupied Housing Units	Owner Occupied Housing Units	Percent Owner Occupied Housing	Total Households	Persons per Household
2000	960	859	89.5%	777	90.5%	859	2.45
2010	1,139	980	86.0%	843	86.0%	980	2.45
2016	1,166	1,021	87.6%	854	83.6%	1021	2.37
Pct Change	21%	19%	-2%	10%	-8%	19%	-3%

Sources: U. S. Census 1990 to 2010  
2016 American Community Survey 5-year Estimates

**2.2.3 Economic Activity**

Employment data and retail trade data for the area have been collected from available sources to characterize the economy of the Sandy Run area and Calhoun County.

Calhoun County historically had an economy that relied on agriculture. Cotton farming was a major source of income and employment in the first half of the 20<sup>th</sup> century, but agriculture declined as a major source of economic support in the county in the latter half of the century. In the 21<sup>st</sup> century, manufacturing, construction, wholesale trade, retail trade, and services are the foundation of the county economy.

Manufacturing employment has grown by 84 percent from 2000 to 2015, and provides 41 percent of the jobs and 58 percent of the annual payroll within the county. Table 6 presents 2015 employment and payroll data from County Business Patterns; Table 7 shows change in employment from 2005 to 2015. Total employment in the county has increased by 53 percent between 2005 and 2015, led by manufacturing growth. **Leading business sectors are highlighted in yellow in the tables.**

**Table 6**  
**2015 Calhoun County Business Patterns**

Business Sector	Establishments	Employees	Annual Payroll (1,000s)	Percent of Employees	Percent of Payroll
Total	236	3,595	150,379	100%	100%
Agriculture, forestry, fishing and hunting	7	112	3,079	3%	2%
Utilities	2	na	na	na	na
Construction	34	396	14,686	11%	10%
Manufacturing	22	1,467	87,638	41%	58%
Wholesale trade	8	245	8,740	7%	6%
Retail Trade	38	246	5,050	7%	3%
Transportation and Warehousing	10	89	2,953	2%	2%
Information	3	5	288	0%	0%
Finance and Insurance	12	40	1,825	1%	1%
Real Estate Rental and Leasing	4	12	769	0%	1%
Professional, Scientific and Technical Services	13	42	1,190	1%	1%
Administrative and Support Services	15	215	9,225	6%	6%
Educational Services	2	na	na	na	na
Health and Social Assistance	22	394	7,738	11%	5%
Arts, Entertainment and Recreation	4	27	362	1%	0%
Accommodation and Food Services	7	101	976	3%	1%
Other Services	33	103	1,710	3%	1%

Source: U.S. Census Bureau, County Business Patterns, 2005, 2010, and 2015

**Table 7**  
**2005 to 2015 Calhoun County Business Patterns**

	Employees			Percent Change	10 Year Change
	2005	2010	2015		
Total	2,349	3,032	3,595	53%	1,246
Agriculture, forestry, fishing and hunting	12	na	112	833%	100
Utilities	na	na	na	na	na
Construction	215	547	396	84%	181
Manufacturing	799	950	1,467	84%	668
Wholesale trade	99	174	245	147%	146
Retail Trade	243	259	246	1%	3
Transportation and Warehousing	52	na	89	71%	37
Information	8	na	5	-38%	(3)
Finance and Insurance	69	72	40	-42%	(29)
Real Estate Rental and Leasing	22	20	12	-45%	(10)
Professional, Scientific and Technical Services	na	27	42	na	na
Administrative and Support Services	66	na	215	226%	149
Educational Services	na	na	na	na	na
Health and Social Assistance	382	na	394	3%	12
Arts, Entertainment and Recreation	na	na	27	na	na
Accommodation and Food Services	86	79	101	17%	15
Other Services	90	118	103	14%	13

Source: U.S. Census Bureau, County Business Patterns, 2005, 2010, and 2015

Much of the employment growth in Calhoun County since the 1990s has been focused in the Sandy Run area. Proximity to and visibility from I-26 is an important factor, but access to a County sewer main along I-26 from Sandy Run Creek northward to the Cayce Wastewater Treatment Plant is the key factor.. Table 3 presents a list of the ten largest employers in the county, seven of which are in the Sandy Run area.

A current expansion of Zeus Industrial Products will add 230 more employees in Sandy Run. Additional industrial site development appears extremely likely in the near future in the area around the Zeus expansion site.

**Table 8**  
**Calhoun County Largest Private Employers**

Employer	Location	Employees
DAK Americas, LLC	Sandy Run	430
Devro, Inc.	Sandy Run	300
Zeus Industrial Products	Sandy Run	125
Starbucks Roasting Plant	Sandy Run	101
Alaglass Pools	Calhoun County	100
Southeast Frozen Foods	Sandy Run	90
The Fitts Company	Sandy Run	79
Cablecraft Motion Controls	St. Matthews	54
Cameron Lumber Co.	Cameron	54
Stier Supply Co.	Sandy Run	50

Source: Central Carolina Alliance

## 2.2.4 Retail Trade

An evaluation of the Retail Marketplace Profile provided by Central Carolina Alliance confirms what those familiar with the Sandy Run area have observed: residents can and do shop locally for flowers, gasoline, hunting and fishing supplies, lawn and garden supplies, and miscellaneous retail supplies. Nearly all other retail spending by Sandy Run residents occurs outside of the community.

In simple terms, “retail leakage” is the term that means the residents of a community tend to shop outside of their community, by choice or necessity. In many categories of retail sales, 100 percent of the spending of Sandy Run residents occurs outside of the community because there are no local retailers in those retail categories. It is noteworthy that Sandy Run captures a surplus in spending on Florists and Sporting Goods, as both of those categories are served by local Sandy Run businesses. Technical Memorandum 1 Appendix E contains a full Retail Market Profile report provided by staff at Central Carolina Alliance, the Midlands region’s economic development agency.

### 3 Existing Transportation System

Data for the existing highway system was collected from South Carolina Department of Transportation (SCDOT) for the Sandy Run Area. In addition, staff spent considerable time driving the roads in the study area to become familiar with maintenance conditions, traffic flows, and adjacent development.

#### 3.1 Highway Network

##### 3.1.1. Functional Classification of Roads

An important concept for the reader to understand is that most major roads in the U.S. are eligible for federal highway funding. Federal Highway Administration (FHWA) requires state DOTs to functionally classify all public roads based on the types and lengths of trips that are served. All roads classified as Collectors or higher are eligible for federal funding for resurfacing, reconstruction, and improvement. A simplified explanation of functional classes is shown in the sidebar at right.

Within the Sandy Run area, only Interstate 26 is classified as an Arterial route. Other major roads in the study area are classified as Collectors. These routes are:

- Old Sandy Run Road (Secondary Route S-31)
- Old State Road (US 176)
- Columbia Road (US 21)

Map 2 illustrates the functional classification of the highways within the Sandy Run area. This very limited network of Federal Aid eligible roads in the study area are the only roads that can be considered for improvement through the COATS TIP.

Several other state roads are important in the local road network, and in some cases seem to function as Rural Minor Collector Roads, although they have not been included in the Federal Aid Highway Network. These routes are:

#### **Highway Classification**

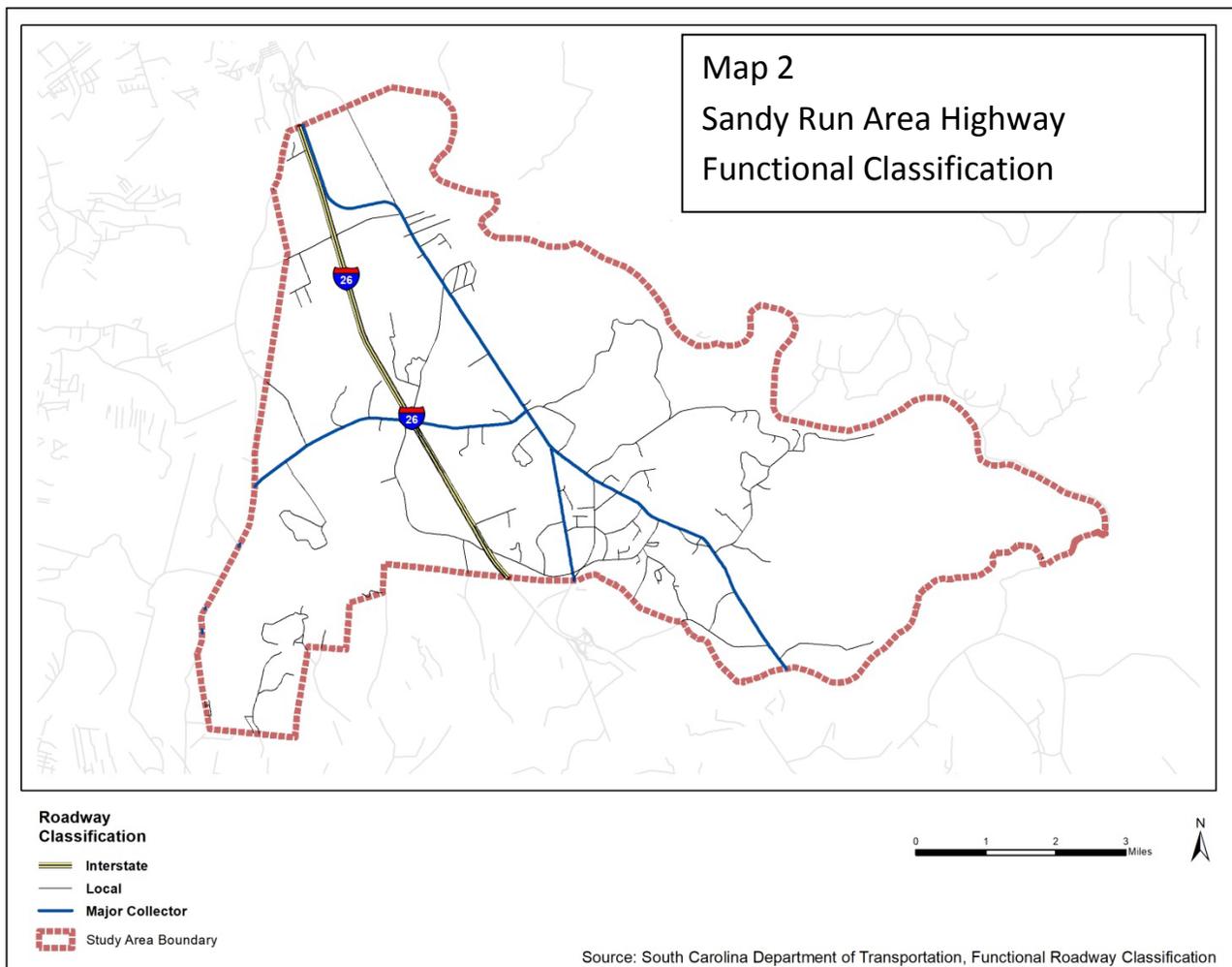
**Principal Arterials** include all of the Interstate Highways, all other freeways, and other major routes that serve major centers of metropolitan areas.

**Minor Arterials** serve trips of moderate length, and provide connectivity to the Principal Arterial system.

**Collectors** gather traffic from local streets and funnel it into the Arterial highways; in rural areas, Collectors serve primarily intra-county travel rather than statewide travel.

- Savany Hunt Creek Road (S-86), which provides access to Zeus Industrial Products and Southeast Frozen Foods;
- Valley Ridge Road (S-41), which provides access to Calhoun County Industrial Park;
- Old Swamp Road (S-353), which provides access to the Devro manufacturing facility and to Sandy Run School.

Each of these routes serves facilities that typically generate positive consideration for adding the route to the federal aid system. Presently, these routes are only eligible for state funding through SCDOT, or for funding through the Calhoun County Transportation Committee (CTC), which receives funds from SCDOT for projects that address local needs. CTC funds can be used to fund projects on or off of the federal aid system.



**3.1.2 Traffic Counts**

Table 9 presents SCDOT traffic counts for selected years in Sandy Run. Presently, all of the roads in the study area operate well below their traffic carrying capacity on typical days.

**Table 9  
Traffic Counts in Sandy Run**

Rte	Rt#	Sta#	Road Name	From .... To	2008	2013	2017
US	21	109	Columbia Rd	Lexington County Line to US 176	1,400	1,550	2,000
US	21	111	Old State Rd N	US 176 (Old State Rd) TO S- 86 (Savany Hunt Creek Rd)	4,500	4,900	5,900
US	21	113	Old State Rd N	S- 86 (Savany Hunt Creek Rd) TO Lexington County Line	3,700	3,800	4,900
US	176	115	Old State Rd S	US 21 (Columbia Rd) TO S- 353 (Old Swamp Rd)	3,500	4,100	4,200
US	176	117	Old State Rd S	S- 353 (Old Swamp Road) TO S- 36 (Great Circle Dr)	2,300	2,700	3,000
S	31	292	Old Sandy Run Rd W	S- 41 (Livingston Rd), S- 459 TO Lexington County Line	2,000	1,950	2,300
S	31	293	Old Sandy Run Rd E	US 21 (Old State Rd) TO S- 41 (Livingston Rd)	1,650	1,650	1,850
S	86	295	Savany Hunt Cr Rd	Lexington County Line to US 21 (Old State Rd)	500	500	600
I	26	2155	I-26	US 21 (Charleston Highway) TO S- 31 (Old Sandy Run Rd)	53,700	54,800	61,700

Source: SCDOT Data Services

While little congestion occurs in Sandy Run on normal days, incidents on I-26 cause traffic to divert through Sandy run using US -21 and US 176, and create substantial delays and problems for local traffic. SCDOT has proposed widening I-26 to six lanes southward from Exit 125, where the Interstate currently transitions from six lanes to four lanes, and this likely will reduce crashes in the segment between Exit 125 (Old Sandy Run Road) and Exit 129 (US 21) and thereby reduce the frequency of Interstate traffic being diverted by GPS navigation through Sandy Run.

Hurricane evacuation operations usually result in lane reversals on I-26 between Charleston and I-77 south of Columbia, so that all lanes of I-26 operate in the Westbound direction for evacuation, and then all operate Eastbound for return to the coast. During I-26 lane reversals, US 176 is the primary route to the coast during evacuation operations, and the primary route for leaving the coast when the area is cleared for residents to return to the coast. During these lane reversals, traffic volumes and congestion increase significantly through Sandy Run on US 176.

Map 3 shows the approximate locations at which traffic counts are conducted by SCDOT in Sandy Run, with traffic volumes represented by line width.

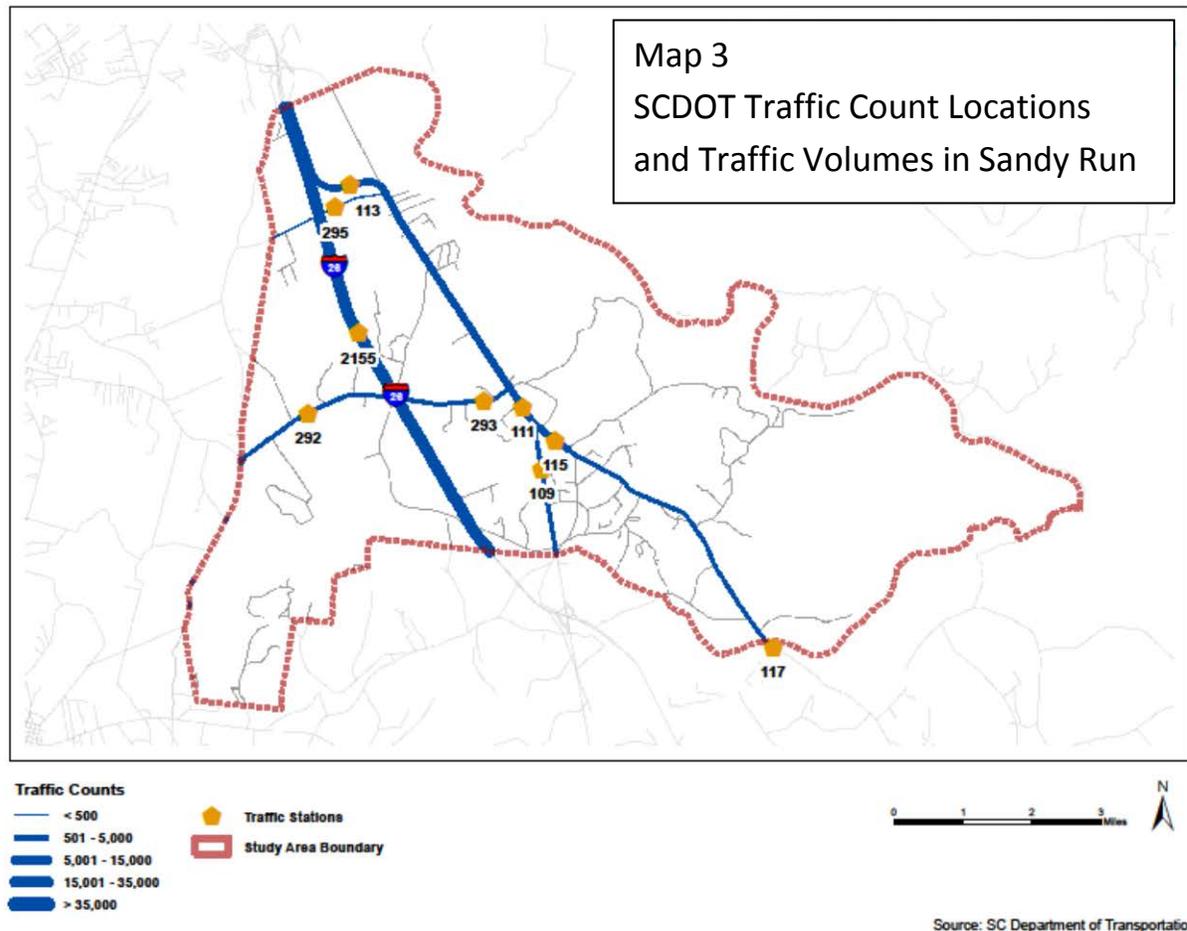
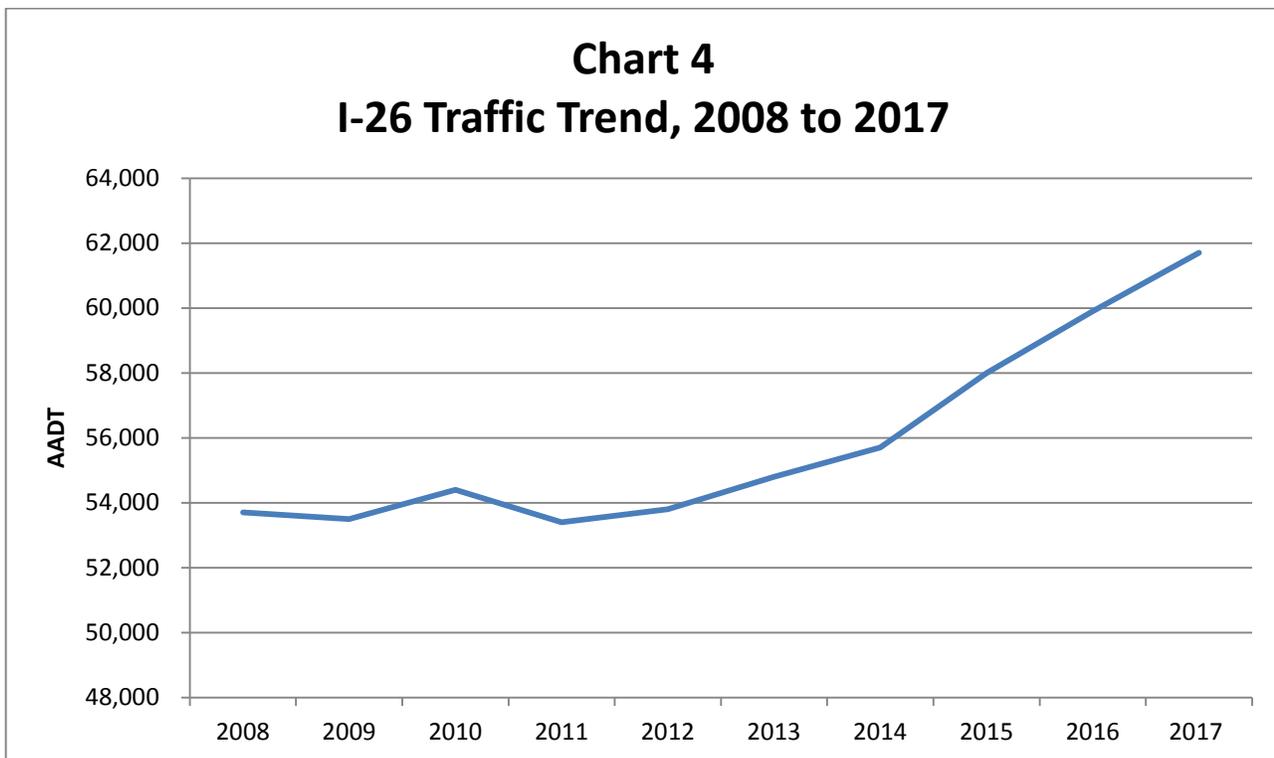
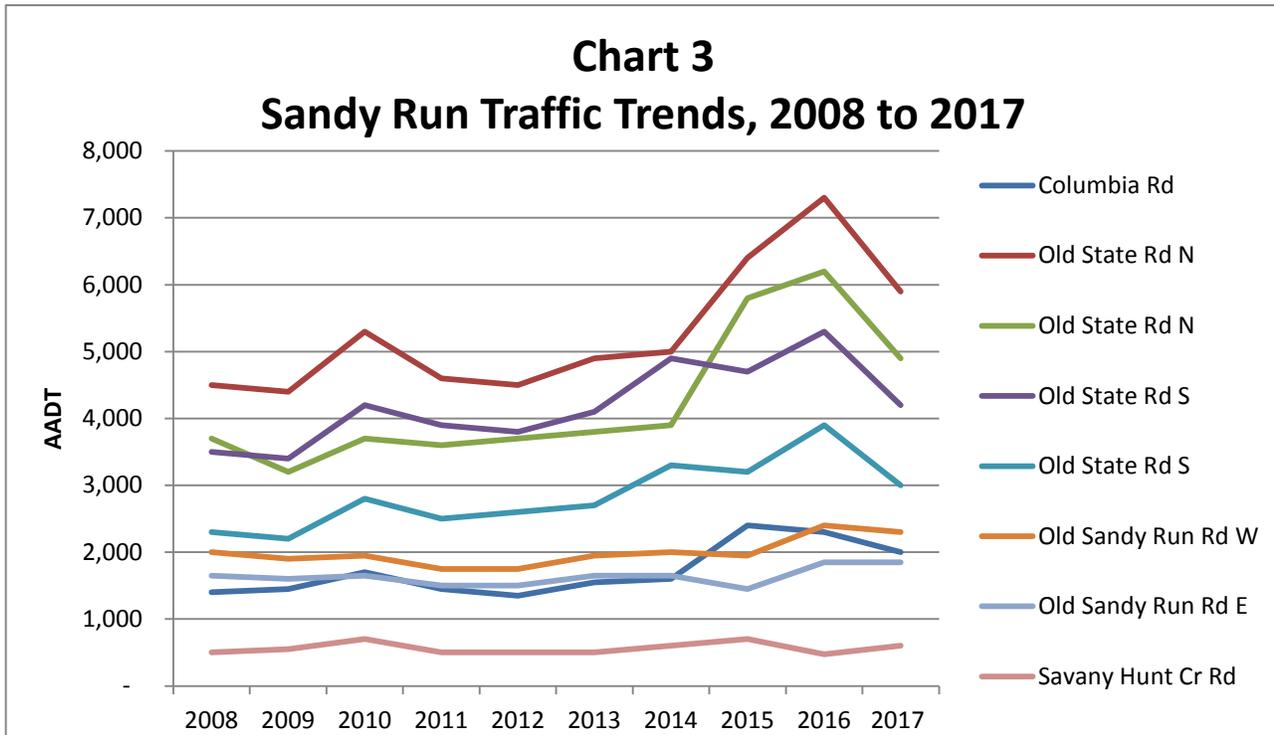


Chart 3 provides a graphic depiction of traffic trends in Sandy run for each of the routes in SCDOT’s traffic count database. Highest traffic volumes are found on the northern sections of Old State Road. Traffic volumes on nearly all of the roads in the area show a peak in 2015 and 2016 when I-26 construction was underway; this likely reflects both the tendency of daily commuters to take US 176 rather than I-26 during the construction period, as well as crash-related traffic diversion through Sandy Run. All routes show a return in 2017 to a level more in line with the long term growth trend for traffic in the area.

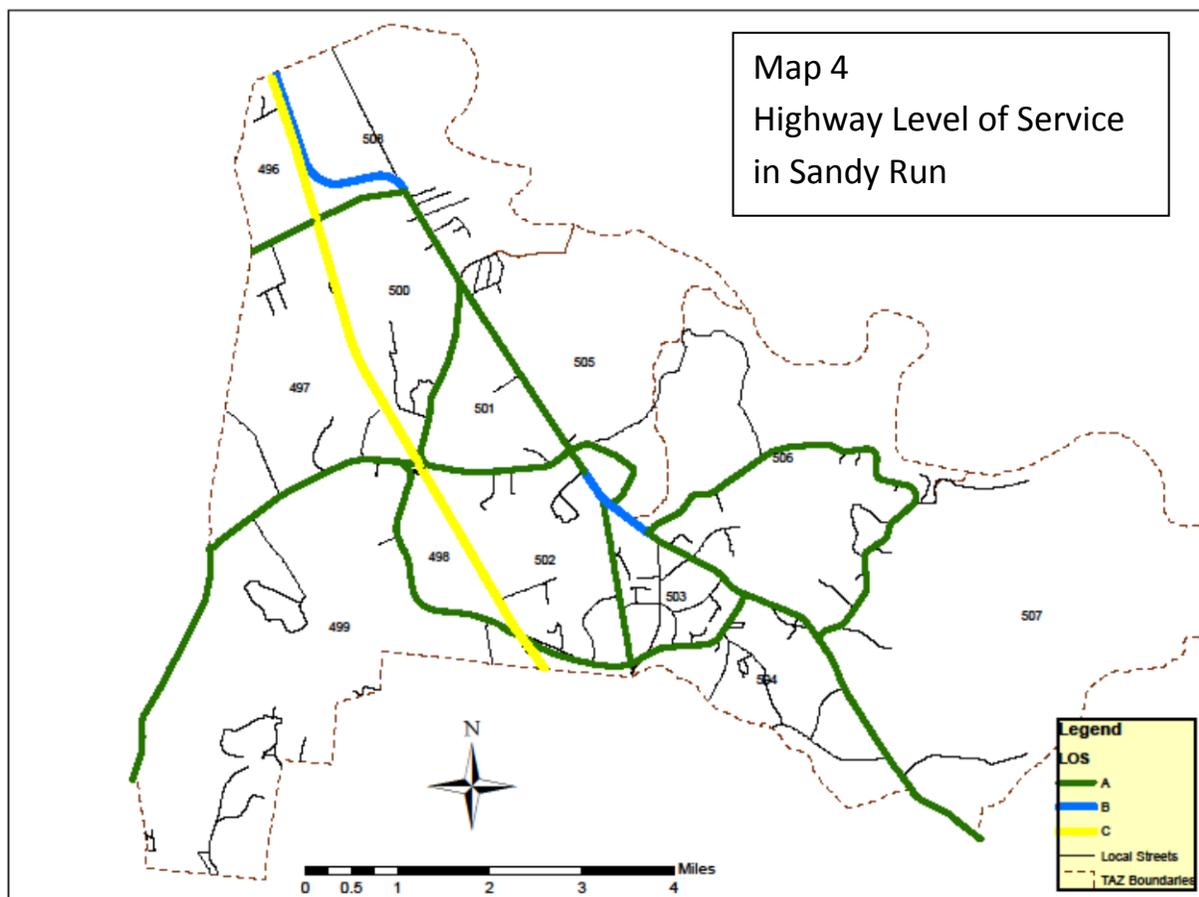
Chart 4 illustrates the ten-year growth trend for traffic on I-26 from 2008 through 2017. Consistent with data reported nationwide, traffic volumes actually declined on I-26 during the years of “The Great Recession,” with 2011 being the low point. Since 2011, I-26 traffic has increased by 16 percent, which likely reflects several factors: statewide population growth,

tourism industry recovery and growth, and increased goods movement and intercity travel associated with the general economic recovery.



## 3.1.3 Highway Level of Service

Map 4 illustrates Level of Service on the roads in Sandy Run that are included in the COATS regional travel demand model. The traffic engineering concept of Level of Service is explained and defined in Table 10 below; the concept mirrors academic letter grades, with Level of Service A (LOS A) being ideal traffic operations and LOS F describing a road where traffic exceeds the road's capacity and travel becomes highly congested. In rural areas, most highway agencies attempt to maintain at least LOS C operations, while in urban areas LOS D or even LOS E is considered acceptable for peak period operations.



In the Sandy Run study area, all roads currently operate at LOS A or LOS B except for I-26, which operates at LOS C. It is important to note that I-26 is presently at the upper end of capacity for a four lane interstate and growing at three percent annually; south of Sandy Run, crashes and delays should be expected to become more common as the freeway reaches and exceeds capacity, and these conditions will not improve until the next section of I-26 is widened.

**Table 10**  
**Highway Level of Service (LOS)**

LOS	Description
A	Free flow. Traffic flows at or above the posted speed limit and motorists have complete mobility between lanes.
B	Reasonably free flow. LOS A speeds are maintained, but maneuverability within the traffic stream is slightly restricted.
C	Stable flow, near free flow. Ability to maneuver is restricted and lane changes require more driver awareness. This is the target LOS for most rural highways.
D	Approaching unstable flow. Speeds become variable, and freedom to maneuver is much more limited and driver comfort levels decrease.
E	Unstable flow, at capacity. Flow becomes irregular and speed varies rapidly because there are no gaps in the traffic stream. Incidents create serious delays.
F	Breakdown flow. Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted.

**3.1.4 Crash data and crash rates**

Five years of highway crash data was obtained from SCDOT and mapped to provide an indication of any crash hot spots in the area. Overall, crash rates appear to be in an acceptable range:

- Fatality rate for Sandy Run area is 1.36 per 100 million vehicle miles of travel, compared with the national rate of 1.16 for 2017, while the South Carolina Fatality rate was 1.87 in 2016;
- Injury rate for Sandy Run is 40.1, compared with a national rate of 85.

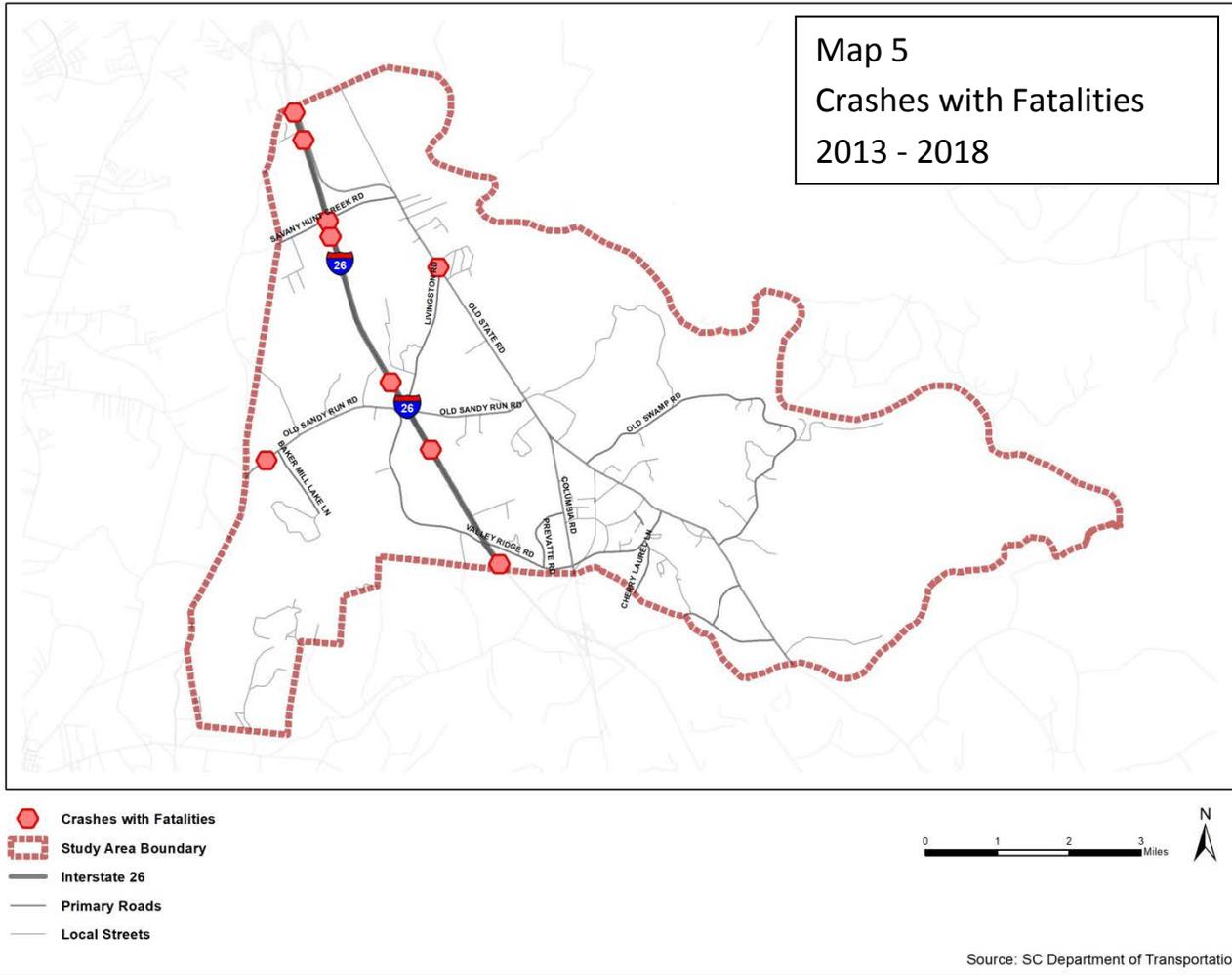
Table 11 below provides data and crash rates for the Sandy Run study area. The vehicle miles of travel estimate used to calculate the crash rates includes only the roads in the study area that have SCDOT traffic counts, which results in rates that are very slightly higher than they would be if all of the vehicle miles of travel in the study area were included in the calculation.

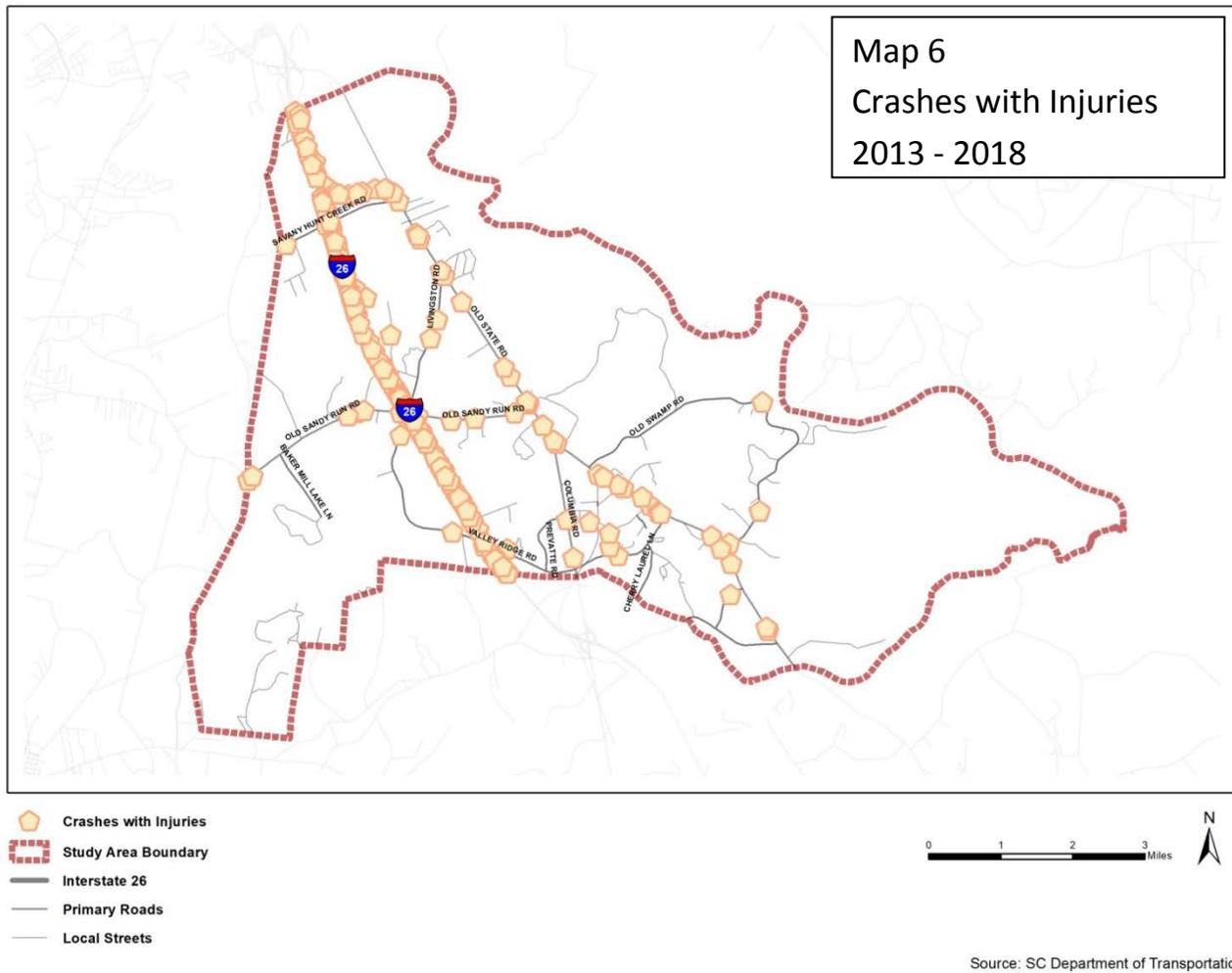
Table 11  
Sandy Run Area Estimated Crash Rates, 2013 to 2018

Statistic	Five-Year Total
Total Vehicle Miles of Travel (VMT)	663,202,993
Crashes	969
Crash Rate (per 100 million VMT)	146.1
Injury Crashes	266
Injury Crash Rate	40.1
Fatalities	9
Fatality Rate	1.36
SC Fatality Rate, 2016	1.87
SC Injury Rate, 2016	not available
National Fatality Rate, 2017	1.16
National Injury Rate, 2017	85

Sources: SCDOT Traffic Counts, SCDOT Roadway Incident Management System (RIMS) Reports, and NHTSA Traffic Safety Facts, April 2019

Map 5 illustrates the location of crashes with fatalities in Sandy Run, while Map 6 shows the distribution of crashes with injuries in the study area from 2013 through June 2018. The location of crashes was used to help identify intersections that should be considered for safety improvements such as left turn lanes during the planning horizon. The crash analysis here is intended as guide to help prioritize potential needs; further study by SCDOT will be necessary to determine the types of safety improvements that will be most appropriate and the priority for funding those improvements.





### 3.1.5. Observations About Roads in Sandy Run

The highway network in the Sandy Run area has had relatively few improvements in recent years. Beginning in 2015, Interstate 26 was widened to 3 lanes in each direction from north of Old Sandy Run Road (Exit 125). Old State Road (US 176) has been recently resurfaced with two-foot wide paved shoulders with rumble strips along the edge line, and is in a good state of repair. A safety improvement at the US 21/US 176 intersection has added concrete islands and improved the alignment and geometry of the intersection.

All other major routes in the area are two-lane roads with ditch drainage and earthen shoulders. There are no traffic signals in the study area, and none of the intersections have been improved with left turn lanes. Recent new commercial development has occurred north and south of the intersection of Old State Road (US 176) and Old Sandy Run Road, but left turn lanes have not been added to Old State Road at the commercial driveways.

## **3.1.6. Public Concerns**

Concerns that were often voiced in meetings with the PSC, focus groups, and area residents include:

- Excessive speed on Old State Road between US 21 to a few hundred yards north of Old Sandy Run Road (north of commercial businesses);
- Need for left turn lanes to serve businesses on Old State Road between US 176 and Sandy Run Road;
- Sight distance problems caused by vehicles parking in the right of way in front of the Marathon gas station on Old State Road at Old Sandy Run Road;
- Heavy traffic on US 176 during hurricane evacuations, when I-26 is reversed and US 176 is the designated alternate route to I-26; and,
- High volumes of interstate traffic diverting through Sandy Run on US 21 and US 176 when crashes cause backups on Interstate 26.

## **3.2 Non-motorized Transportation**

There are no facilities for pedestrians or bicyclists in the Sandy Run area. Pedestrians walk on the shoulders of the roads, while bicyclists must share the general traffic lanes with trucks and automobiles. Very few bicyclists or pedestrians have been observed during site visits and driving tours of the study area, and improved bicycle and pedestrian facilities were not a high priority in comments and responses in public involvement sessions.

## **3.3 Public Transportation**

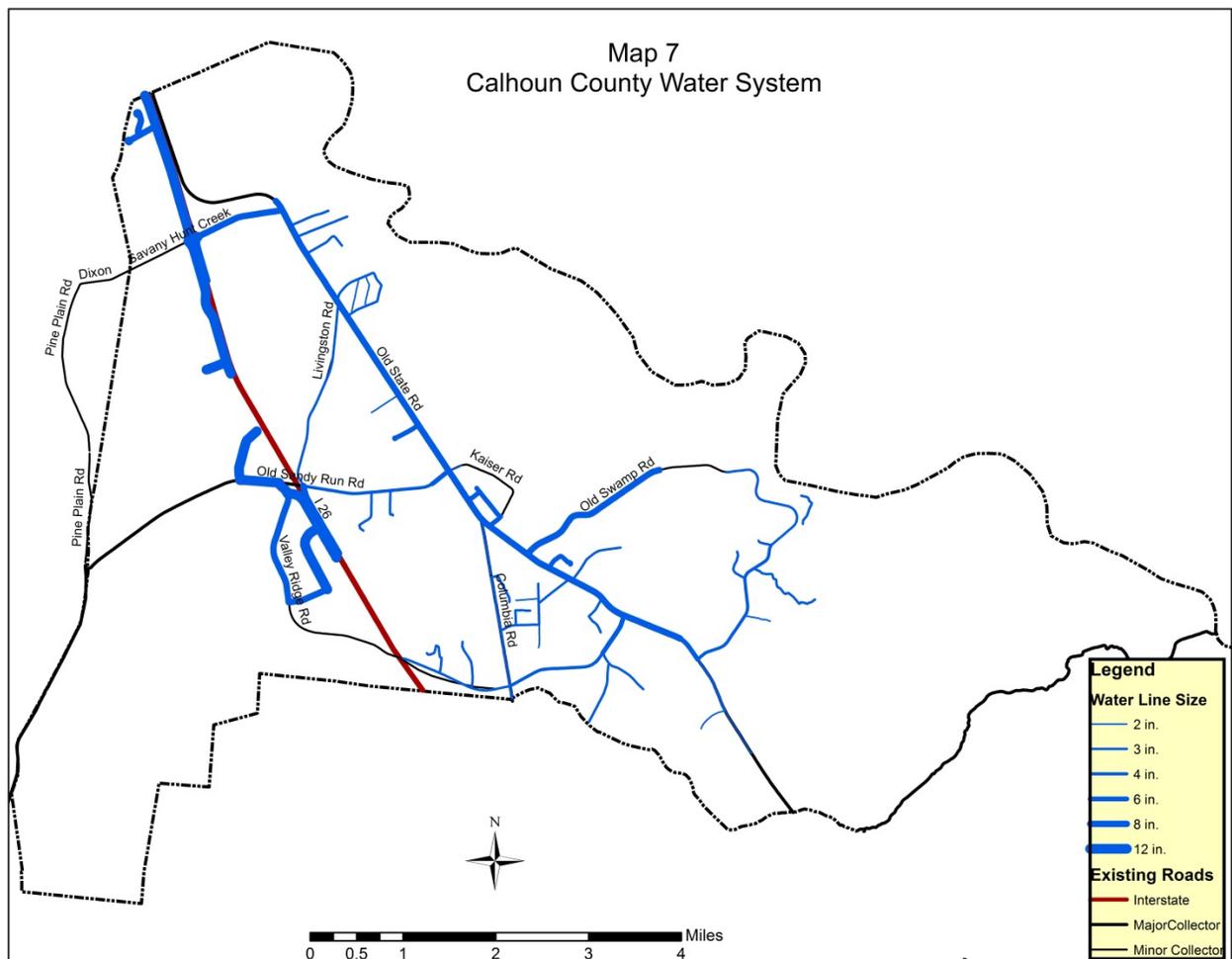
The area is not served by public transit or by commercial intercity bus service. Little to no support was found for express bus service to Columbia in public involvement meetings, where that was specifically listed as an idea for improving transportation. At present density, fixed route service is unlikely to be productive.

## 4 Infrastructure Availability and Development Constraints

Sandy Run is a rural community where in many cases family lands have remained intact since the 1700s. Employment and population growth in the area is a relatively new phenomenon, and at present the community has limited infrastructure to support suburban growth. This section of the report describes the existing water, sewer, electric and telecommunications infrastructure in the area necessary to support industrial, commercial and residential growth, as well as the natural drainage systems and wetlands that influence and constrain the location of development.

### 4.1 Rural Water System

Calhoun County operates a rural water system in the Sandy Run area, which provides extensive geographic coverage. However, much of the system consists of small diameter lines and in some areas adequate flow is not available for fire hydrants. The County is continuing to upgrade the system, primarily to support industrial growth, but also to replace aging lines.



Three wells provide raw water for the system. One is located on Old Swamp Road near Old State Road, one is located on Old Sandy Run Road across from the fire station, and a third is located on the west side of I-26 near the water tower, and a fourth is being developed near the Calhoun County Industrial Park on Sonntag Drive.

Table 12 provides capacity and demand details for the Calhoun County water system serving the Sandy Run area. Map 7 shows the water mains and service lines in the system. Within the core service area, defined by I-26, Savany Hunt Creek Road, Old State Road, and Sandy Run Creek, the system has eight-inch mains to provide for adequate primary distribution for industrial development and to maintain adequate pressure for fire service.

**Table 12**  
**Calhoun County Municipal Water Well Capacities**

Available Flow from Wells	Gallons Per Day (GPD)	
	24 Hour Volume	16 Hour Volume
Water Wells		
Sandy Run well 1	532,800	355,200
Sandy Run well 2	518,400	345,600
I-26 well	648,000	432,000
Sonntag well	700,000	480,000
<b>Total</b>	<b>2,399,200</b>	<b>1,612,800</b>

Average Gallons Pumped Per Day	Gallons Per Day (GPD)	
	24 Hour Volume	16 Hour Volume
Water Wells		
Sandy Run well 1	200,000	n/a
Sandy Run well 2	200,000	n/a
I-26 well	174,000	n/a
Sonntag well	-	n/a
<b>Total</b>	<b>574,000</b>	<b>n/a</b>

Excess Capacity of Wells	Gallons Per Day (GPD)	
	24 Hour Volume	16 Hour Volume
Water Wells		
Sandy Run well 1	332,800	155,200
Sandy Run well 2	318,400	145,600
I-26 well	474,000	258,000
Sonntag well	700,000	480,000
<b>Total</b>	<b>1,825,200</b>	<b>1,038,800</b>

Source: Calhoun County Public Works

**4.2 Wastewater Collection and Treatment Capacity**

Wastewater service in Sandy Run is limited to areas along I-26 north of Sandy Run Creek. Wastewater is pumped in a pressurized main from Sandy Run to the City of Cayce wastewater treatment plant on the Congaree River. Calhoun County has purchased 250,000 gallons per day of wastewater capacity at the Cayce Plant and pays a treatment fee based on volume. Currently, about 1500,000 gallons per day of wastewater is generated by customers in Sandy Run.

Calhoun County owns a small wastewater treatment plant near the rest area on I-26. This plant is currently idle, but could be reactivated to provide an additional 140,000 gallons per day of capacity.

The total potentially available wastewater treatment capacity in Sandy Run is 290,000 gallons per day, considering unused capacity at the Cayce plant and the idle capacity of the Calhoun County plant. Table 13 provides a summary of wastewater capacity. Map 8 illustrates the location of sewer mains and the County’s currently idle wastewater treatment plant.

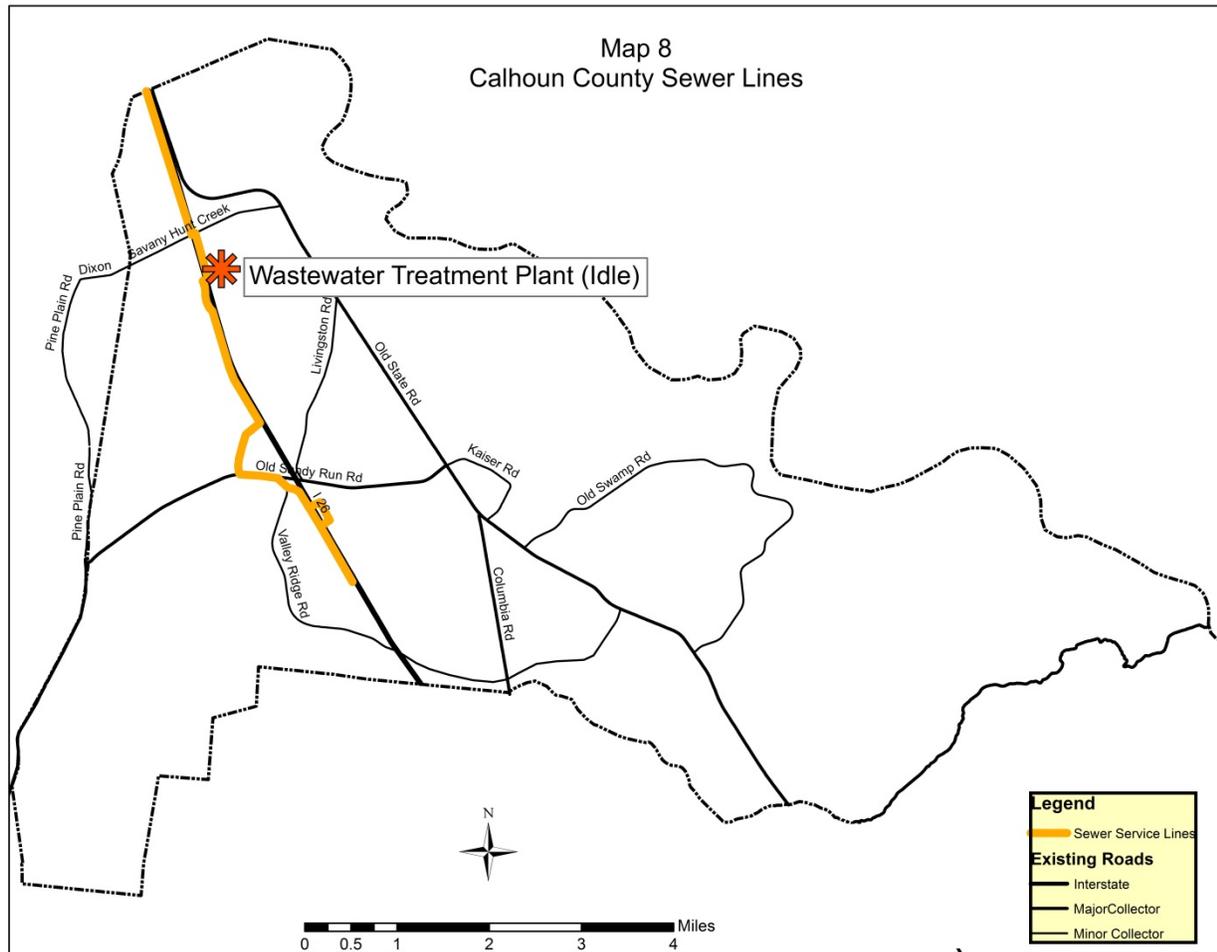
**Table 13  
Calhoun County Wastewater Treatment Capacities**

Wastewater Treatment Plant	Total Capacity	Available Capacity
City of Cayce Wastewater Treatment Plant	250,000	150,000
Calhoun County Wastewater Treatment Plant	140,000	140,000
Treatment Capacity	390,000	290,000

Source: Calhoun County Public Works

Presently, all residential development and most small businesses in Sandy Run rely on septic systems for wastewater disposal. Recent problems with some new subdivision lots failing to pass soil percolation tests, which are required to obtain a permit for a septic tank, have raised concerns about development on half-acre lots in the Sandy Run area. A residential of 20,000 square feet, slightly less than one-half acre, is the minimum allowed by SC DHEC for septic systems. Some soils in the area are relatively impermeable and may not be suited for septic systems. While identification of areas that may be unsuitable for septic systems is beyond the scope of this study, Calhoun County may wish to pursue further evaluation of available soils data with state agencies; the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS) soil survey for the county is available on line at the link below.

[https://www.nrcs.usda.gov/Internet/FSE\\_MANUSCRIPTS/south\\_carolina/SC017/0/Calhoun.pdf](https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/south_carolina/SC017/0/Calhoun.pdf)



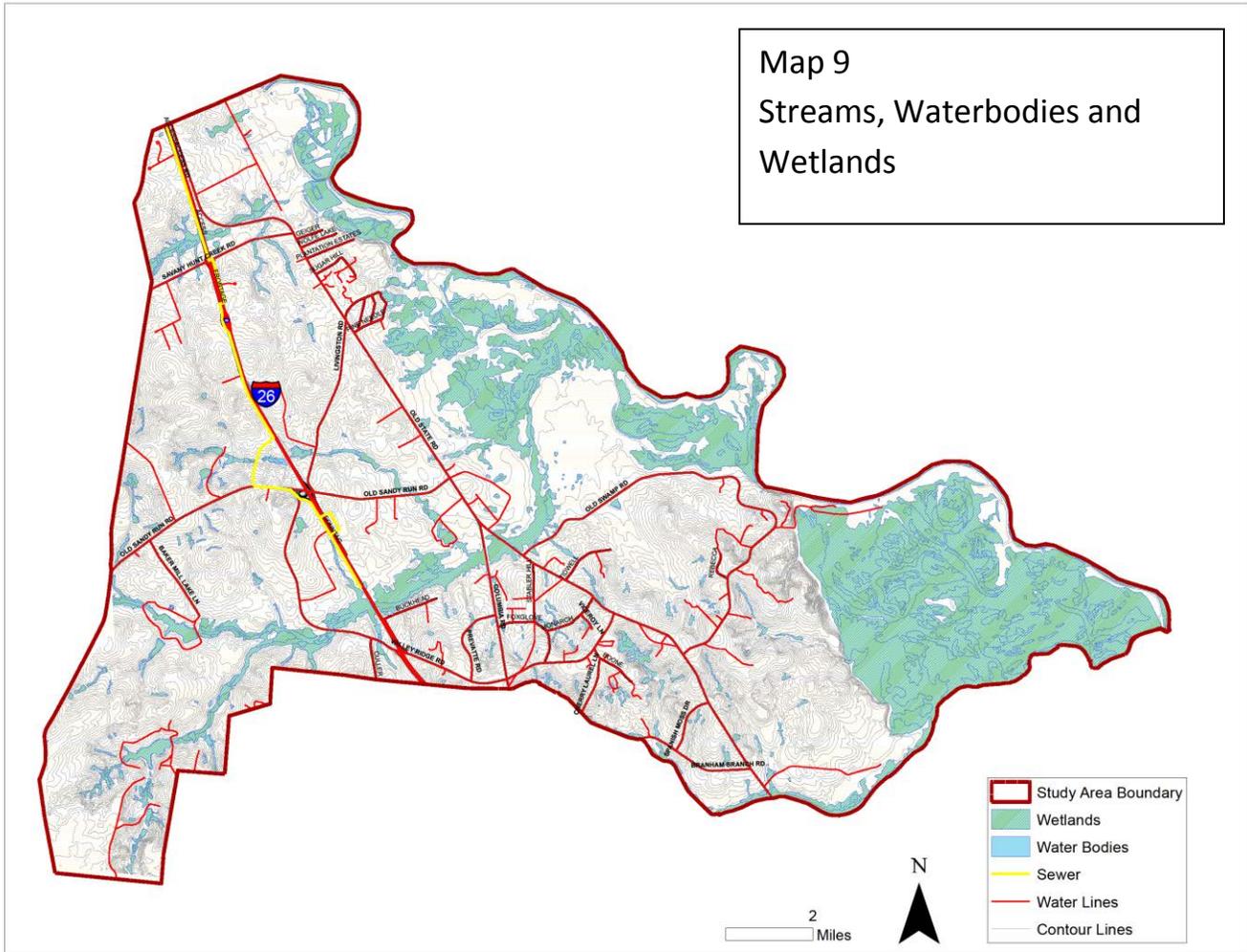
### 4.3 Private Utility Services

Security concerns preclude mapping electric and gas distribution lines, while competitive concerns result in limited responsiveness from telecommunication providers regarding location and capacity of their facilities. However, discussions with existing industry representatives and with Central Carolina Alliance indicates that the facilities are adequate to support continued industrial growth and that both SCE&G and Tri-County Electric Cooperative have been responsive to industrial customers' needs; Tri-County provides electric service to all of the study area except the northernmost area above Savany Hunt Creek Road, which is served by SCE&G. SCE&G provides natural gas throughout the study area.

Electric and natural gas capacity concerns have not been found to be a limitation on industrial recruitment. However, some concerns about broadband access and capability have been raised, primarily by small business and residents. Some comments suggest that internet service is less than ideal in parts of the study area.

#### 4.4 Streams, wetlands and development constraints

Significant areas along the Congaree River in the Sandy Run study area are wetlands or lie within the floodplain of the river. Two large tracts are protected by conservation easements. Map 9 depicts areas that are unsuitable for development due to environmental constraints. Water lines and sewer lines also are shown on this map for reference.



Generally, land along the Congaree is undevelopable wetlands. Sandy Run Creek runs generally southwest to northeast through the study area and is the major drainage course through the study area.

## 5 Existing Land Use and Zoning

### 5.1 Existing Land Use Inventory

An existing land use inventory was completed using Calhoun County tax records. The inventory of developed and undeveloped land is summarized below in Table 14, which summarizes land by development status based on environmental constraints, conservation easements, and regulatory protections. Table 15 summarizes the inventory of developed land by land use category. Existing Land Use is mapped in Map 10.

**Table 14**  
**Sandy Run Land Development Status**

Land Development Status	Acres	Percent of Total
Developed Land	8,584	25%
Undeveloped Land	25,467	75%
Undeveloped Land - Undevelopable	9,692	28%
Undeveloped Land - Developable	15,775	46%
Total	34,051	100%

Source: Calhoun County Tax Assessors data, 2018

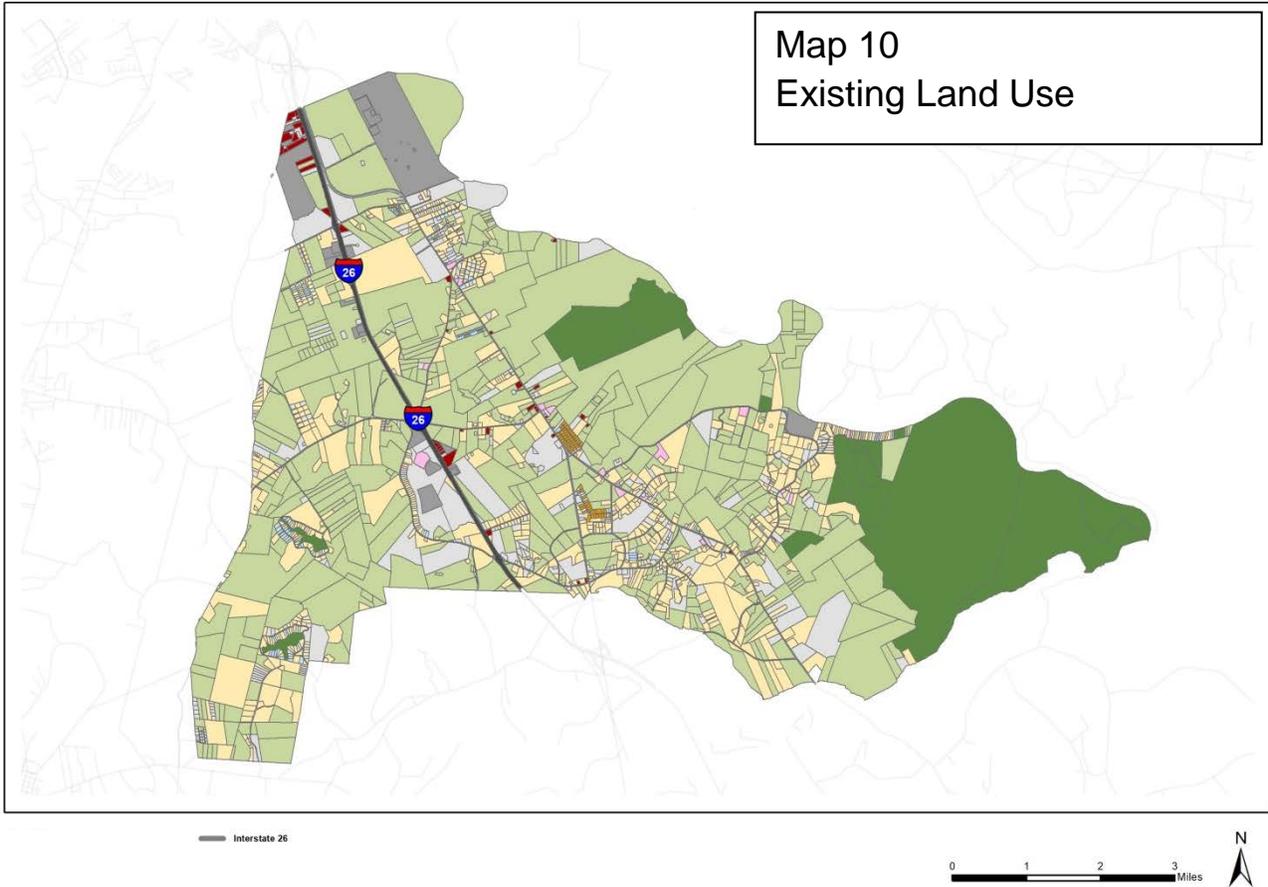
**Table 15**  
**Sandy Run Land Use Inventory**

**DEVELOPED LAND ONLY**

Land Use	Parcels	Acres	Average Acres per Parcel	Percent of Developed Land
All Residential	925	6,034	6.52	70%
Commercial	43	137	3.2	2%
Industrial	30	1,165	38.8	14%
Agricultural	28	1,004	35.9	12%
Open Space	2	124	62.2	1%
Civic / Tax-Exempt	31	119	3.8	1%
Total	1,059	8,584	na	100%

Source: Calhoun County Tax Assessors data, 2018

Map 10  
Existing Land Use



- Land\_Use**
-  Undeveloped
  -  Open Space
  -  Agricultural / Open Space
  -  Industrial
  -  Rural Residential
  -  Large-Lot Residential
  -  Commercial
  -  Vacant Residential
  -  Civic

## 5.2 Existing Zoning

Calhoun County zoning districts are summarized below. This summary is intended to define the zoning districts sufficiently for planning purposes, and does not include all of the details of the zoning ordinance. At present, the PUD and UD districts are not found within the Sandy Run area.

### RUD – Rural District

This district does not restrict uses.

### UD – Urban District

This district covers the unincorporated area around the Town of St. Matthews, and uses are not restricted.

### RC -- Single-Family Residential District

Permitted uses include single family detached dwellings; churches and places of worship; schools; parks, golf courses, and similar open space uses; family day care homes; horse stables; home occupations; and uses accessory to those listed. Manufactured homes are prohibited.

### RD -- Multiuse Residential District

Permitted uses include all uses permitted in the RC district, plus: single family attached townhouses; duplexes; multifamily dwellings including apartments, condominiums and boarding houses; manufactured homes; nursing homes; home occupations; child care centers; agricultural uses, including greenhouses and nurseries, equine hospitals, general farming operations, except that keeping of pigs, livestock feed lots, and commercial poultry houses shall not be permitted.

### IND -- Industrial District

Permitted uses include: agricultural uses; industrial, manufacturing, and mining; wholesale, warehousing and distribution; office buildings, laboratories and research facilities; private clubs, lodges, and armories; landfills; veterinary establishments; business and vocational schools; bulk and outdoor storage lots; utilities, including production and distribution facilities; water plants, sewage treatment facilities, and substations; assembly and processing plants; automotive wrecking, appliance, and construction material salvage and junkyards; resource recovery, solid waste and composting facilities; and uses accessory to the above.

### OR -- Office-Residential District

Permitted uses include single family detached dwellings, patio homes, townhouses, churches and places of worship, parks and open space uses, horse stables, family day care homes, medical offices and clinics, nursing homes, schools, funeral homes, professional offices, government offices, financial institutions, and similar uses.

### LD -- Limited Development District

# Sandy Run Area Plan

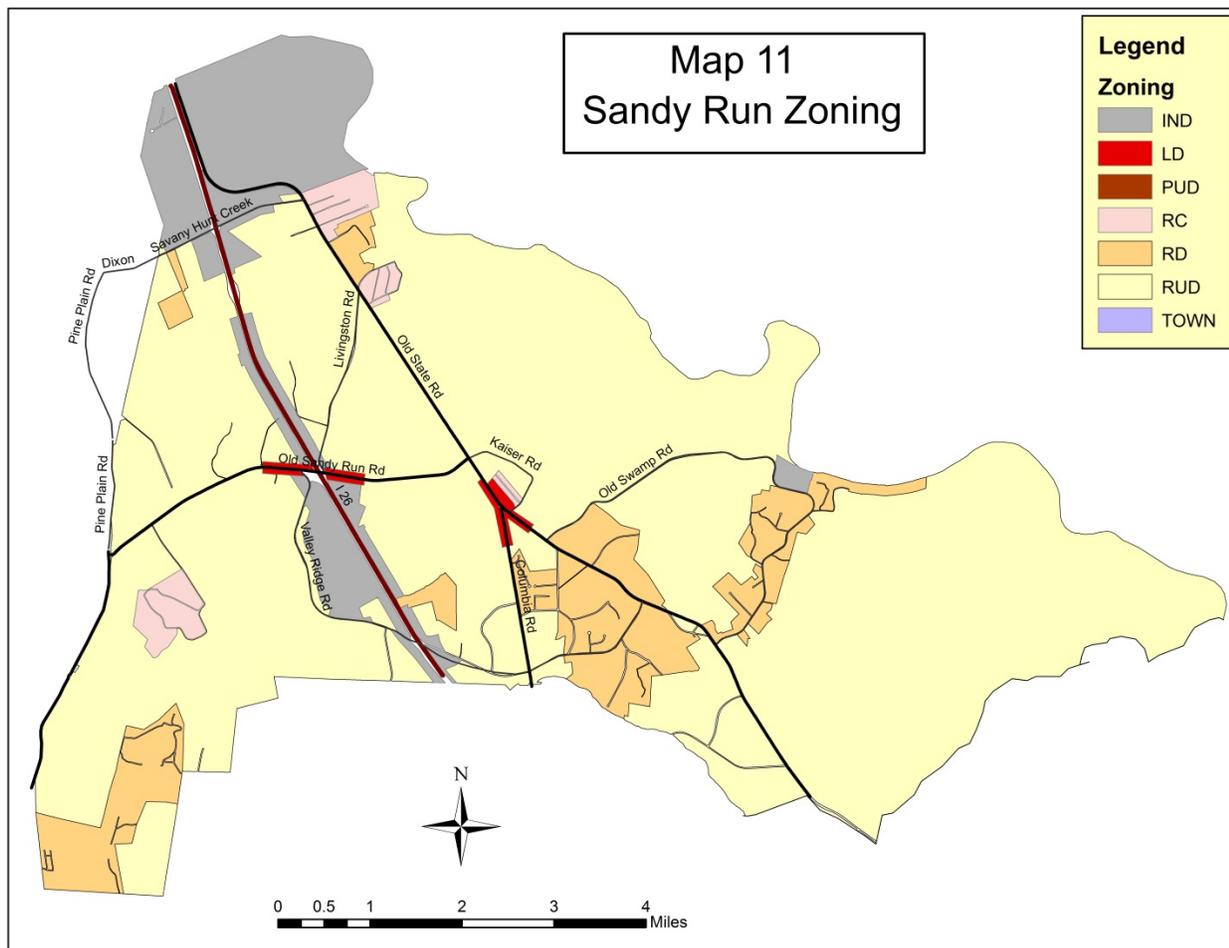
The purpose of this district is to accommodate multiple-use development on a limited basis and to minimize land use conflicts along major transportation corridors where use controls and limitations are needed to enhance aesthetic values, ensure compatibility and promote a viable

Permitted uses include residential uses; social and Institutional uses; commercial uses; limited industrial and agricultural uses. A variety of uses are prohibited, including mobile or manufactured homes used as dwellings, landfills, incinerators, race tracks, mining, shooting ranges, jails, prisons, feed lots, slaughterhouses, junkyards, sexually oriented businesses, and outdoor flea markets.

## PUD -- Planned Use District

The purpose of the planned use district is to encourage flexibility in the development of land in order to promote its most appropriate use; and to do so in a manner that will enhance the public health, safety, morals, and general welfare of the county. Permitted uses are specified in a PUD application and site plan for a specific parcel of land, and upon approval by the Planning Commission and County Council, the approved uses and densities become the only uses permitted.

Map 11 shows existing zoning in Sandy Run.



## 6 Land Use Scenarios and Preferred Future Land Use Pattern

Reasonable population and employment forecasts are an essential first step to development of land use scenarios. The methods used to develop population and employment forecasts are described below.

### 6.1 Population Forecast

To develop a 2045 population forecast for the Sandy Run area, three alternative methods were explored and evaluated. The population forecast of the South Carolina State Data Center for Calhoun County was reviewed and considered but rejected; it forecasts a 13 percent decline in Calhoun County population. Recent trends suggest that Calhoun County will continue to experience population growth in coming years. The three different approaches that were considered in developing a population forecast for Sandy Run are described below.

First, a linear regression forecast using population data from 1990 through 2016 suggests that Sandy Run will add 639 persons from 2016 through 2045, reaching a total population of 3,063 in year 2045. Calhoun County overall would gain 2,793 persons by year 2045.

**Table 16**  
**Calhoun County and Sandy Run Area**  
**Linear Regression Forecast of Population**

Area	Year				Forecast
	1990	2000	2010	2016	2045
Census Tract 9501, Total	3,691	5,200	5,613	5,591	7,983
Sandy Run Study Area (BG 1)	na	2,108	2,399	2,424	3,063
Remainder of Tract 9501 (BG 2, 3)	na	3,092	3,214	3,167	4,921
Balance of Calhoun County	9,062	9,985	9,562	9,295	9,696
County Total	12,753	15,185	15,175	14,886	17,679

Source: U.S. Census, 1990 to 2010  
 American Community Survey, Five-Year Estimates 2016

The second approach to developing a population forecast for Calhoun County and Sandy Run involved analysis of growth trends in other South Carolina Counties that are similarly situated to Calhoun County, on the fringe or edge of a metropolitan area. These selected “urban fringe” counties are listed in Table 15 below, and have averaged 28.6 percent growth between 1990 and

2010. Based on an assumption that 90 percent of the county population growth will continue to occur in the Sandy Run area, as has been the case in recent years, this level of County growth would add 3,443 persons in Sandy Run by 2045. Sandy Run would have a total population of 5,867 persons by 2045.

**Table 17**  
**Population Change for Select Counties, 1990 to 2010**

County	1990	2010	Pct Change 1990 to 2010
Colleton	34,377	38,892	14.2%
Darlington	61,851	68,681	10.9%
Edgefield	18,375	26,985	49.1%
Georgetown	46,302	60,158	32.6%
Kershaw	43,599	61,697	46.4%
Lancaster	54,516	76,652	41.5%
Laurens	58,092	66,537	16.2%
Oconee	57,494	74,273	34.5%
Total, Urban Fringe Counties	374,606	473,875	28.6%

Source: U.S. Census Bureau, Census 1990 and 2010

A third approach to the population forecast was based on analysis of remaining developable land in the study area and existing land use patterns. This analysis suggested that a minimum of 1700 additional dwelling units could be built at current average residential density of 1 dwelling per 6.5 acres of developed residential land. Assuming the current 2.4 persons per dwelling, this would result in an additional 4,080 residents in Sandy Run, and would bring total population in Sandy Run to 6,504 in 2045, as presented in Table 16. Assumptions in Table 18 are based on the Existing Land Use Inventory in Table 15.

**Table 18**  
**Sandy Run Population Forecast**  
**Based on Undeveloped Land Availability**

2016 Population	2,424
Estimate of Developable Residential Acres	11,090
Current Average Acres per Dwelling Unit	6.52
Additional Dwelling Units by 2045	1,700
Additional Persons by 2045	4,080
2045 Forecast Population	6,504

For purposes of this plan, the land use based population forecast was used, as it is the highest of the several potential forecasts considered, but is within a reasonable range of the population growth suggested by other approaches. For all three of the land use scenarios presented below, population in Sandy Run is assumed to increase by 4,080 by the 2045 horizon year for the plan, so total population will be 6,504.

## 6.2 Employment Forecast

Two methods were considered to develop the employment forecast for Sandy Run:

- Generally, metro areas have about 55 jobs per 100 persons; applying this ratio to the 2045 forecast of 4,080 additional persons, one would expect 2,244 additional employees;
- A regression forecast of County Business Patterns data for 2005 and 2015, presented in Table 19, suggests 3,758 additional employees in Calhoun County by 2045; if 75 percent of this new employment occurs in Sandy Run, about 2,800 new employees would be expected within the planning area.

The higher forecast of 2,800 additional employees in the Sandy Run area was used to help ensure the plan adequately anticipates the potential impacts of employment growth.

**Table 19**  
**Summary of Calhoun County Employment Change, 2005 to 2015**

Business Sector	Employees			Forecast	Change
	2005	2010	2015	2045	2015 to 2045
Industrial	1,177	1,671	2,309	5,681	3,372
Retail	243	259	246	260	14
Office	165	92	272	551	279
Services	764	1,010	768	861	93
<b>Total</b>	<b>2,349</b>	<b>3,032</b>	<b>3,595</b>	<b>7,353</b>	<b>3,758</b>

Source: U.S. Census Bureau, County Business Patterns, 2005, 2010, and 2015

### 6.3 Land Use Scenarios

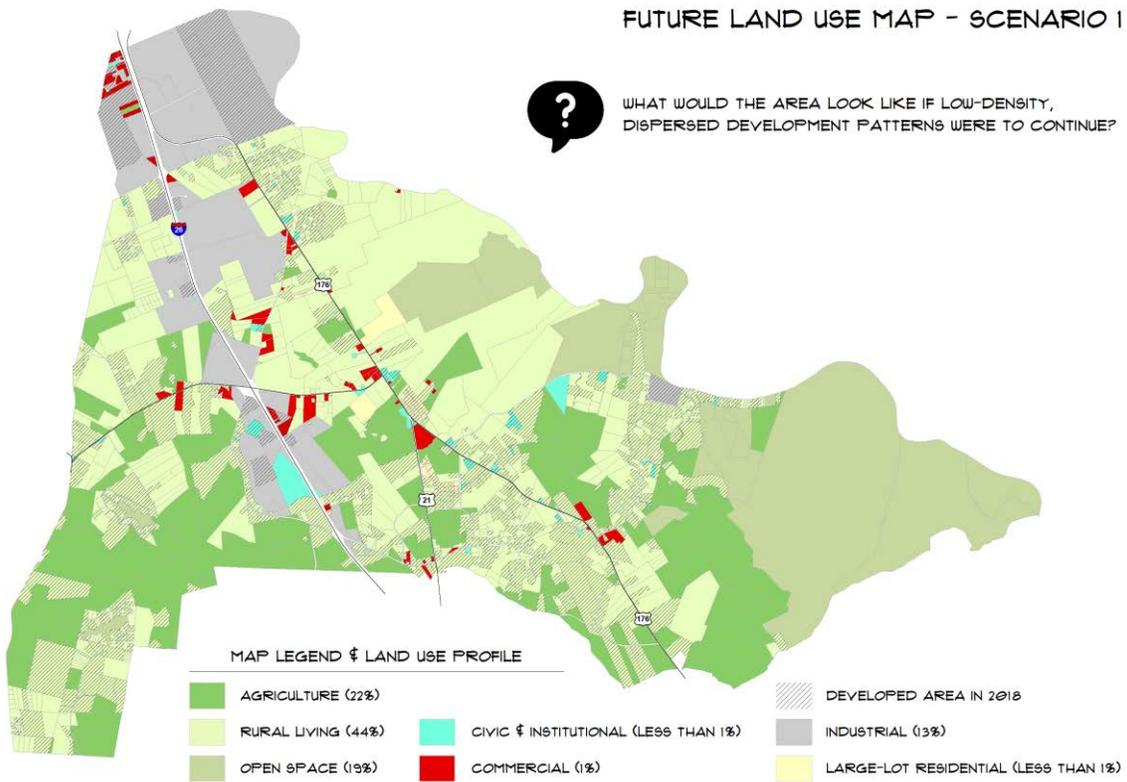
To illustrate the impacts of different patterns of growth, two land use scenarios were tested, using the same amount of population and employment growth, but changing the distribution of growth. A land use modelling and forecasting program, CommunityViz, was used to predict future growth patterns based on access to roads and infrastructure, the future land use plan, and land development constraints.

#### 6.3.1. Scenario 1: Trend Scenario

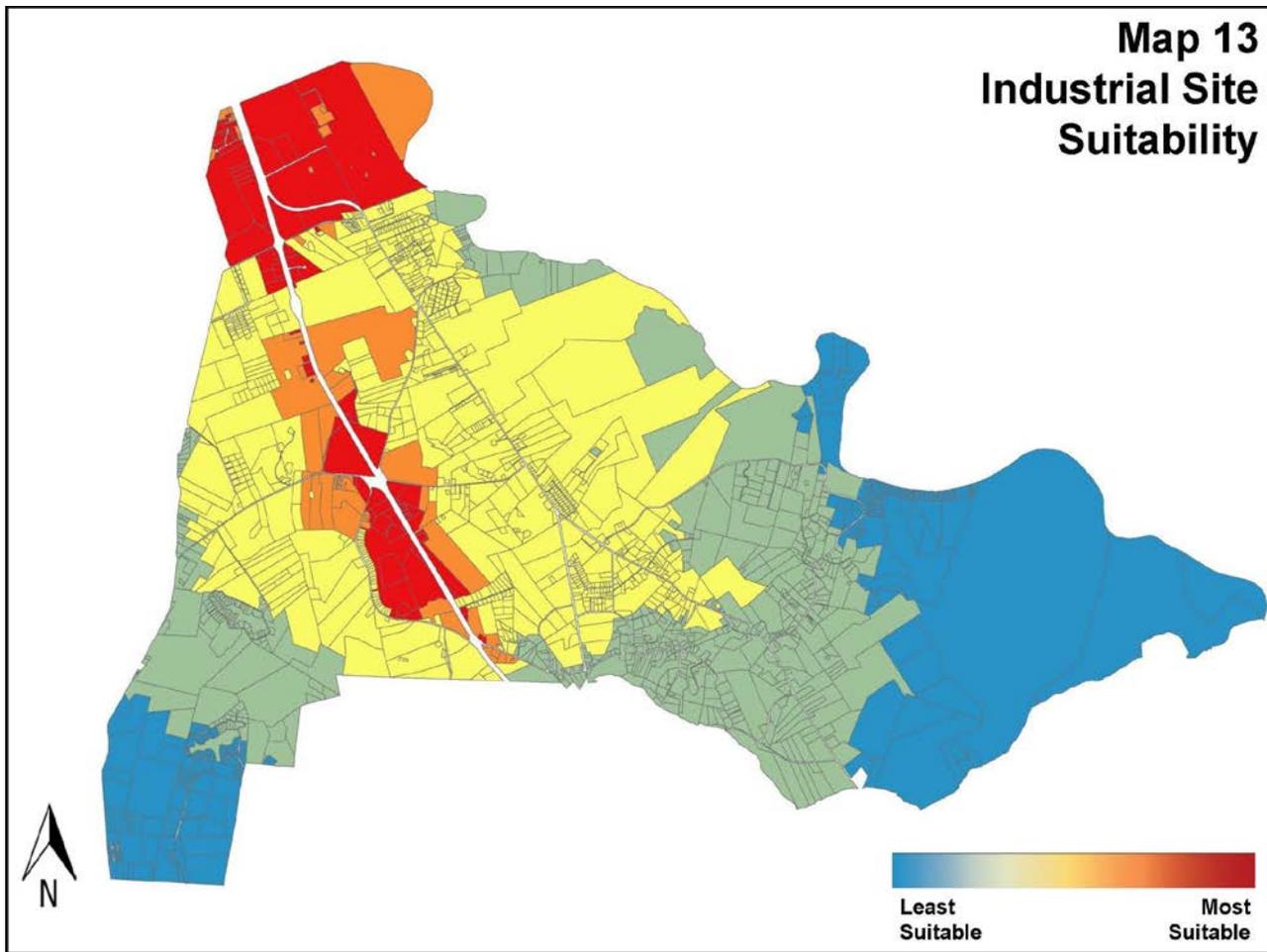
Scenario 1 assumes that Sandy Run continues to develop in the same pattern as it has currently developed, with new residences built in a widespread pattern around the area as land becomes available. New residences will be distributed across the area in a more or less random pattern, while existing zoning will continue to determine the location of new industrial and commercial development. Map 12 presents the future land use map that was developed for Scenario 1. The Community Viz model that was used for land use scenario planning uses the land uses in the future land use map, along with other measures of land suitability for development, to allocate residential growth and employment growth within the study area.

## Map 12 SANDY RUN AREA PLAN

FUTURE LAND USE MAP - SCENARIO 1



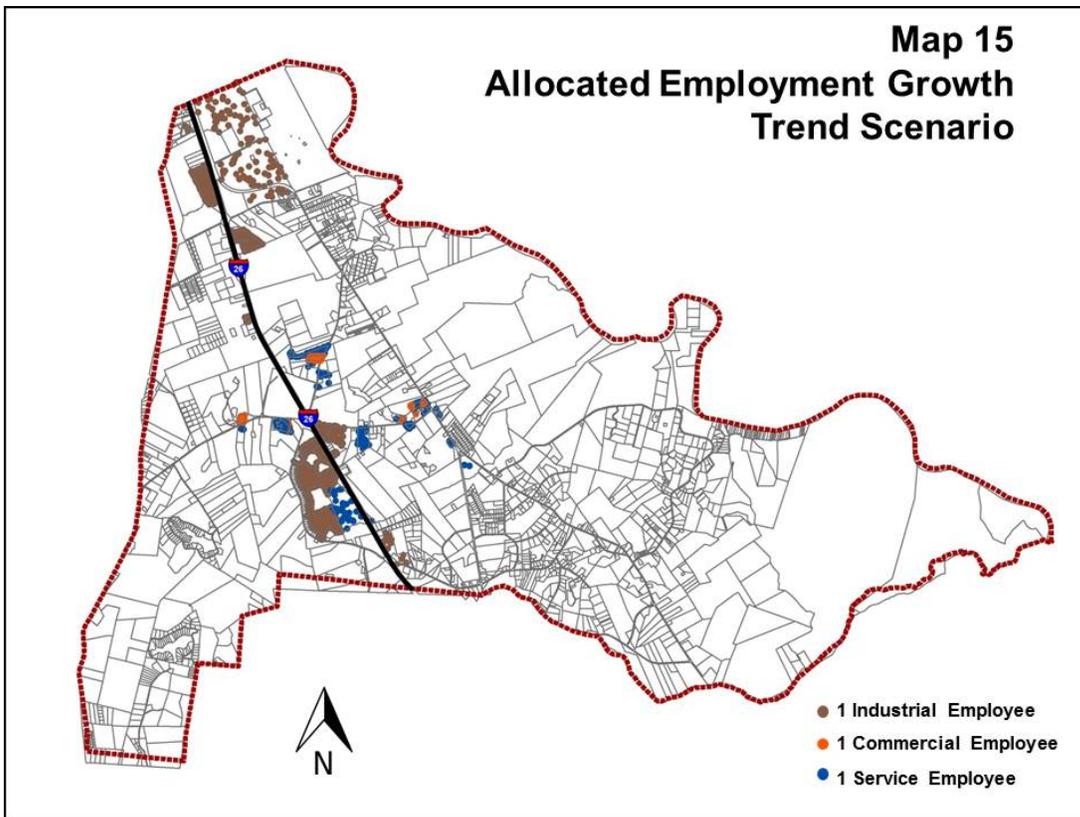
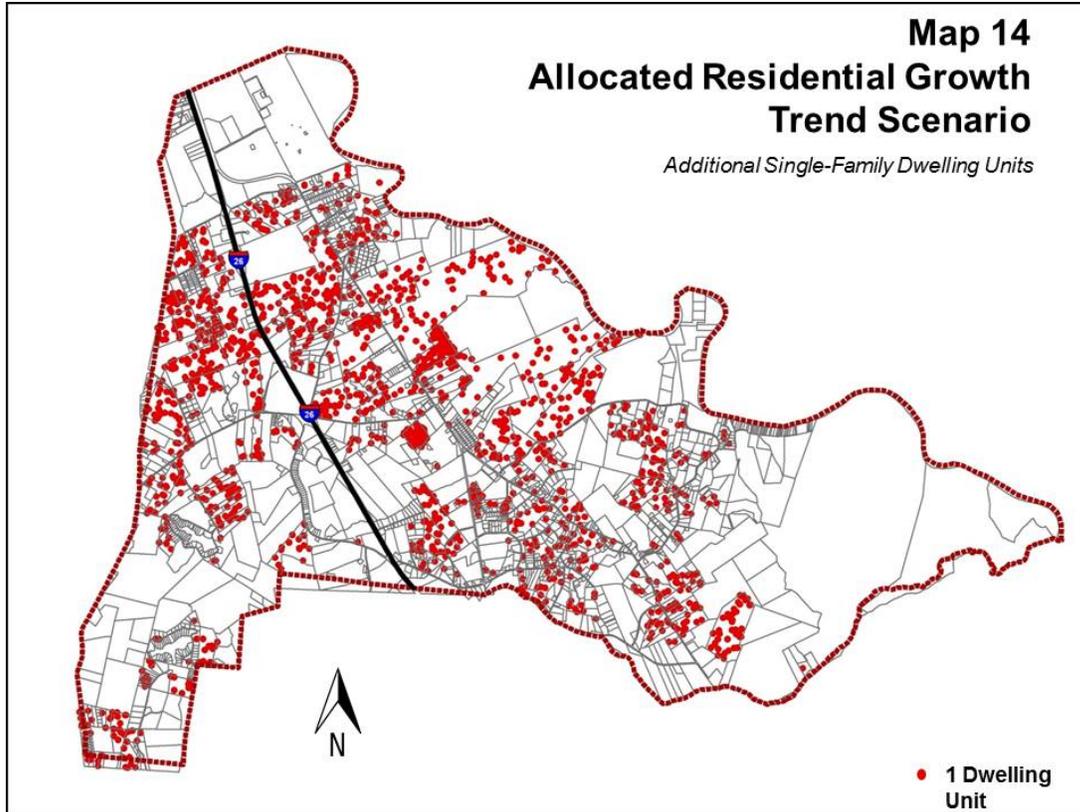
Map 13 illustrates the CommunityViz model's assessment of land suitability for industrial development, based on availability of water and sewer, regional highway access, development constraints, the future land use map, and other factors.



Map 14 shows the allocation of residential growth predicted by the Community Viz land use model. As should be expected, with current zoning and development regulation, residential growth is predicted to disperse in a scattered pattern across the study area.

Map 15 shows the allocation of industrial, commercial, and service jobs predicted by the model. These uses are more dependent upon good highway access, water and sewer access, and visibility. Zoning also is more limiting on the location of these land uses.

This land use scenario would require no expansion of sewer infrastructure, but probably would require some extensions of water lines to serve the highly dispersed residential development that would spread across the area.



**6.3.2. Scenario 2: Focused Growth**

Scenario 2 is a “Focused Growth Scenario” and assumes that residential and commercial growth is focused in a few areas where good water capacity currently exists, where sewer infrastructure can be easily extended, with good regional highway access. This scenario would create a small town development pattern around the existing center of the Sandy Run community at the intersection of Old Sandy Run Road and Old State Road. The Town Center area would include retail, restaurant, office and limited commercial uses, with houses being built on small lots outside of the business district.

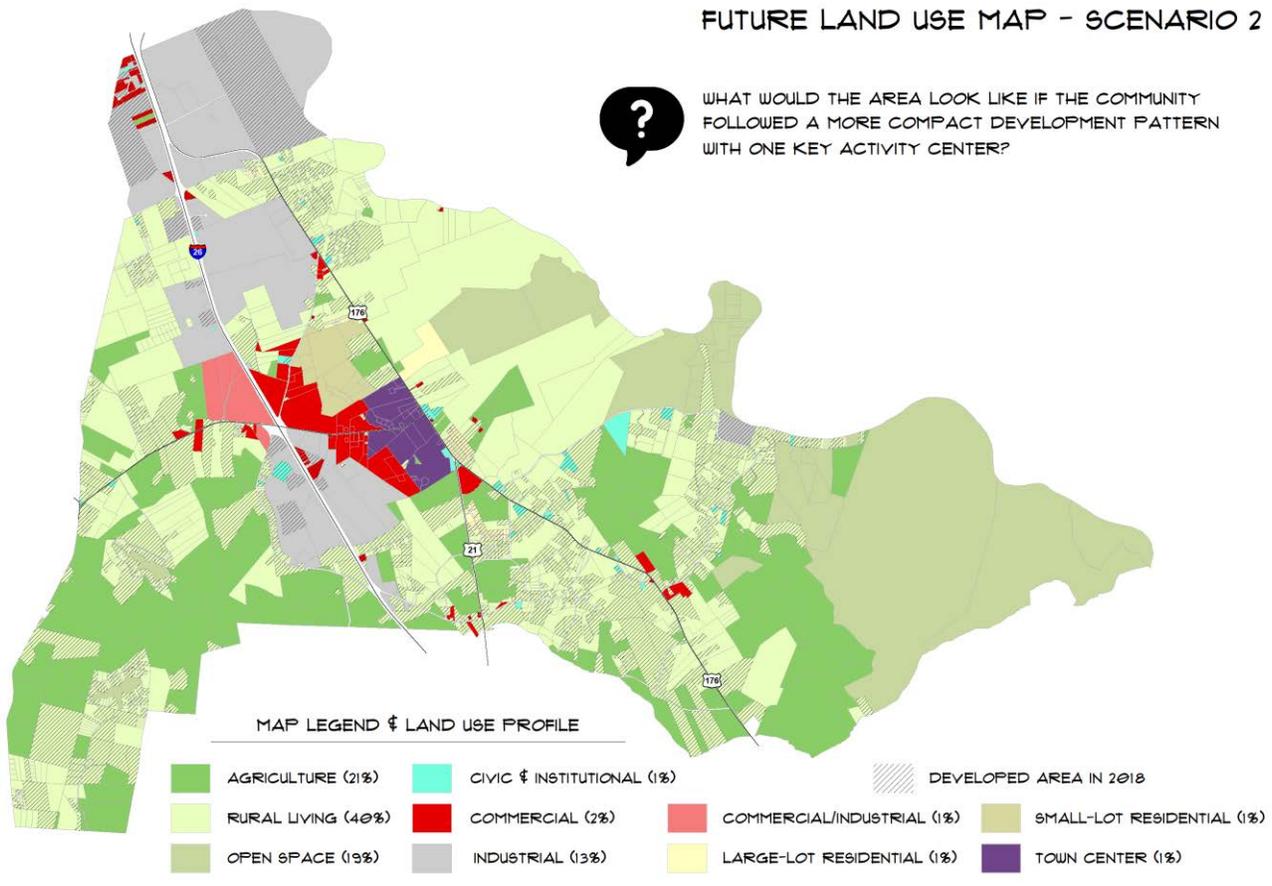
Map 16 presents the future land use map that was developed to guide the distribution of growth by the Community Viz model for Scenario 2.

**Map 16 SANDY RUN AREA PLAN**

FUTURE LAND USE MAP - SCENARIO 2

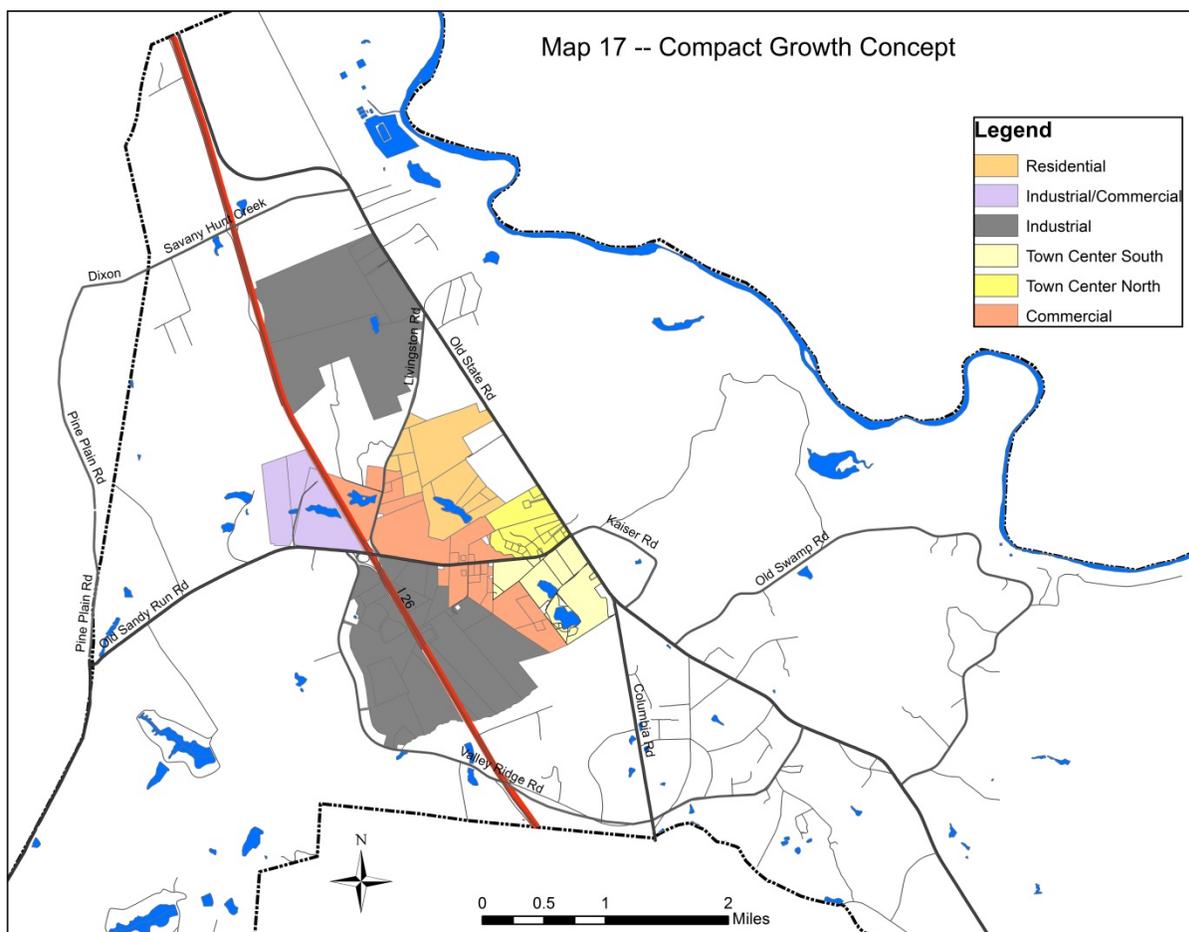


WHAT WOULD THE AREA LOOK LIKE IF THE COMMUNITY FOLLOWED A MORE COMPACT DEVELOPMENT PATTERN WITH ONE KEY ACTIVITY CENTER?

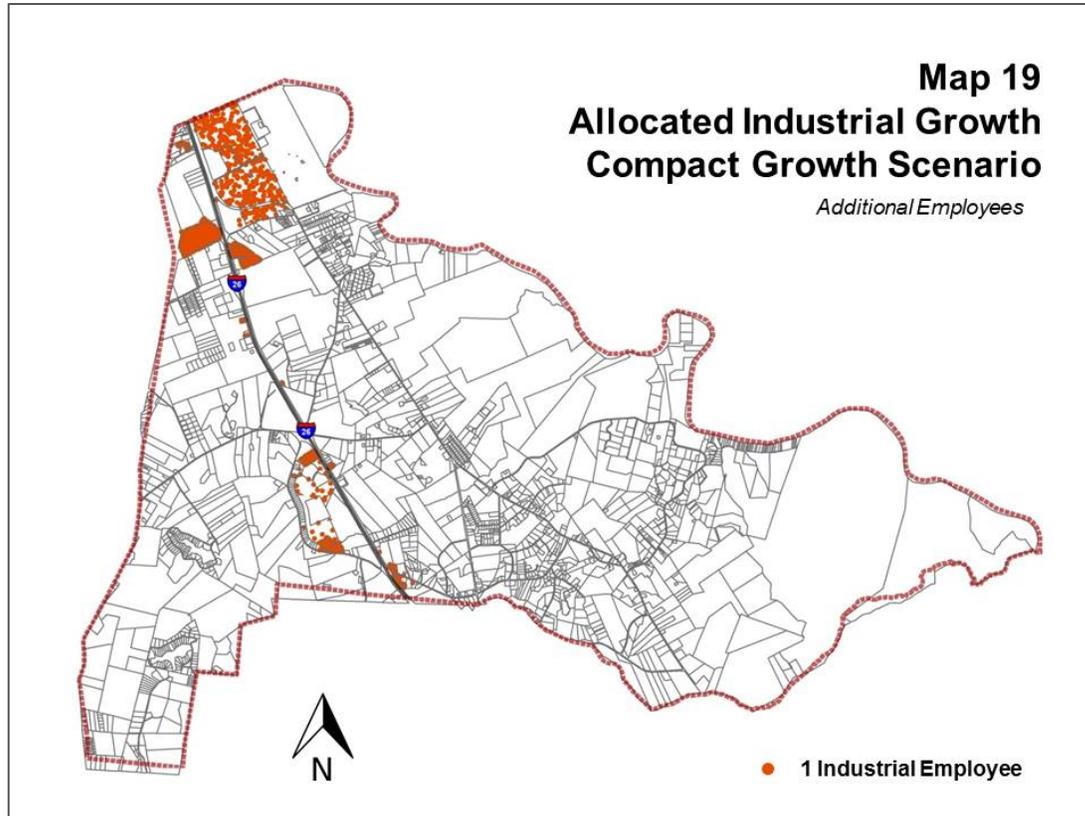
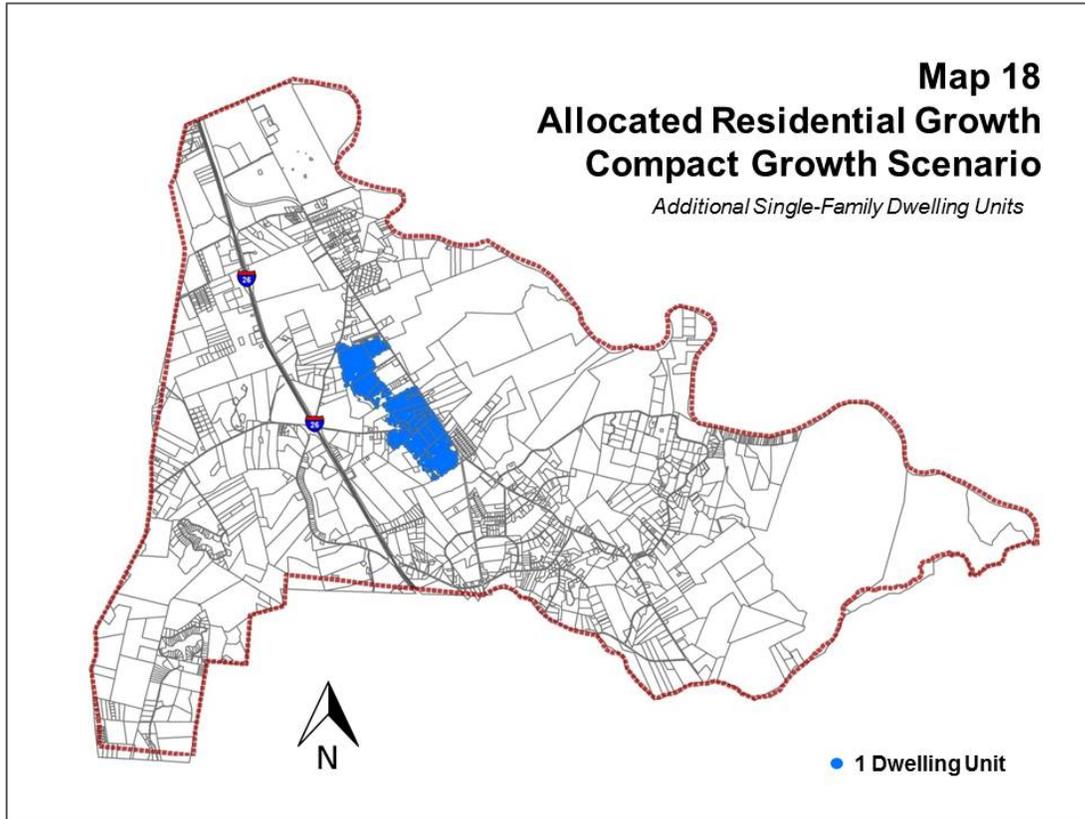


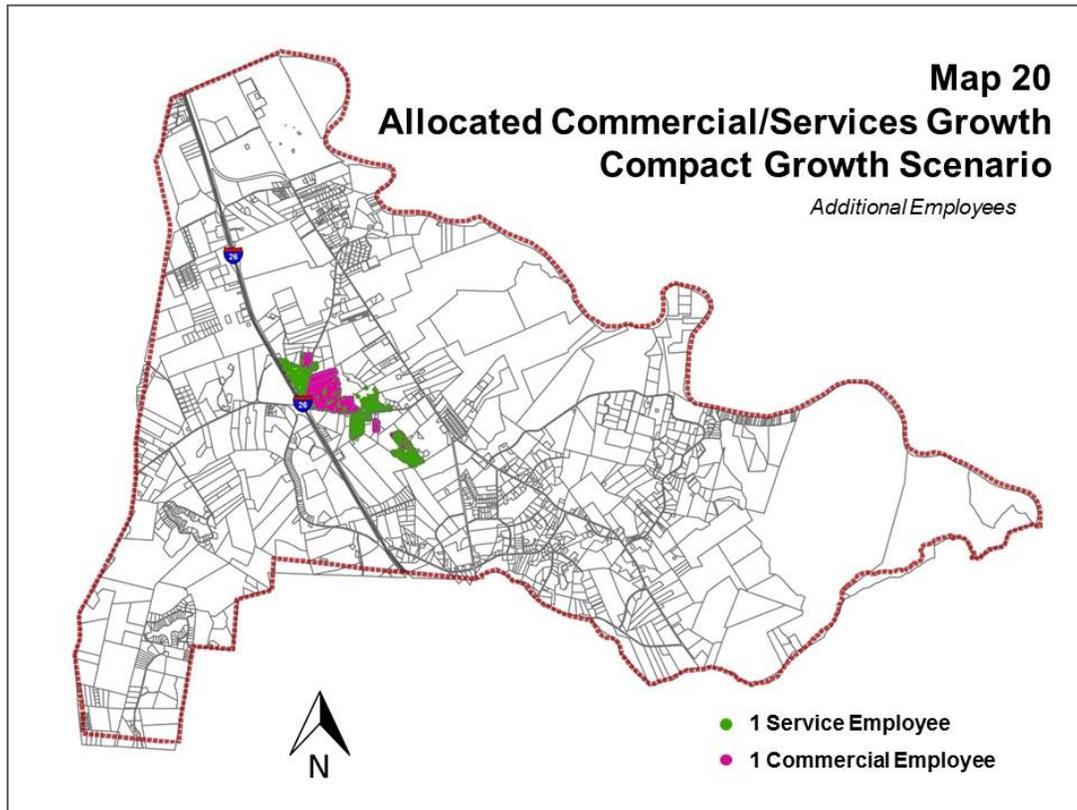
Map 17 is an illustration of this focused growth land use concept for Sandy Run. While confining new growth to such a rigid small town pattern is an unrealistic assumption, this scenario is designed to illustrate the differences in development impacts of widely dispersed growth patterns and focused, more compact growth.

By focusing growth in a compact pattern at the center of the study area, where utility access and regional highway access is best, the costs and impacts of new development should be reduced. Workers would have shorter commutes to jobs nearby, and some trips could be made on foot or bicycle. Many automobile trips might be made entirely on local streets, without ever using the regional highway network. All of these factors reduce the total impacts of growth.



Map 18 illustrates the predicted distribution of new housing under this scenario, while Map 19 and Map 20 illustrate the likely distribution of new jobs by employment sector.





### **6.3.3. Public Reactions and Concerns About Scenarios 1 and 2**

Land Use Scenario 1 raised many concerns among PSC members and focus group participants. The primary concern was the amount of developable land consumed and the general spread of residential development across the area. Spread of industrial development south along US 176 to Livingston Road also was a concern raised several times. Most comments suggested that industrial development should be confined to the undeveloped portion of the former site and to sites along I-26.

Scenario 2 assumed a traditional small-town development pattern would occur at the current center of the Sandy Run Community, around the intersection of Old Sandy Run Road and Old State Road. This scenario was generally well-received as a concept, and many comments focused on the fact that only 21 percent of the remaining undeveloped land in the community would be needed to accommodate expected growth if development followed this compact town center growth patterns. However, many commenters were opposed to the density and intensity and urban character in illustrations of the town center development concept, saying this is out of character with their desires to maintain a low density rural community. Some concerns were raised about the expansion of industrial land use at the northern part of the developed area;

several commenters suggested that currently undeveloped industrial areas should be developed instead.

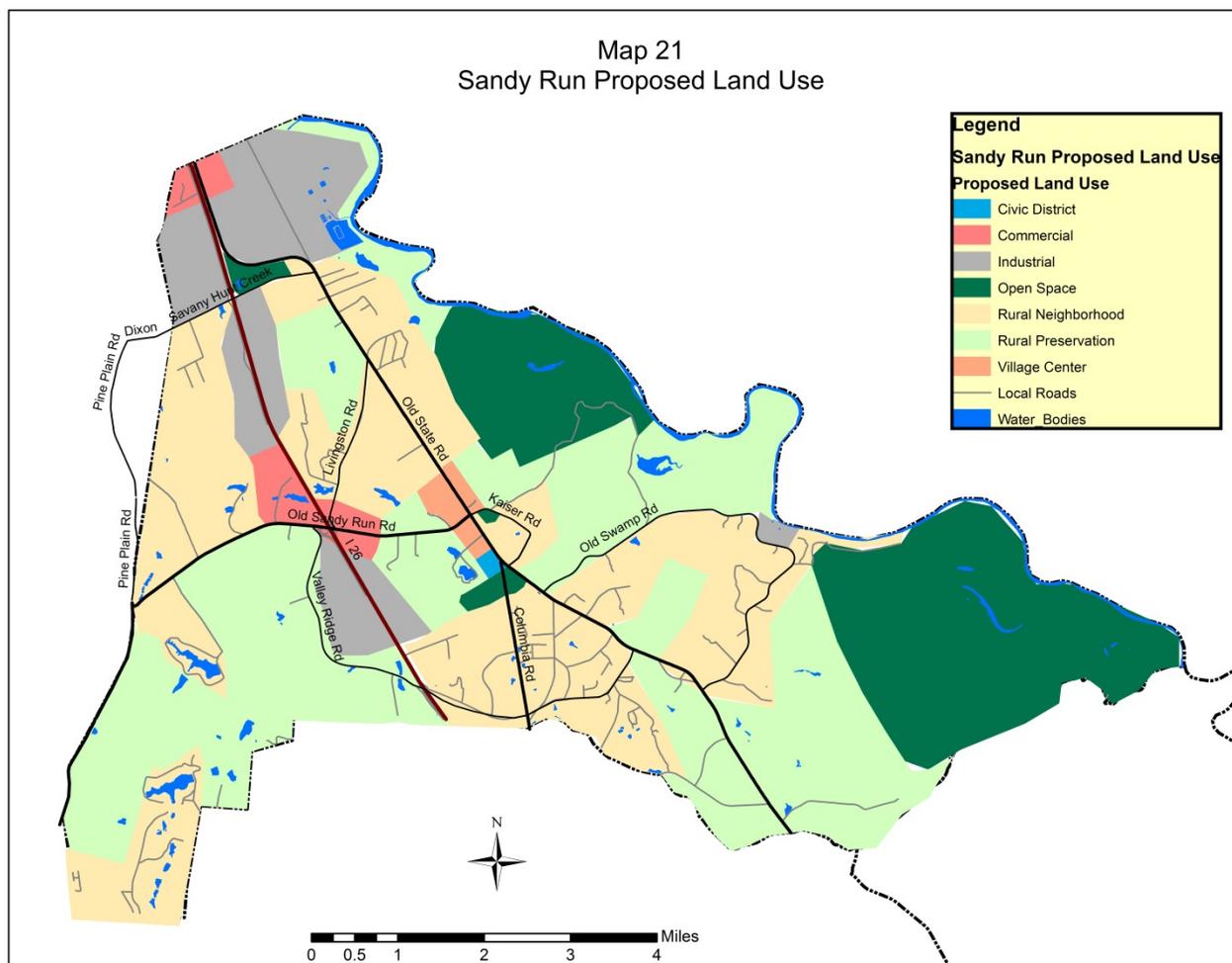
Calhoun County officials had concerns about the cost of extending sewer lines along Sandy Run Creek and northward to serve a town center type of development; these costs would include not only the expense of new sewer mains, but also the cost to purchase additional wastewater treatment capacity from the City of Cayce. Calhoun County currently has approximately 290,000 gallons per day of available wastewater capacity, including unused capacity at the Cayce treatment plant and the inactive treatment plant in Sandy Run; the nearly 4,000 persons that would be accommodated in the town center development would all rely on the County sewer system would be expected to generate nearly 280,000 gallons per day of wastewater demand, leaving virtually no capacity available for industrial and commercial development.



**6.3.4. Land Use Scenario 3: Rural Conservation**

Land Use Scenario 3 is based on feedback from the community engagement process. This scenario would guide growth to existing developed areas, but would not require expansion of the County’s wastewater collection system to enable and serve small lot residential development. Residential growth would occur on lots large enough to be served by septic systems; wastewater treatment and collection capacity would be preserved for industrial and commercial development.

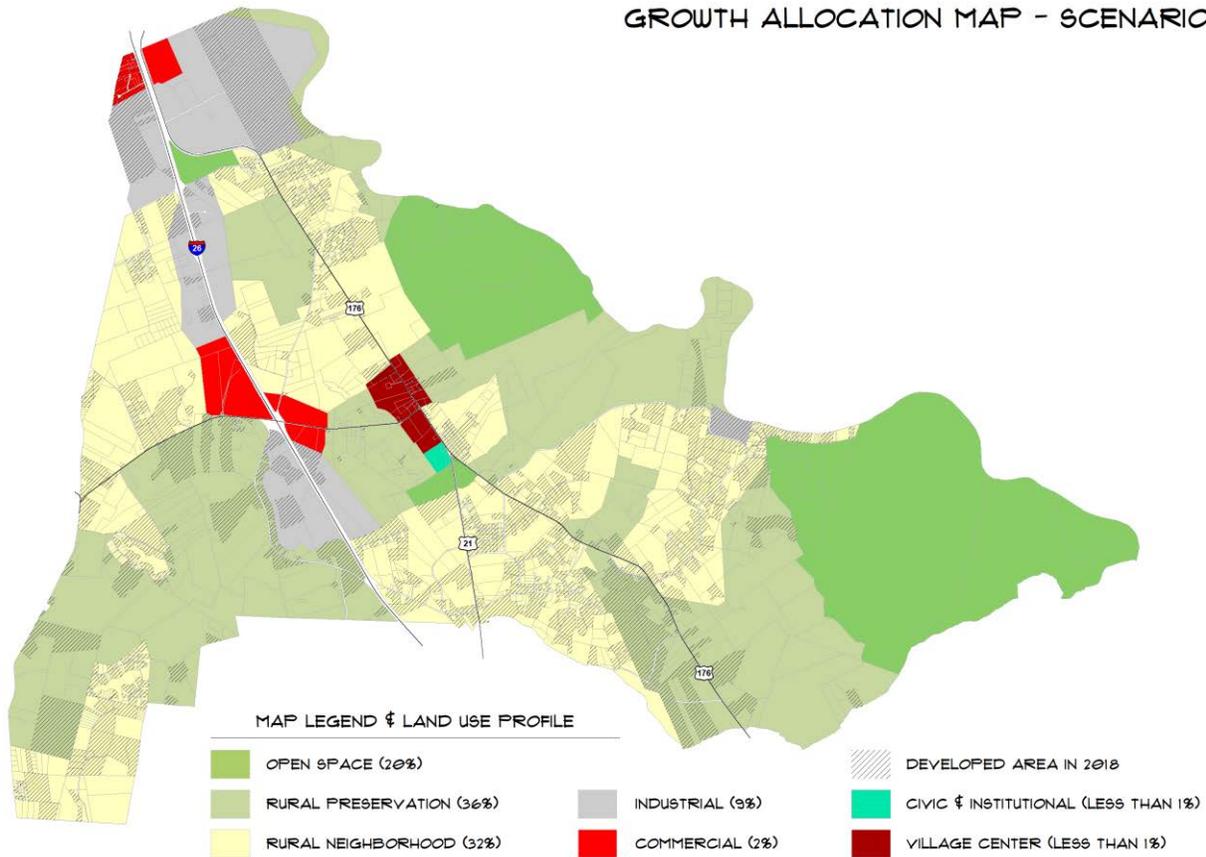
Map 21 is the conceptual Future Land Use Map for the Preferred Land Use Scenario, which was developed based on input from the January planning workshop, input from the PSC, and in consultation with Calhoun County officials. This proposed Future Land Use Map was presented at the Public Information Meetings on February 26 and March 2 and was very well received, with no negative comments documented.



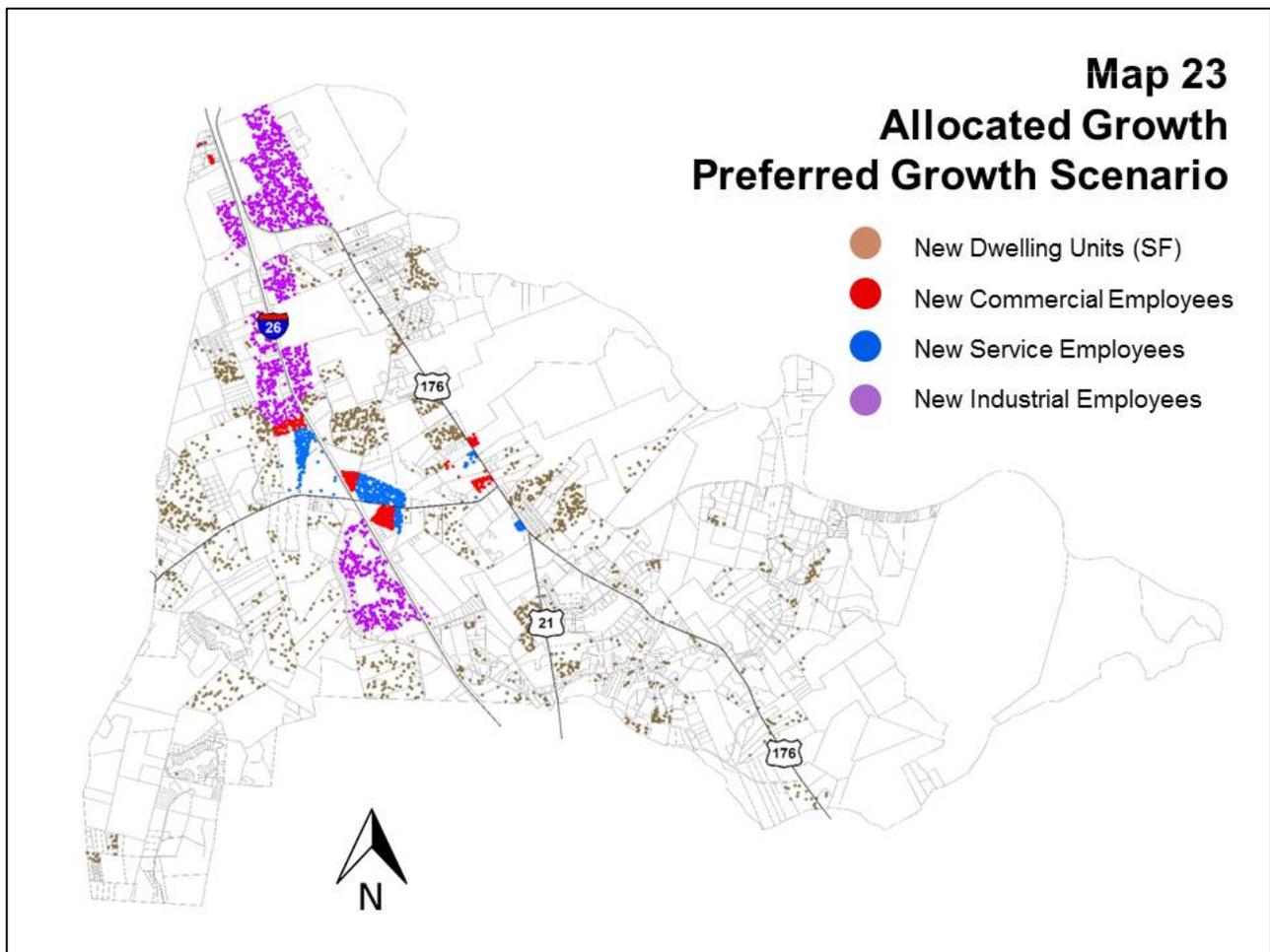
Map 22 presents the future land use map that was developed to guide the distribution of growth by the Community Viz model for Scenario 3.

## Map 22 SANDY RUN AREA PLAN

GROWTH ALLOCATION MAP - SCENARIO 3



Map 23 illustrates the distribution of growth that is predicted by the CommunityViz model based on the Preferred Future Land Use map developed for this third land use scenario. This scenario focuses residential growth in areas that already are developed and preserves much of the existing rural area with little new development. Commercial and Service development is limited to areas near I-26, and Industrial growth is concentrated in existing Industrial areas in the I-26 corridor, including the undeveloped portion of the old Eastman site in the northern part of the study area, as well as in the Calhoun County Industrial Park south of Old Sandy Run Road.



## **Land Use Descriptions for the Preferred Land Use Scenario**

The descriptions of the land use categories in this Preferred Future Land Use Map are detailed and illustrated below.

### **Open Space**

Areas designated as Open Space in the Future Land Use Map include Preserved Open Space and Recreational Open Space.

Preserved Open Space is land that has been dedicated for permanent conservation through public ownership, or through deeded easements held by public agencies or non-profit organizations. These lands may be used for active and passive recreation, including hiking, bicycling, and wildlife management. These lands may include national parks and forests, state parks and forests, private open space owned by homeowners associations or other private owners, cemeteries, and similar uses.



### **Recreational Open Space**

Recreational Open Space is land specifically reserved for active and passive recreation. This land use includes City or County parks, playgrounds, ball fields, swimming pools, public gardens, greenway trails, and private recreation areas such as playgrounds and parks maintained by Homeowners Associations (HOAs) within subdivisions.

### **Rural Preservation**

The Rural Preservation Areas in the Future Land Use Map are areas where the impact and visual intrusion of new development will be minimized. The existing rural character and agricultural landscapes will be preserved. While subdivision of land is permitted, the minimum lot size will be 3 acres and natural landscaped buffers will be required to screen new development from adjacent roads and existing development. Specific land uses include Working Farms, Rural Living, Conservation Subdivisions, and Rural Crossroads.

## Working Farms

Working farms are active agricultural production operations of 10 or more acres. Crop production, tree farming, timber harvesting, and livestock grazing will be the primary activities.



## Rural Living

This land use is common in the area now, represented by single family homes on tracts of 3 to 10 acres, often with barns and other outbuildings. Public water service is often available, but some homes will rely on wells. All houses will rely on septic systems for wastewater disposal. For newly subdivided land, new lots should be required to have frontage on a paved road built to county standards in order to reduce lot sizes to 3 acres. Where new lots do not have direct frontage on paved road, the minimum lot size would be 5 acres, and improved gravel roads would be required for access.

## Conservation Subdivision

Conservation Subdivisions do not increase the number of lots houses permitted on a given tract of land. For example, a 30 acre tract of land would permit a maximum of 10 houses. However, the houses could be clustered on about 10 acres of the site, and the remaining 20 acres left undisturbed and managed by a Homeowners Association. Landscaped buffers around the entire site would be required, and all lots would be on paved streets, and served by public water lines. Developers would be required to protect creeks, wetlands, large trees, and other significant natural features on the site. Public water service should be required for all subdivisions of this type, as lots will be too small to support both a well and septic on site.

## Rural Cross Roads

Rural Cross Roads are located at intersections within the Rural Preservation area, and typically will include a small store or gas station, and one or two small businesses. These land uses are not specifically mapped, but some do currently exist and a few additional locations may be permitted at a limited number of intersections within the Rural Preservation area.

## Rural Neighborhoods

This land use area is where new residential development will be focused. Two types of subdivisions would be permitted.

### Large Lot Residential

Minimum lot sizes of 1 to 3 acres, with subdivision access to a paved public road, with public water, and with landscaped buffers along public street frontage. For subdivisions of more than 25 lots, two points of access to a public road should be required. Public water service should be required for lots of less than two acres.



### Medium Lot Residential

Minimum lot size is ½ acre for this land use, but lot sizes will range up to 1 acre. Landscaped buffers are required around the entire subdivision. A homeowners association will be required to maintain entrances to the subdivision and required community amenities. Two points of access to a public road are required for all new subdivisions. A minimum of 10 percent of the developable land area of the tract will be preserved as community open space or recreation area. Community amenities shall be provided, which may include one or more of the following: community pool; playground; ball field; walking trail or sidewalks; bicycle path; or other active recreation facility.



## Industrial

Industrial land uses include manufacturing facilities, warehousing and distribution, utilities, and similar land uses. Large structures with large parking areas are an essential characteristic of industrial

development, but quality building façade materials and good landscape design are important.

## Commercial

This land use includes grocery stores, restaurants, retail stores, drug stores, banks, hotels, offices, and similar land uses, and would be focused around the I-26 Interchange at Old Sandy Run Road. Development could occur in free standing buildings or in small to mid-size shopping centers. In most cases, these uses will have access to public sewer systems.



## Special Districts

### Civic District

This land use includes government facilities and offices, such as fire stations, sheriff's substations, administrative offices, libraries and schools. It would not include public works operations, materials and equipment storage, or vehicle storage or maintenance facilities.

### Village Center

This is a small scale, low density town center area. Minimum lot sizes will be  $\frac{3}{4}$  acre. Maximum building height will be 2 stories. Buildings should have a style and spacing consistent with a small town or rural village. Land uses in the village could include the following:



*Primary land uses* in the village center area could include a small supermarket, convenience store, bank, barber shop or salon, sit down restaurant, community-serving commercial

business, professional office, post office, and community facilities. *Secondary Land Uses* could include a day care center, farmers market, or pocket park.

To maintain an appropriate quality of development and maintain a village character, architectural design standards should be established for the Village Center area, along with quality landscaping standards and buffering or screening requirements for utilities, dumpsters, service areas and storm water ponds. Otherwise, this land use district could develop to look very much like the suburban highway commercial strips that residents have indicated are inappropriate in Sandy Run.

## 6.4 Analysis of Land Use Scenarios

The key performance factors for the three alternative land use scenarios are residential wastewater treatment demand, cost of expanding public sewer infrastructure, costs of water system maintenance and expansion, and the impacts of growth on rural character.

### 6.4.1 Residential Wastewater Demand and Public Infrastructure Costs

Map 24 Illustrates the new sewer main that would be necessary to support the Town Center in the Compact Growth land use scenario. The density of development in that scenario cannot be served by septic systems.

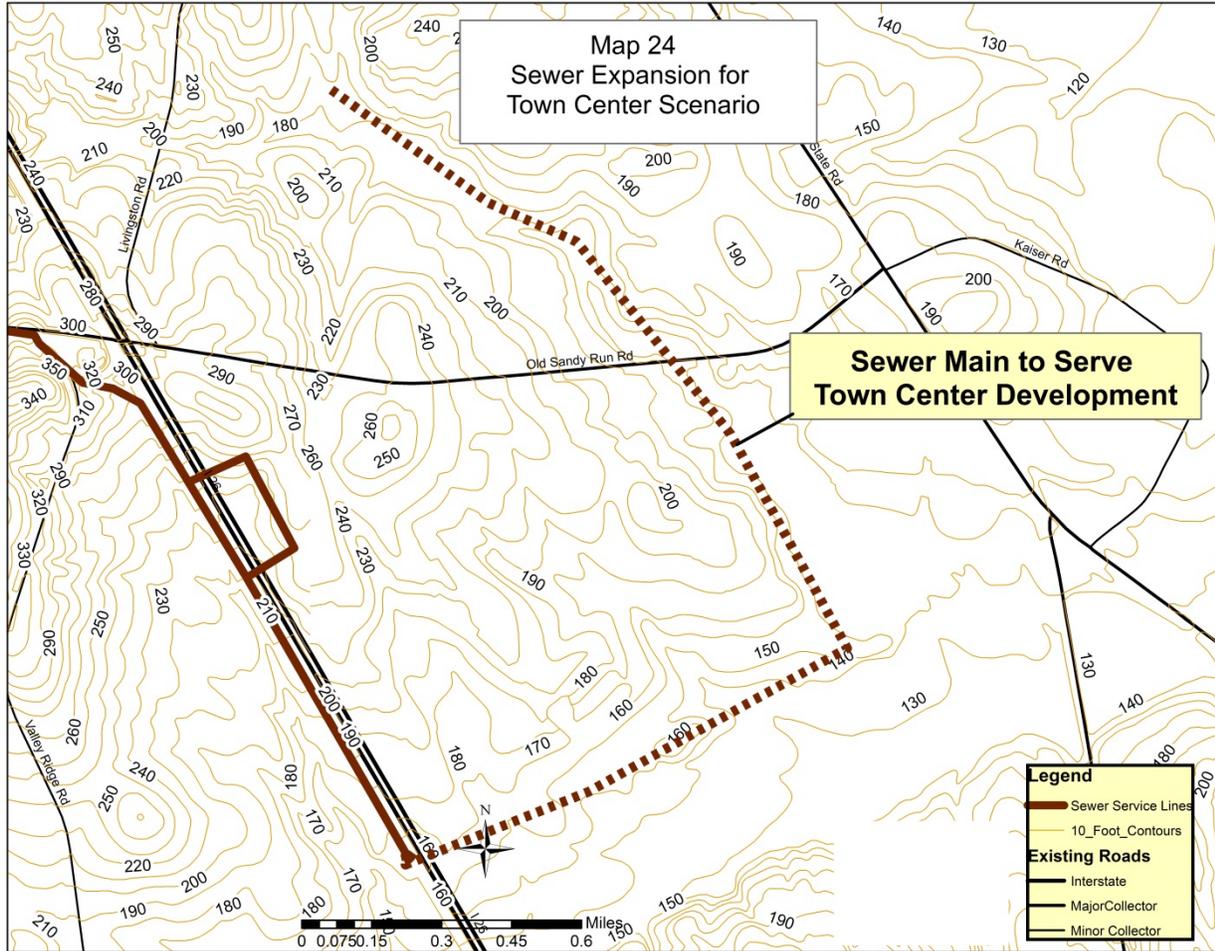
In the other two scenarios, no expansion of the existing sewer system is required, as new residential development would be large-lot single family development that can be served by septic systems, creating no public infrastructure costs.

In all three scenarios, new industrial, commercial and services development are located in proximity to the existing sewer force main, so there is no identifiable or quantifiable difference in the impact on cost or demand. The key factor in demand and cost is the density and location of residential growth.

Table 20 summarizes residential wastewater demand and public infrastructure costs for each land use scenario. Table 21 provides a cost estimate for sewer infrastructure expansion.

**Table 20**  
**Residential Wastewater Demand Estimates**

	Trend	Focused Growth	Preferred Scenario
Additional Population Served	4080	4080	4080
Wastewater per Person (gallons per day) [2]	0	80.75	0
Additional Wastewater Demand (gpd) [3]	-	280,041	-
Available Wastewater Capacity (gpd) [4]	290,000	290,000	290,000
Remaining Capacity (gpd)	-	9,959	-



**Table 21**  
**Sewer Expansion, Preliminary Cost Estimates**

	Trend	Focused Growth	Preferred Scenario
Linear Feet of New Gravity Flow Sewer Main	0	14,500	0
Construction Cost per Linear Foot	\$45	\$45	\$45
Construction Cost Estimate	\$0	\$652,500	\$0
Engineering Costs (10%)	\$0	\$65,250	\$0
Total Preliminary Cost Estimate	\$0	\$717,750	\$0

*Note: this is a very preliminary planning-level cost estimate*

**6.4.2 Water System Maintenance, Demand and Expansion**

Estimating the costs of water system expansion and maintenance for each scenario would require engineering analysis beyond the scope of this study. However, some general engineering guidance is useful to provide subjective measures of likely impacts and costs.

As shown in Map 7 on Page 22 of this report, the Sandy Run water system has large diameter 8-inch and 12-inch mains in along Old State Road, I-26, Savany Hunt Creek Road and on Old Swamp Road to Sandy Run School. Smaller lines serve the outer parts of the system.

The Trend Scenario appears likely to create the greatest demand for expansion of water service, as new subdivisions could spread to almost any part of the area. The more growth disperses, the more pressure will be placed on the smaller diameter water system lines at the fringes of the water service area, creating need to replace, extend and upgrade capacity of lines at the fringe of the service area. Some new residential development on large lots will likely use well water, complicating any attempt to quantify public water demand and infrastructure cost estimates.

Development of a Town Center as suggested in Scenario 2 would require all new residential development to be served by public water, as lot sizes would be too small for wells to be used. As a result, the Compact Growth scenario would create both the highest residential water demands as well as create a high demand for investment in new water lines to serve all of the new residential development.

The Preferred Land Use Scenario strikes a balance by focusing potential subdivision growth near the existing developed areas and near existing large water mains. However, because more large lot development would occur than in the Compact Growth Scenario, some of the new residential development will rely on private wells.

**Table 22  
Residential Water Demand and Capacity Estimates**

	Trend	Compact Growth	Preferred Scenario
Additional Population Served	4080	4080	4080
Water Use per Person (gallons per day) [1]	95	95	95
Additional Water Demand (gpd)	387,600	387,600	387,600
Available Water Capacity (gpd)	1,825,200	1,825,200	1,825,200
Remaining Capacity (gpd)	1,437,600	1,437,600	1,437,600

Table 22 summarizes the relative impacts of each land use scenario on potential water system demand (gallons per day), which are all the same. However, as seen in Table 23, it is safe to assume that the Trend and Preferred scenarios will result in less demand, as more new homes will be on large lots and can rely on private wells. The subjective estimates of impacts summarized in Table 23 suggest that the Preferred Scenario would have the least impact overall on the water system as it would be expected to create the lowest additional water system expansion costs, and should have a moderate impact on maintenance needs, as less growth occurs at the fringes of the system. While these are not precise estimates of real costs, the overall indication of costs should be directionally sound.

**Table 23**  
**Water System Demand, Maintenance and Expansion Needs**

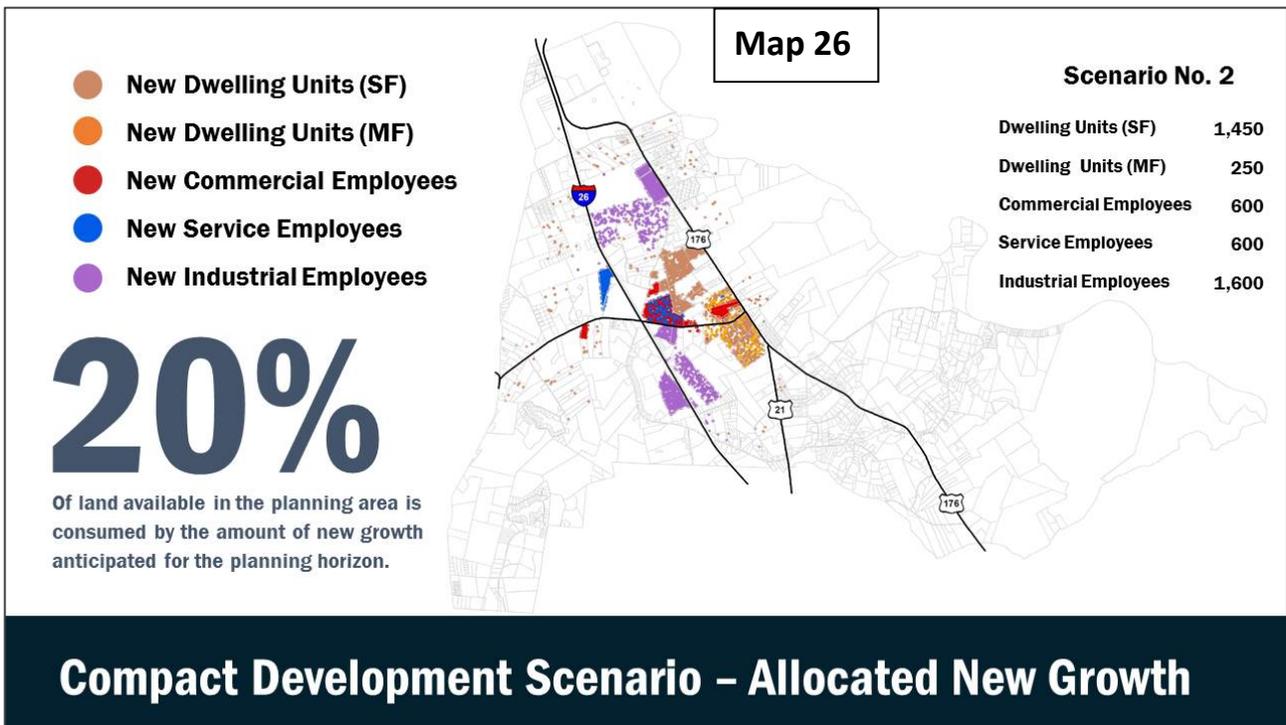
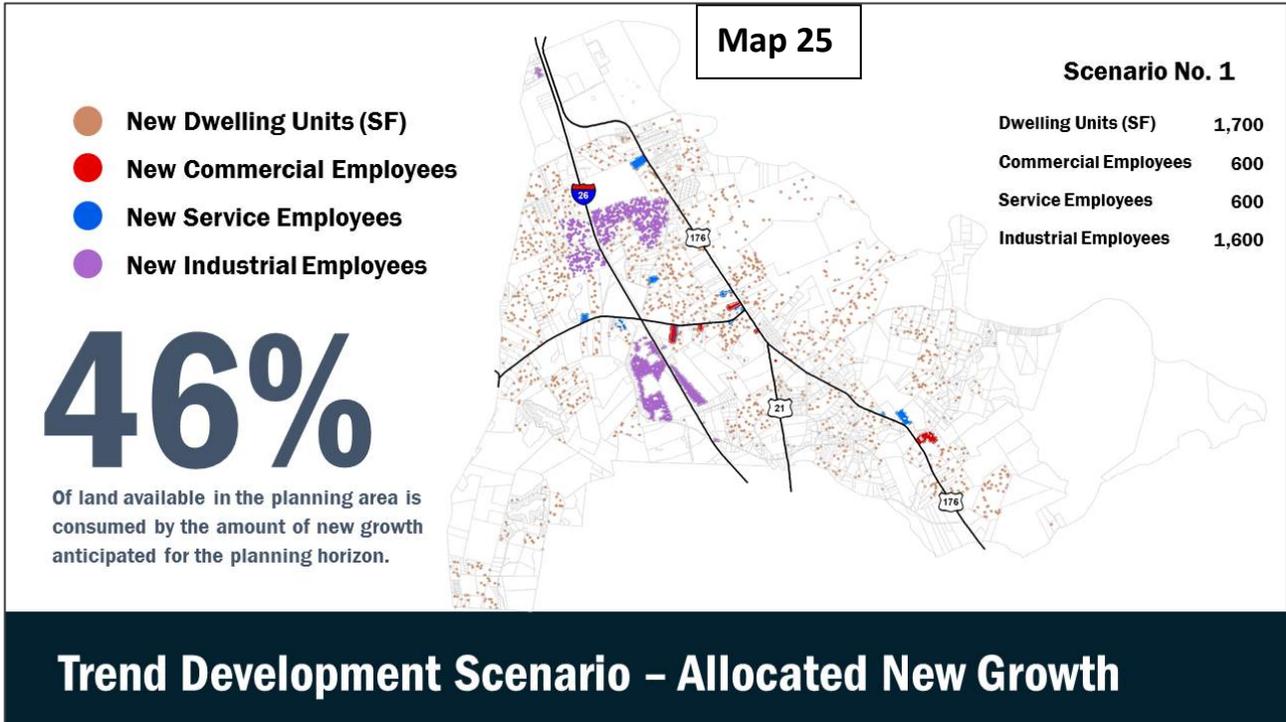
	Trend	Compact Growth	Preferred Scenario
Water Demand	Low	High	Moderate
Maintenance Need	High	Low	Moderate
Expansion Costs	High	High	Low
Score (High=3, Moderate=2, Low=1)	7	7	5
Overall Impact	High	High	Moderate

**6.4.3 Percent of developable land consumed by growth**

Preserving the current rural character of Sandy Run was a key theme of the public input received during the planning process. As a result, the clearest performance measure to apply to the land use scenarios plan is the percentage of available land that is consumed in each scenario. Table 24 summarizes land consumption, while Maps 25, 26 and 27 illustrate these results.

**Table 24**  
**Land Consumption by Land Use Scenarios**

	Trend	Compact Growth	Preferred Scenario
Percentage of Remaining Developable Land Consumed	20%	46%	31%



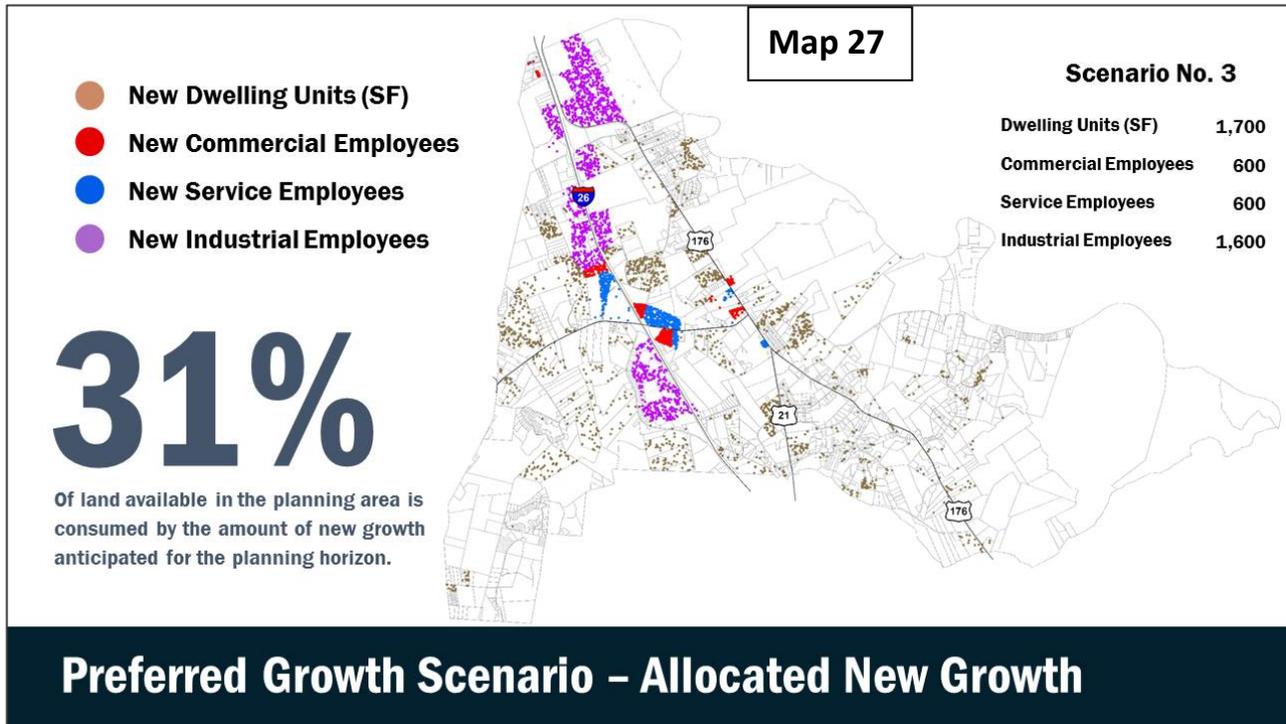


Table 25 summarizes the overall performance of the land use scenarios. The compact growth scenario was found to have the highest overall impacts on the selected performance measures, although it does result in the least land consumption. Impacts on wastewater and water service are important factors in the analysis, and the Compact Growth scenario had the highest infrastructure impacts in this case. Overall, the Preferred Growth scenario has the least overall impact of the three scenarios.

**Table 25**  
**Summary of Land Use Performance Measures**

	Trend	Compact Growth	Preferred Scenario
Wastewater Demand	Low	High	Low
Wastewater Infrastructure Cost	Low	High	Low
Water System Impacts	High	High	Moderate
Land Consumption	High	Low	Moderate
Score (High=3, Moderate=2, Low=1)	8	10	6
<b>Overall Impact</b>	<b>Moderate</b>	<b>High</b>	<b>Low</b>

## 7 Future Transportation Needs and Analysis

### 7.1 Comparison of Traffic Forecasts for the Three Land Use Scenarios

Traffic impacts of the three different land use scenarios developed for this plan were evaluated using the SCDOT statewide travel demand model, which has a 2045 horizon year. The COATS travel demand model is being updated, and currently has a 2040 horizon year.

#### 7.1.1 VMT, VHT and Average Speeds

Table 26 summarizes data from the travel demand model runs completed for each land use scenario. Each scenario was tested using the existing plus committed road network in the statewide model. Only the Preferred Land Use Scenario was tested using a road network that includes the recommended road improvements presented below in Section 7.3.

The Preferred Land Use Scenario produces smaller increases in vehicle-miles of travel (VMT) and vehicle-hours of travel (VHT), and results in slightly higher average speeds than the other two land use scenarios. This may be in part due to industrial employment being more focused in the northern part of the study area, so new work trips travel fewer miles within the study area.

**Table 26**  
**Traffic Forecasts based on Land Use Scenarios**

**Vehicle-Miles of Travel By Functional Class**

Functional Class	Change, 2015 to 2045			Percent Change, 2015-2045		
	Trend	Compact	Preferred	Trend	Compact	Preferred
Local Roads	10,959	4,977	3,362	67%	30%	21%
Major Collectors	48,588	53,155	43,016	78%	86%	69%
Interstate	63,432	53,009	49,125	17%	14%	13%
Total	122,978	111,141	95,504	27%	24%	21%

**Vehicle Hours of Travel By Functional Class**

Functional Class	Change, 2015 to 2045			Percent Change, 2015-2045		
	Trend	Compact	Preferred	Trend	Compact	Preferred
Local Roads	377	168	113	69%	31%	21%
Major Collectors	1,959	2,241	1,676	108%	124%	92%
Interstate	3,145	2,542	2,360	58%	47%	44%
Total	5,480	4,951	4,149	71%	64%	53%

**Speed By Functional Class**

Functional Class	Change, 2015 to 2045			Percent Change, 2015-2045		
	Trend	Compact	Preferred	Trend	Compact	Preferred
Local Roads	(0.3)	(0.1)	(0.0)	-1%	0%	0%
Major Collectors	(4.9)	(5.8)	(4.1)	-14%	-17%	-12%
Interstate	(18.6)	(16.0)	(15.2)	-26%	-23%	-21%
Total	(15.3)	(14.4)	(12.7)	-26%	-24%	-21%

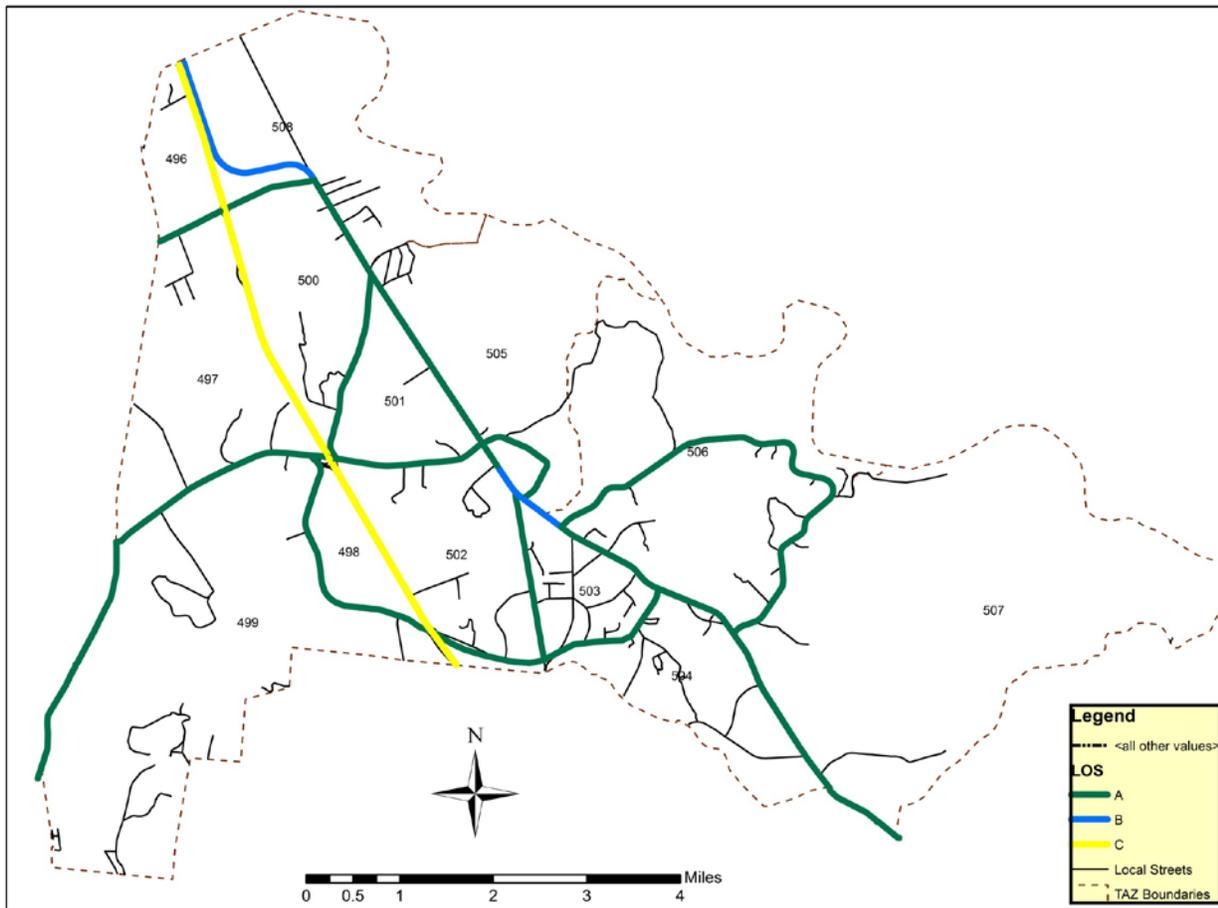
## 7.1.2 Level of Service Analysis

Level of Service for the 2015 Base Year, 2045 Trend Development Scenario, 2045 Compact Growth Scenario, and 2045 Preferred Land Use Scenario are presented in Maps 28 through 31 below.

Map 32 presents the results of the 2045 Preferred Land Use Scenario tested with the recommended road improvements in Section 7.3.

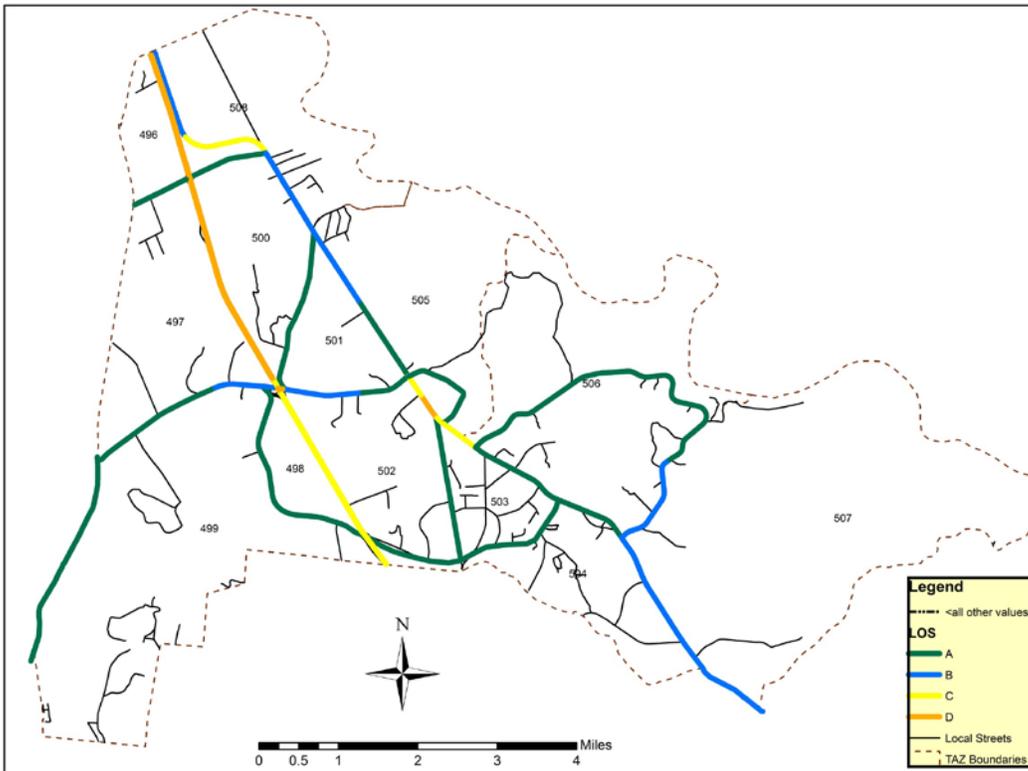
Map 28

2015 Highway Level of Service



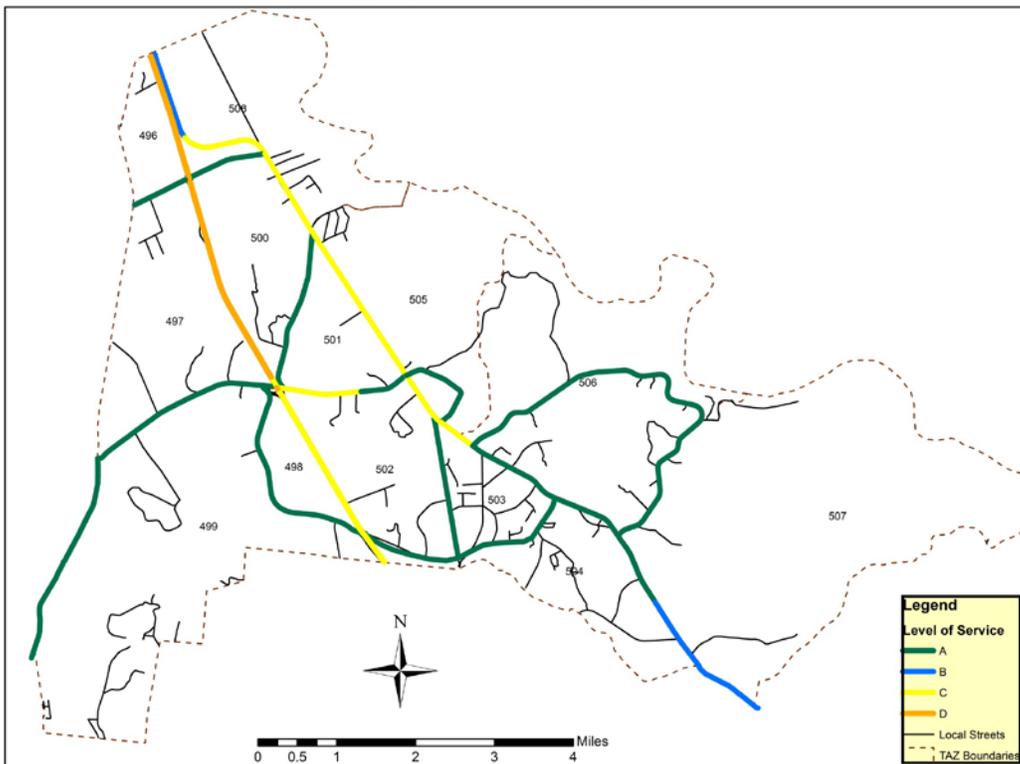
Map 29

2045 Highway Level of Service, Trend Development

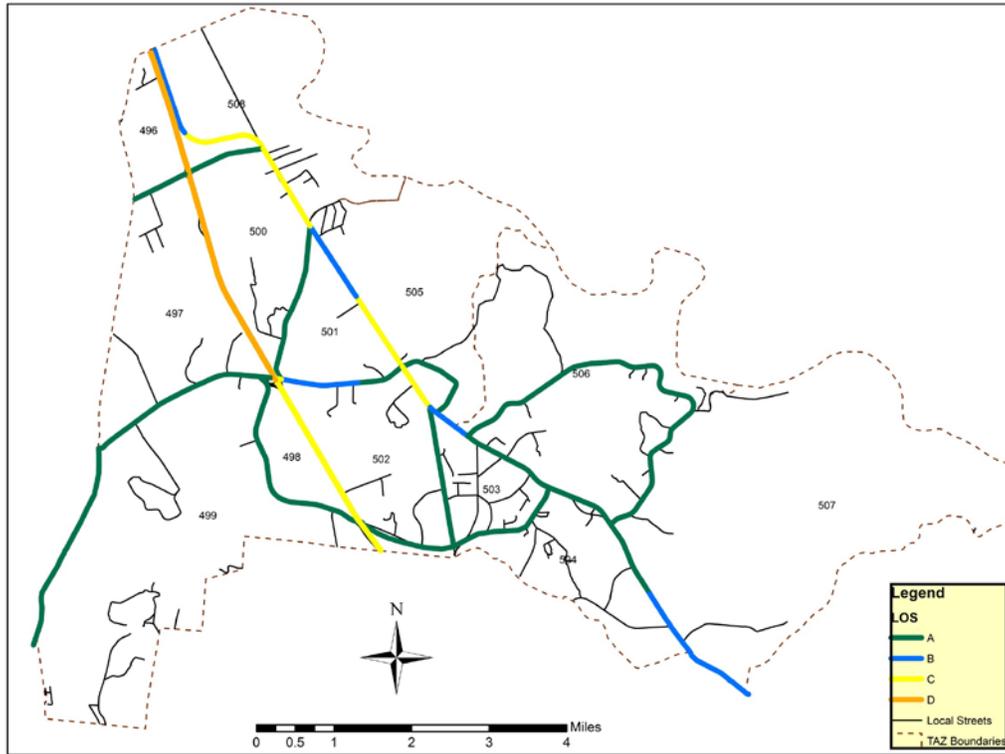


Map 30

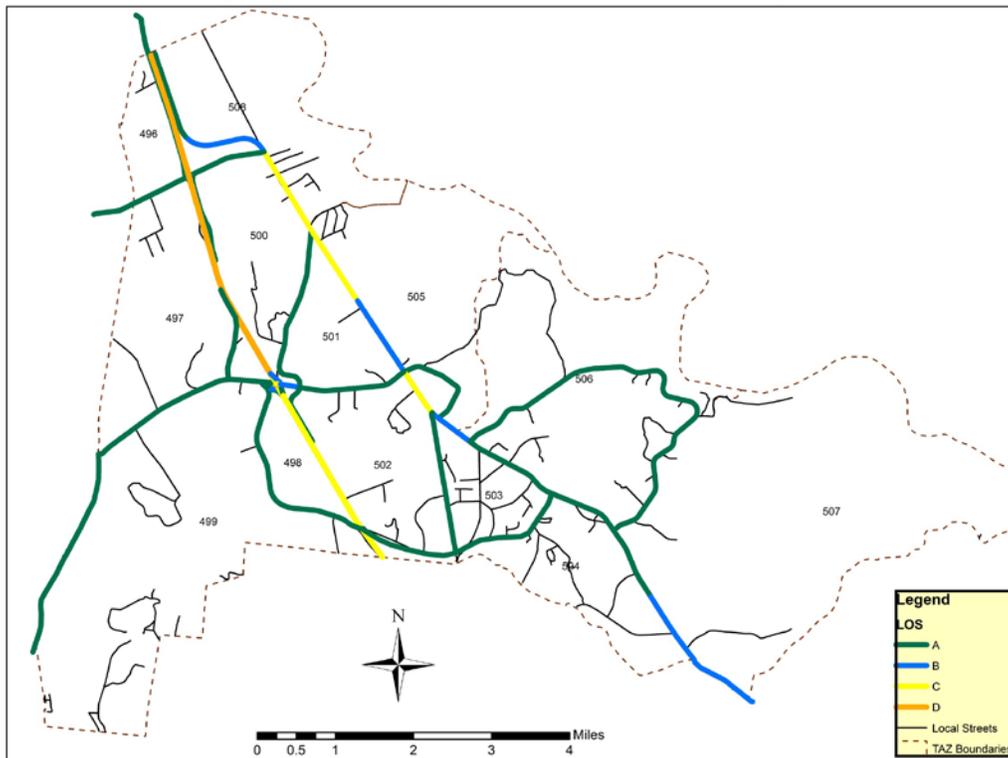
2045 Highway Level of Service, Compact Growth



Map 31 2045 Highway Level of Service, Preferred Land Use with NO Road Improvements



Map 32 2045 Highway Level of Service, Preferred Land Use with Road Improvements



## 7.2 Needs Assessment

### 7.2.1 Safety issues and speed concerns

The I-26 Interchange at Old Sandy Run Road has several problems with frontage road alignment and intersection separation from the freeway entrance and exit ramps. As traffic volumes increase at this interchange, these roadway alignment problems will cause an increasing number of crashes and delays. Access to a proposed fuel station and convenience store in the southeast quadrant of the interchange also will be problematic unless the frontage road is realigned to provide about 700 feet of separation between the frontage road and the westbound I-26 exit ramp.

Overall crash rates in the Sandy Run study area are below statewide averages. However, several intersections would benefit from left turn lanes, based on assessment of the crash data provided by SCDOT, and those intersections are identified in Map 30 below.

Speeds in the commercial center of the community -- along Old State Road between the US 21/US 176 intersection and Old Sandy Run Road -- are a concern expressed by many community residents and leaders. While SCDOT has recently reduced the speed limit to 45 mph in this section of highway, additional measures to reduce speed should be considered.

### 7.2.2 Traffic Congestion

Daily traffic congestion in Sandy Run, both now and in the 2045 traffic forecast, is not a major issue, as previous analysis indicates. Congestion is associated with I-26 traffic diversions that result from incidents or holiday traffic delays, or from hurricane-evacuation lane reversals.

As industrial development occurs in the northern portion of the study area, a four-lane improvement to Old State Road may be warranted.

Otherwise, traffic congestion is not a major factor in the recommendations for road improvements in this report.

### 7.2.3 Bicycle and Pedestrian Facilities

No comments were received specifically identifying needs for bicycle and pedestrian facilities in the community. However, some support was expressed for greenway trails and recreational trails. The very low density development pattern in the study area works against development of an effective network of bicycle and pedestrian facilities. Adding wide paved shoulders to the

busiest roadways in the area is likely to be the most cost-effective way to address bicycle and pedestrian needs, and will also yield motorist safety benefits.

### 7.2.4 Public Transportation

The low density of the community likely makes scheduled, fixed route bus service unworkable. A demand-responsive rural transportation service would be a more likely successful approach.

## 7.3 Recommended Improvements

Map 28 presents recommended road improvements. Map 29 presents a more detailed view of recommended improvements at the I-26 interchange at Old Sandy Run Road. Map 30 illustrates the locations of recommended intersection improvements.

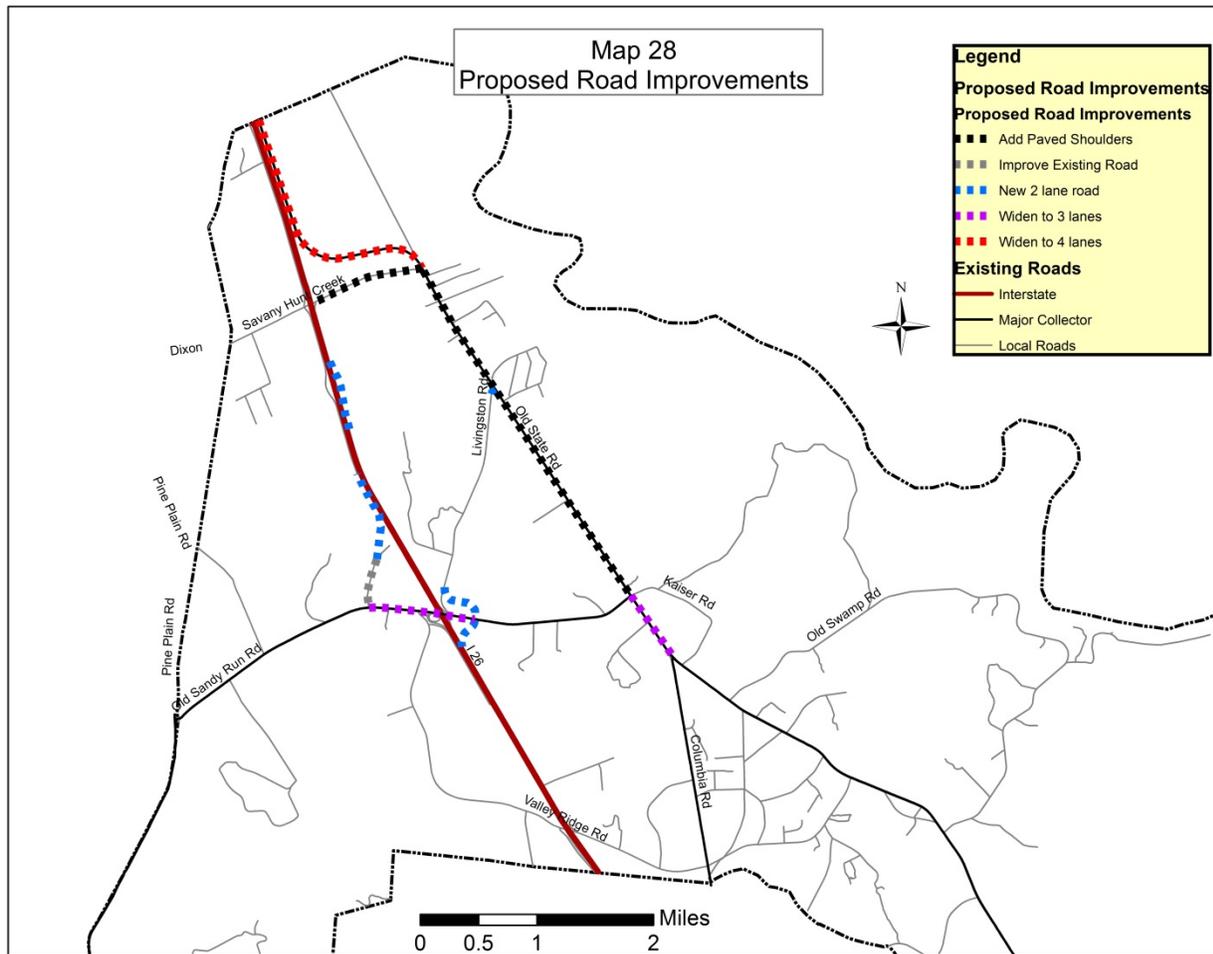
Table 29 presents a list of the recommended road improvements while Table 30 presents the recommended intersection improvements.

### 7.3.1 Safety and Intersection Improvements

Adding wider paved shoulders to Old State Road (US 21-176) is recommended to provide better recovery area for motorists in crash avoidance maneuvers, and to provide space for pedestrians and cyclist along this major corridor in the community.

A roundabout at the Columbia Road (US 21)/Old State Road (US 176) intersection is suggested as a way to manage incident-related and evacuation-related traffic congestion at this intersection, as well as an effective way to reduce traffic speeds. Further engineering analysis would be required to determine if a roundabout is the best improvement to address congestion and safety needs at this intersection; existing rights of way appear to be adequate to construct a roundabout without additional right of way acquisition.

Intersection improvements to add left turn lanes are recommended where crash data analysis indicates concentrations of crashes with injuries.



### 7.3.2 Road Widenings

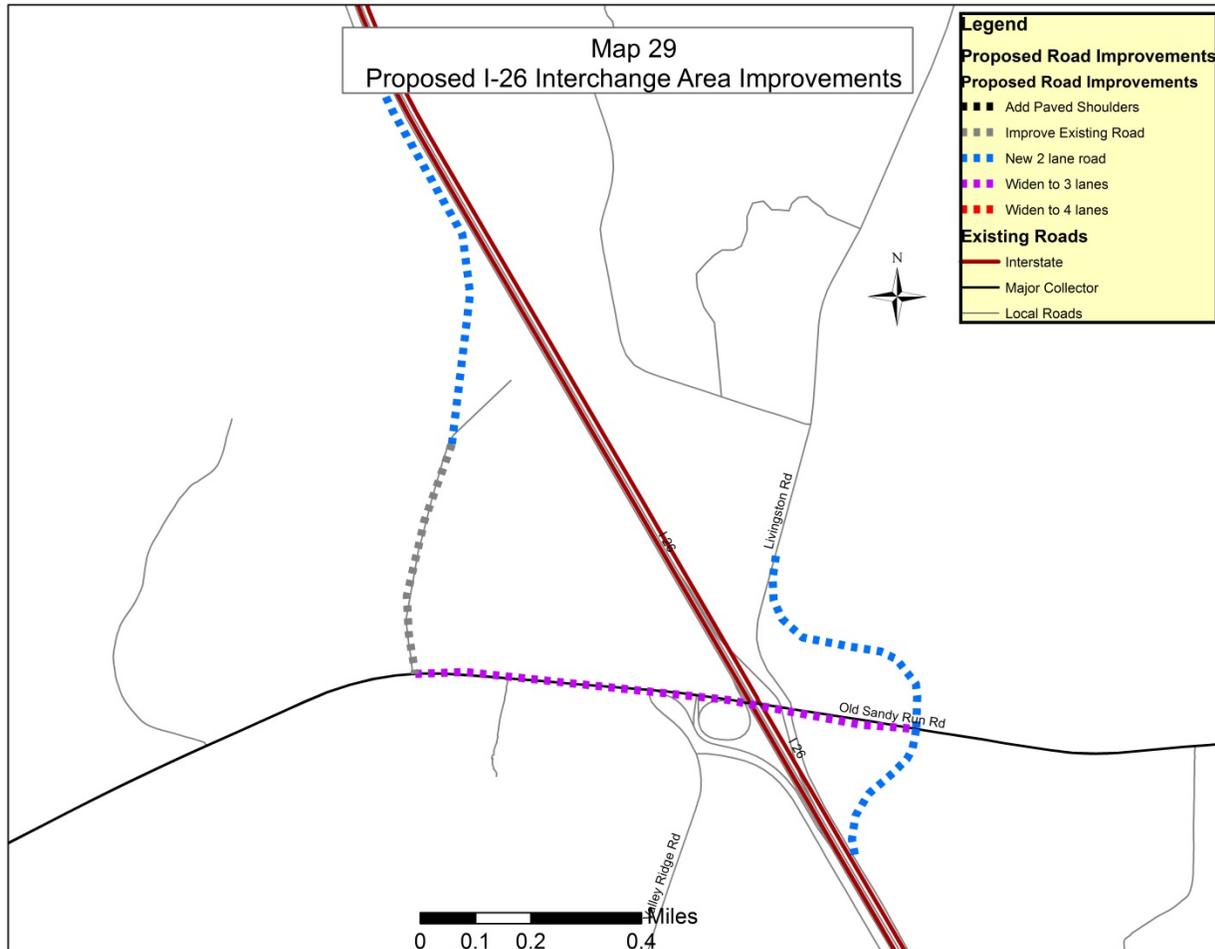
A four-lane improvement is suggested for Old State Road north of Savany Hunt Creek Road to the I-26 interchange (Exit 119). However, federal guidance requires projects to have “logical termini, which normally means projects must begin and end at intersecting federal aid routes. For this project to be eligible for funding through COATS, it would be necessary to add Savany Hunt Creek Road and the west side frontage road of I-26 to the Federal Aid system as a Rural Minor Collector route. The presence of Zeus and Southeast Frozen Foods as major industrial sites would help support this change in functional class.

Old Sandy Run Road is recommended for a three-lane improvement at the I-26 interchange (Exit 125).

### 7.3.3 New Roads

Proposed new roadways include realignment of Livingston Road at Old Sandy Run Road, extension of the frontage road on the west side of I-26 to provide a connection from Savany Hunt Creek

Road to Old Sandy Run Road, and an extension of the east side frontage road on I-26 when needed for future development.



### 7.3.4 Bicycle and Pedestrian Accommodations

The addition of wider paved shoulders on Old State Road and Savany Hunt Creek Road are the only bicycle and pedestrian accommodations proposed.

## 7.4 Project Prioritization

Table 27 presents recommended priorities for road improvement. Road improvements are prioritized based on level of service without improvement, functionally obsolete design features, and economic development potential supported or created by the project.

Recommended Intersection priorities are presented in Table 28, and are based on the number of crashes with injuries or fatalities at each intersection, and economic development supported by the project.

**Table 27**  
**Road Improvement Priorities**

Project Name	LOS	Design Obsolete?	Econ Develop Support	LOS Score	Design Score	Econ Dev Score	Total Score
Widen Old Sandy Run Road at I-26 *	C	Yes	Low	2	1	1	4
Widen Old State Road North of Savany Hunt Creek	B and C	No	High	1.5	0	2	3.5
Improve Old State Road	B and C	No	Low	1.5	0	1	2.5
Extend Frontage Road west side of I-26	A	No	High	0	0	2	2
Improve Frontage Road on West side of I-26	A	No	High	0	0	2	2
Relocate Frontage Road east side of I-26	A	Yes	Low	0	1	1	2
Extend Frontage Road east side of I-26	A	Yes	Low	0	1	1	2
Relocate Livingston Road at Old Sandy Run Rd	A	Yes	Low	0	1	1	2
Improve Savany Hunt Creek Road	A	No	Low	0	0	1	1

## 7.5 Potential Funding Sources

### 7.5.1 SCDOT Safety Program

Some of the intersection projects recommended below could be candidates for SCDOT safety program funding. A request to evaluate the recommended intersection projects should be

submitted to SCDOT Traffic Engineering to determine if any of the recommended intersection projects may be eligible for funding.

The highest priorities for intersection safety improvements are US 178 at US 21, where a roundabout is recommended as a way to manage evacuation traffic flow as well as incident-related traffic diversion from I-26, and at US 178 and Old Sandy Run Road, where parking on the right-of-way creates sight distance issues that may be addressed at relatively low cost with a concrete island or other measures to prevent adjacent business customers from parking on the highway right of way.

Old State Road (US 178) has been recently resurfaced and has two-foot paved shoulders. Adding additional width to the paved shoulders when the road is resurfaced next would further improve recovery area for crash avoidance maneuvers, reduce run off the road crashes, and provide some accommodation for cyclists and pedestrians.

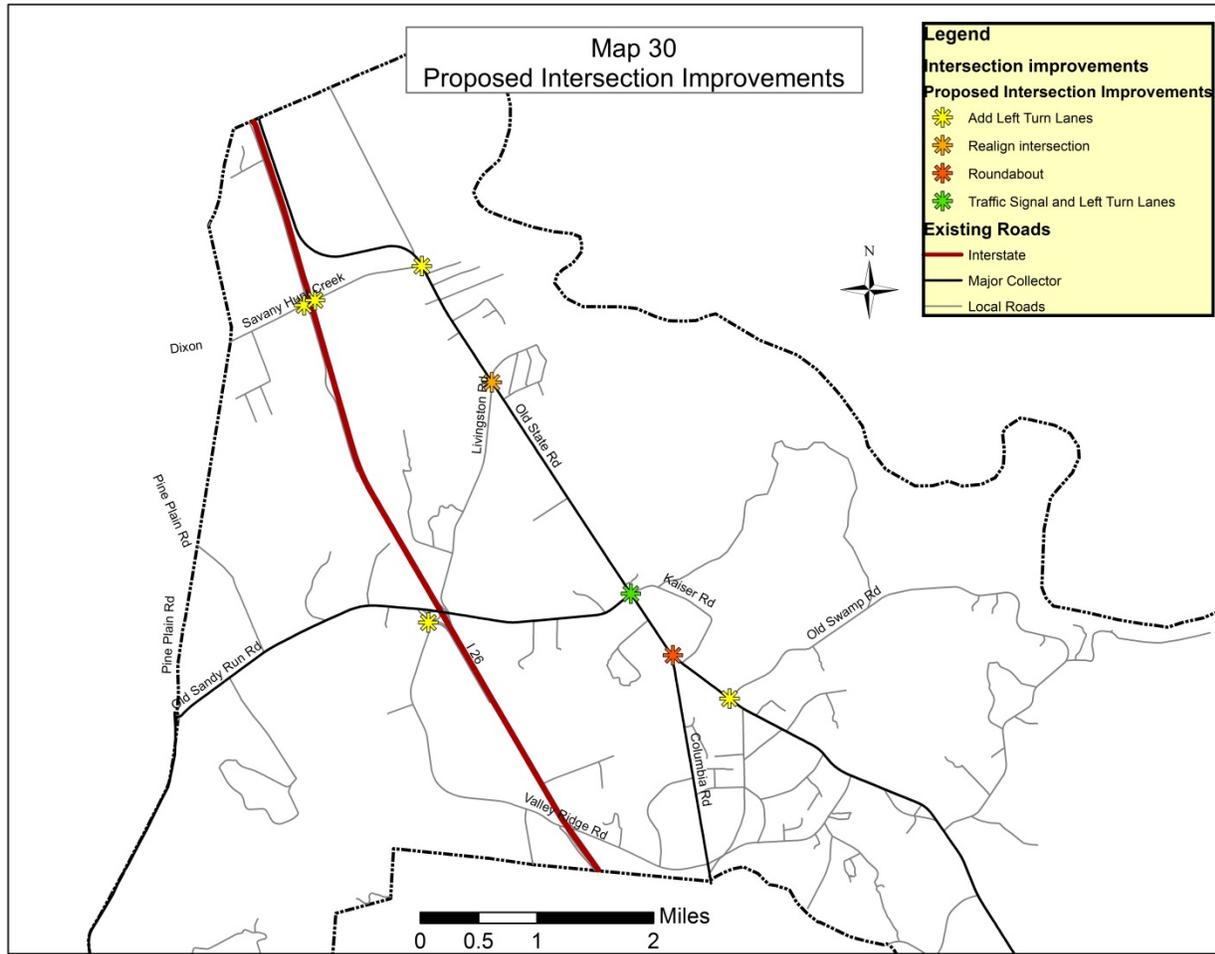
### 7.5.2 COATS TIP

Improvements to the I-26 interchange at Exit 125, Old Sandy Run Road, should be the highest priority for the Sandy Run area for COATS funding. The functionally obsolete design of the ramps and frontage roads should be corrected, both to address routine traffic operational issues as well as to improve safety when traffic is diverting from I-26 toward US 178 and US 21 due to incident related traffic delays on the interstate.

### 7.5.3 Calhoun CTC

CTC funds should be pursued for intersections that are not on the federal aid system: Valley Ridge Road at Sirens Drive, and the two intersections on Savany Hunt Creek Road at the interstate frontage roads.

Unless the frontage road on the west side of I-26 is added to the Federal Aid system, that project will not be eligible for COATS funds. As discussed in Section 7.3.2, the eastern section of Savany Hunt Creek Road and all of the the west side frontage road would have to be added to the federal aid system as a rural minor collector or rural major collector route for this recommended project to become eligible for COATS funding.



### 7.6 Planning-level Cost Estimates

Preliminary cost estimates were developed based on review of the COATS TIP, Lower Savannah COG STIP project budgets, and consultation with SCDOT District Office engineers. The cost estimates are incorporated in Table 29 and Table 30.

**Table 29**  
**Recommended Road Improvements**

Project Name	Type of Improvement	Preliminary Cost (000s)
Extend Frontage Road west side of I-26	New 2 lane road	\$2,151
Relocate Frontage Road east side of I-26	New 2 lane road	\$768
Extend Frontage Road east side of I-26	New 2 lane road	\$1,974
Relocate Livingston Road at Old Sandy Run Rd	New 2 lane road	\$1,466
Widen Old State Road North of Savany Hunt Creek	Widen to 4 lanes and 4' shoulders	\$18,182
Widen Old Sandy Run Road at I-26 *	Widen to 3 lanes	\$3,788
Improve Frontage Road on West side of I-26	Upgrade Private drive to Public Roadway	\$1,178
Improve Savany Hunt Creek Road	Add 4' Paved Shoulders	\$97
Improve Old State Road	Add 4' Paved Shoulders	\$398
Total		\$300,001

\*cost estimate does not include bridge replacement, assumes coordination with BR funds

**Table 30**  
**Recommended Intersection Improvements**

Project Name	Type of Improvement	Preliminary Cost (000s)
Old State Road (US 21) at Old Sandy Run Road	Traffic Signal and Left Turn Lanes	\$2,500
Old State Road (US 176) at Columbia Road (US 21)	Roundabout	\$1,000
Old State Road (US 21) at Savany Hunt Creek Road	Add Left Turn Lanes	\$800
Old State Road (US 21) at Livingston Road	Add Left Turn Lanes, realign minor roads	\$800
Old State Road (US 176) at Old Swamp Road	Add Left Turn Lanes	\$800
Valley Ridge Road at Sirens Drive	Add Left Turn Lanes	\$1,750
Savany Hunt Creek Rd at I-26 overpass west side frontage road	Add Left Turn Lanes	\$500
Savany Hunt Creek Rd at I-26 overpass east side frontage road	Add Left Turn Lanes	\$500
Total		\$8,650

## 8 Next Steps

### 8.1 Update of Calhoun County Comprehensive Plan

The South Carolina Planning Enabling Act of 1994, as amended, requires counties to adopt a Comprehensive Plan if they intend to regulate zoning and subdivision of land. To implement this Sandy Run Area Plan, Calhoun County will need to amend its current Comprehensive Plan to adopt the preferred Future Land Use Map presented in this document prior to amending the County's zoning and subdivision ordinances.

### 8.2 Update and revisions to Zoning and Subdivision

To implement the preferred future land use plan developed here, Calhoun County will need to update its zoning and subdivision ordinances to reflect the districts and standards that are described in general terms in this document.

### 8.3 Coordinate with SCDOT, COATS, and Calhoun CTC

The transportation improvements recommended in this plan will take many years to implement, due to the limited funding available to SCDOT, COATS, and Calhoun CTC, and the competition for funding from more densely developed areas where traffic volumes, congestion and crash rates may be more severe than in Sandy Run. However, many of the recommended improvements in this plan are relatively low cost improvements, and therefore may be more easily funded than larger projects elsewhere. Calhoun County officials should immediately pursue funding through SCDOT's Safety Program, through the COATS MPO, and from the Calhoun CTC for the projects high priority projects identified in this plan.