Fort Valley Bypass Study

October 2010

JJG

GDOT
Georgia Department of Transportation
Office of Planning

Table of Contents

List of Tables

List of Figures

Executive Summary

The Georgia Department of Transportation (GDOT) has prepared the Fort Valley Bypass Study to identify and document the transportation need for a bypass around the city of Fort Valley, and to identify and evaluate feasible alternatives for the bypass. The intent of this study was to provide decision makers with enough information regarding the alignment, configuration, cost, and performance of all feasible bypass segments to make an informed decision regarding possible programming, or continued inclusion, in the GDOT Work Program or construction as a locally funded project.

The purpose of the Fort Valley Bypass was to satisfy the transportation needs for increased mobility, safety, and access in and around Fort Valley. The Northeast, Southeast, and Southwest Bypass Alternatives were drafted to consider a variety of logical connections to the existing roadway network, including a combination of all three alternatives to create a complete bypass of the city. (The Northeast Bypass Alternative in this study is currently programmed in the GDOT Work Program (GDOT PI#0006963).) These bypass alternatives were considered in their environmental and cultural context for potential negative impacts to their surroundings.

Evaluation criteria were established in order to compare the relative performance of each alternative. The first three criteria address the identified need and purpose of the project, and the final two consist of total project cost and benefit/cost ratio. Study alternatives, including the No-Build Alternative, were assigned a score based on how well they addressed each criterion, and then ranked by their composite score. The following recommendations were based on the analysis and ranking of the study alternatives presented in this report:

Northeast Bypass Alternative ranked first out of the five bypass alternatives, most effectively addressed the need for improved mobility within the study area, and was the only stand-alone alternative that addressed the LOS deficiency in Fort Valley. While this alternative does not address access to Fort Valley State University, it most effectively addresses the primary need and purpose of the bypass while minimizing project costs. The Northeast Bypass Alternative is recommended for continued inclusion in the GDOT Work Program.

All Bypass Alternatives ranked second and scored well on mobility, safety, and access, and fulfilled the project need and purpose. However, it is doubtful that the Value Engineering study, required for all federally funded projects in Georgia with costs of $10M or more, would recommend the implementation of this alternative since it ranks lower than the Northeast Bypass alternative, and costs $18.5M more. For this reason, implementation of southeast and southwest segments of the All Bypass Alternatives alternative would need to utilize local funds for preliminary engineering, right-of-way acquisition, and construction.

Southwest Bypass Alternative ranked third and would provide some benefit to mobility and safety within the study area, as well as access to Fort Valley State University. However, it would not address the LOS deficiency within the City of Fort Valley. If local officials wish to pursue this alternative, local funds would need to be utilized for preliminary engineering, right-of-way acquisition, and construction.

Southeast Bypass Alternative ranked fifth. While this alternative would improve access to Fort Valley State University, it is only expected to attract 240 vehicles per day, and would not address the LOS deficiency within Fort Valley. If local officials wish to pursue this alternative, local funds would need to be utilized for preliminary engineering, right-of-way acquisition, and construction.

1. Introduction

In cooperation with Peach County, the city of Fort Valley, and other planning partners, the Georgia Department of Transportation (GDOT) has prepared the Fort Valley Bypass Study. The purpose of this study was to identify and document the transportation need for a bypass around the city of Fort Valley, and identify and evaluate feasible alternatives for the bypass. The intent of this study was to provide decision makers with enough information regarding the alignment, configuration, cost, and performance of all feasible bypass segments to make an informed decision regarding possible programming in the GDOT Work Program or as a locally funded project.

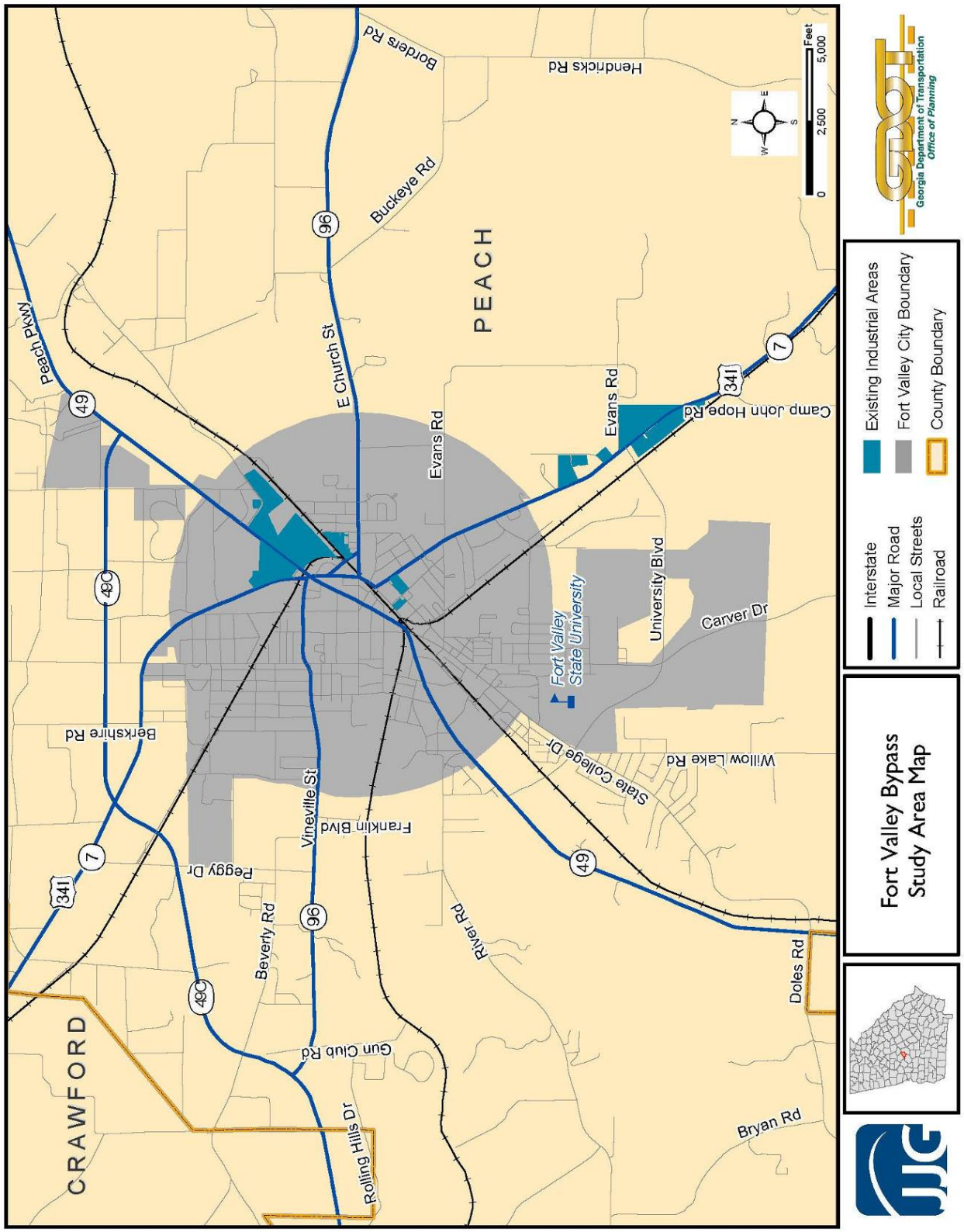
This study first examined the existing and future conditions within the study area in order to understand the need and purpose for a partial or full bypass around the city of Fort Valley. Agency, stakeholder and public input were also solicited regarding the transportation needs within the Fort Valley area. These needs were documented and mapped. Once the need and purpose of the Fort Valley Bypass was defined, the study presented the three bypass segment alternatives, one to the northeast of the city, one to the southeast, and one to the southwest, which were developed to address the identified transportation needs along with the cost of each alternative. The bypass segment alternatives were then evaluated based on their impact to environmental and community resources, their transportation benefits, their benefit/cost ratios, and finally how well each alternative addressed the need and purpose of the project. The results of this study will be forwarded to Peach County and the City of Fort Valley for further consideration.

GDOT currently has a SR 49 Bypass project programmed in its Work Program (GDOT PI#0006963). This bypass would connect SR 49C north of Fort Valley to SR 96 east of the city and is referred to in this study as the Northeast Bypass Alternative. Although this project is already programmed, it was included as part of this study in order to evaluate its effectiveness as a bypass segment.

1.1 Study Area

The study area is generally defined as the area within an approximate 3-4 mile radius from the center of the city of Fort Valley. Since several segments of the Fort Valley Bypass have already been constructed or are currently programmed, the study area was predetermined due the location of these bypass segments. While the study area for potential bypass alternatives is located within an approximate 3-4 mile radius of the center of Fort Valley, the influence area for travel patterns affecting potential bypass alternatives is larger than this study area. For example, land use or development patterns to the east or west of the study area have the potential to influence travel patterns within the study area. Thus, for purposes of this study, much of the analysis and figures utilized in this study covers all of Peach County. The study area is illustrated in **Figure 1.1** on page 2.

Figure 1.1: Study Area Map



1.2 Study Process

The study was conducted in a series of seven phases from January 2009 to July 2010. The study began with a data-collection period, which was followed by an evaluation of existing socioeconomic and transportation conditions. A travel demand evaluation was performed utilizing the travel demand model developed for the Southwest Georgia Multi-County Study. Input from local agencies, stakeholders, and the public regarding transportation needs and issues and development patterns was received. Utilizing the results of the existing and future conditions analysis as well as local input, the need and purpose of the Fort Valley Bypass was developed. A series of alternatives for the bypass were proposed, refined, evaluated for transportation benefits, and examined for environmental impacts. Planning-level design, right-of-way, and construction cost estimates for each alternative were prepared. This final report presents the findings of this study. Throughout the study process, stakeholders and agency personnel have been involved in identifying issues and proposing bypass alternatives within the study area.

2. Existing Conditions

The area of influence of the Fort Valley Bypass Study extends beyond the specified study area. The demographics, employment, and land use across Peach County all contribute to the regional traffic patterns that affect transportation performance within the study area. Therefore, these data are presented in this section on a county level.

2.1 Population

As depicted in **Table 2.1** below, between 1990 and 2000, Peach County exhibited an increase in its population, with almost 2,500 new residents, resulting in an annual growth rate of 1.1 percent during this decade. During the same decade, statewide growth outpaced that of the study area, at 26.4 percent, or 2.4 percent per year.

More recently, from 2000 to 2006, Peach County experienced moderate growth of 0.8 percent per year, for a net addition of 1,117 residents, while the state of Georgia maintained its strong growth trend of 2.3 percent per year, for a total increase of 14.4 percent during this period to a 2006 population of 24,785.

From 1990 to 2000, the City of Fort Valley lost 2.4 percent of its population, and had 8,005 residents at the time of the US Census. By 2006, the city's population was 7,706, down 3.7 percent from the 2000 population. The gradual decline of the city of Fort Valley's population stands in contrast to the growth of the county at large. In many cases, as the *Peach County Comprehensive Plan* (2006) notes, population is shifting away from the aging residential structures within the city to the new developments elsewhere in the county. The shift in population centers in the county has resulted in the need for travel through, rather than to or from, the city of Fort Valley.

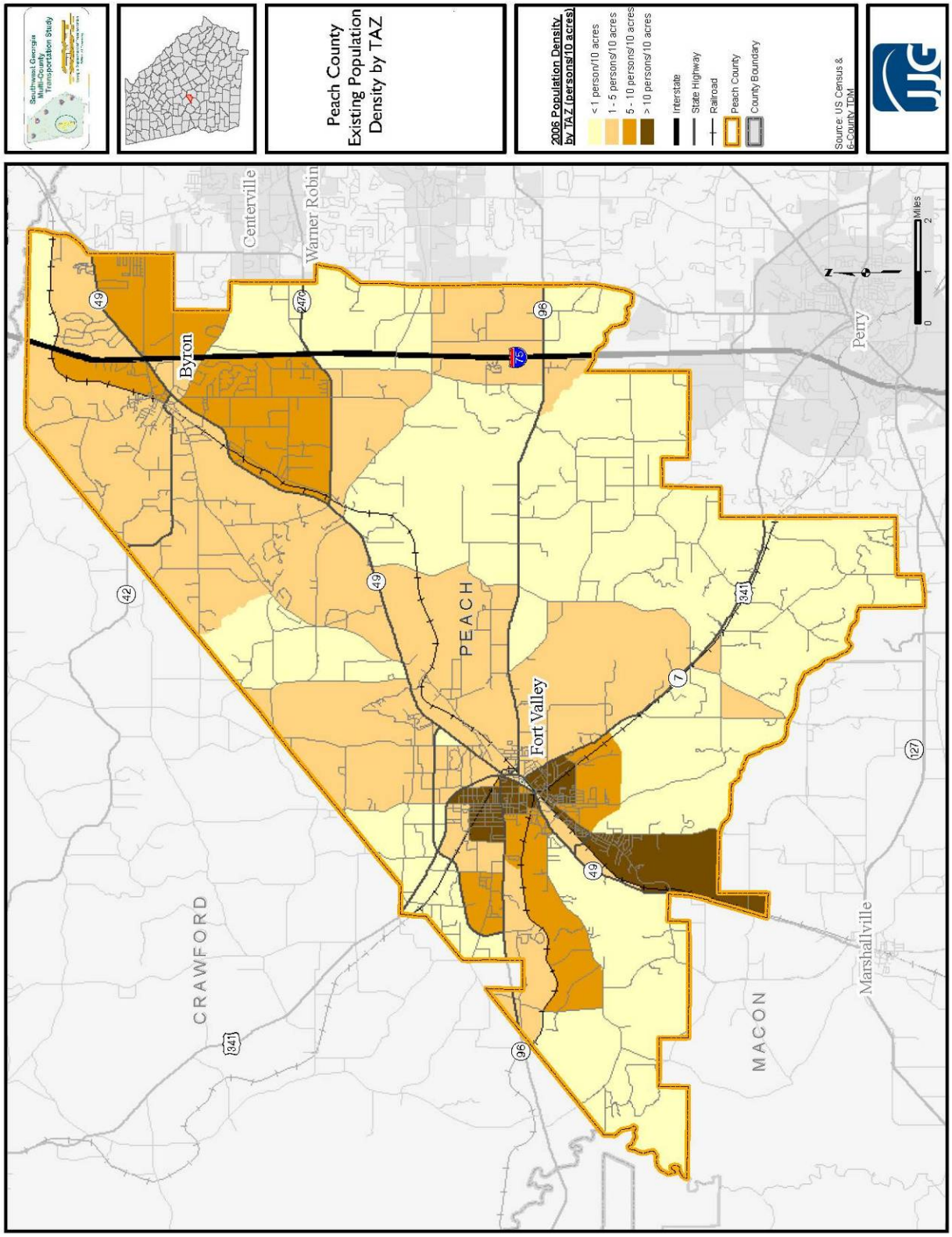
Table 2.1: Peach County Population Growth, 1990-2006

				1990 - 2000		2000 - 2006	
	1990	2000	2006	Percent Change	Annual Growth Rate	Percent Change	Annual Growth Rate
Fort Valley	8,198	8,005	7,706	-2.4%	-0.2%	-3.7%	-0.6%
Peach County	21,189	23,668	24,785	11.7%	1.1%	4.7%	0.8%
State of Georgia	6,478,216	8,186,453	9,363,941	26.4%	2.4%	14.4%	2.3%

Source: 2000 US Census and GADCA

As shown in **Figure 2.1** on page 5, the most densely populated areas in Peach County are located in the study area. Traditional residential areas along SR 7/US 341, SR 96 and SR 49, along with Fort Valley State University, contribute to traffic along these state routes.

Figure 2.1: Peach County Population Density



2.2 Employment

As illustrated in **Figure 2.2** on page 7, in general, the majority of jobs in Peach County can be found along state routes in Fort Valley and Byron. Approximately 2,500 acres in Peach County has an employment density of at least ten jobs per ten acres. Downtown Fort Valley, which is in the study area, has the highest employment density in Peach County with 470 jobs per ten acres.

As depicted in **Table 2.2** below, Peach County was home to approximately 7,900 jobs in 2006. Almost half of Peach County's employment is associated with the service-providing sector, which includes a significant share of accommodation and food services, and health care jobs.

Table 2.2: 2006 Area Employment

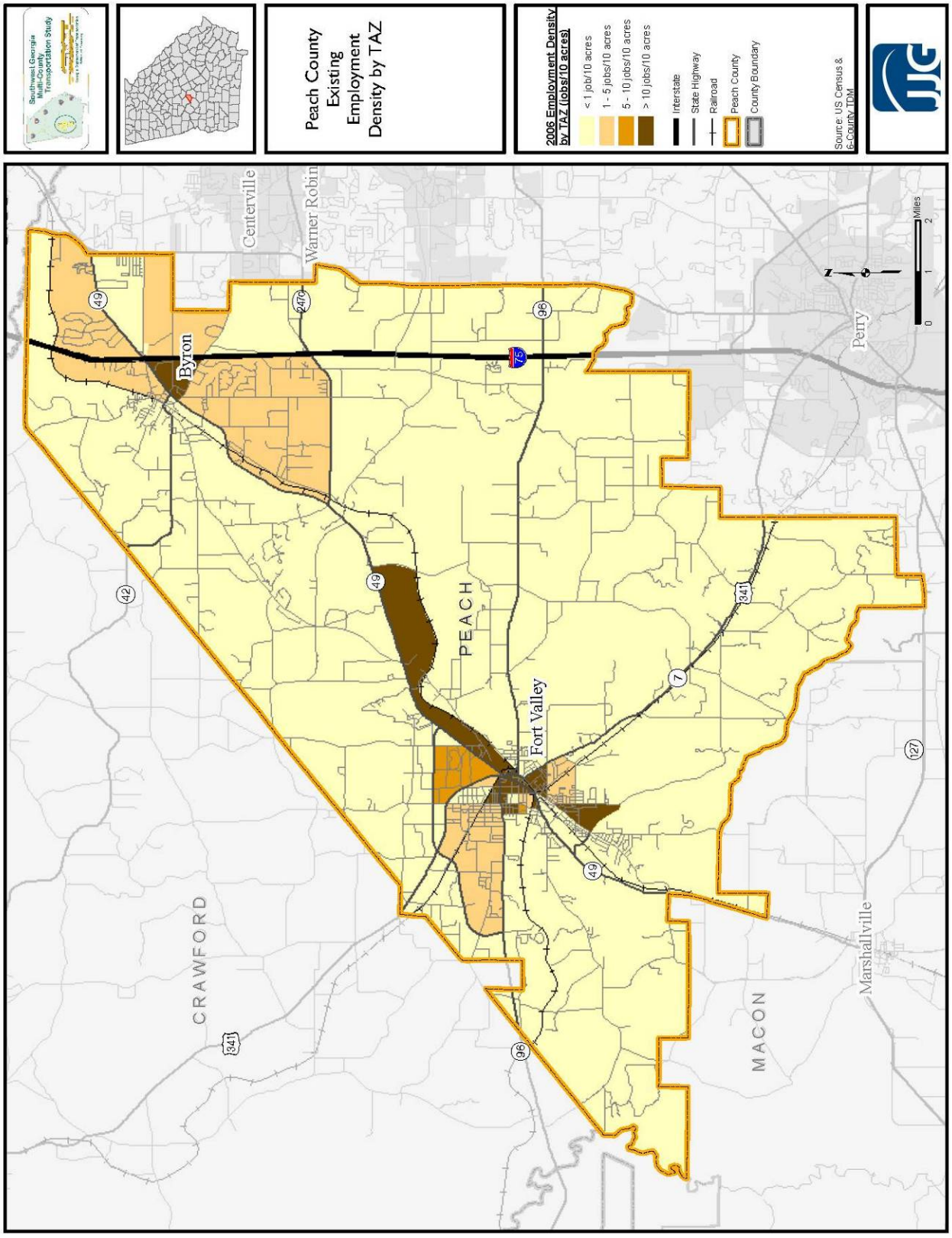
COUNTY	AMC	MFG	WTW	Retail	Service	TOTAL
Fort Valley	169	349	98	223	1,560	2,398
Share	*7%*	*15%*	*4%*	*9%*	*65%*	*100%*
Peach County	727	1,861	353	1,026	3,933	7,901
Share	*9%*	*20%*	*6%*	*14%*	*51%*	*100%*
Houston County	3,309	8,124	1,276	6,135	34,477	54,149
Share	*6%*	*15%*	*2%*	*11%*	*64%*	*100%*

Note: AMC – Agricultural, Mining and Construction employment
MFG – Manufacturing employment
WTW – Wholesale, Trucking and Warehouse employment
Source: GDOL; U.S. Bureau of Labor Statistics

While, Fort Valley was home to just under one-third of the jobs in Peach County in 2006, the entire Peach County economy was overshadowed by that of its neighbor to the east, Houston County. Houston County acts as the economic engine of this region, with 54,149 jobs, five times as many as Peach County. With such a large number of jobs located in Houston County, peak hour travel patterns in Peach County are dominated by commuter traffic travelling to and from Houston County. Much of this traffic utilized SR 96 and SR 49 to travel through Fort Valley to employment centers to the east.

Moreover, data collected by the Georgia Department of Community Affairs (DCA) show that Fort Valley employment, like its population, has been in steady decline since 1990. In 1990, Fort Valley employment accounted for 2,758 jobs; by 2000, it accounted for 2,535 jobs, a decrease of 8.1 percent. By 2006, another 137 jobs were lost from Fort Valley, a 5.4 percent loss over six years. This indicates that commuter traffic is less likely to be destined for Fort Valley; rather, it will be passing through Fort Valley.

Figure 2.2: Peach County Employment Density



2.3 Land Use

The land uses within the study area are generally agricultural, residential with some commercial and institutional uses. The commercial nodes are generally located along the major roadways and in downtown Fort Valley. Significant institutional areas are located on the south side of the city, with Fort Valley State University comprising the majority of this land. A major industrial use is found at the South Peach Industrial Park, just south of Fort Valley on SR 7/US 341. A map of existing land use in Peach County can be found in **Figure 2.3** on page 9.

2.4 Roadway Characteristics

Functional classification is the process by which street and highway facilities are grouped into classes according to the character of traffic service that they are intended to provide. These classifications allow the safety of facilities across the state of Georgia to be evaluated relative to other facilities of similar design, traffic volumes and purpose, and determine eligible funding sources for roadway projects. **Table 2.3** below lists the functional classifications of major roadways in the study area.

Table 2.3: Primary Functional Classifications of Major Study Area Roadways

Roadway	Functional Classification
Orange Street/East Church Road/SR 96	Urban Principal Arterial
Bluebird Boulevard/SR 49	Urban Principal Arterial
US 341/SR 7	Urban Principal Arterial
SR 49C	Urban Principal Arterial
River Road	Rural Major Collector
University Boulevard	Rural Major Collector
Carver Drive	Rural Minor Collector
Willow Lake Road	Rural Major Collector

Source: GDOT Roadway Classification data

As can be seen in **Figure 2.4** on page 10 all of the principal arterials in Peach County, except for Russell Parkway, converge in and traverse Fort Valley. As shown in **Table 2.4** on page 11, with the exception of Interstate travel, the majority of annual vehicle miles travelled in the county occur on arterials, most of which intersect in and travel through Fort Valley.

Figure 2.3: Peach County Land Use Map (2006)

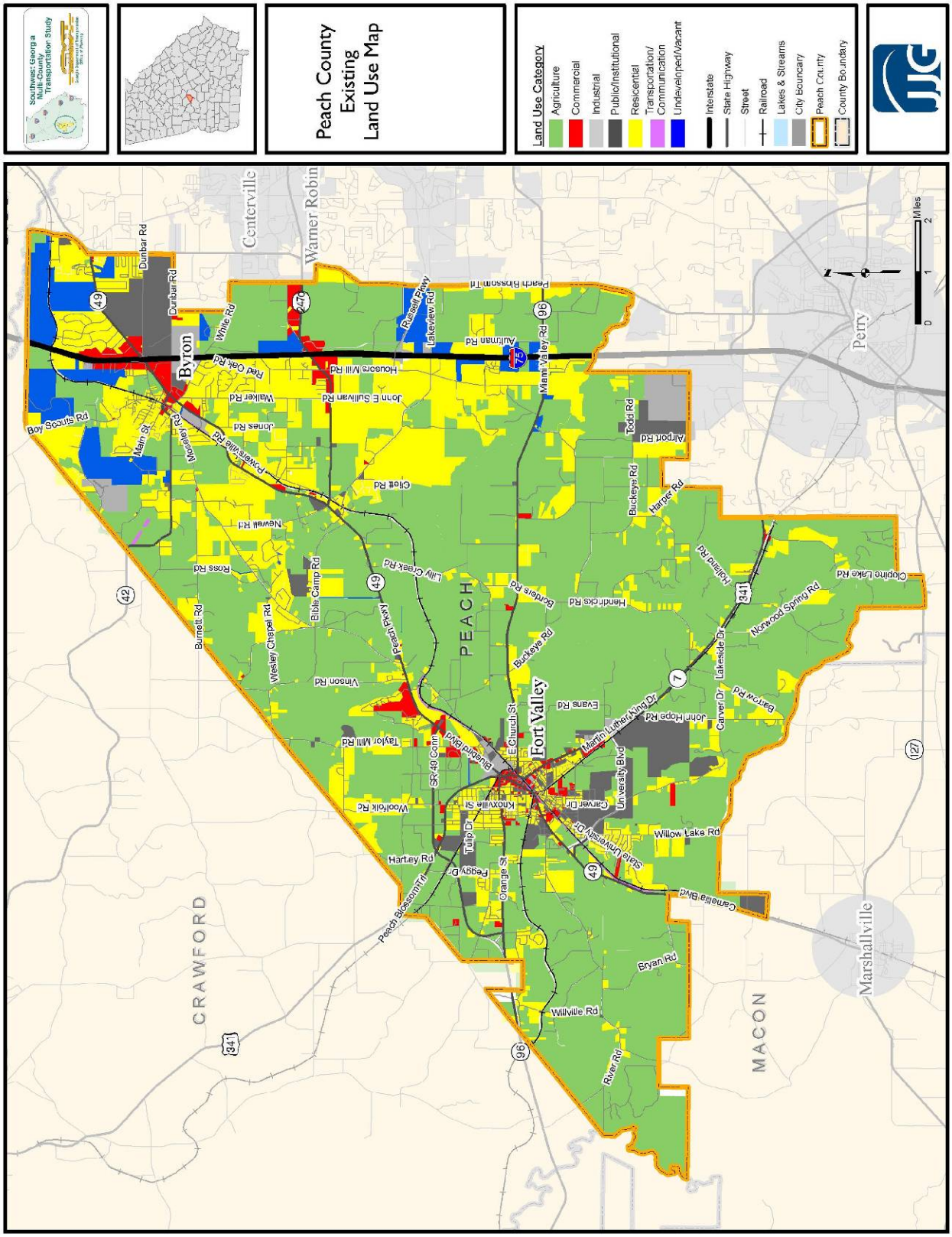


Figure 2.4: Peach County Functional Classifications

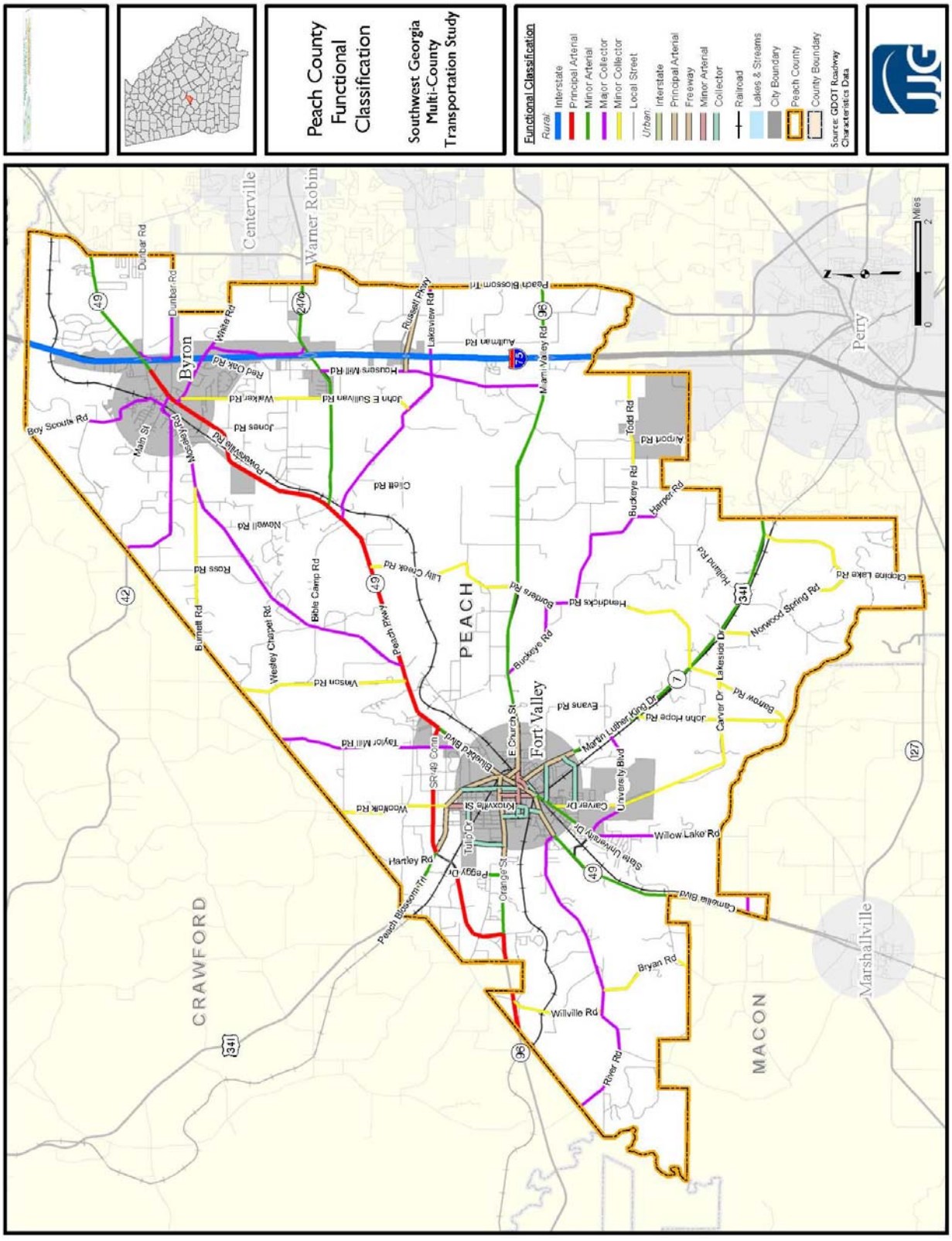


Table 2.4: Functional Classifications in Peach County

	Rural Roadways		Urban Roadways	
	Mileage	**VMT**	**Mileage**	**VMT**
Interstate	8.30	569,064	2.82	182,227
Arterial	41.53	319,309	20.77	134,564
Collector	90.19	147,588	8.56	11,469
Local	153.57	70,010	49.13	44,494
Road Total	293.59	1,105,970	81.28	372,755

Source: GDOT Roadway Classification data

SR 49 is an urban principal arterial within Fort Valley, and a rural principal arterial northeast of the city through Byron to the northeast, and this facility provides the major connection between the two cities in Peach County. SR 96 is also an urban principal arterial within Fort Valley and, as a rural principal arterial elsewhere in the county, provides an east-west connection through the county, specifically between the city of Fort Valley and I-75.

SR 96 and SR 49 also serve as a primary east-west travel corridor named the Fall Line Freeway. The Fall Line Freeway is envisioned as a travel corridor that would traverse the entire width of the state from the Alabama State Line at Columbus to Macon and then to Augusta at the South Carolina State Line. The Fall Line Freeway is being constructed as part of the Governor's Road Improvement Program (GRIP), which aims to foster connections among Georgia cities, provide opportunities for growth, and provide safe and effective transportation throughout the state.

Within the study area, the Fall Line Freeway follows SR 96 from west of Fort Valley, passes along the northwest of Fort Valley via SR 49C, and then connects to SR 49 and moves north toward Macon. SR 96 also serves traffic travelling between Columbus and Savannah. As identified later in the Public Involvement section, SR 96 serves military traffic from Fort Benning in Columbus travelling to the Port of Savannah for deployment. Large convoys of military vehicles traverse Fort Valley on SR 96 during these deployments.

SR 7/US 341 is the third and final principal arterial within Fort Valley and it provides a connection from Fort Valley to Perry to the southeast and to Crawford County in the northwest. With three major travel corridors converging in Fort Valley, the intersections of these state routes serve a bottleneck restricting mobility through Fort Valley. These intersections create congestion, delay, and safety issues as through-traffic must compete with local trips on sections of these state routes within the city.

2.5 Safety

Crashes occur most frequently at intersections, but can also occur along segments of a street or highway due to curvature of the road, lane width and type of movements occurring within a specific segment. Understanding where and why accidents occur is useful in measuring relative need and prioritizing projects.

2.5.1 Roadway Safety Analysis

Peach County roadways were analyzed by road segment. Alternative termini were established by using county lines, termini of a roadway facility, or location where a facility type changed. Segments with accidents rates higher than the statewide rate per million vehicle miles (MVM) for their respective facility type were identified and noted. This analysis was conducted using the year 2000-2007 data, the most recent available when analysis for this study began.

Average accident rates on Peach County roadways were compared to statewide averages for respective functional classifications. Of the ten Peach County segments that experienced higher rates than statewide averages for each respective roadway type, three; SR49C, US 341/SR 7, and SR 96, lie within the Fort Valley Bypass study area. **Figure 2.5** on page 13 illustrates the location of these relatively high-accident segments within Peach County. **Table 2.5** below provides a complete list of segments and associated statistics for all ten segments.

Table 2.5: 2007 Peach County Crash Rate by Roadway Segment

Roadway			Crashes	Crash Rate (per 100 million vehicle-miles (MVM))		Injuries
GDOT Route No.	Functional Classification	Beg - End MP	Number	Road Segment	Statewide Ave.	Number
I-75	Rural Interstate	0 - 3.6	47	60	50	17
I-75	Rural Interstate	5.7 - 11.3	124	81	50	69
I-75	Rural Interstate	12.5 - 17.6	71	270	114	21
SR 49 CO*	Rural Principal Arterial	0 – 5	22	320	114	26
SR 96	Rural Minor Arterial	5.9 - 12.9	30	237	154	16
SR 96	Rural Minor Arterial	13.0 - 15.0	12	200	154	3
SR 7/US 341*	Rural Minor Arterial	0.3 - 6.2	24	204	154	11
SR 7/US 341*	Urban Principal Arterial	6.3 - 10.1	61	629	441	27
SR 247 CO	Rural Minor Arterial	0.0 - 3.0	21	276	154	5
SR 42	Rural Major Collector	0.0 - 3.5	18	391	158	8

*Indicates that segment is in study area

Source: CARE Data 2000-2007

2.5.2 Intersection Analysis

As with roadways, the crash rates of Peach County intersections were analyzed to identify high crash locations. GDOT maintains statewide crash rates for intersections by type; however, for the purposes of this study, intersection crash rates were compared within the county. Of the ten intersections across the county identified as having more than 40 crashes during the 2000 to 2007 period, five were located within the study area. As with the high crash roadways, these high crash intersections are likely a result of increasing traffic volumes along major roadways serving this growing study area. **Figure 2.5** identifies the location of each intersection. **Table 2.6** on page 14 presents the ten intersections in Peach County with the highest number of annual crashes in the county, including the five located within the study area.

Figure 2.5: Peach County Hotspots and Roadway Segments with Above-Average Crash Rates

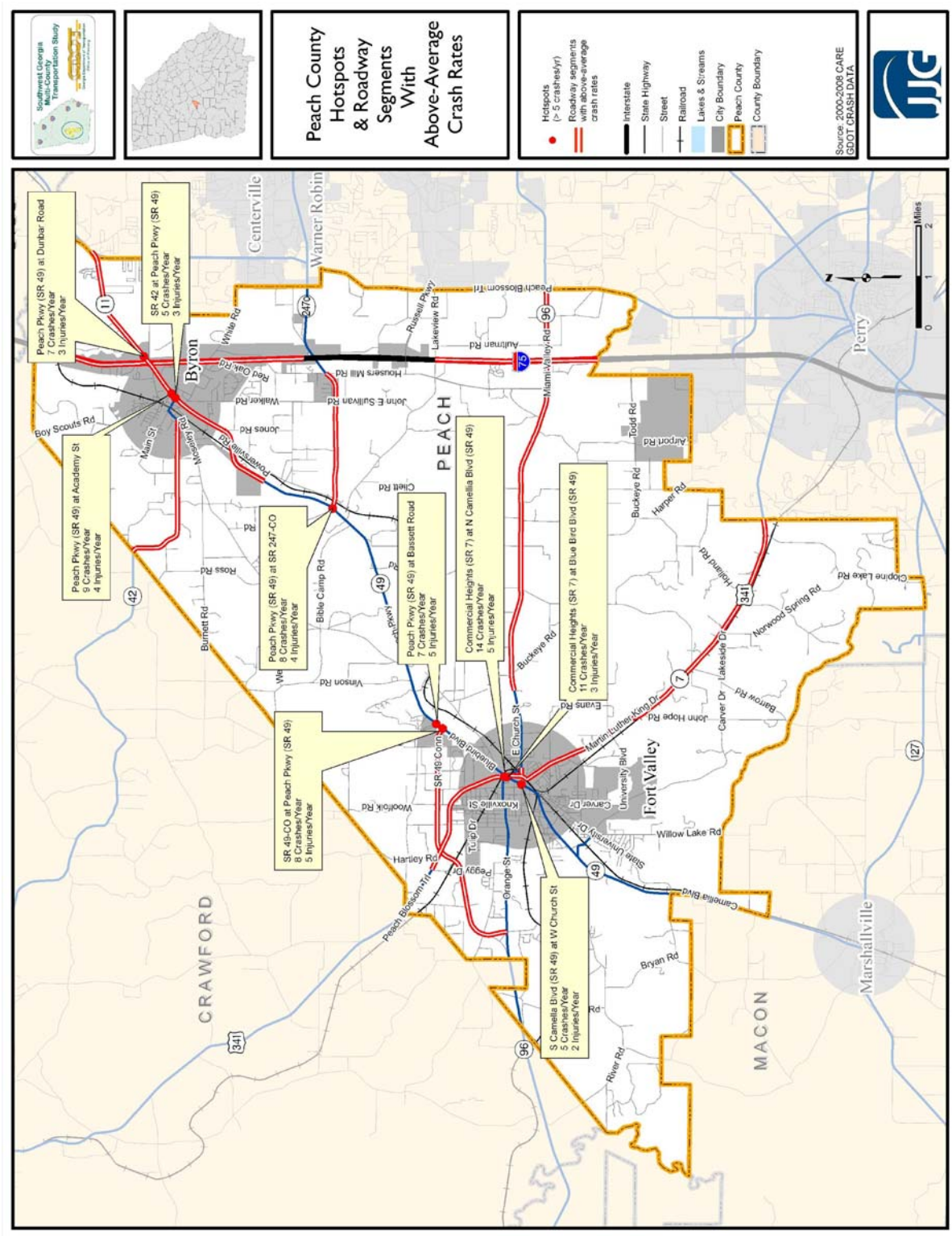


Table 2.6: Peach County Intersection Crash Rates

		Total (2000-2007)			Annual Average		
Location	**MP**	**Crash**	**Injury**	**Fatality**	**Crash**	**Injury**	**Fatality**
Commercial Heights (SR 7) at N. Camellia Blvd (SR 49)*	7.73	115	36	0	14	5	0
Commercial Heights (SR 7) at Blue Bird Blvd (SR 49)*	7.86	90	25	0	11	3	0
Peach Pkwy (SR 49) at Academy Street	14.81	72	29	0	9	4	0
SR 49-CO at Peach Pkwy (SR 49)*	0.00	65	41	2	8	5	<1
Peach Pkwy (SR 49) at SR 247-CO	10.97	65	28	1	8	4	<1
Peach Pkwy (SR 49) at Dunbar Road	15.77	57	23	0	7	3	0
Peach Pkwy (SR 49) at Bassett Road	5.9	54	38	0	7	5	0
SR 42 at Peach Pkwy (SR 49)	0.00	42	22	1	5	3	<1
Atlanta Street(SR 7) at N 1st Street*	9.13	40	30	1	5	4	<1
South Camellia Blvd (SR 49) at W Church Street*	3.92	40	15	0	5	2	0

*Indicates that intersection is in study area

Source: CARE Data 2000-2007

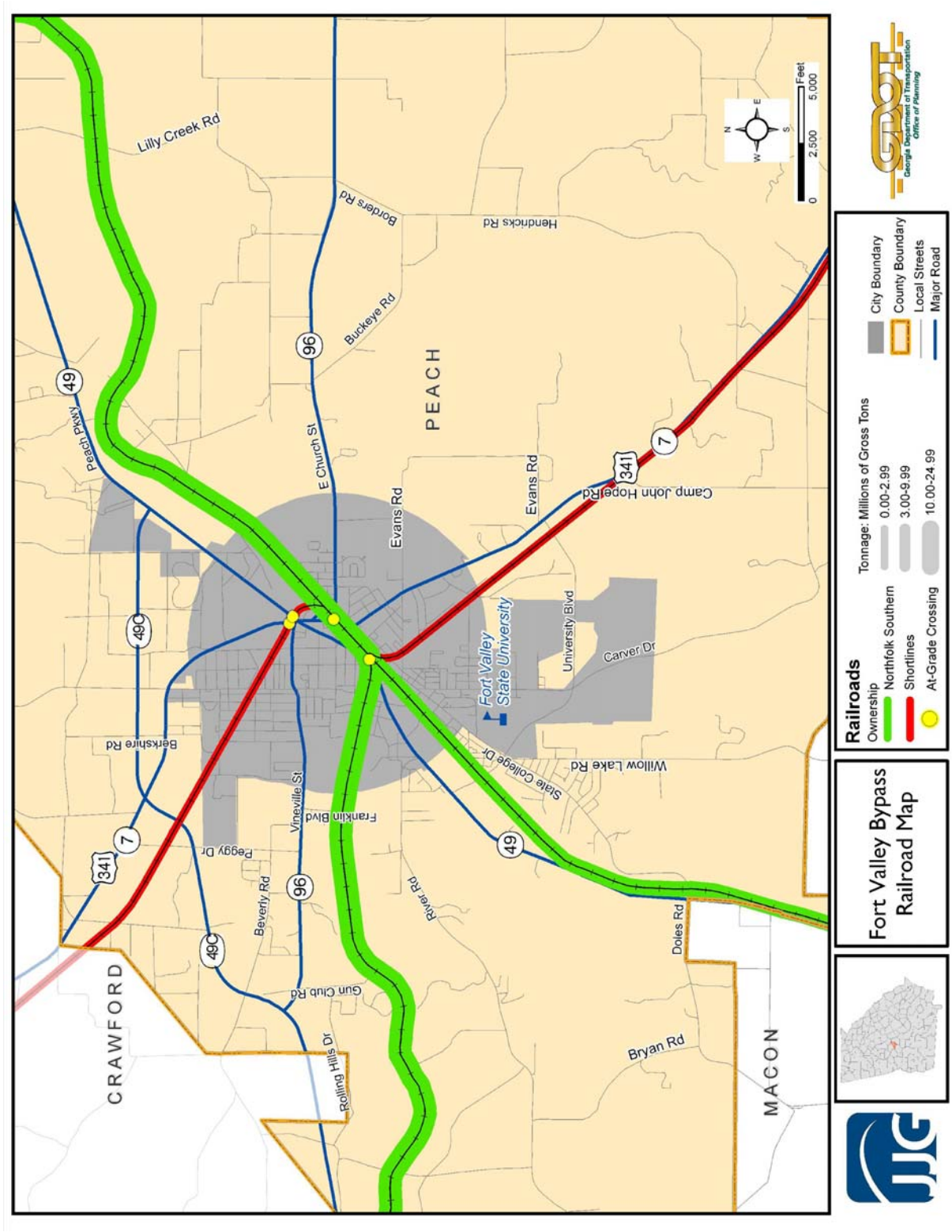
Within the study area, two high-accident intersections can be found at or near SR 49C at SR 49 to the north of the city. The other three high-accident intersections within the study area are all found within the city of Fort Valley at intersections involving at least one state route. The high number of accidents at these intersections is most likely the result of high traffic volumes and congestion at these major intersections. The high levels of accidents at these intersections further highlights the transportation deficiencies caused by the convergence of three principal arterial state routes in Fort Valley.

2.6 Rail Activity

Two major Norfolk Southern rail lines meet in Fort Valley, as can be seen in **Figure 2.6** on page 15. The first links Albany to Macon, and passes north-south through Fort Valley. It currently carries 10 to 25 million gross tons per year on the segment from Fort Valley north to the Houston County line and 3 to 10 million gross tons per year on the segment from Albany to Fort Valley. This north-south rail line crosses SR7/US 341/SR 96/Church Street at an at-grade crossing in central Fort Valley. This at-grade crossing is located in the center of the SR 96/Church Street intersections with SR 7/US 341. This at-grade crossing is identified in **Figure 2.6**. A rail overpass has been constructed over this line from SR 96/SR7/US341/Oakland Heights Pkwy to SR 96/E Church Street for those traveling to or from SR 96 to the east of Fort Valley. This two-lane overpass is the only grade separated railroad crossing in Fort Valley.

The second Norfolk Southern line connects Fort Valley to Columbus, Georgia, to the west. It carries 10 to 25 million gross tons per year. This east-west rail line crosses SR49/Camellia Blvd in south Fort Valley at an at-grade intersection before joining with the north-south Norfolk Southern line to the north. This at-grade crossing is indicated in **Figure 2.6**. There is also a short line, the Georgia Midlands Railway that crosses the Norfolk Southern lines in Fort Valley. This line operates between Roberta and Perry via Fort Valley and carries 1 to 3 million gross tons per year. This northwest-southeast line crosses SR 42/SR7/US 341 in north Fort Valley, and then crosses SR 49/N. Camellia Blvd one block away. Both crossings are at-grade intersections.

Figure 2.6: Study Area Rail Lines and At-Grade Intersections



In addition to the two at-grade railroad crossings of state routes within Fort Valley, there are multiple at-grade crossings for local streets. As with the convergence of major roadways within Fort Valley, this convergence of railroads serves to further hinder mobility and reduce safety within Fort Valley. Although no railroad related accidents were recorded since 2000, there is an inherent conflict between automobiles on three state routes crossing two active railroads within downtown Fort Valley. It is important to note that these at-grade railroad crossings all currently include adequate railroad warning devices such as crossing gates and signals, and appear to meet current design standards for such crossings. However, with three state routes traversing these crossings, these locations will continue to be a source of delay and congestion for traffic travelling through Fort Valley.

2.7 Existing Traffic Conditions

2.7.1 Travel Demand Model

In order to evaluate existing and future traffic conditions on study area roadways, a travel demand model (TDM) was developed based on the TDM originally developed for the GDOT Southwest Georgia Interstate Study (2009). The Southwest Georgia Interstate Study investigated needs for improving Southwest Georgia's access to interstates in the region including I-185, I-75 and I-10. A TDM is a computer model used to estimate traffic volumes and travel patterns utilizing study area information such as roadway networks, land use information, and demographic data, including population and employment. The base, or existing, model year utilized was 2006 since this is the most recent year for complete employment data from the Georgia Department of Labor. The future, or horizon, year utilized for this study was 2035.

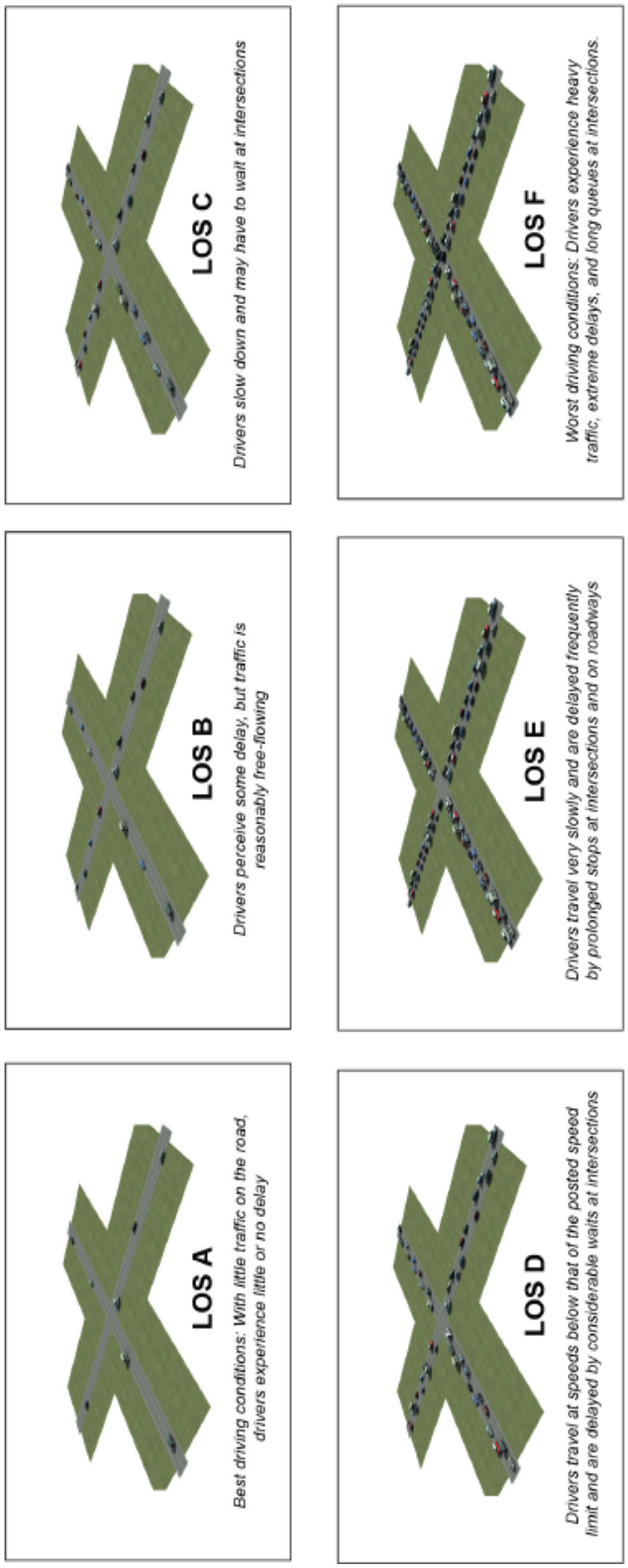
The TDM was utilized to determine traffic conditions on study area roadways for the base (2006) and horizon year (2035). Traffic conditions on study roadways are evaluated based on a Level-of-Service (LOS) analysis. LOS is a qualitative measure describing operational conditions and driver perceptions within a traffic stream. According to the 2000 Highway Capacity Manual (2000 HCM), six LOS are defined for each type of facility. Letters designate each level, from A to F, with LOS A representing free-flow conditions with minimal delay and LOS F representing severe congestion with long vehicle delays.

LOS for a roadway segment is based on the volume to capacity (V/C) ratio. V/C compares the traffic volumes on a roadway with the carrying capacity of that segment of road. V/C is the quantitative measure generated by the travel demand model that is utilized to determine the LOS of a roadway segment. The threshold for each LOS based on V/C is presented in **Table 2.7** below. **Figure 2.7** on page 17 presents a graphical representation of the six levels of service.

Table 2.7: Level of Service Thresholds

Level of Service (LOS)	Volume/Capacity Ratio
LOS A, B, C	V/C < 0.75
LOS D	0.75 <= V/C < 0.85
LOS E	0.85 <= V/C < 1.00
LOS F	V/C >= 1.00

Figure 2.7: Representation of LOS



The TDM was utilized to identify existing and future roadway segments with deficient LOS. For transportation planning efforts, GDOT considers LOS C or better to be acceptable and considers LOS D, E, or F to be deficient. When developing long range transportation plans, GDOT strives to provide LOS C or better for all study roadways.

2.7.2 Existing Travel Conditions

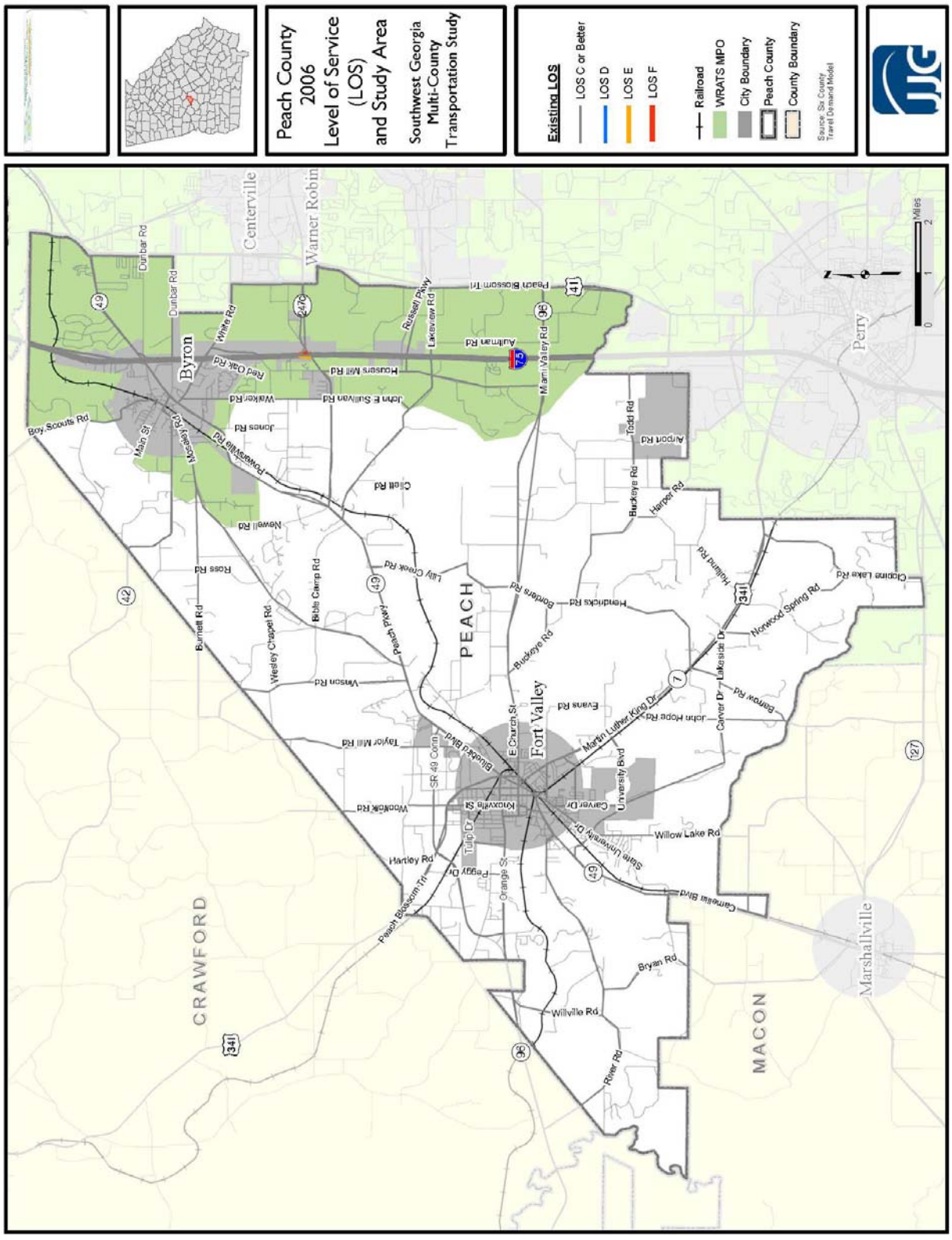
Under existing conditions, most roadways within Peach County operate at acceptable LOS (C or better). **Figure 2.8** on page 19 identifies all roadways within Peach County that operate at LOS D or worse under existing conditions. No roadways within the study area operate at LOS D or worse.

Table 2.8: Roadway Segments in Peach County with Existing Deficient LOS, 2006

Roadway	From	To	LOS	Traffic Volume (AADT)
SR 247 Connector	I-75 SB Ramps	I-75 NB Ramps	F	11,990

Source: CARE Data 2000-2007

Figure 2.8: Existing LOS in Peach County



3.0 Future Conditions

3.1 Future Population

Peach County is forecast to add 6,950 new residents from 2006 to 2035, with a county-wide annual growth rate of 0.44 percent during this period. During this same period, Fort Valley is projected to continue its trend of gradual population loss, with a 2035 population of 6,265. Population projections are listed in **Table 3.1** below.

Table 3.1: Study Area Population Forecast 2006-2035

Area	2006	2035	2006-2035	
			Percent Change	Annual Growth Rate
City of Fort Valley	7,706	6,265	-18.7%	-0.7%
Peach County	24,785	31,735	21.9%	0.9%
State of Georgia	9,363,941	12,962,006	37.4%	1.1%

Source: US Census, GA DCA

As can be seen from the projected future (2035) Peach County population density as illustrated in **Figure 3.1** on page 21, much of the population growth in Peach County is expected to come from the Byron area. While some growth is expected in unincorporated parts of the study area, no population growth is expected in Fort Valley. The reduction of population in Fort Valley, combined with an increase in population elsewhere in the county, is likely to contribute to an increased demand for through-trips on state routes through Fort Valley and a decrease in trips to and from destinations within the city itself.

3.2 Future Employment

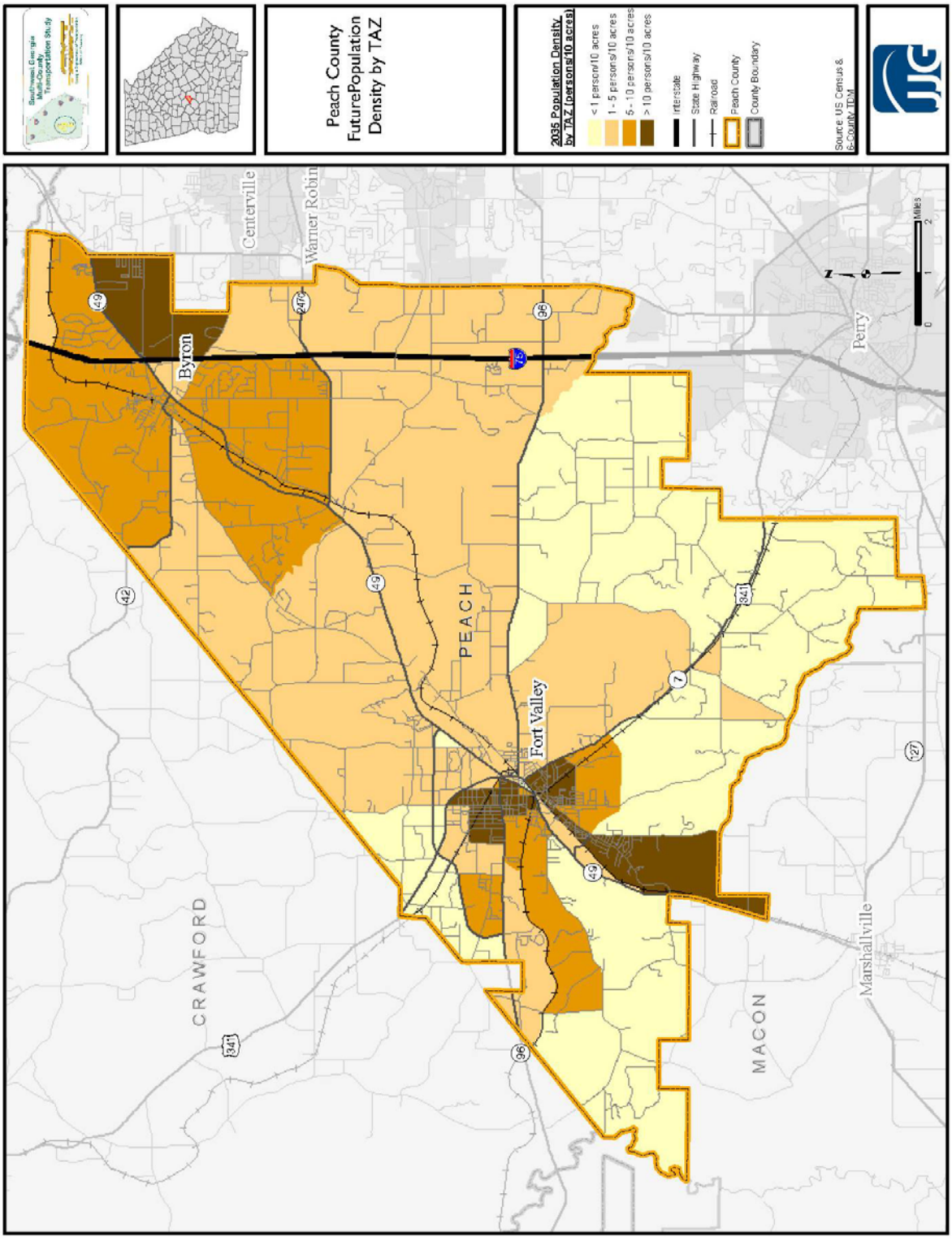
Peach County is forecast to have over 10,100 jobs in 2035, for a 28 percent increase in jobs over 2006. Approximately half of the job increase in Peach County is expected to occur in the service-providing sector. Employment growth projections are listed in **Table 3.2** below.

Table 3.2: Future Study Area Employment Growth 2006-2035

Area	2006	2035	2006-2035	
			Percent Change	Annual Growth Rate
City of Fort Valley	2,402	2,117	-11.9	-0.4%
Peach County	7,901	10,106	27.9	0.9%
Houston County	54,149	80,713	49.1	1.4%

Source: GA DOL; U.S. Bureau of Labor Statistics

Figure 3.1: Peach County Future (2035) Population Density



Future employment density in Peach County is presented in **Figure 3.2** on page 23. The city of Fort Valley is projected to lose jobs in addition to population into the future, while other areas of the county add them, decreasing the need for trips to Fort Valley itself for work. In fact, as can be seen from **Table 3.2**, the true economic engine of the region is Houston County, where Warner Robins is located. Houston County is projected to increase its employment almost 50 percent by 2035. With continued employment growth in Houston County, commuter trips through Fort Valley are likely to increase in the future.

3.3 Future Land Use

According to the Peach County Comprehensive Plan (2006), most of the growth anticipated in Peach County is expected to occur in the northeast section of the county around Byron. The Peach County future land map, found in **Figure 3.3** on page 24, shows much of the agricultural land uses shifting to residential and commercial uses throughout the county. Large commercial nodes are expected along state routes and at interstate interchanges.

3.4 Future Traffic Conditions

Under future conditions, most roadways within Peach County operate at acceptable LOS (C or better). A map identifying these deficient segments is presented in **Figure 3.4** on page 25. The roadway segments in Peach County that are projected to operate at unacceptable LOS (D or worse) in 2035 are presented in **Table 3.3** below. Of these, the only roadway segment within the study area is SR 96 in central Fort Valley. This location is a two-lane section of roadway where SR 96 and SR 7/US 341 converge for a short distance.

Table 3.3: Future (2035) Deficient Roadway Segments in Peach County

Roadway	From	To	LOS	Traffic Volume (AADT)
SR 247 Connector	I-75 SB Ramps	I-75 NB Ramps	F	17,480
SR 247 Connector	Walker Rd	Housers Mill Rd	E	13,390
SR 247 Connector	I-75 North Ramp	Gunn Road	E	26,460
SR 96	I-75	US 41	E	14,200
I-75	Lakeview Rd	Crawford County Line	D	90,020
US 341/SR 7/SR 96	RR Overpass	SR 49	D	14,230

Source: CARE Data 2000-2007

Figure 3.2: Peach County Future (2035) Employment Density

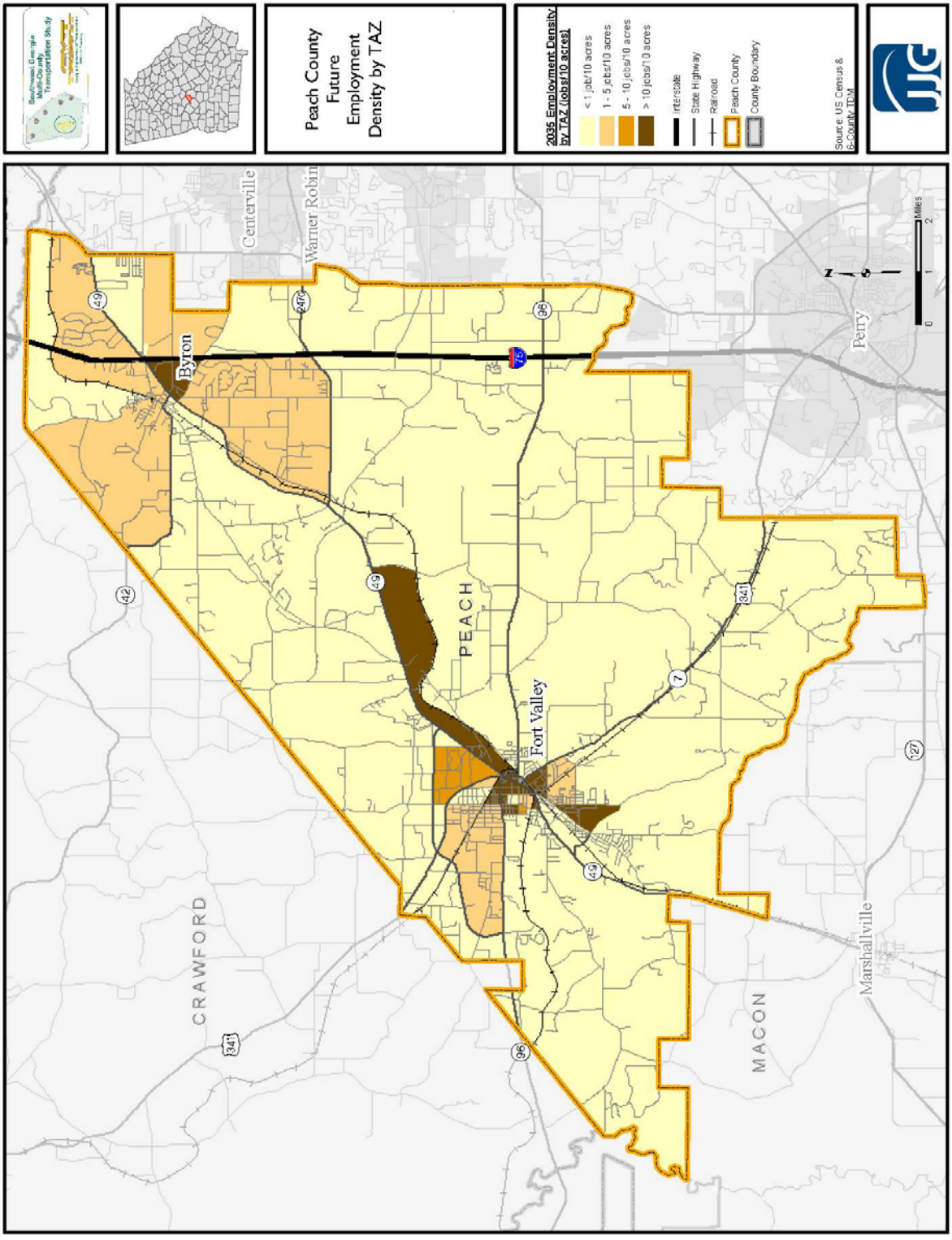


Figure 3.3: Peach County Future Land Use (2035)

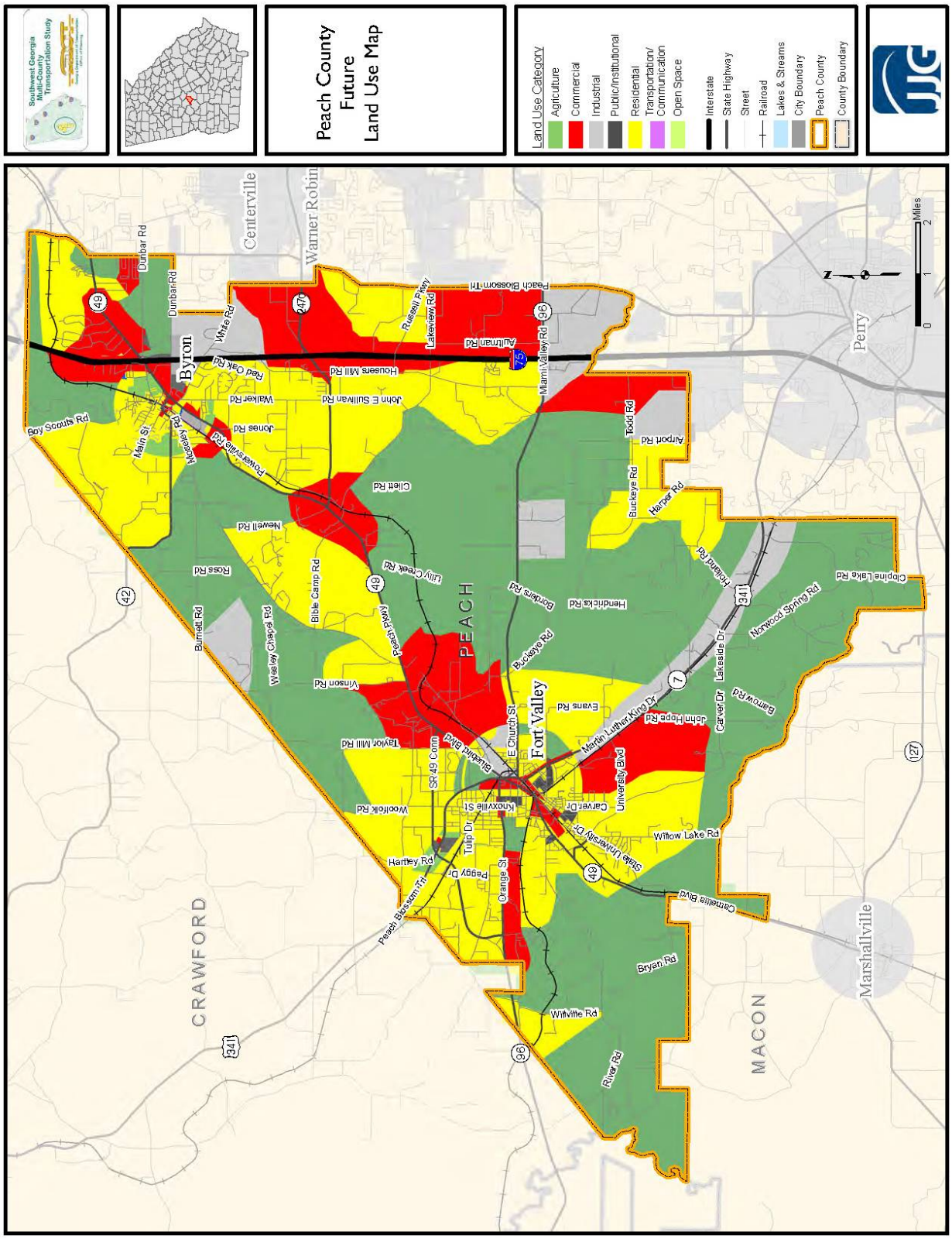
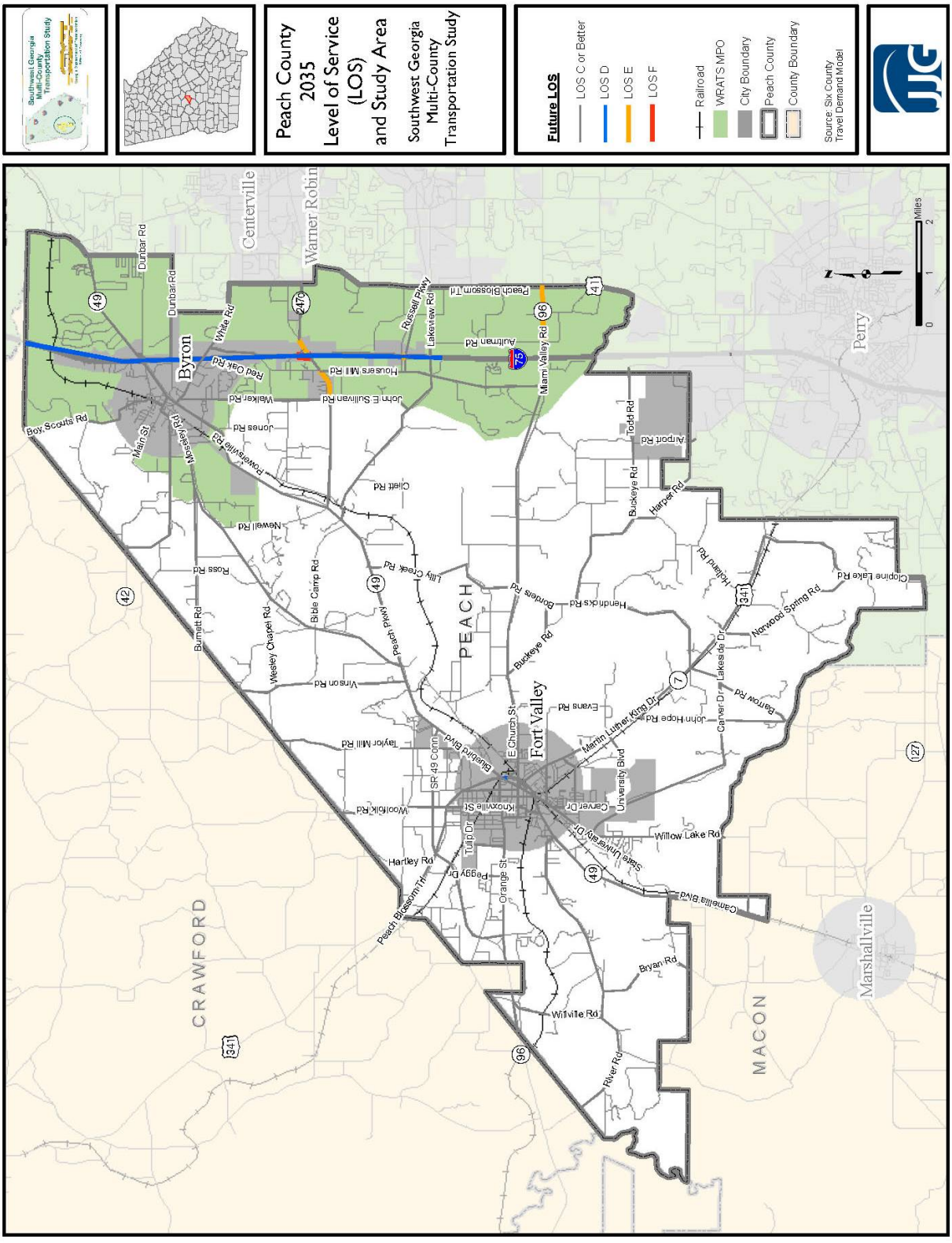


Figure 3.4: 2035 LOS in Peach County



4.0 Public Involvement

4.1 Agency Kickoff Meeting

The study team met with representatives of agencies within the study area to discuss the proposed Fort Valley Bypass. The initial meeting with agency representatives was held at 1:30 pm on February 4, 2009, at the Peach County Fire Station No. 1 in Byron. In addition to members of the project team, meeting attendees included:

- Martha McAfee, City Administrator, City of Fort Valley
- John Stumbo, Mayor, City of Fort Valley
- Roy Lewis, County Commissioner, Peach County
- Marcia Johnson, County Administrator, Peach County
- Martin Moseley, County Commission Chairman, Peach County
- Bob Rychel, Manager of Planning Programs, Middle Georgia RDC
- Jessica Bird, Transportation Planner, Warner Robins MPO
- Melvin Walker, Jr. County Commissioner, Peach County
- Billie Segars, Peach County Public Works Director

At the meeting, Pat Smeeton, a member of the study team, gave a presentation about the study purpose and schedule. Then the group discussed the opportunities and challenges that would accompany the project in the future. The expectations and needs of the local agency representatives will inform the study and aid the study team in selecting the preferred alternatives for this project, should one be chosen. At the close of the meeting, the Fact Sheet for the study was distributed, in the expectations that attendees would share the information with others in the study area.

During the discussion period, the following observations were collected from meeting attendees:

- A question was asked regarding the status of the northeast bypass from SR 49 to SR 96. It was explained that the bypass is currently in the GDOT long range program.
- The Fort Valley Bypass Study should explore connecting to SR 96 rather than stop at SR 7/US 341.
- A connection from US 341 at University Boulevard to SR 96 appears to be make more sense prior to a southwest bypass. Since the northeast bypass has already been identified and is programmed for long range, a southeast connection to University Blvd. would provide a bypass around most of the city. This may be cheaper and easier to implement.
- Military deployment convoys from Fort Benning heading to Savannah and Fort Stewart come through the center of town on SR 96 and continue east on SR 96. Although not designated as

the Fall Line corridor, many in the meeting believed that SR 96 was the natural route of this corridor.

- SR 96 east of town has a high pressure gas line along the north side of the roadway, which would be difficult and costly to move.
- SR 96 to the east and I-75 appear to be the main source/destination for traffic that would utilize a bypass. It was not thought that there was a major travel pattern to and from US 341. It was asked how much traffic utilized US 341 currently.
- If University Boulevard was utilized for part of the bypass, its truck traffic would increase. This may conflict with the expansion plans of Fort Valley State University. The university's master plan shows expansion south of University Blvd. and they might oppose adding significant traffic volumes to this roadway. It was explained that the university would be an important stakeholder throughout the study.
- Water and sewer service is being installed along SR 96 east of the city. These utilities will aid in drawing development to this corridor, as would the shopping center proposed at the sod farms near the Interstate.
- It was asked if Department of Defense funding would be available for the bypass since this is a deployment route. It was explained that it is unlikely that DOD funds would be available to a project this far from a military base.
- A previous planning study had examined the southwest bypass as well as improvements to SR 49 all the way to Americus. It was determined that SR 49, south of Fort Valley, did not currently and was not expected to attract heavy traffic volumes. The current study will develop a more accurate traffic model and better quantify the demand on area roadways.

4.2 Stakeholder Interviews

Members of the study team met with stakeholders individually to obtain additional information about the needs of each county. Stakeholders interviewed included the Peach County Chamber of Commerce, the Peach County Economic Development Authority, the Assistant Superintendent of Operations for Peach County Schools, and Fort Valley State University. The stakeholder input is summarized in **Appendix B**. Areas that were perceived by stakeholders to be in need of transportation improvements are included in the Locally-Identified Transportation Needs Areas map at the end of this section.

4.3 Fact Sheets

The study team produced a Fact Sheet for the Fort Valley Bypass Study to educate the public about the study. The Fact Sheet presents the purpose of the study, the study process, the study schedule, a map of the study area, and ways in which the public can remain involved in the study, as by checking the study webpage on the GDOT website. Many Fact Sheets were distributed among attendees of the agency kick-off meeting so that attendees could pass them along to others.

4.4 Locally Identified Transportation Issues and Needs in the Study Area

Based on resident and agency representative feedback, issues and needs in the Fort Valley Bypass study area were mapped. These issues and needs are listed here. Corresponding items are numbered on the map in **Figure 4.1** on page 29.

Roadway Issues and Needs

1. SR 96 from downtown Fort Valley to city limits needs to be five lanes of traffic.
2. SR 96 carries high volumes of traffic.
3. Congestion downtown would be alleviated by a bypass.

Safety/Pedestrian and Bicycle Issues and Needs

4. Need improved pedestrian access between Fort Valley State University and downtown Fort Valley. Sidewalks are also needed throughout Fort Valley.
5. SR 49 bypass of Fort Valley needs a signal.
6. A pedestrian overpass is needed near the University.

Truck and Railroad Issues and Needs

7. Five Points area (where SR 96, SR 49, SR 7 converge) in Fort Valley has congestion issues caused by trucks and trains.
8. SR 96 has heavy truck traffic.
9. Train activity (moving back and forth) where the railroad crosses US 341/GA 49 in central Fort Valley backs up traffic. People not from the area do not know there is an overpass that will allow them to avoid delay. A small road may be needed to connect US 341 to the overpass
10. The existing bypass hits SR 49 but with high speed traffic trucks can't get out because the intersection is not signalized.

Access Issues and Needs

11. Lane's Southern Orchards attracts a large number of visitors in summer.

Growth/Development Issues and Needs

12. A large development on US 341 South has Blue Bird starting up a new plant.
13. A new elementary school is planned on US 341 near the proposed bypass.
14. Fort Valley University is projecting 5000 students by 2010 and 8900 by 2015.
15. University Boulevard was built to be a major entrance to the University and the University plans to expand to its south. The University's Master Plan focuses on University Boulevard as the main entrance point to the University once a bypass is constructed. Because it is difficult and slow to travel through downtown Fort Valley to access the University, the bypass would provide more efficient access.

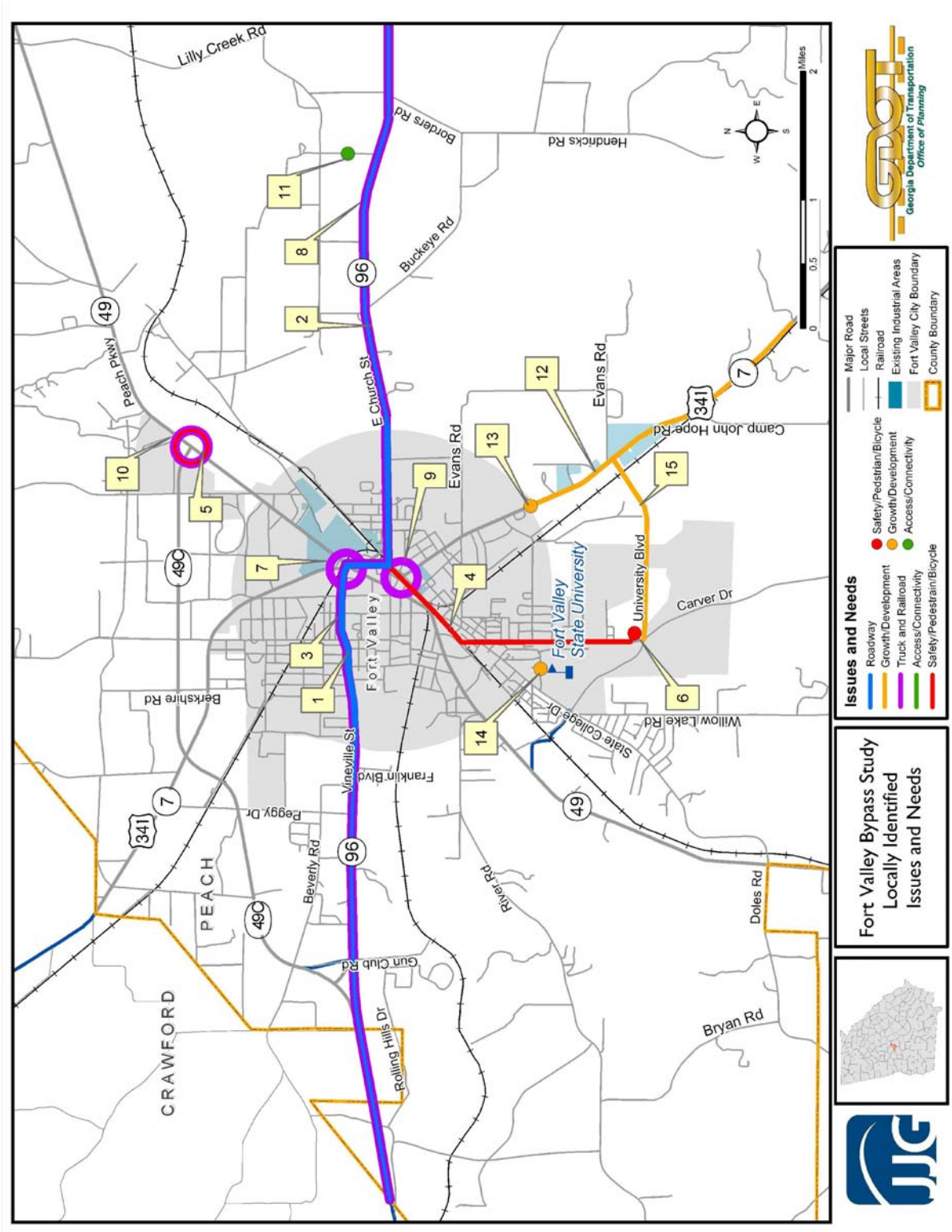


Figure 4.1: Fort Valley Bypass Study Locally Identified Issues and Needs

5.0 Project Need and Purpose

The previous sections of this report all serve to identify the need and purpose for the Fort Valley Bypass. Utilizing the existing and future conditions analysis and projections, along with input from local agencies and stakeholders, the following primary transportation needs within the study area were identified:

Mobility

As described in the existing and future conditions sections of this report, northeast Peach County and Houston County is expected to experience significant employment growth over the next 25 years. With Houston County serving as the economic engine in the area, traffic patterns in Peach County are dominated by commuter trips to and from Houston County and I-75. With Fort Valley expected to experience population and employment decline over this time period, this trend of traffic travelling through, rather than from or to, Fort Valley is expected to continue.

As previously described, the majority of travel within the study area occurs on arterial roadways, specifically three state routes (SR 7/US 341, SR 49 and SR 96). These three state routes all converge in central Fort Valley at a five point intersection. Local agency and resident feedback revealed significant concern about this "Five Points" intersection. SR 7/US 341 and SR 96 also converge as a two lane roadway south of the five point intersection. This roadway segment is expected to operate at an unacceptable LOS (LOS D or worse) by 2035. Traffic flow through the city is also hindered by congestion and several intersections on SR 49 as it passes through downtown. With SR 96 and SR 49 serving as major east-west corridors for travel within the region, their convergence in Fort Valley serves to reduce mobility for vehicles on these roadways.

As identified in the Public Involvement section, SR 96 also serves military traffic from Fort Benning in Columbus travelling to the Port of Savannah for deployment. Large convoys of military vehicles traverse Fort Valley on SR 96 during these deployments. If a deployment were to occur during peak hours, their mobility through Fort Valley would be considerably hindered.

In addition to the convergence of these three state routes, three railroad lines converge in Fort Valley as well. Feedback from Peach County residents and officials indicates that traffic on state routes is often delayed by train traffic at several at-grade intersections. With only one grade separated railroad crossing in the city, rail traffic also serves to hinder mobility within Fort Valley.

As demonstrated above, mobility for traffic travelling through Fort Valley is substandard under existing conditions. As traffic volumes continue to grow on these regional corridors, through traffic will continue to experience congestion and delay, further reducing mobility in Peach County. Maintaining mobility across the study area is a primary transportation need within the study area.

Safety

The existing conditions section of this report describes the three railroads that converge in central Fort Valley. State routes 7/US 341, 49, and 96 all cross these railroads with at-grade crossings. Additionally, there are multiple at-grade crossings for local streets within Fort Valley. Although no railroad accidents

were recorded since 2000, increasing vehicular and train traffic will only serve to increase delay and reduce safety for the travelling public in Fort Valley.

The existing conditions section also presents the safety analysis for the study area. Of the ten intersections with the highest number of crashes in Peach County, five are located within the study area. Roadway segments in Peach County were also analyzed. Roadways with a higher crash rate than statewide average for that facility type were identified. Within the study area, SR 7/US 341 experienced a crash rate higher than statewide average through the study area. These high crash intersections and high crash roadways are likely a result of increasing traffic volumes along major roadways serving this growing study area. Ensuring the roadway network operates safely and efficiently is an important need within the study area.

Access

While access was not directly identified by most agencies and stakeholders, it was a primary transportation concern of Fort Valley State University. As described in Section 4, University Blvd. was designed and constructed to tie into a potential future bypass on the southeast side of Fort Valley. The majority of trips to and from the university have to traverse downtown Fort Valley. Trips to the university from I-75 to the east require travel on SR 49 or SR 96 through several congested intersections in downtown Fort Valley and crossing the NS railroad at an at-grade crossing. Access to Fort Valley State University is hindered by the congestion and delay associated with travel through Fort Valley. The university's master plan calls for continued development around University Blvd. as the main entrance. Improved accessibility to the university is an important locally identified need.

6.0 Development of Bypass Segment Alternatives

Once an understanding of the need and purpose for a Fort Valley Bypass was established, bypass segment alternatives were developed to address this need and purpose. As with most bypass studies, the first improvement alternative studied was the improvement of the existing roadway network. Analysis of all state routes through Fort Valley revealed that the widening of these roadways would be unfeasible due to their proximity to historic resources. SR 7/US 341, SR 49, and SR 96 all traverse or abut a National Register of Historic Places (NRHP) historic district as well as railroads eligible for inclusion in the National Register. In order to adequately address identified mobility and safety needs, improvements to any of these routes would need to include a grade separated railroad crossing. The close proximity of all three routes to the historic district make it impossible to implement these improvements without significant negative impact to this district. Given state and federal environmental law, impacts to this National Register district would likely preclude the implementation of any major improvements to SR 7/US 341, SR 49, or SR 96 through Fort Valley.

Since improvements to existing roadways are not feasible, this study identified bypass alternatives that addressed the transportation needs of the study area. Three bypass segment alternatives were proposed for analysis in this study. A map of these bypass segments can be found in **Figure 6.1** on page 33. All bypass alternatives were initially modeled as a two-lane and four-lane roadways, however the results of the travel demand modeling indicated that four-lane facilities were not warranted for any alternatives. For this reason, all bypass alternatives were evaluated as two-lane roadways.

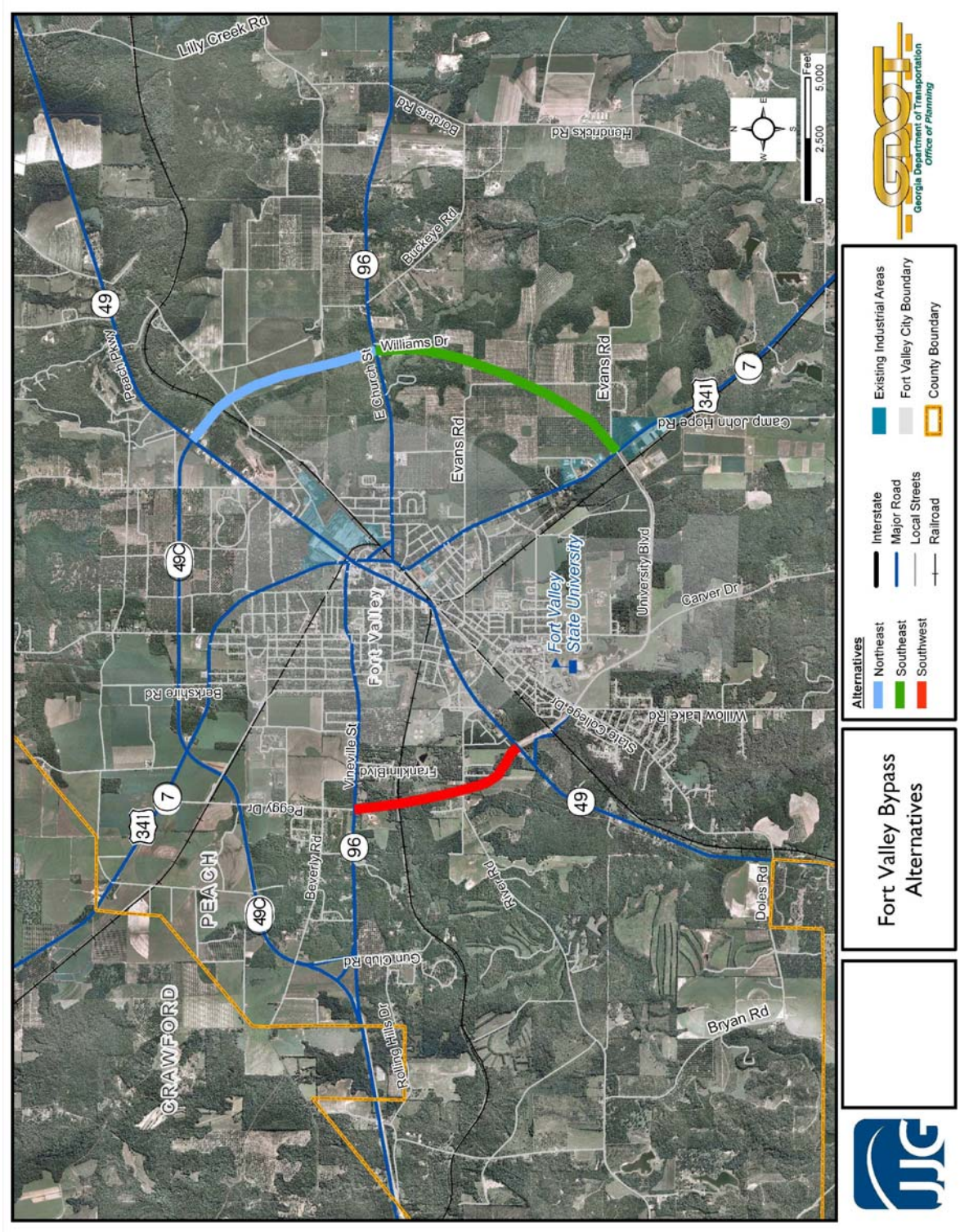
A No-Build Alternative was also analyzed in addition to the bypass alternatives. The No-Build Alternative is based on projected future conditions with no transportation improvements and provides a comparison for the Build alternatives.

6.1 Planning Level Cost Estimates for Bypass Alternatives

Planning-level costs were estimated for all alternatives using GDOT Right-of-Way and Utility Relocation Cost Estimate Tool (RUCEST) and Trns-port Cost Estimation System Tool (CES) Software. In addition, Preliminary Engineering costs were set at eight percent of construction costs. Individual assumptions for each project can be found in **Appendix A: Cost Estimates**.

To determine right of way costs, a survey of each alternative was conducted using aerial photography and field investigation for adjacent land use types, presence of utilities and potential impacts to homes, businesses and institutions. This information was entered into RUCEST, which determined costs for right of way acquisition based on land use type and county given the additional or new right of way requirements for the project. RUCEST estimated utility relocation costs by utility type and location, and relocation and improvement costs based on market history. Contingency costs were added to right of way estimates, to cover damages (30 percent), scheduling (55 percent), and administration and court costs (60 percent, all costs cumulative). The resulting right of way and utility cost estimates were included when developing total project costs.

Figure 6.1: Potential Fort Valley Bypass Alternatives



Construction costs were based on width, length and roadway functional classification, to which costs for additional or replacement traffic signals, turn lanes and bridges were added as needed. Turn lanes were included in cost estimates for major intersections or where intersection improvements were deemed necessary. Likewise, traffic signals were included at intersections where widening or other improvements would require their replacement or where they were deemed necessary as an intersection improvement.

In CES, costs for turn lanes were estimated using the same price per ton for asphalt and base/aggregate as the main project; these prices were estimated by CES given size and location of the project. Cost estimates for bridges were determined by CES based on materials costs and historic data. CES construction estimates were utilized in the development of total project costs, which included right of way, utility relocation, and preliminary engineering costs.

6.2 Northeast Bypass Alternative

The general location of the Northeast Bypass Alternative was predetermined due to the location of SR 49C which currently serves as a north and northwest bypass for Fort Valley connecting SR 96 to the west with SR 49 to the northeast. With this connection to SR 49C already determined, the alignment of the Northeast Bypass Alternative was developed to minimize impact to commercial and residential properties.

The southern terminus of the Northeast Bypass Alternative would be at SR 96 between Williams Drive and Buckeye Road, which is also the proposed northern terminus of the Southeast Bypass Alternative. From this point, the Northeast Bypass Alternative travels northwest for approximately 1.6 miles to its northern terminus at the intersection of SR 49 at SR 49C. Northeast Bypass Alternative would be constructed as a new, two-lane roadway with an overpass over the Norfolk Southern railroad.

The Northeast Bypass Alternative was developed to improve east-west mobility through the Fort Valley area. This alternative would, in combination with the existing SR 49C, create a complete northern bypass of Fort Valley. With this northern bypass in place, traffic could complete an east-west through trip on SR 96 without travelling through central Fort Valley.

The preliminary engineering, right-of-way, utility relocation, and construction costs for the Northeast Bypass Alternative are presented in **Table 6.1** below.

Table 6.1: Planning-Level Cost Estimates for Fort Valley Northeast Bypass Alternative

Bypass Alternative	PE	ROW	Utility	CST	Total
Northeast	$583,854.61	$3,676,239.27	$0.00	$7,298,182.65	**$11,558,276.53**

6.3 Southeast Bypass Alternative

The general location of the Southeast Bypass Alternative was predetermined due to the location of University Blvd. which currently serves as a southern bypass for Fort Valley connecting SR 49 to the southwest with SR 7/US 341 to the southeast. With this connection to University Blvd. already

determined, the alignment of the Southeast Bypass Alternative was developed to minimize impact to commercial and residential properties.

The southern terminus of the Southeast Bypass is at the existing eastern terminus of University Boulevard at SR 7/US 341. From there, the Southeast Bypass Alternative extends northeast for approximately 2.2 miles to its northern terminus at SR 96 between Williams Drive and Buckeye Road. The Southeast Bypass Alternative would be constructed as a new, two-lane roadway.

The Southeast Bypass Alternative was developed to improve mobility for traffic travelling between SR 49 south of Fort Valley and SR 96 east of Fort Valley. This alternative would improve mobility for traffic from Americus or Montezuma travelling on SR 49 to access destinations east of Fort Valley including Warner Robins, I-75, and Macon via SR 96 without travelling through Fort Valley. This alternative would also improve access to and from Fort Valley State University for traffic travelling from the east. These bypass alternatives would connect to University Avenue south of Fort Valley, and utilize this existing facility as part of a longer bypass.

The preliminary engineering, right-of-way, utility relocation, and construction costs for the Southeast Bypass Alternative are presented in **Table 6.2** below.

Table 6.2: Planning-Level Cost Estimates for Fort Valley Southeast Bypass Alternative

Bypass Alternative	PE	ROW	Utility	CST	Total
Southeast	$439,933.01	$797,207.27	$0.00	$5,499,162.59	**$6,736,302.87**

6.4 Southwest Bypass Alternative

The general location of the Southwest Bypass Alternative was predetermined due to the location of University Blvd. which currently serves as a southern bypass for Fort Valley connecting SR 49 to the southwest with SR 7/US 341 to the southeast. With this connection to University Blvd. already determined, the alignment of the Southwest Bypass Alternative was developed to minimize impact to commercial and residential properties.

The southern terminus of the Southwest Bypass Alternative is at SR 49 at the existing western terminus of University Blvd. southwest of Fort Valley. From there, the Southwest Bypass Alternative would extend northwest for approximately 1.4 miles to its northern terminus at SR 96 at Peggy Drive. An alignment extending further west to tie into SR 49C was examined and discarded due to potential property impacts. The Southwest Bypass Alternative would be constructed as a new, two-lane roadway with an overpass over the Norfolk Southern railroad.

The Southwest Bypass Alternative was designed to increase north-south mobility in the Fort Valley area. By connecting to University Avenue, this alternative would complete a western bypass of Fort Valley connecting SR 49, SR 96, and SR 7/US 341. Trips to and from the northeast, northwest, southwest, southeast, and west could be made without travelling through central Fort Valley.

The preliminary engineering, right-of-way, utility relocation, and construction costs for the Southwest Bypass Alternative are presented in **Table 6.3** on page 36.

Table 6.3: Planning-Level Cost Estimates for Fort Valley Southwest Bypass Alternative

Bypass Alternative	PE	ROW	Utility	CST	Total
Southwest	$553,645.64	$4,451,464.73	$0.00	$6,920,570.49	**$11,925,680.86**

6.5 All Bypass Alternatives

The combination of the Southwest, Southeast, and Northeast Bypass Alternatives, along with their connections to SR 49C and University Blvd. would create a full bypass of the city of Fort Valley. The All Bypass Alternatives option was designed to offer the combined advantages of each of the bypass Alternatives listed above, to improve area north-south mobility, east-west mobility, safety, and access to Fort Valley State University. As a group, All Bypass Alternatives would complete the full bypass of Fort Valley, which would allow a vehicle approaching Fort Valley on a State Route to complete its through-trip on that State Route, or connect to any of the other area state routes, without travelling through Fort Valley.

The preliminary engineering, right-of-way, utility relocation, and construction costs for All Bypass Alternatives are presented in **Table 6.4** below.

Table 6.4: Planning-Level Cost Estimates for All Fort Valley Bypass Alternatives

Bypass Alternative	PE	ROW	Utility	CST	Total
All Bypass Alternatives	$1,577,433.26	$8,924,911.27	$0.00	$19,717,915.73	**$30,220,260.26**

7.0 Travel Demand Model Analysis

In order to determine the transportation benefits, if any, of each alternative, the travel demand model was utilized to analyze each alternative. Each of the four Build alternatives and the No-Build condition were analyzed using the 2035 travel demand model developed for the ongoing Southwest Georgia Multi-County Study. The following sections present the results of this travel demand modeling analysis for all alternatives.

7.1 No Build Scenario

The LOS and traffic volumes projected from the travel demand model for the No-Build alternative are presented in **Figure 7.1** on page 38. In the No Build Scenario, the north-south segment of SR 7/US 341 and SR 96/Oakland Heights Parkway in downtown Fort Valley is projected to be at LOS D in 2035. LOS on all other major roads in the study area is projected to be at C or better.

7.2 Transportation Benefits of Northeast Bypass Alternative

Figure 7.2 on page 39 presents projected traffic conditions associated with the implementation of the Northeast Bypass Alternative**.** Portions of the Northeast Bypass Alternative are projected to attract 2,030 vehicles per day and operate at an acceptable LOS. The implementation of the Northeast Bypass Alternative would reduce traffic congestion on the combined segment of SR 7/US 341/SR 96 between SR 49 and SR 96/E. Church Street, allowing it to operate at LOS C or better.

In addition, the Northeast Bypass Alternative would increase the utility of the existing SR 49C to the north of Fort Valley, and increase ADT on that segment by 1,100 vehicles per day to 4,080. At the same time, ADT on SR 96 within Fort Valley is projected to drop to 5,790 between Anderson Avenue and Knoxville Street in Fort Valley. Therefore, the Northeast Bypass Alternative is projected to successfully shift traffic away from downtown Fort Valley and on to existing and new bypass segments.

7.3 Transportation Benefits of Southeast Bypass Alternative

Figure 7.3 on page 40 presents projected traffic conditions associated with the implementation of the Southeast Bypass Alternative**.** Segments of the Southeast Bypass Alternative are projected to attract 240 vehicles per day. Because this alternative attracts so little traffic from existing routes, the implementation of the Southeast Alternative would not reduce traffic congestion on the combined segment of SR 7/US 341/SR 96 between SR 49 and SR 96/E. Church Street sufficiently to allow the segment to operate at LOS C or better.

The Southeast Bypass Alternative would reduce ADT on SR 96 east of SR 7/US 341 by 540 vehicles per day to 5,860, while ADT on SR 49 south of SR 96 is projected to remain fairly stable. These data indicate that this bypass alternative would attract some commuters traveling to and from SR 49 south of the city to SR 96 east of the city.

Figure 7.1: No-Build 2035 LOS and Traffic Volumes

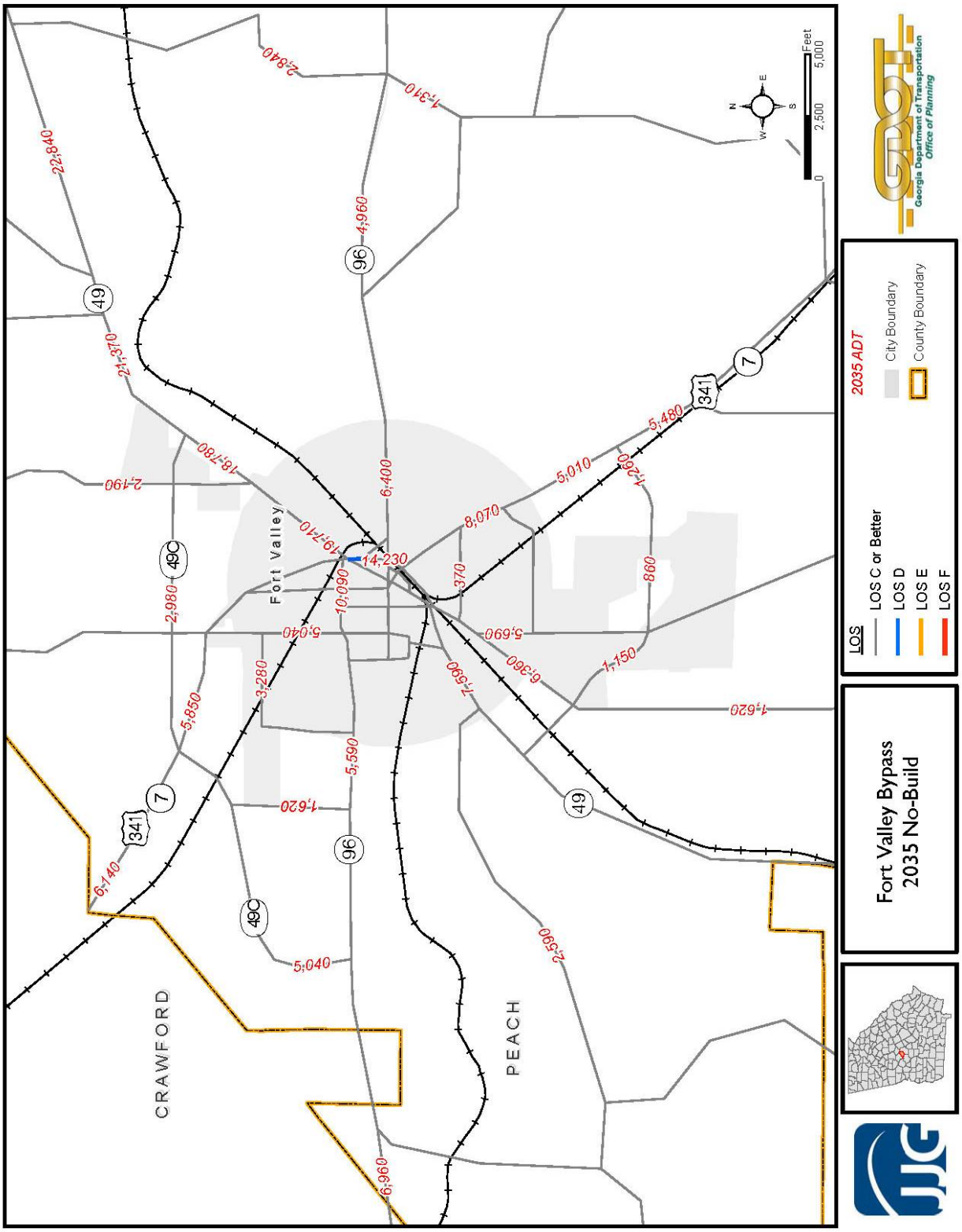


Figure 7.2: 2035 LOS and Traffic Volumes for the Northeast Bypass Alternative

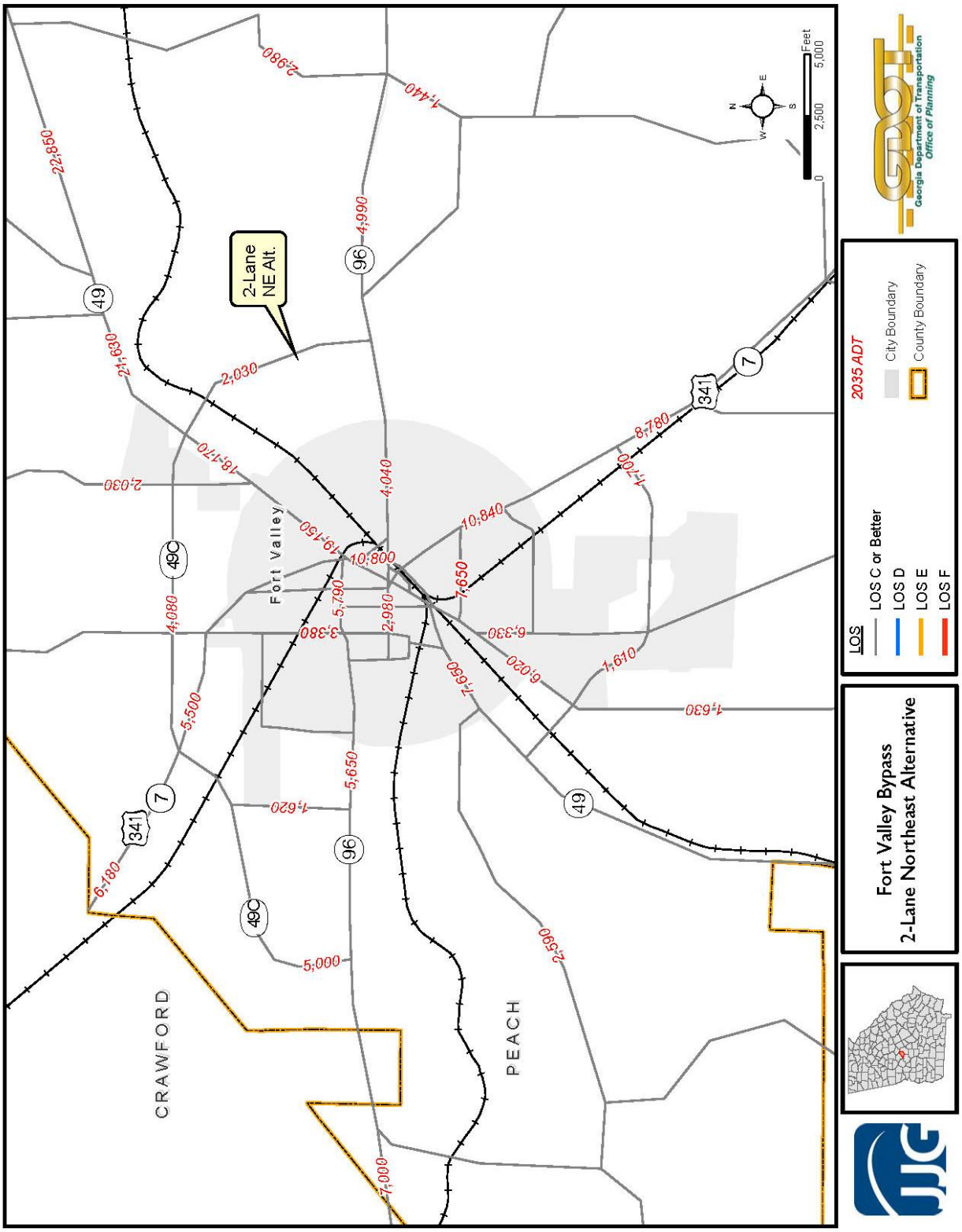
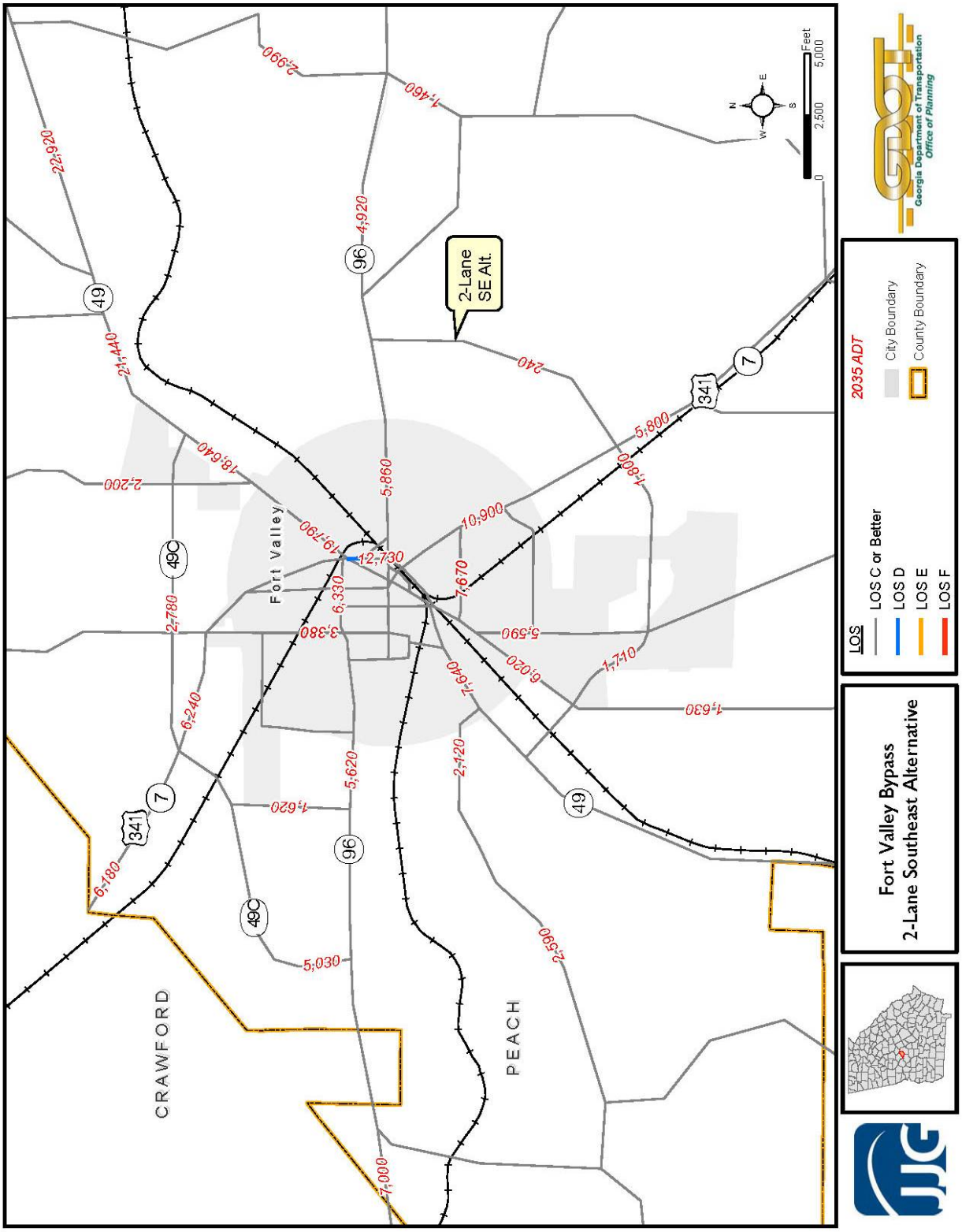


Figure 7.3: 2035 LOS and Traffic Volumes for Southeast Bypass Alternative



7.4 Transportation Benefits of Southwest Bypass Alternative

Figure 7.4 on page 42 presents projected traffic conditions associated with the implementation of the Southwest Bypass Alternative**.** Segments of the Southwest Bypass Alternative are projected to attract 1,550 vehicles per day and operate at an acceptable LOS.

The Southwest Bypass Alternative would connect SR 96 west of Fort Valley to University Boulevard and so to SR 7/US 341. ADT is projected to increase on SR 96 west of the new bypass alternative from 5,590 in the No-Build scenario to 5,930, but decrease on SR 49 south of SR 96 from 7,590 to 6,950. Therefore, this bypass would provide an attractive route for travel from SR 49 south of Fort Valley to SR 96 west of the city, and vice-versa.

7.5 Transportation Benefits of All Bypass Alternatives

Figure 7.5 on page 43 presents projected traffic conditions associated with the implementation of All Bypass Alternatives**.** All segments of All Bypass Alternatives are projected to operate at acceptable LOS. The northeast segment would attract 2,170 vehicles per day; the southeast segment would attract 480 vehicles per day; and the southwest segment would attract 1,550 vehicles per day. The implementation of All Bypass Alternatives would reduce traffic volumes on the combined segment of SR 7/US 341/SR 96 between SR 49 and SR 96/E. Church Street by 3,430 vehicles per day, allowing it to operate at LOS C or better.

Furthermore, All Bypass Alternatives would improve both east-west and north-south mobility. Reductions in ADT occur on SR 96 east of SR 49, which is reduced by 2,390 vehicles per day, and on SR 49 south of SR 96, which is reduced by 640 vehicles per day. Volume on SR 7 south of SR 49C would be reduced by 1,010 vehicles per day.

Figure 7.4: 2035 LOS and Traffic Volumes for the Southwest Bypass Alternative

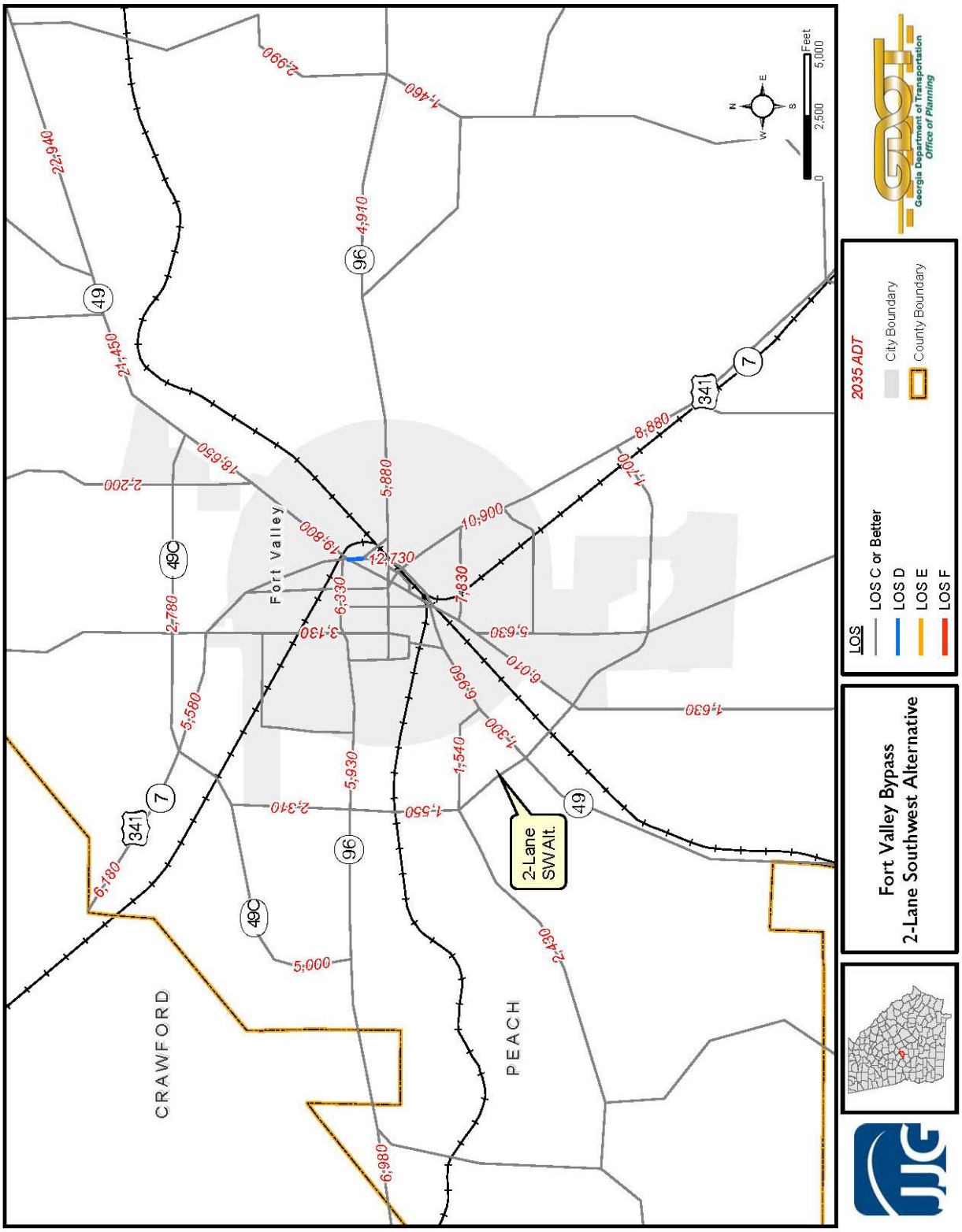
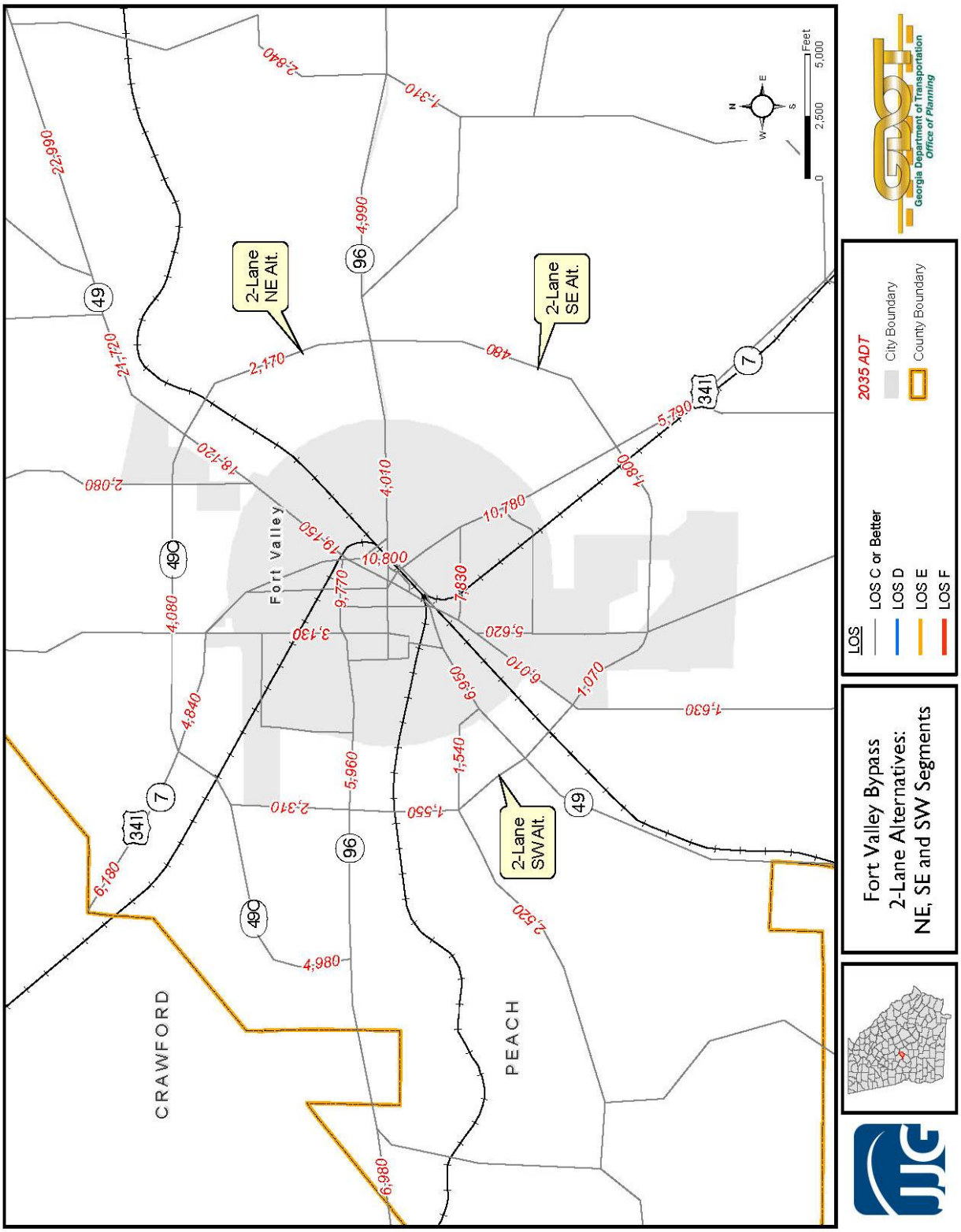


Figure 7.5: 2035 LOS and Traffic Volumes of All Bypass Alternatives



8.0 Impacts to Environmental and Social Resources

8.1 Potential Impacts to Protected Areas

Protected areas are locations which receive protection because of their environmental, cultural, community, or physical value. A large number of protected areas exist which receive varying levels of protection by state and federal laws. Examples include parks, reserves, wetlands, wildlife sanctuaries, cemeteries, and historic properties. **Figure 8.1** on page 45 presents the identified environmental and historical resources within the study area overlaid with the alignments of the study alternatives.

When developing the study alternatives, impacts to these identified resources were avoided or minimized where possible. Environmental resources, such as historic districts, have the potential to preclude the implementation of state or federally funded transportation projects. For this reason, whenever possible, environmental screening is conducted to identify protected environmental resources.

This section discusses the potential impacts of each alternative on identified protected areas. Federal and state law requires protection of wetlands and other natural resources from adverse impacts. Where impacts are unavoidable, mitigation of these impacts must be provided. Federal and state law also requires the protection of historic properties. Where impacts are unavoidable, all possible planning to minimize harm must be made.

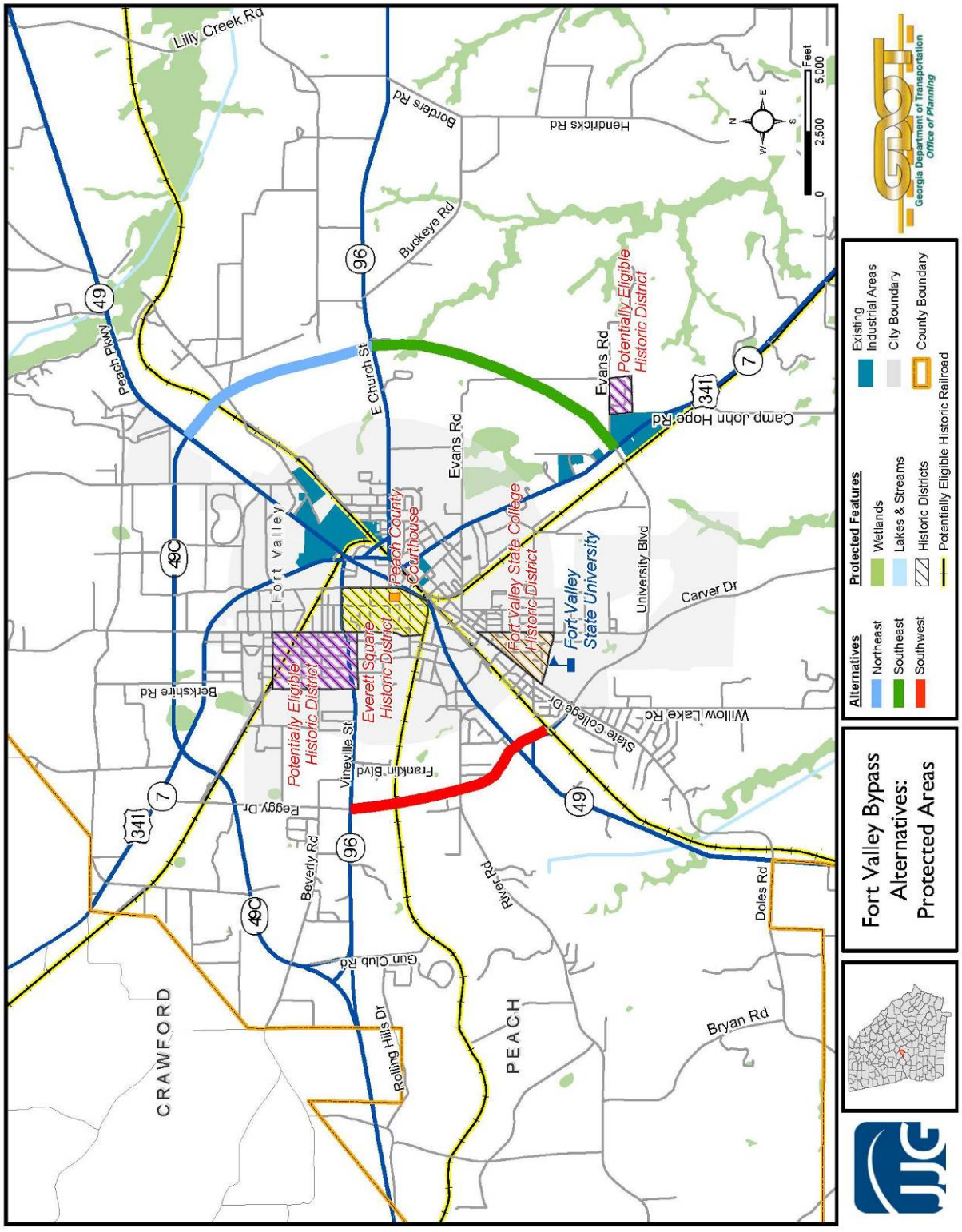
According to the National Historic Register of Places (NRHP), the study area contains four historic places. The more prominent among these are the Peach County Court House in central Fort Valley and the Fort Valley State College Historic District. **Table 8.1** below provides a complete list of historic places in the study area. **Figure 8.1** illustrates areas of potential impacts to streams and wetlands and historic resources from the bypass alternatives.

Table 8.1: Study Area Historic Structures

City	Location	Address
Fort Valley	Everett Square Historic District	Roughly bounded by Knoxville, Vineville, Anderson, and Macon Sts. and the Central of Georgia RR tracks
Fort Valley	Everett, James A., House	220 Northwoods Dr.
Fort Valley	Fort Valley State College Historic District	Pear St. and State University Dr.
Fort Valley	Peach County Courthouse	Off GA 49

Source: National Register of Historic Places

Figure 8.1: Potential Impacts to Protected Areas from Fort Valley Bypass Alternatives



8.1.1 Northeast Bypass Alternative Potential Impacts to Protected Resources

As can be seen in **Figure 8.1**, the Northeast Bypass Alternative would have little or no impact to wetlands or streams. This alternative would cross a railroad with a historic designation but, as with most railroad crossings, this would not constitute an adverse impact to this resource. This alternative would benefit the identified historic resources within the city of Fort Valley by attracting traffic away from these resources.

8.1.2 Southeast Bypass Alternative Potential Impacts to Protected Resources

As can be seen in **Figure 8.1**, the Southeast Bypass Alternative would need to avoid a potentially historic district southeast of Fort Valley. Wetland impacts appear likely with this alignment and thus, wetland mitigation would likely be necessary. While these impacts would need to be minimized as much as possible, they would not be likely to preclude the implementation of the Southeast Bypass Alternative. This alternative would provide a slight benefit to the identified historic resources within the city of Fort Valley by attracting some traffic away from these resources.

8.1.3 Southwest Bypass Alternative Potential Impacts to Protected Resources

As can be seen in **Figure 8.1**, the Southwest Bypass Alternative would have little or no impact to wetlands or streams. This alternative would cross a railroad with a historic designation but, as with most railroad crossings, this would not constitute an adverse impact to this resource. This alternative would benefit the identified historic resources within the city of Fort Valley by attracting traffic away from these resources.

8.2 Environmental Justice

Title VI of the Civil Rights Act of 1964 and related statutes assure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, and disability. EO 12898 Federal Actions to Address Environmental Justice to Minority Populations and Low income Populations requires federal agencies to consider impacts to minority and low income populations as part of environmental analyses to ensure that these populations do not receive a disproportionately high number of adverse human health impacts as a result of a federally funded project. In 1998, FHWA issued a guidance document that established policies and procedures for complying with EO 12898 in relation to federally-funded transportation projects. This guidance defines a “disproportionately high and adverse effect” as one that is predominantly borne by, suffered by, or that is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population.

Minority persons are defined as those people belonging to the following groups: Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Hispanic or Latino. It is important to note that while the first five groups are defined as races, Hispanic or Latino is defined as an ethnicity by the Office of Management and Budget (OMB 1997) as well as the

2000 US Census. As such, people of this minority group can belong to any racial group but are still considered minorities with respect to Environmental Justice. Low-income persons are defined as those whose median household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

Census data from the P4 and P92 sample datasets were utilized to provide a quantitative analysis of the study area with respect to minority and ethnic populations and low-income households. Census data are grouped together by geographic area, of which blocks are the smallest and most precise form. The sensitivity of some information requires the Census Bureau to release it in the more general form of block groups. The data for this study were gathered at the most accurate level for which they were available: for race and ethnicity, at the block level; for income, at the block-group level. The study area is composed of Census Tracts 402, 403.01, 403.02, and 404.

Of the total population of the study area, 72.5 percent are minority persons, a greater share than that of the total Peach County population, which is 50.8 percent minority, and of the State of Georgia, which is 37.4 percent minority. For the study area as a whole, 26 percent of households have incomes under the poverty level, slightly higher than the Peach County average of 25.6 percent, and more than twice the statewide average of 12.6 percent. To better gauge potential impacts of the construction of alternatives upon minority and low income neighborhoods, the minority population as a percentage of Census block group population is presented in **Figure 8.2** on page 48 and the low-income population as a percentage of Census tract population is presented in **Figure 8.3** on page 49.

8.2.1 Potential Environmental Justice Impacts of Northeast Bypass Alternative

As can be seen in **Figure 8.2**, the Northeast Bypass Alternative traverses a Census Tract in which 31 to 50 percent of households are low-income. However, this Bypass Alternative does not pass through or near any residential areas, and is unlikely to cause disproportionate negative impacts to low income households.

As can be seen in **Figure 8.3**, the Northeast Bypass Alternative passes through two Census Block Groups. At its southern terminus, the Bypass Alternative lies within an area that is 81-100 percent minority. In this area, however, this alternative does not pass through any residential areas, and is unlikely to impact minority residents adversely. The alternative's northern terminus lies in an area that is zero to 20 percent minority. With no expected residential displacements, this bypass alternative is unlikely to impact minorities negatively in this area.

8.2.2 Potential Environmental Justice Impacts of Southeast Bypass Alternative

As can be seen in **Figure 8.2**, the Southeast Bypass Alternative traverses a Census Tract in which 16 to 30 percent of households are low-income. With little or no expected residential displacements, this Bypass Alternative is unlikely to cause disproportionate negative impacts to low income households.

Figure 8.2: Potential Impacts to Low Income Populations from Fort Valley Bypass Alternatives

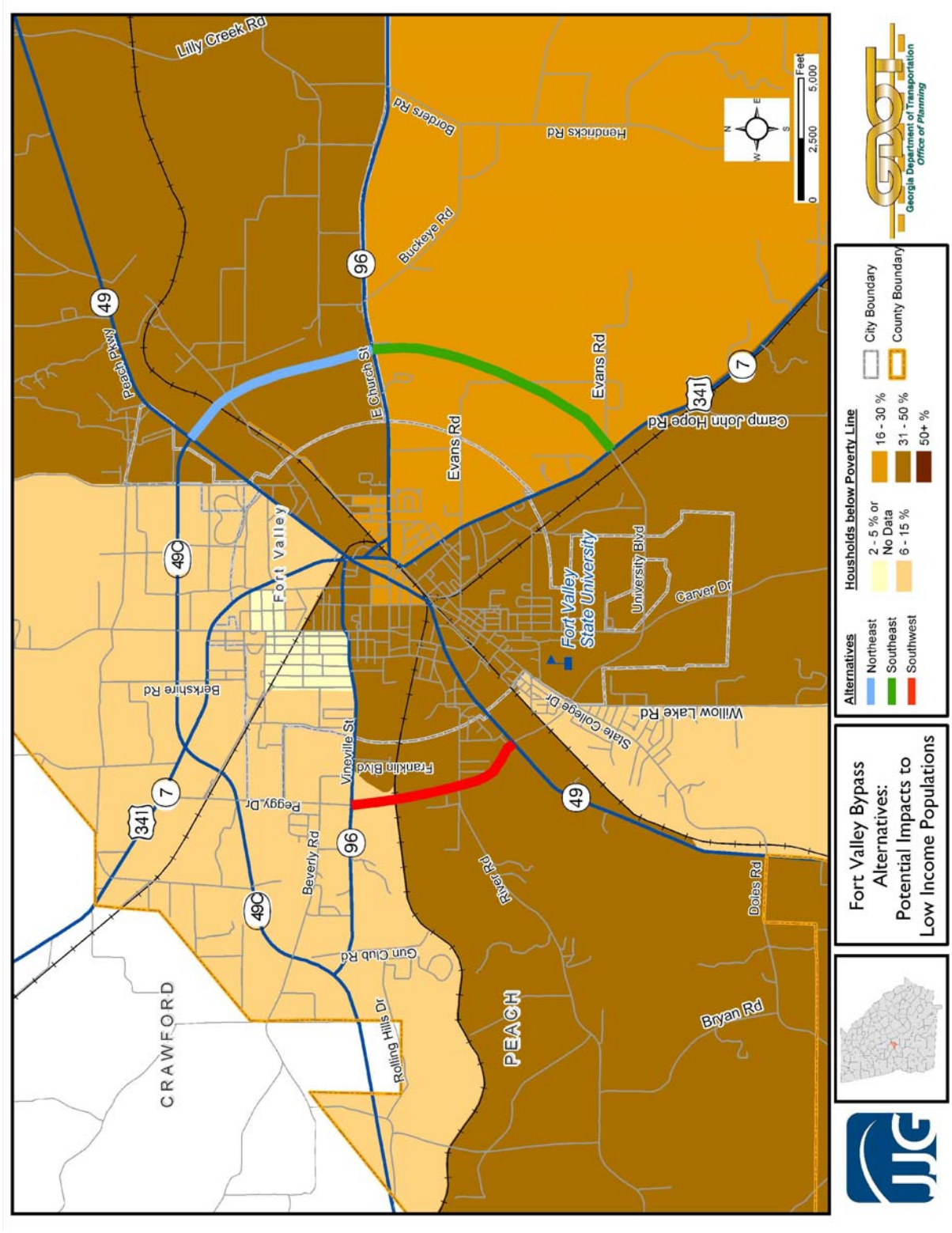
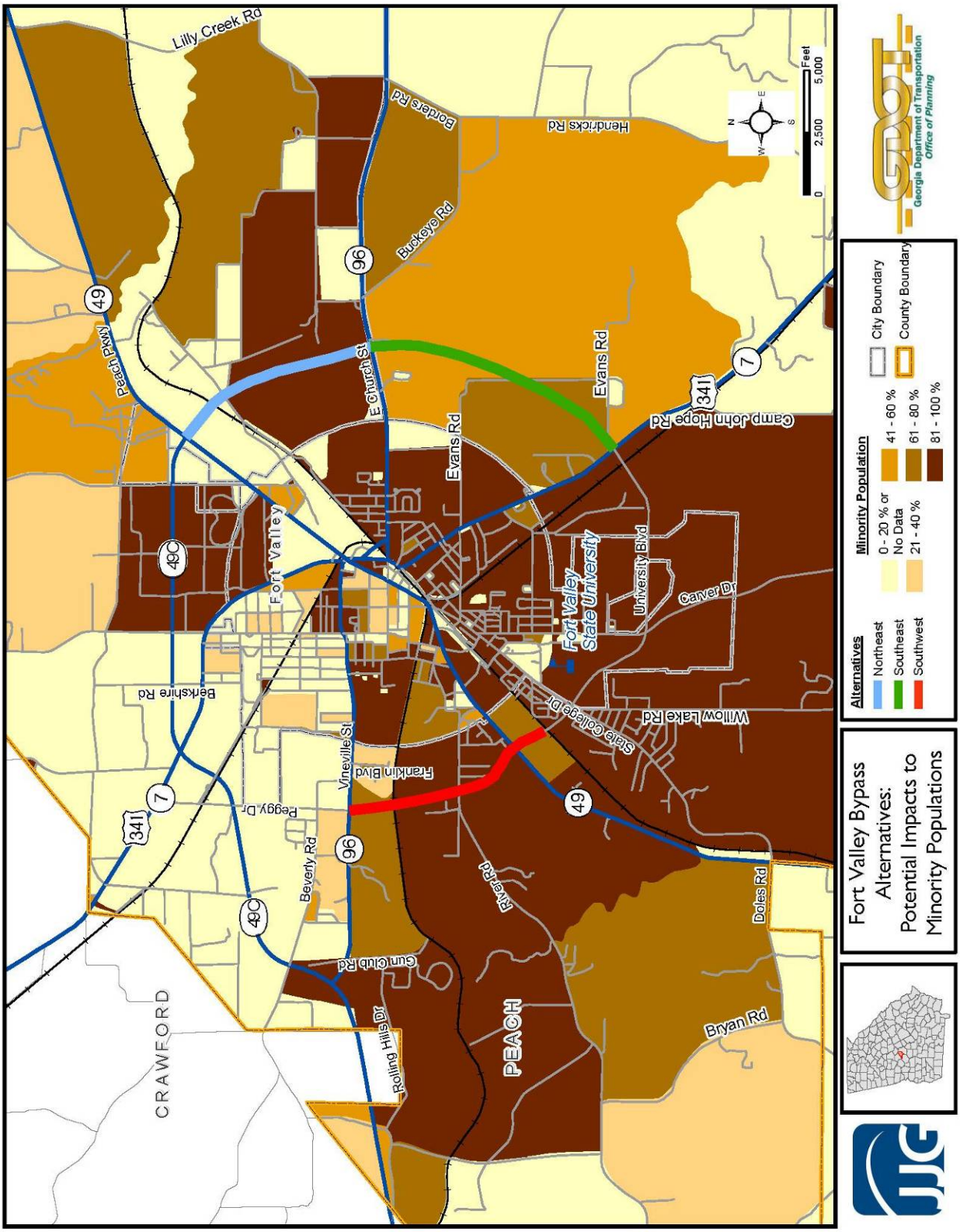


Figure 8.3: Potential Impacts to Minority Populations from Fort Valley Bypass Alternatives



As can be seen in **Figure 8.3**, the Southeast Bypass Alternative traverses two Census Block Groups. The southern terminus of this bypass alternative is located in an area with a population that is 61 to 80 percent minority. This bypass alternative then traverses a second Block Group with 81 to 100 percent minority population before returning to its initial Block Group to their northern termini. With little or no expected residential displacements, this bypass alternative is unlikely to cause disproportionate negative impacts to minority communities or populations.

8.2.3 Potential Environmental Justice Impacts of Southwest Bypass Alternative

As can be seen from **Figure 8.2**, the Southwest Bypass Alternative traverses two Census Tracts. The northern end point of the bypass alternative is located within a tract in which six to 15 percent of households are low-income and population density is from one to five persons per ten acres. The Southwest Bypass Alternative's southern terminus is located in a second tract, in which 31 to 50 percent of households are low income and population density is five to ten persons per ten acres. In addition, this bypass alternative would intersect River Road, which is characterized by low-density residential development. With little or no expected residential displacements, it is unlikely that the Southwest Bypass Alternative would cause disproportionate and adverse effects on low income households in this area.

As can be seen from **Figure 8.3**, the Southwest Bypass Alternative traverses three Census Block Groups. The northern terminus of this bypass alternative is located in an area in which 61 to 80 percent of the population is a minority. At its center, the Southwest Bypass Alternative traverses a second Block Group, in which 81 to 100 percent of the population is a minority. The southern terminus of the Southwest Bypass Alternative is located in a Block Group with a population that is 61 to 80 percent minority. With little or no expected residential displacements, this bypass alternative is unlikely to cause disproportionate negative impacts to minority communities or populations.

9.0 Evaluation of Bypass Alternatives

In order to assist Peach County, the city of Fort Valley, and GDOT with future decisions regarding further study and/or inclusion of the Fort Valley Bypass in the GDOT Work Program of State Transportation Improvement Program (STIP), all alternatives, including the No-Build, were evaluated and ranked. This section documents the identification of evaluation criteria, results of the evaluation, and ranking of study alternatives.

9.1 Evaluation Criteria

Evaluation criteria were established in order to compare the performance, or effectiveness, of each bypass alternative with the other alternatives. By evaluating each bypass alternative against these criteria, an objective comparative evaluation of each bypass alternative can be performed. Five main evaluation criteria were identified to evaluate the bypass alternatives. The first three criteria evaluate each bypass alternative's ability to address the identified need and purpose of the project. Total project cost and benefit/cost ratio were also utilized to evaluate the study bypass alternatives against each other. For each evaluation criteria, the bypass alternatives were assigned a score based on how well each criterion was addressed. The composite score for each bypass alternative across all five evaluation criteria was utilized to rank the study alternatives.

Improved mobility within and around the city of Fort Valley was identified as a primary need within the study area. For this reason, the ability of the study alternatives to address mobility in the study area was selected as an evaluation criterion. In order to evaluate this criterion, the travel demand model analysis was utilized to quantify the traffic reduction on segments of the three state routes that converge in and traverse Fort Valley.

Improving safety within the study area was also identified as a need within the study area. With SR 7/US 341, SR 49, and SR 96 all crossing the Norfolk Southern railroad at at-grade crossings within downtown Fort Valley, the reduction of traffic on these crossings was utilized to compare the safety benefit of each bypass alternative.

While not a primary transportation need identified by many agencies or stakeholders, improved access was identified as an important need for Fort Valley State University. With a growing annual enrollment, the success of this university is important to the success of Fort Valley. Thus, each bypass alternative was evaluated for how well it improved access to the university.

Additionally, project cost was utilized as an evaluation criterion since cost is a primary consideration for all agencies when considering and prioritizing transportation projects. Finally, benefit/cost ratio was utilized since it serves to equate project benefits with project costs.

As presented in the previous section of this report, no bypass alternatives are expected to have significant environmental or social impacts. Thus the environmental or social impacts of the bypass alternatives were not included in the evaluation criteria. The following details the results of the evaluation of bypass alternatives based on these established criteria.

9.2 Mobility

Reducing congestion and delay on the three state routes that traverse Fort Valley is a primary need within the study area. Providing an alternative route for through trips is the main purpose of the Fort Valley Bypass. Mobility was measured by the reduction in ADT on state routes in Fort Valley in 2035, as a result of the implementation of each alternative. The 2035 ADT for the Fort Valley roadway network that is projected to result from the construction of each bypass alternative is shown in **Figures 7.1 - 7.5**. The state route segments used for this comparison are:

- SR7/US 341 as it approaches SR 96 from the south;
- SR 96 as it approaches SR 49 from the west;
- SR 96 as it approaches SR 49 from the south;
- SR 96 as approaches SR 7/US 341 from the east;
- SR 49 as it approaches SR 96 from the north; and
- SR 49 as it approaches SR 96 from the south.

A comparison of ADT reduction on state routes by alternative is provided in **Table 9.1** below. **Table 9.2** below presents the project evaluation scoring for the Mobility evaluation criterion. Since improved mobility was identified as the primary need for a bypass, this criterion received a higher weighting than do all other criteria.

Table 9.1: Comparison of ADT Reduction on State Routes by Alternative

Bypass Alternative	SR 7/ US 341 S	SR 49 N	SR 49 S	SR 96 W	SR 96 Center	SR 96 E	Total ADT reduction
No-Build	8,070	19,710	7,590	10,090	14,230	6,400	
reduction	*0*	*0*	*0*	*0*	*0*	*0*	***0***
Northeast	10,840	19,150	7,650	5,790	10,800	4,040	
reduction	*-2,770*	*560*	*-60*	*4,300*	*3,430*	*2,360*	***7,820***
Southeast	10,900	19,790	7,640	6,330	12,730	5,860	
reduction	*-2,830*	*-80*	*-50*	*3,760*	*1,500*	*540*	***2,840***
Southwest	10,900	19,800	6,950	6,330	12,730	5,880	
reduction	*-2,830*	*-90*	*640*	*3,760*	*1,500*	*520*	***3,500***
All	10,780	19,150	6,950	9,770	10,800	4,010	
reduction	*-2,710*	*560*	*640*	*320*	*3,430*	*2,390*	***4,630***

Source: Southwest Georgia Multi-County Transportation Study Travel Demand Model

Table 9.2: Mobility Evaluation Criterion Scoring

Characteristic: **Reduced congestion in Fort Valley as shown in the combined reduction of ADT on SR 7/US 341, SR 49, and SR 96**	**Score**
Total ADT reduction <3,000 vehicles per day	0
Total ADT reduction = 3,501- 5,000 vehicles per day	2
Total ADT reduction = 5,001 – 7,000 vehicles per day	4
Total ADT reduction > 7 ,001 vehicles per day	6

9.2.1 Mobility Evaluation of No-Build Alternative

The No-build Alternative does not offer any reduction in ADT.

9.2.2 Mobility Evaluation of Northeast Bypass Alternative

As can be seen in **Table 9.1**, the Northeast Bypass Alternative is projected to reduce ADT on state routes within the city of Fort Valley by 7,820 vehicles per day. This alternative offers the greatest reduction in Fort Valley ADT of all the combined and single segment build options.

9.2.3 Mobility Evaluation of Southeast Bypass Alternative

As can be seen in **Table 9.1**, the Southeast Bypass Alternative is projected to reduce ADT on state routes within the city of Fort Valley by 2,840 vehicles per day. This alternative offers the least reduction in Fort Valley ADT of all the combined and single segment build options.

9.2.4 Mobility Evaluation of Southwest Bypass Alternative

As can be seen in **Table 9.1**, the Southwest Bypass Alternative is projected to reduce ADT on state routes within the city of Fort Valley by 3,500 vehicles per day.

9.2.5 Mobility Evaluation of All Bypass Alternative

As can be seen in **Table 9.1**, the All Bypass Alternatives option is projected to reduce ADT on state routes within the city of Fort Valley by 4,630 vehicles per day.

9.3 Safety

The project need and purpose states that improved safety is a primary transportation need within the study area. This study determined that there is an inherent conflict between automobiles on three state routes crossing two active railroads within downtown Fort Valley that will continue to be a source of delay, congestion, and safety concerns without improvements or alternative routes. This study therefore quantifies the safety advantages of each bypass alternative in terms of its ability to reduce projected ADT on state routes where they intersect with rail lines in Fort Valley. This evaluation identified ADT reduction in the SR 7/US 341/SR 96 at-grade crossing and the SR 49 at-grade crossing (ADTs on these alternatives are displayed in **Figures 7.1 -7.5**.)

Table 9.3 on page 56 presents a comparison in ADT reduction at rail crossings by alternative. **Table 9.4** on page 56 presents the project evaluation scoring for the Safety evaluation criterion.

Table 9.3: Reduction of ADT at Rail Crossings by Bypass Alternative

	SR 49 S	SR 96 Center	Total ADT reduction
No-Build	7,590	14,230	
Reduction	*0*	*0*	***0***
Northeast Bypass Alternative	7,650	10,800	
Reduction	*-60*	*3,430*	***3,370***
Southeast Bypass Alternative	7,640	12,730	
Reduction	*-50*	*1,500*	***1,450***
Southwest Bypass Alternative	6,950	12,730	
Reduction	*640*	*1,500*	***2,140***
All Bypass Alternatives	6,950	10,800	
Reduction	*640*	*3,430*	***4,070***

Source: Southwest Georgia Multi-County Transportation Study Travel Demand Model

Table 9.4: Safety Evaluation Criterion Scoring

Characteristic: **Improved Safety through Combined Reduction of ADT on SR 7/US 341, SR 49, and SR 96**	**Score**
Total ADT reduction < 2,000 vehicles per day	0
Total ADT reduction = 2,001- 3,000 vehicles per day	1
Total ADT reduction = 3,001 – 4,000 vehicles per day	2
Total ADT reduction > 4,000 vehicles per day	3

9.3.1 Safety Evaluation of the No-Build Alternative

The No-Build Alternative is projected to not reduce combined ADT on study rail crossings.

9.3.2 Safety Evaluation of Northeast Bypass Alternative

The Northeast Bypass Alternative is projected to reduce combined ADT at rail crossings by 3,370 vehicles per day. This is the second greatest reduction in ADT at rail crossings offered by a bypass alternative and the greatest reduction of the single-segment alternatives.

9.3.3 Safety Evaluation of Southeast Bypass Alternative

The Southeast Bypass Alternative is projected to reduce combined ADT on study rail crossings by 1,450 vehicles per day. This alternative offers the least reduction in ADT on study alternatives of all bypass segment alternatives.

9.3.4 Safety Evaluation of Southwest Bypass Alternative

The Southwest Bypass Alternative is projected to reduce combined ADT on study rail crossings by 2,140 vehicles per day.

9.3.5 Safety Evaluation of All Bypass Alternative

The All Bypass Alternative is projected to reduce combined ADT on study rail crossings by 4,070 vehicles per day. The All Bypass Alternative would reduce ADT at rail crossings more than any of the single-segment bypass alternative options.

9.4 Access

The project need and purpose states access to Fort Valley State University is an identified need for the Fort Valley Bypass. In order to evaluate how well each bypass alternative meets this need, the ability of each alternative to provide new access was identified. Since access from the east and I-75 is of primary concern to the university, it was ranked higher than new access from the west. A comparison of new access provided by bypass alternatives is presented in **Table 9.5** below. The evaluation criterion scoring for new access is provided in **Table 9.6** below.

Table 9.5: Comparison of New Access Provided by Alternatives

Bypass Alternative	No New Access	New Access from the East	New Access from the West	New Access from the East and West
No Build	X			
Northeast	X			
Southeast		X		
Southwest			X	
All Bypass Alternatives				X

Table 9.6: Safety Evaluation Criterion Scoring

Characteristic: Provision of New Access to Fort Valley State University	Score
Provides no New Access	0
Provides New Access from the West	1
Provides New Access from the East	2
Provides New Access from the West and East	3

9.4.1 Access Evaluation of No-Build Alternative

The No-Build Alternative would provide no new access to Fort Valley State University.

9.4.2 Access Evaluation of Northeast Bypass Alternative

The Northeast Bypass Alternative provides no new direct access to the university.

9.4.3 Access Evaluation of Southeast Bypass Alternatives

The Southeast Bypass Alternative provides direct access to the university for traffic from the east.

9.4.4 Access Evaluation of Southwest Bypass Alternative

The Southwest Bypass Alternative provides direct access to the university for traffic from the west.

9.4.5 Access Evaluation of All Bypass Alternatives

All Bypass Alternatives provides new access from the east and west. Additionally, it provides access for traffic from SR 49 to the northeast without having to travel through downtown Fort Valley.

9.5 Total Planning-Level Project Cost

As presented earlier in this report, the cost estimates for the study alternatives vary significantly based on alignment and configuration differences. Given the fiscal constraints facing federal, state, and local agencies, project cost becomes an increasingly important consideration when preparing and prioritizing transportation plans and programs. For this reason, project cost was included as an evaluation criterion. **Table 9.7** below presents the total planning-level project cost for each alternative, including construction, preliminary engineering, right of way and utility relocation costs. **Table 9.8** below presents the project evaluation scoring for the project cost evaluation criterion.

Table 9.7: Planning-Level Cost Estimates for Fort Valley Bypass Alternatives

Bypass Alternative	PE	ROW	Utility	CST	Total
Northeast	$583,854.61	$3,676,239.27	$0.00	$7,298,182.65	**$11,558,276.53**
Southeast	$439,933.01	$797,207.27	$0.00	$5,499,162.59	**$6,736,302.87**
Southwest	$553,645.64	$4,451,464.73	$0.00	$6,920,570.49	**$11,925,680.86**
All Bypass Alternatives	$1,577,433.26	$8,924,911.27	$0.00	$19,717,915.73	**$30,220,260.26**

Source: RUCEST and CES

Table 9.8: Project Planning-Level Cost Evaluation Criterion Scoring

Characteristic: **Cost of project including preliminary engineering, right-of-way, utility, and construction costs**	**Score**
Total project cost > $30 million	0
Total project cost = $20 - 30 million	1
Total project cost = $10 - 20 million	2
Total project cost < $10 million	3

9.5.1 Total Cost of No-Build Alternative

The No-Build Alternative would not incur any costs.

9.5.2 Total Cost of Northeast Bypass Alternative

The Northeast Bypass Alternative is estimated to cost $11.6 million.

9.5.3 Total Cost of Southeast Bypass Alternative

The Southeast Bypass Alternative is estimated to cost $6.7 million. This alternative is estimated to incur the least cost of all the bypass segments.

9.5.4 Total Cost of Southwest Bypass Alternative

The Southwest Bypass Alternative is estimated to cost $11.9 million.

9.5.5 Total Cost of All Bypass Alternatives

The estimated cost of constructing the All Bypass Alternative is $30.2 million. This option would have the highest cost of those studied.

9.6 Benefit-Cost Ratio

Although the cost of a project is an important factor when evaluating transportation projects, it is also important to weight projects costs with project benefits. Projects with a benefit-cost ratio greater than 1 have greater benefits than costs as well as positive net benefits. The higher the benefit-cost ratio, the greater the benefits relative to the costs. Thus, the high cost of a project may be validated by the additional benefits its implementation would provide users. The benefit-cost ratio is useful in determining whether the costs associated with that project justify its construction. This ratio can also provide insight as to whether the extra expense of an alternative is justified by the additional benefits it is projected to provide. This is especially true when evaluating four-lane versus two-lane projects, as with all bypass alternatives. Benefit-cost ratios help agencies prioritize projects and make better transportation investment decisions, but are not the sole determinant of a project's planning, programming, or scheduling.

In a benefit-cost analysis, each alternative is compared to the no-build scenario. The user benefits projected to result from each alternative—shorter trip times and reduced fuel costs--are divided by the alternative's annualized construction cost. The travel demand model was utilized to calculate the benefits of each alternative relative to the No-Build condition, based on the following assumptions:

- Truck percentage of five percent.
- Fuel cost per mile of $0.1786 based on fuel cost of $3.22 and an average MPG of 18.03.
- Annual average use is 250 days per year.
- Driver's time value is $13.75 and truck driver's time value is $72.65.
- Project lifetime of 25 years.

Table 9.9 on page 60 presents the benefit-cost ratio calculations for each alternative. **Table 9.10** on page 60 presents the project evaluation scoring for the benefit-cost ration criterion.

Table 9.9: Benefit-Cost Ratio by Project Alternative

	Benefit - Delay Savings				Benefit - Fuel Savings					
Bypass Alternative	Car Time Savings	Truck Time Savings	Total Daily Savings	Annual Savings	VMT Change	Daily Change	Annual Benefit/ Loss	Total Project Cost	Annualized Project Cost	B/C Ratio
No Build	0	0	0	0	0	0	0	0	0	**0.00**
Northeast	-$751	-$317	-$1,068	-$267,102	-3,063	-547.02	-$136,756	$11,558,276.53	$663,767	**-0.61**
Southeast	-$1,235	-$521	-$1,757	-$439,134	-3,997	-713.83	-$178,457	$6,736,302.87	$386,852	**-1.60**
Southwest	-$968	-$409	-$1,376	-$344,063	-3,430	-612.57	-$153,142	$11,925,680.86	$684,866	**-0.73**
All Bypass Alternatives	-$509	-$215	-$724	-$181,086	-5,244	-936.53	-$234,133	$30,220,260.26	$1,735,485	**-0.24**

Source: Southwest Georgia Multi-County Transportation Study Travel Demand Model

Table 9.10: Project Benefit-Cost Ratio Evaluation Criterion Scoring

Characteristic: **Ratio of time savings and cost savings benefits to project cost**	**Score**
Benefit-Cost Ratio of less than -1.0	0
Benefit-Cost Ratio of -1.0 through -.51	1
Benefit-Cost Ratio of -.50 through -.01	2
Benefit-Cost Ratio of 0 and greater	3

While the results of the benefit-cost analysis reveals that all alternatives have a B/C ratio below 1, this evaluation criterion was included in the project evaluation to identify that all projects received a scope of 0 for this evaluation criterion.

9.6.1 Benefit-Cost Analysis of No-Build Alternative

As can be seen from **Table 9.9**, the benefit cost of the No-Build Alternative is 0. This alternative offers no time or fuel savings, but also does not incur any costs. The benefit-cost ratio of the No-Build Alternative is higher than any of the single or combined segment alternatives studied.

9.6.2 Benefit-Cost Analysis of Northeast Bypass Alternative

As can be seen from **Table 9.9**, the benefit cost of the Northeast Bypass Alternative is -0.61. Benefit cost ratios below 1 are recognized to indicate that the cost of the project would outweigh its benefit.

9.6.3 Benefit-Cost Analysis of Southeast Bypass Alternative

As can be seen from **Table 9.9**, the benefit cost of the Southeast Bypass Alternative is -1.60. Benefit cost ratios below 1 are recognized to indicate that the cost of the project would outweigh its benefit.

9.6.4 Benefit-Cost Analysis of Southwest Bypass Alternative

As can be seen from **Table 9.9**, the benefit cost of the Southwest Bypass Alternative is -0.73. Benefit cost ratios below 1 are recognized to indicate that the cost of the project would outweigh its benefit.

9.6.5 Benefit-Cost Analysis of All Bypass Alternatives

As can be seen from **Table 9.9**, the benefit cost of All Bypass Alternatives is -0.24. Benefit cost ratios below 1 are recognized to indicate that the cost of the project would outweigh its benefit.

9.7 Bypass Alternative Evaluation Matrix

The scores of each bypass alternative in each category have been compiled into a single evaluation matrix, presented in **Table 9.11** below. These scores have been totaled to produce a ranking of alternatives, from highest score to lowest.

Table 9.11: Project Evaluation Matrix

	Need and Purpose Measures			Costs			
Alternative	Mobility	Safety	Access	Total Cost	Benefit-Cost Ratio	Total Score	Ranking
No Build	0	0	0	3	3	6	4
Northeast Bypass Alternative	6	2	0	2	1	11	1
Southeast Bypass Alternative	0	0	2	3	0	5	5
Southwest Bypass Alternative	2	1	1	2	1	7	3
All Bypass Alternatives	2	3	3	0	2	10	2

9.7.1 Evaluation of No-Build Alternative

As can be seen from **Table 9.11**, the No-Build Alternative ranks fourth out of the five options studied. It is important to note that while the No-Build alternative provides no benefit to mobility, safety, and access within the study area, it also incurs no cost. Furthermore, the benefit-cost ratio of all Build alternatives was negative while the No-Build was zero. Thus the No-Build condition scored high on cost and benefit-cost yet received no score in any other category. The No-Build alternative is included in this analysis to serve as a baseline for comparison with the Build alternatives. Therefore, if a Build alternative provides only minor benefit at a high cost, the No-Build alternative may rank higher and be a more prudent transportation decision.

9.7.2 Evaluation of Northeast Bypass Alternative

As can be seen from **Table 9.11**, the Northeast Bypass Alternative ranked first out of the five options studied. This alternative provides improved east-west mobility along the SR 96 corridor, as well as high safety benefits. It also had a significantly lower cost than the next highest ranking alternative.

9.7.3 Evaluation of Southeast Bypass Alternative

As can be seen from **Table 9.11**, the Southeast Bypass Alternative ranked fifth out of the five options studied. This alternative scored high on improved access and cost but did little to improve mobility or safety.

9.7.4 Evaluation of Southwest Bypass Alternative

As can be seen from **Table 9.11**, the Southwest Bypass Alternative ranked third out of the five alternatives studied. This alternative scored poorly on most criteria and would incur a cost similar to the Northeast alternative.

9.7.5 Evaluation of All Bypass Alternatives

As can be seen from **Table 9.11**, All Bypass Alternatives ranked second out of the five options studied. This is to be expected since this alternative includes all the benefits of each of the other build alternatives. However, because this alternative also includes the combined cost of all other alternatives, it scored poorly on cost.

10.0 Conclusions/Recommendations

The purpose of this study was to identify and document the transportation need for a bypass around the city of Fort Valley, then identify and evaluate feasible alternatives for the bypass. The intent of this study was to provide decision makers with enough information regarding the alignment, configuration, cost, and performance of all feasible bypass segments to make an informed decision regarding possible programming, and/or continued inclusion, in the GDOT Work Program or construction as a locally funded project.

Based on analysis of existing and future conditions in the study area, the study established that the purpose of the Fort Valley Bypass was to satisfy the transportation needs for increased mobility, safety, and access in and around Fort Valley. First, reduced congestion and increased mobility in the city of Fort Valley will benefit local traffic as well as the increasing number of through trips on state routes. Second, since all state routes cross railroad lines at at-grade crossings within central Fort Valley, improved safety is a transportation need in the area. Finally, efficient access to Fort Valley State University is hindered by congestion on the existing roadway network in downtown Fort Valley. This growing university would benefit from the direct access that the Southeast Bypass Alternative or the Southwest Bypass Alternative would provide.

The Northeast, Southeast, and Southwest Bypass Alternatives were drafted to consider a variety of logical connections to the existing roadway network, including a combination of all three alternatives to create a complete bypass of the city. These bypass alternatives were considered in their environmental and cultural context for potential negative impacts to their surroundings.

Evaluation criteria were established in order to compare the performance, or effectiveness, of each alternative with the other alternatives. By evaluating each alternative against these criteria, an objective comparative evaluation of each alternative could be performed. Five main evaluation criteria were identified to evaluate the Fort Valley Bypass Alternatives. The first three criteria evaluate each alternative's ability to address the identified need and purpose of the project. Total project cost and benefit/cost ratio were also utilized to compare study alternatives. For each evaluation criterion, the study alternatives were assigned a score based on how well each criterion was addressed. The composite score for each alternative across all five evaluation criteria was utilized to rank the study alternatives. **Table 9.11** on page 59 presents the results of this evaluation and the resultant ranking of all project alternatives.

The following recommendations were based on the analysis and ranking of the study alternatives presented in this report:

- **Northeast Bypass Alternative:** This alternative ranked first out of the five bypass alternatives studied and most effectively addressed the need for improved mobility within the study area. The Northeast Bypass alternative was the only stand-alone alternative that addressed the LOS deficiency within the City of Fort Valley. Furthermore, this alternative is expected to cost approximately $18.5M less than the next highest ranked alternative. While this alternative does not address access to Fort Valley State University, it most effectively addresses the primary need

and purpose of the bypass while minimizing project costs. For these reasons, the Northeast Bypass Alternative is recommended for continued inclusion in the GDOT Work Program.

- **Southeast Bypass Alternative:** This alternative ranked fifth out of the five bypass alternatives studied. While this alternative would improve access to Fort Valley State University, it is only expected to attract 240 vehicles per day. Furthermore, this alternative would not address the LOS deficiency within the City of Fort Valley. While this alternative is the least expensive build alternative studied, it also provides the least transportation benefit. The Southeast Bypass Alternative would not likely be eligible for federal funding since it does not adequately address the identified need and purpose of the bypass. If local officials wish to pursue this alternative, local funds would need to be utilized for preliminary engineering, right-of-way acquisition, and construction.
- **Southwest Bypass Alternative:** This alternative ranked third out of the five bypass alternatives studied. While this alternative would provide some benefit to mobility and safety within the study area, as well as access to Fort Valley State University, it would not address the LOS deficiency within the City of Fort Valley. The Southwest Bypass Alternative would not likely be eligible for federal funding since it does not adequately address the identified need and purpose of the bypass. If local officials wish to pursue this alternative, local funds would need to be utilized for preliminary engineering, right-of-way acquisition, and construction.
- **All Bypass Alternatives**: This alternative ranked second out of the five bypass alternatives studied. While this alternative scored well on mobility, safety, and access, and fulfilled the project need and purpose, its $30.2M cost was more than $18.2M higher than next most expensive alternative. Furthermore, while the All Bypass Alternatives alternative would attract higher traffic volumes on each bypass segment, the southeast segment would still only carry 480 vehicles per day under this alternative. This project would not likely be eligible for federal funding since all federally funded projects in Georgia with costs of $10M or more have to undergo a Value Engineering (VE) study. VE studies attempt to make recommendations that optimize the value of a project and minimize its cost. It is doubtful that the VE study would recommend the implementation of this alternative since it ranks lower than the Northeast Bypass alternative, and costs $18.5M more. For this reason, implementation of southeast and southwest segments of the All Bypass Alternatives alternative would need to utilize local funds for preliminary engineering, right-of-way acquisition, and construction.