2005-2035 GEORGIA STATEWIDE TRANSPORTATION PLAN

Prepared by
Cambridge Systematics, Inc.

With
Geostats, Inc.
Reynolds, Smith and Hills, Inc.
Sycamore Consulting, Inc.
Dr. Karen Dixon

January 2006
February 2007

GDOT
Georgia Department of Transportation

final report

2005-2035 Georgia Statewide Transportation Plan Update

prepared for

Georgia Department of Transportation

prepared by

Cambridge Systematics, Inc.
100 CambridgePark Drive, Suite 400
Cambridge, Massachusetts 02140

with

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Executive Summary

Major Finding

This Statewide Transportation Plan (SWTP) presents a systematic analysis of future transportation needs and likely available funding for the surface transportation programs in the State of Georgia over the next 30 years to 2035. As with previous SWTP Updates, this Plan finds that there is a major structural funding gap between needs and approved programs on the one hand, and available funding on the other.

Figure ES.1 summarizes the total revenues estimated to be available for transportation expenditures for the period between 2006 and 2035 in 2005 dollars. Total revenues are forecast to be $86 billion for the 30-year Plan period, compared to total costs of the Build/Financially Unconstrained scenario of $160 billion, leaving a funding gap of $74 billion. This deficit threatens the future economic vitality of the State and the quality of life of its residents. The inability to meet the State's ever growing transportation needs, and the congestion which will result from this failure, will in all likelihood choke off or greatly reduce forecasted levels of economic growth and degrade the quality of life of its residents.

It is the goal of the Department to support the objectives of the State of Georgia Department of Economic Development, including but not limited to maintaining a globally competitive and attractive climate for businesses and people to live, work and play within the State of Georgia; and to ensure that the State's transportation system contributes to a productive and efficient economy. The Department continually works towards improving transportation within the state to facilitate these goals to support economic development.

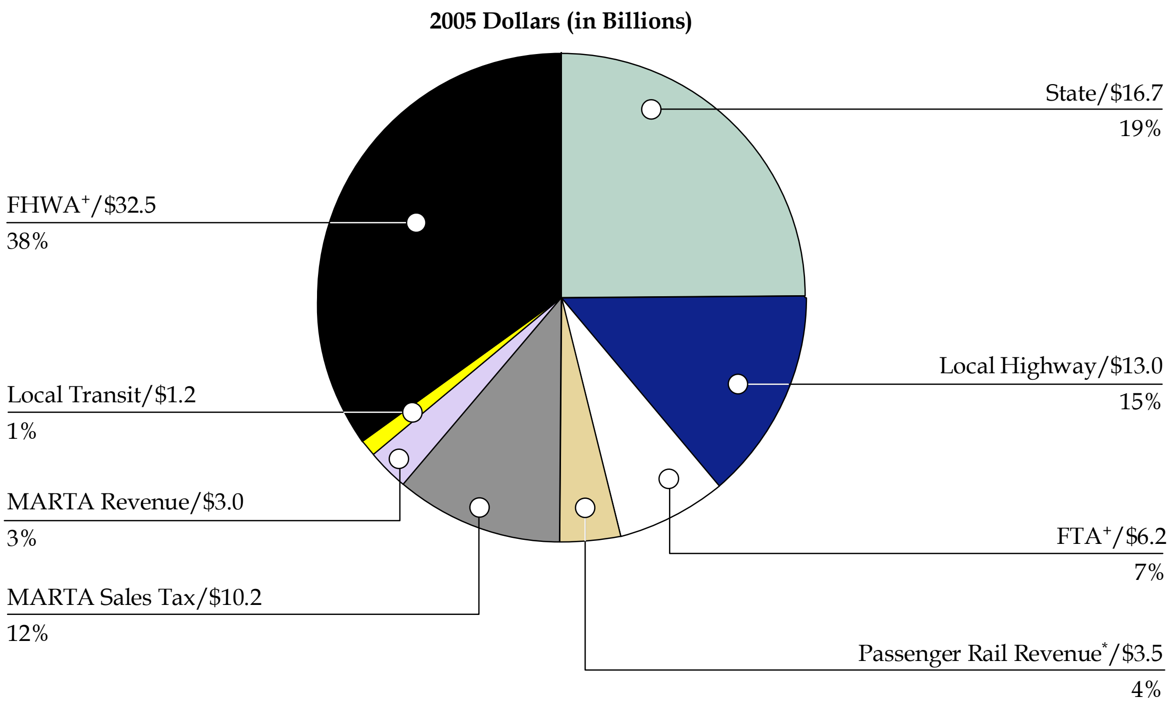
Project Background

The Federal government requires that each state develop, maintain, and update a Statewide Transportation Plan (SWTP). These requirements are codified in 23 CFR 450.212 and 450.214. Accordingly, the Georgia State Transportation Board has adopted the following policy for the Georgia Department of Transportation (GDOT) to follow:

> The Department shall develop and maintain a long-range state transportation plan for all areas of the State as required under Title 32 of the Georgia Code, Section 32-2-3, and 23 Code of Federal Regulations, Part 450, Section 214. This

plan shall provide for the development of transportation facilities that will function as an intermodal state transportation system and that will be a guide for implementation of transportation facilities in the State of Georgia.

Figure ES.1 Total Available Transportation Revenue by Source ($86.1 Billion)
2006-2035



*Assumes complete system is built.
+Assumes SAFETEA-LU authorization levels.

GDOT's Office of Planning is responsible for developing the Statewide Plan. This Plan update represents the third SWTP update prepared by GDOT in the past 10 years. In updating its Plan every five years, GDOT has exceeded Federal requirements. Given that a major update was undertaken five years ago, this Plan was intended to provide continuity with that prior effort and was not intended to initiate major new policy initiatives. The Plan is not intended to select specific projects, but rather to present a programmatic assessment of the State's transportation systems. This Plan is more comprehensive than the last plan in that it includes city and county roadway needs which are eligible for Federal aid. Also, several new data sources are now available to support Plan analysis and development.

The goals for this Statewide Transportation Plan Development are similar to those for the 2000 Statewide Plan and were affirmed/developed early in the public outreach process, and are consistent with Federal requirements:

- Support the economic vitality of the United States, and the entire State of Georgia; especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety of the transportation system for all motorized and non-motorized users;
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system.

This Plan seeks to accomplish the following objectives:

- Document existing transportation conditions across the State and across all modes;
- Define and compare the performance of future No-Build and Build/Financially Unconstrained scenarios for the year 2035; and
- Assess the funding available to the State over the 30-year planning horizon and compare the cost of the Build scenario to the available financial resources. It should be noted that unlike MPO long-range plans and Transportation Improvement Programs (TIPs), there is no regulatory requirement to develop a Financially Constrained Statewide Plan.
- Ensure that the Statewide Transportation Plan and the Plan's goals support the objectives of land use management agencies and organizations; natural resource management agencies; environmental protection agencies; and conservation and historic preservation agencies.

Public Outreach

The requirements for the public involvement process as it relates to the development of a Statewide Transportation Plan are defined in U.S. 23 CFR 450.210. In general, "the public involvement processes shall be proactive and provide complete information, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement." The goals of the SWTP Update Public Involvement Plan were:

- To initiate early and continuous activities to inform and involve the public, and others in order to provide timely information;
- Provide reasonable public access to technical and policy information used while developing the SWTP;
- Hold public meetings at convenient and accessible times and locations;
- Present materials in an easy to understand manner, using visualization techniques;
- Disseminate information via the world wide web;
- To provide flexibility in order to be responsive to the public's request for information and ongoing involvement;
- To listen to the concerns and issues of stakeholders across the State and ensure that they are incorporated into the planning process; and
- To consult with community leaders about ideas for solutions to transportation problems.

To achieve these goals, three forms of public outreach meetings were conducted (see Appendix A for more detail):

1. Stakeholder Advisory Committee meetings;
2. General public meetings; and
3. Transportation planning workshop.

Two rounds of public meetings were held across the State in Atlanta, Savannah (two meetings), Tifton, Moultrie, and Commerce. Special efforts were made to reach out to minority, low-income, elderly, disabled, and other transportation disadvantaged populations during the public involvement process. These populations are recognized as key stakeholders for the SWTP Update. The SWTP Update public involvement process included an environmental justice program that was designed to build and sustain meaningful participation for the transportation-disadvantaged.

A project web site was developed and linked to the GDOT home page.[1] Media outreach was utilized to inform stakeholders about the SWTP Update through mass media such as newspapers, radio, and television. Working through the GDOT Office of Communications, the project team disseminated information via press release to the general public about upcoming events regarding the SWTP Update. The project team cataloged comments received throughout the public involvement process and analyzed the content for trends that helped GDOT to draw conclusions regarding public sentiment toward the SWTP Update.

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[1] www.dot.state.ga.us/DOT/plan-prog/planning/swtp/index.shtml.

Methodology

In order to develop this Plan in the most cost-effective manner, existing data sources were used to support the analysis. New electronic linkages were created among many of these disparate sources and provided to GDOT to facilitate future Plan updates and other analyses. The primary data sources and tools used to support this analysis were as follows:

- **GDOT Road Characteristic (RC) File –** Complete inventory of all roads in Georgia (2003);
- **GDOT Crash Database –** Complete inventory of all crashes occurring on Georgia's road; to minimize year-to-year anomalies, three-year (2001-2003) averages were used;
- **FHWA Highway Performance Monitoring System (HPMS) –** Basic infrastructure and operational data on all roadways, and detailed performance data on a sample of roadways (2003);
- **FHWA National Bridge Inventory (NBI) –** Bridge operational, physical and condition data on all bridges on public roads;
- **FHWA National Bridge Investment Analysis System (NBIAS) –** Comprehensive bridge model which can forecast future conditions and optimal investment strategies for rehabilitation or replacement;
- **GDOT Digital Line Graph Features (DLG-Fs) –** GIS file of all roads in Georgia with an RCLINK ID capable of producing detailed maps;
- **GDOT Multimodal Transportation Planning Tool –** Planning analysis tool for all modes operating in non-urbanized areas of Georgia;
- **GDOT TP+ Statewide Travel Demand Forecasting Model –** Model containing all state highways and a county-zone system for analyzing roadway congestion under varying network scenarios;
- **GDOT TPro Database –** Comprehensive database of all capital projects for which any planning, design or construction work is anticipated;
- **MPO and Other Local Plans –** Regional Transportation Plans (RTPs) and Long-Range Multimodal studies were adopted to define existing conditions and forecasts within the MPO or other jurisdiction (years vary); a list of Plans is included in Appendix B.

- **GDOT Intermodal Data Sources –** *The Georgia Transit Programs Fact Book* for 2004, and GDOT modal-specific plans for intercity and commuter rail, bicycle and pedestrian travel, aviation and intercity bus were used to define existing and future conditions in the respective modes (years vary) (see Appendix B); and

- **Global Insight, Inc. TRANSEARCH Database –** Detailed data on existing freight movement by commodity and value within and through Georgia by all modes (1998).

- **Coastal Management Program Document –** Prepared by State of Georgia Department of Natural Resources, Coastal Resources Division

- **From the Ground Up: A Preservation Plan for Georgia –** Prepared by State of Georgia Department of Natural Resources, Historic Preservation Division

- **Wildlife Action Plan (aka: Comprehensive Wildlife Conservation Strategy) –** Prepared by State of Georgia Department of Natural Resources, Wildlife Resources Division

- **Statewide Comprehensive Outdoor Recreation Plan –** Prepared by State of Georgia Department of Natural Resources, State Parks and Historic Sites Division

A list of project team responsibilities is included in Appendix C.

Existing Conditions

The SWTP Update is a multimodal plan. The evaluation of existing conditions has therefore been prepared for all modes. As travel on Georgia's highway system constitutes the largest volume of travel, highway analysis is discussed separately from other modes. Recognizing that GDOT is responsible for the most heavily used highways, but that responsibility is shared on the less heavily utilized roads with cities and counties, the analysis of existing highway conditions is presented separately for state roads and city and county roads. This breakdown by mode and ownership is consistent with the differences in data sources and the analysis methods that are available.

Highways

There are almost 120,000 miles of public roads in Georgia primarily owned by the State (17 percent), counties (70 percent), and municipalities (12 percent). Federal Aid roads represent 34 percent (40,584 miles) of all centerline road miles in Georgia. The State owns half of the Federal Aid roads (50 percent), with the counties (46 percent) and the municipalities (4 percent) owning the other half. In 2003, there were almost 190 million Daily Vehicle Miles of Travel (VMT) on public roads in Georgia. The majority of this travel occurred on roads owned by the State (64 percent), with the remainder of the VMT occurring on roads owned by counties (29 percent) and municipalities (7 percent). Travel is primarily on those functionally classified roads eligible for the Federal Aid highway programs administered by GDOT (77 percent). Travel on roads in urban areas represents 60 percent of all VMT in Georgia.

In 2003, there were almost 26.1 million Truck Vehicle Miles of Travel (TVMT) per day on public roads in Georgia, 8.8 percent of total VMT. The majority of this travel occurs on roads owned by the State (77 percent), with the rest on roads owned by counties (18 percent) and municipalities (5 percent). Truck travel is primarily on those roads eligible for the Federal Aid highway programs administered by GDOT (84 percent).

Pavement Condition

Pavement condition is shown in Figure ES.2 as estimated by GDOT's Pavement Condition Evaluation System (PACES). Federal Aid roads of all ownership types are in better condition than non-Federal Aid roads, and state-owned roads are in better condition than county and city-owned roads, as indicated by the percentage of centerline miles by category of pavement condition. The average weighted value for GDOT's PACES rating system on the state-owned roads, which are all eligible for the Federal Aid road system, is 83.4 (on a scale of 100). Eighty-three percent (83.1 percent) of the centerline miles are rated in very good or good condition, 6.7 percent of the roads are in fair condition, only 0.2 percent is rated in poor condition and no centerline miles are rated in very poor condition. Based on these values, it should be considered that overall pavement conditions on state roads are excellent and that there are no systemwide deficiencies, only isolated deficiencies. County and city roads have PACES values generally in the low 70s.

Bridge Conditions

As shown in Figure ES.3, slightly over 2 percent (132 out of 6,455 bridges) of state-owned bridges are rated Structurally Deficient, almost all on rural lower functionally classified roads. Structurally deficient bridges are safe today but may require operational restrictions (such as weight limits) and eventual major rehabilitation or replacement. Based on these ratings the State-owned bridges have no systemwide problem, only isolated issues. A higher percentage of county bridges (15 percent or 1,078 out of 7,244 bridges) are structurally deficient. While cities own relatively few bridges, almost 8 percent (44 out of 508 bridges) of city bridges are Structurally Deficient.

Figure ES.2 Pavement Condition by Federal Aid Designation and Ownership – Existing Conditions

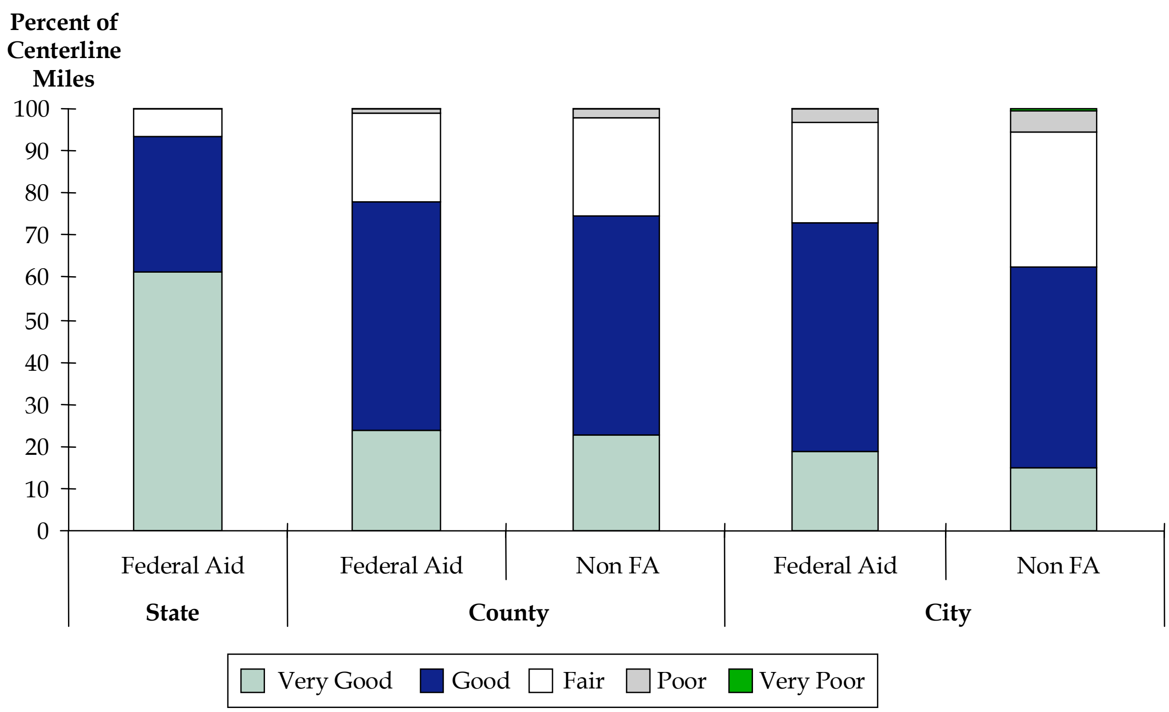
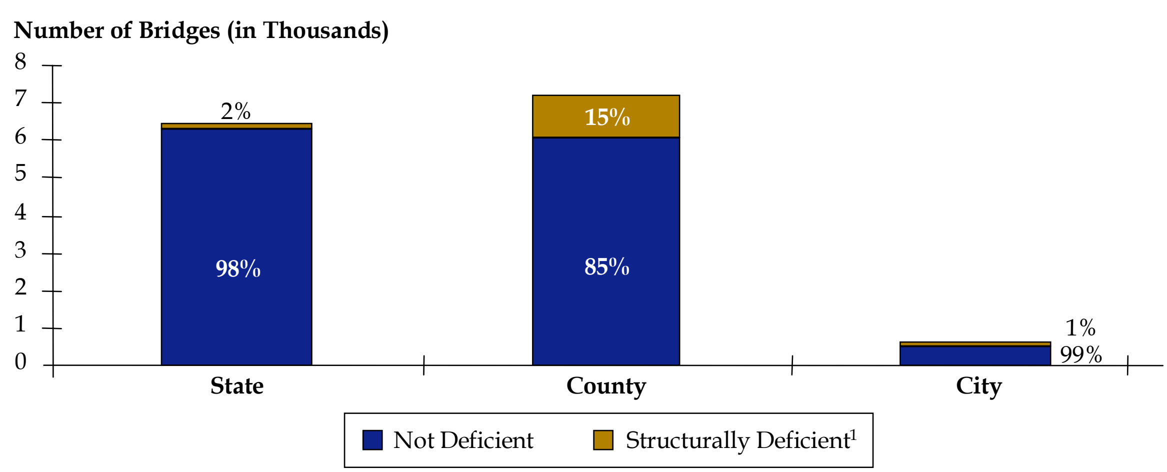


Figure ES.3 Bridge Condition by Ownership – Existing Conditions



[1] Will need physical repairs – but not unsafe today.

Safety

In 2003 the National Highway Safety Traffic Administration cited a national highway fatality rate of 1.48 per 100 MVMT.[2] That same report cites the Georgia fatality rate as 1.47 per 100 MVMT. Thus, the Georgia fatality rate is almost identical to the United States average. Georgia's fatal crash rate ranked 19th lowest nationally and second lowest in the Southeast.[3]

Figure ES.4 summarizes the total crash, injury, and fatality rates by roadway ownership. The highest crash and injury rates are on city roads which typically have heavy volume operating under less than optimal design conditions. However, fatality rates are higher on state and county roads where speed is more apt to be a contributing factor. The number of crashes, injuries, and fatalities are highest on the Interstate System, but that system also carries the greatest amount of travel and consequently has among the lowest crash, injury, and fatality rates. Conversely, the number of crashes, injuries, and fatalities on the lower functionally classified urban roads are lower because these roads carry much less traffic, but the rates are higher than the statewide averages.

Congestion

Congestion can be measured based on the extent of the problem (e.g., the number of centerline road miles affected) or by its affect on travel (e.g., the amount of VMT affected). The Volume to Service Flow (VSF) ratio for each road segment was used to determine the Level of Service.[4]

Using standard GDOT practice, congestion was defined as LOS D to F, although LOS E is sometimes used in large urban areas to define congestion. Figure ES.5 presents a comparison of the congestion levels measured in percent of centerline miles by LOS on urban roadways of different jurisdictions. Figure ES.6 shows the same comparison by VMT. Two percent of all state roadway centerline miles are congested, while 8 percent of miles in urban areas are congested (5 percent if the LOS E or worse standard is applied). The heaviest congestion is on the interstates (34 percent or 20 percent at LOS E), and freeways (24 percent or 18 percent at LOS E). The magnitude of congestion is much more significant as measured by VMT. Overall, 20 percent of VMT on state roads operates under congested conditions, and 35 percent of urban VMT (24 percent at LOS E). Congestion on urban interstates and freeways is over 50 percent of traffic (43 percent at LOS E), as shown in Figure ES.7. Few centerline miles of county and city roads are congested, and about 10 percent of VMT on urban county roads and 3 percent on city roads operates in congested conditions. There is little congestion outside of urban areas.

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[2] National Highway Traffic Safety Administration, U.S. DOT, *Traffic Safety Facts 2003*, 2003.

[3] Georgia Department of Transportation, *Safety Action Plan,* 2004.

[4]

Volume to Service Flow Range	Level of Service
<= 0.20	A
0.20 < and <= 0.40	B
0.40 < and <= 0.70	C
0.70 < and <= 0.80	D
0.80 < and <= 0.95	E
0.95 <	F

Figure ES.4 Accident Rates by Road Ownership – Existing Conditions
2001-2003

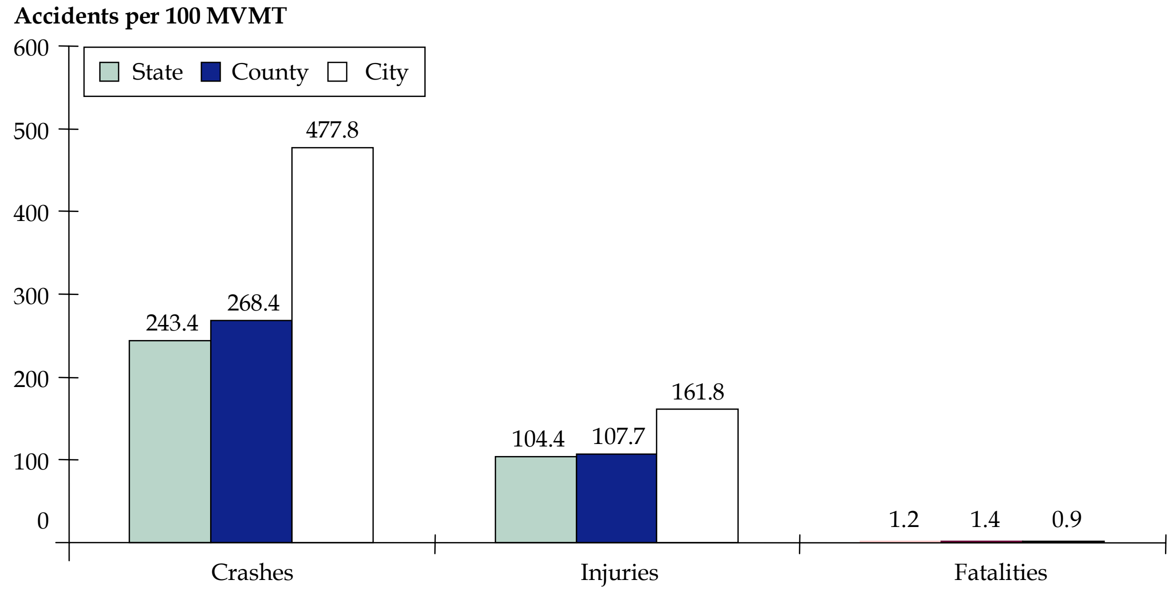


Figure ES.5 Level of Service Comparison by Highway System Component – Existing Conditions
Percent Centerline Miles

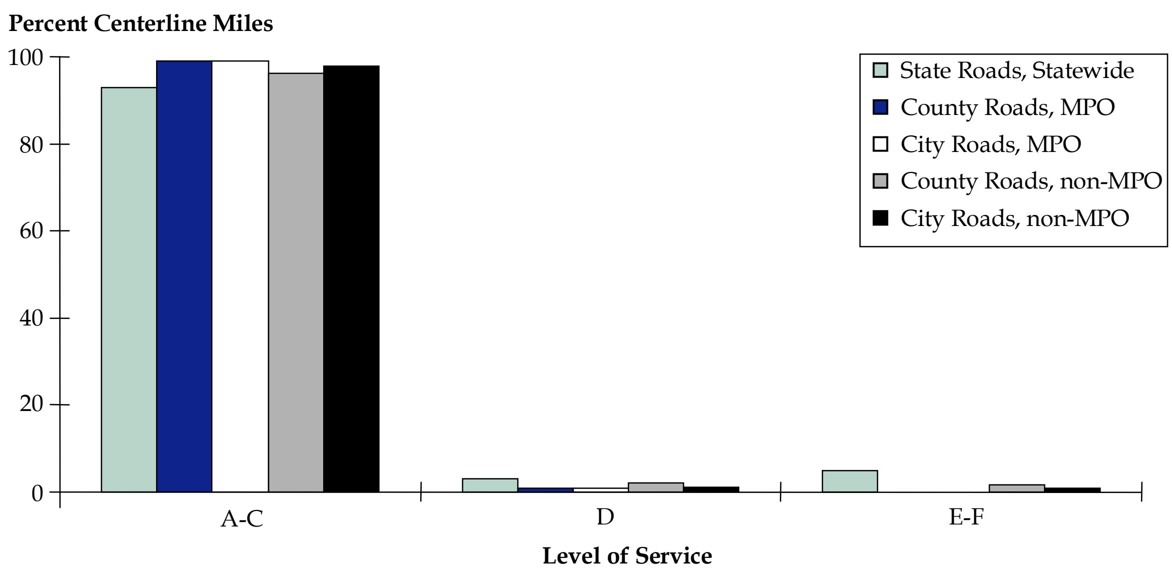


Figure ES.6 Level of Service Comparison by Highway System Component – Existing Conditions
Percent VMT

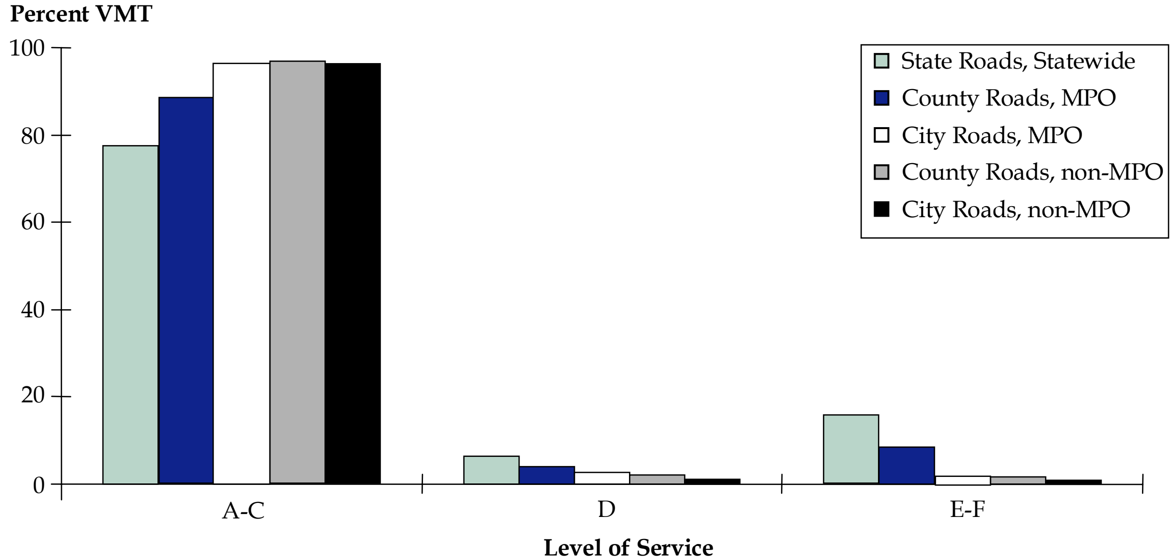
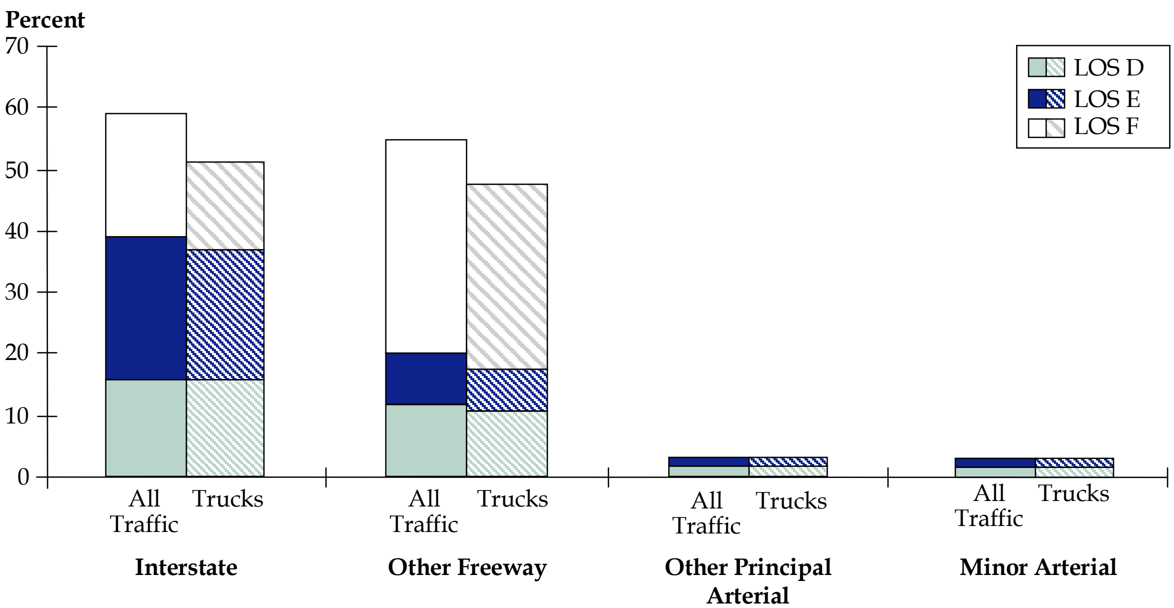


Figure ES.7 Congested Urban VMT on State Roads – Existing Conditions
Level of Service D or Greater



The evaluation of existing congestion also included the truck travel that is affected. Relatively more truck travel than total travel occurs on rural state roads, consequently truck travel is less affected by congestion compared to general traffic. Sixteen percent of all truck travel on state roads occurs under congested conditions, compared to 20 percent of general travel. Within urban areas however, truck travel is even more congested than general traffic.

Intermodal

Transit

In Fiscal Year (FY) 2003, Georgia had 13 urban public transportation systems in operation. These operators provide a range of services that primarily focus around a fixed-route bus system and complementary paratransit service for individuals with mobility limitations. MARTA operates a heavy-rail system in addition to its bus and paratransit services. MARTA is, of course, the largest system in the State with over 50 million annual revenue vehicle miles and 142 million annual trips. Figure ES.8 presents ridership trends for transit operators other than MARTA.

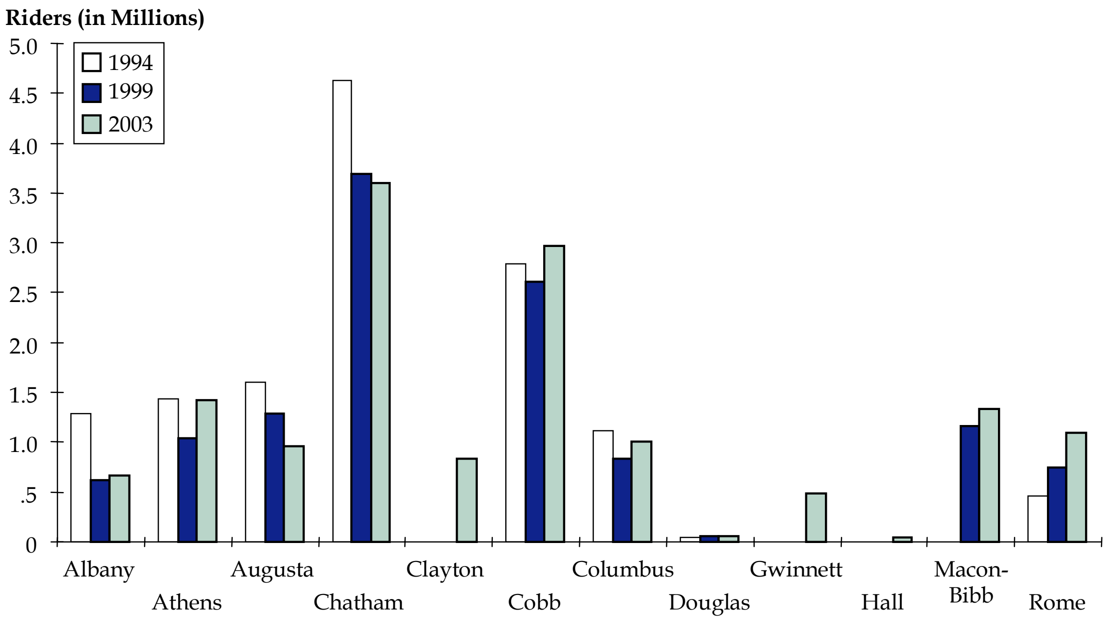
Of the nine non-MARTA transit operators that provided service in 1999, seven have experienced ridership increases between 1999 and 2003, and two experienced declines. Ridership increased by about 10 percent or more on almost all of these systems, with Rome and Athens seeing the largest increases at 47 and 37 percent, respectively. Augusta (25 percent) and Chatham County (2 percent) experienced declines. Ridership is below 1994 levels for all systems, except for Athens, Douglas, and Rome.

In FY 2004, 97 of Georgia's 159 counties offered rural public transit service to the general population under GDOT's rural public transit program. Rural public transit operations in Georgia are demand-responsive services, and are generally available through subscription service and advance reservation. Figure ES.9 displays the counties that provided rural public transit service during 2004.

While the number of counties with service increased by 43 percent and the revenue miles of service offered increased by 120 percent since 1994, ridership increased by only 8 percent. Rural public transit riders in Georgia tend to be low-income, elderly, and transit-dependent individuals. Most rural public transit trips tend to be for personal business and medical reasons.

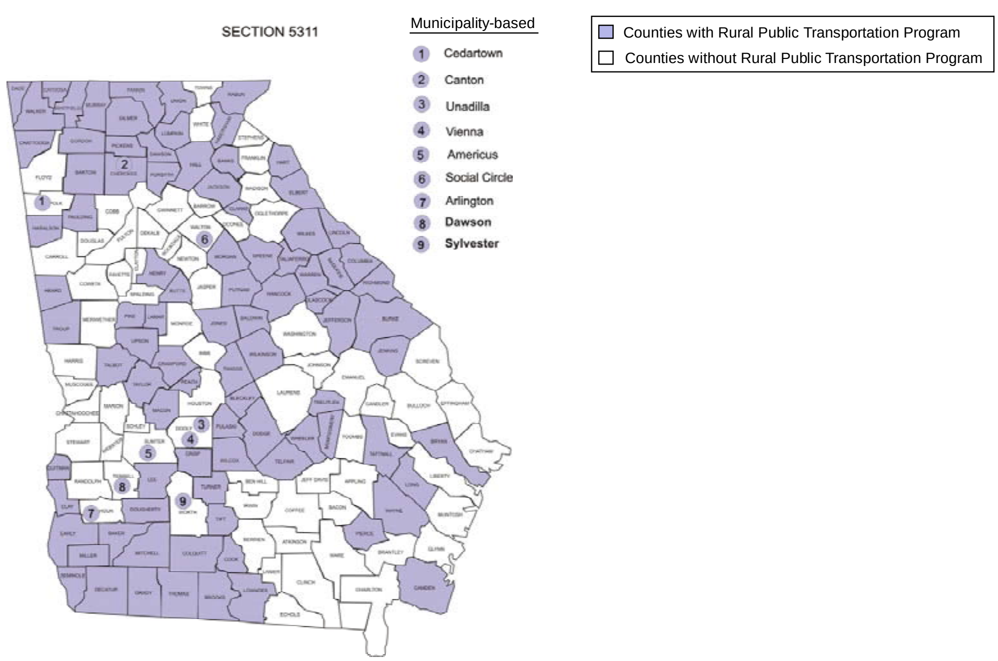
Intercity bus is service is primarily operated by private firms which make decisions regarding routes, service levels, and fares. Intercity bus is an important component of the statewide transportation system, particularly for lower-income individuals; and funding programs are available to encourage the private operators to initiate or continue specific routes. In FY 2003, intercity bus services provided over 11 million revenue vehicle miles of service. The largest single travel market for intercity bus was between Atlanta and Macon, with 51,100 annual trips.

Figure ES.8 Annual Urban Transit Riders – Existing Conditions
Excluding MARTA



Sources: *Georgia Department of Transportation's Statewide Transportation Plan Final Report*, February 2002; *2003 Georgia Transit Programs Fact Book*.

Figure ES.9 Public Transportation Programs – Existing Conditions



Source: Georgia Department of Transportation, Office of Intermodal Programs.

Rail

Georgia's current rail network consists of a total of 4,836 miles of trackage. The rail network is owned and operated by two Class I railroads and 21 short-line (or Class III) railroads. The two Class I railroads are Norfolk-Southern (NS) and CSX Transportation (CSX), which combined own and/or operate 3,510 miles of track or 73 percent of the statewide total.

The rail network is a critical link in the movement of commodities, accounting for the transport of approximately 195 million tons per year of originating, terminating, intrastate and through freight in 2003. About 45 percent of this total is through shipments, 35 percent is terminating, 12 percent is originating, and 8 percent is intrastate. Coal (28.6 percent) is the main commodity carried. Origins are fairly evenly spread throughout the State while terminating freight is more heavily focused on the coastal, Atlanta and northwest areas.[5] The major flows radiate from Atlanta in every direction with the busiest corridors leading in and out of large rail yards in Northwest Atlanta.

Currently, the only intercity rail passenger service in Georgia is provided by Amtrak between New Orleans and New York through Atlanta, Gainesville, and Toccoa, and along the coast with stops in Savannah and Jessup.

Aviation

The aviation system in Georgia consists of 106 open-to-the-public airports. Of these facilities, nine are commercial air carrier airports, including Hartsfield-Jackson Atlanta International Airport (HJAIA). The remaining open-to-the-public airports include 94 publicly owned general aviation facilities and three privately owned facilities.

The nine air carrier airports handled over 1.4 million aircraft operations and over 43 million enplaned passengers in 2004. This total includes nearly 42 million passengers at HJAIA, which continues to be the world's busiest airport. Of the eight air carrier airports outside of Atlanta, Savannah-Hilton International and Augusta Regional at Bush Field were the busiest airports. HJAIA handles almost all air cargo in Georgia, with small amounts also handled by the Savannah-Hilton and Southwest Georgia Regional airports.

Maritime

Georgia's ports and waterways – both publicly and privately owned/operated – are a vital component of its statewide transportation system and its link to international markets. Taken together, more than 23.2 million tons of commodities were moved through nearly 40 public and private terminals in the State of Georgia in calendar year 2002. The Port of Savannah is one of the premier port complexes in the United States. In 2002, the Port of Savannah ranked sixth among United States container ports with 1.13 million

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[5] Source: *Georgia Rail Freight Plan Update 2000.*

Twenty-foot Equivalent Units (TEUs) of containers handled. It was also the 33rd most active maritime port for total tonnage with 17.7 million short tons, up from 39th in 1998. Over the past decade, the Port of Savannah has been one of the fastest-growing ports in the country, and it continues to improve its facilities, its accessibility, and its information systems to successfully accommodate its anticipated continued growth. The Ports of Brunswick and Bainbridge/Columbus (on the inland waterway system) serve smaller niche roles and have not seen the kind of growth evident at the Port of Savannah.

Bicycle and Pedestrians

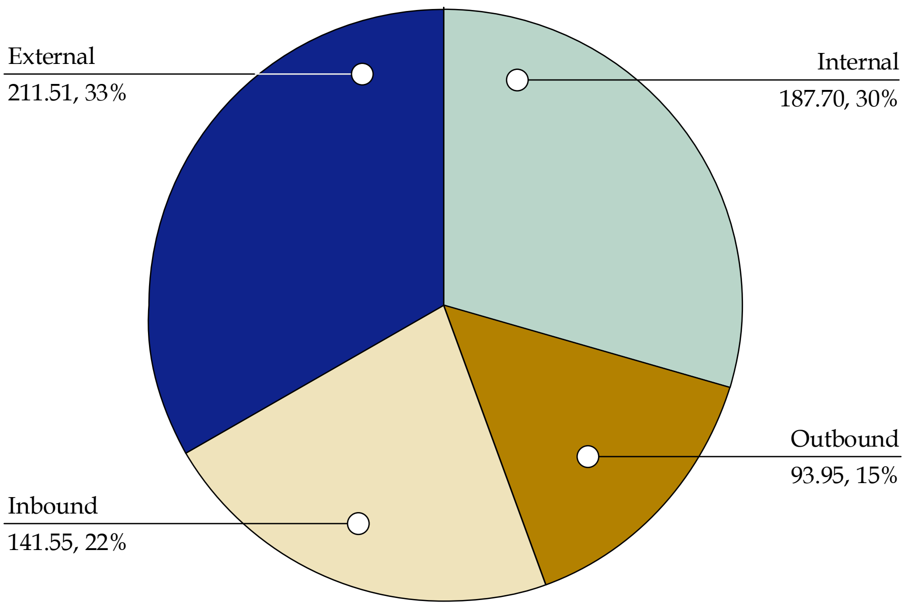
State transportation plans are required to include a bicycle and pedestrian element, and regionally significant bicycle and pedestrian projects and programs must be included in the Statewide Transportation Improvement Program. The *Georgia Bicycle and Pedestrian Plan: Statewide Route Network* was developed in 1997 and updated in 1998 and serves as the primary resource for this effort. GDOT has begun preparation of a stand-alone statewide pedestrian plan. Georgia's statewide bicycle system includes 14 routes, some of which traverse the State while others provide connectivity between routes. The statewide system covers 2,943 miles. GDOT has contracted with the Regional Development Centers (RDCs) to develop Bicycle Plans for all rural parts (non-MPO) of the state (see Appendix B for list of plans). In general, state roadways have the lowest percentage of suitable roadways since few state roads are characterized as "local" in nature. Comparing to the state average on *state* roads only, the TransGeorgia, Augusta Link, Northern Crescent, and Coastal Routes have the highest suitability for bicycle travel. On a statewide basis, 0.1 percent of commuters bicycle to work and 1.1 percent walk to work. Residents of Savannah, Decatur, and Atlanta walk to work at higher than the state average.

Freight

Based on 1998 data, 634 million tons of freight moved to, from, within, and through Georgia. That freight was valued at $1.1 trillion. The intrastate component of that freight is the largest by tonnage, but the other directions (inbound, outbound, and through) are also sizable and fairly evenly distributed as shown in Figure ES.10. Nearly 33 percent of the freight tonnage and 37 percent of the value moving on the transportation system in Georgia have neither an origin nor destination in the State, but rather serve the national economy.

Georgia's outbound freight is principally destined for areas within 500 miles of Georgia's borders, which receive 73 percent of its outbound shipments by tonnage and also 73 percent of its outbound shipments by value. Georgia's inbound freight also comes from areas within 500 miles, which are the origin of 87 percent of its inbound shipments by tonnage and nearly 80 percent of its inbound shipments by value. Miami is Georgia's largest trading partner with respect to value. Lexington, Kentucky with 22.6 million tons is Georgia's largest trading partner with respect to tonnage. This freight is almost exclusively low-value coal shipped by rail to Georgia's coal powered electrical utilities.

Figure ES.10 Directional Flows by Weight – Existing Conditions
1998 Annual Tons (in Millions)



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Trucks carry the largest proportion of freight in Georgia (72 percent by weight and 82 percent by value). Goods carried by trucks tend to have higher value-weight ratios than goods carried by rail and water. Therefore, trucking carries a higher percentage of the value of the goods shipped in the State than it does the percentage of tonnage shipped. Conversely, rail carries 17 percent of the total value of all shipments compared to 26 percent of the total tonnage. Georgia's major ports handle primarily international cargo which is not included in this data. Air cargo accounts for a negligible percentage of tons of Georgia's domestic freight movement.

■ Economic Forecasts

Future transportation needs in Georgia will be influenced by the interplay among employment growth, industry structure, logistics patterns, and changes in the size and composition of the State's population. Decisions made outside of Georgia, such as major infrastructure investments in neighboring states, also will affect how goods and people move.

At the time of the last plan update in 2000, Georgia was nearing the end of a period of remarkable economic and population growth during the 1990s. However, Georgia's employment growth, like the nation's, has plateaued since 2000. Georgia's economy slowed during the 2000-2003 recession, losing about 150,000 jobs, performing below much of the rest of the nation. Since mid-2003, job growth has picked up in Georgia, but not to 1990s levels.

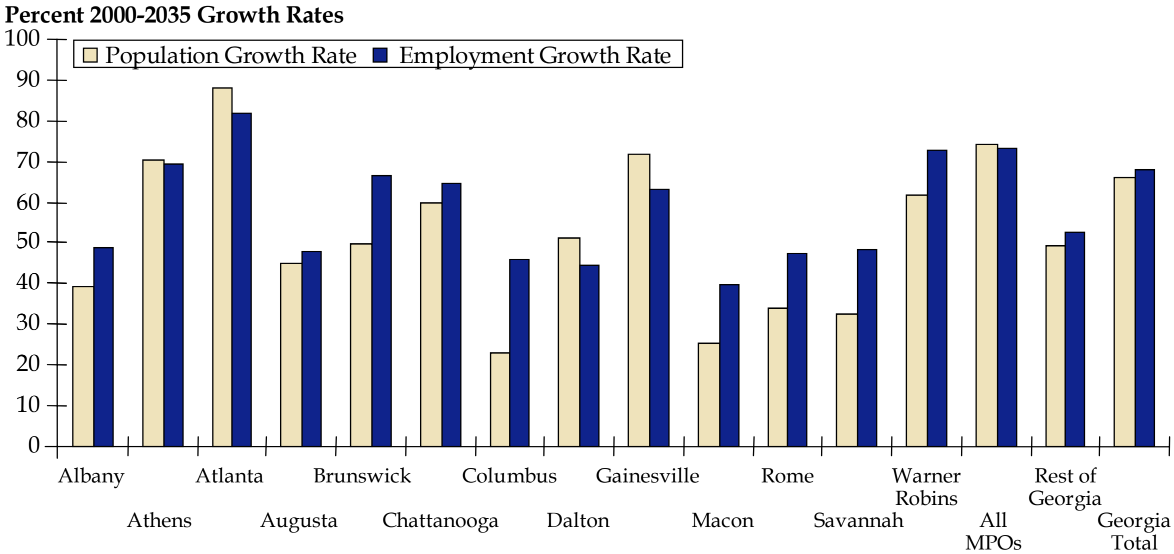
The 2035 economic forecast developed for the SWTP is based on a combination of existing public and private projections. As a check, the forecast developed for the statewide plan was compared to the aggregate MPO forecasts. This comparison showed that the growth rate of the sum of MPOs is comparable to the aggregate of their component counties taken from the forecast developed for this Plan (annual growth rates of about 1.7 percent). The concurrence with the MPOs suggests that the Plan forecast is reasonable given today's trends and current expectations regarding the future. Georgia is expected to grow from about 8.2 million people in 2000 to 13.6 million people in 2035. While the addition of 5.4 million people is impressive, this would be achieved by growing at a slower annual rate of increase (1.45 percent) than recorded in recent decades (2.4 percent annual growth in the 1990s).

Job increases will continue to be dominated by the services sector. Manufacturing, due to heightened competition from overseas and increased productivity, is likely to continue losing jobs. The area within the jurisdiction of the Atlanta MPO will continue to account for the majority of Georgia's population and employment growth through 2035 (see Figure ES.11). Gainesville and Athens, two MPOs just beyond metropolitan Atlanta, will experience the second- and third-fastest population growth rates among Georgia MPOs between 2000 and 2035. Atlanta, Warner Robins, Athens, Brunswick, and Chattanooga are expected to have the most pronounced increases in jobs. Population and job growth, however, also will be significant beyond the State's largest urban areas.

Forecast Conditions – No-Build versus Build/ Financially Unconstrained

For the 2035 forecast year of this SWTP Update, the performance of the transportation system was estimated and compared for two scenarios, the No-Build and the Build/ Financially Unconstrained. The No-Build scenario assumes that no new capital spending on capacity upgrades on the highway system will be undertaken but that minimal spending on the preservation of pavement and bridges and other associated spending would continue. For the intermodal system, the No-Build scenario consists of maintaining the existing systems, but not undertaking any additional service. No costs are shown for the No-Build scenario. It is presented for illustrative purposes and does not reflect current or proposed GDOT policy. Costs are presented for the Build/Financially Unconstrained scenario as reflected in the existing plans and programs of GDOT, the MPOs, the Regional Transit Authorities (RTAs), cities and counties, and other transportation agencies. The total estimated cost of the Build/Financially Unconstrained scenario is $160 billion, consisting of $113 billion for highway programs and $47 billion for intermodal programs.

Figure ES.11 2035 Population and Employment Forecast by MPO



Source: Woods & Poole, Economy.com, Georgia Department of Labor, Governor's Office of Planning and Budget, Cambridge Systematics, Inc.

Note: Due to data constraints, figures are for whole counties only (e.g., the data for the Macon MPO includes all of Jones County even though only part of that county is under the MPO's planning jurisdiction).

Highways

The two scenarios (outlined in Tables ES.1 and ES.2) consist of the three key elements of the highway system: bridges, pavement, and capacity upgrades.

Forecasts of highway usage, expressed in terms of daily VMT, were developed by using the population and employment forecasts discussed previously factor the statewide TDM trip table to 2035. These forecasts drive the assessment of the highway system performance for pavement and congestion (capacity). The average growth rate was forecast to be 2 percent per year for all traffic and 2.9 percent per year for truck traffic. By 2035, these growth rates will result in a forecast increase from 2003 traffic levels of 90 percent for total VMT and 151 percent for truck VMT on state roads (the forecast varies slightly between the No-Build and Build scenarios). The capacity increase projects in the Build/ Financially Unconstrained scenario will increase the overall system capacity on existing state roads by approximately 18 percent.

Table ES.1 No-Build Scenario Recommendations for Highways by Category

Program	Element Description
Bridges	Deferred maintenance, minimal investment
Pavement	Assume trucks grow at same rates as autos
Capacity Upgrades	None
Miscellaneous	Safety, ITS, enhancement, environmental, operational

Table ES.2 Build/Financially Unconstrained Scenario Recommendations for Highways by Category

Costs in Millions of 2005 Dollars

		Estimate	
Program	**Element Description**	**30-Year Cost**	**Annual Cost**
Bridges	Replace/repair at optimal rates	$5,400	$180
Pavement	Assume trucks grow faster than autos (3% versus 2% annual)	$32,290	$1,076
Highway Upgrades	All TPro projects, ISP (Interstate System Plan) projects, MPO constrained RTP projects, ARC *Aspirations Plan* projects	$70,090	$2,336
Miscellaneous	No change	$5,000	$167
Total		**$112,780**	**$3,759**

Pavement Condition

Pavement needs on state highways are scaled from current expenditures using the expected growth in truck traffic, the primary component of Equivalent Single Load Axles (ESAL), which is the major factor in pavement design. GDOT's current practices assume that truck traffic, and thus ESALs, grow at a rate equivalent to the growth in total traffic. At the forecast growth rates of 2 percent per year, truck traffic in 2035 will be 82 percent higher than existing traffic. The cumulative ESALs that will be experienced by pavement during this period are forecast to grow by 38 percent. The costs associated with the current GDOT practice is defined as the No-Build scenario.

At the forecast growth rates for truck traffic of 2.9 percent per year, total traffic in 2035 will be 140 percent higher than existing traffic. The cumulative ESALs that would be experienced by pavement during this period would grow by 61 percent. The cost associated with the need to meet the increase in pavement damage is reflected in the Build/Financially Unconstrained scenario.

GDOT estimates routine pavement rehabilitation expenditures on state roads will be approximately $200 million per year to the year 2035. Through 2008, GDOT anticipates additional heavy interstate pavement reconstruction (deep milling of asphalt, replacing total lanes of concrete pavement), an expenditure of approximately $750 million dollars.

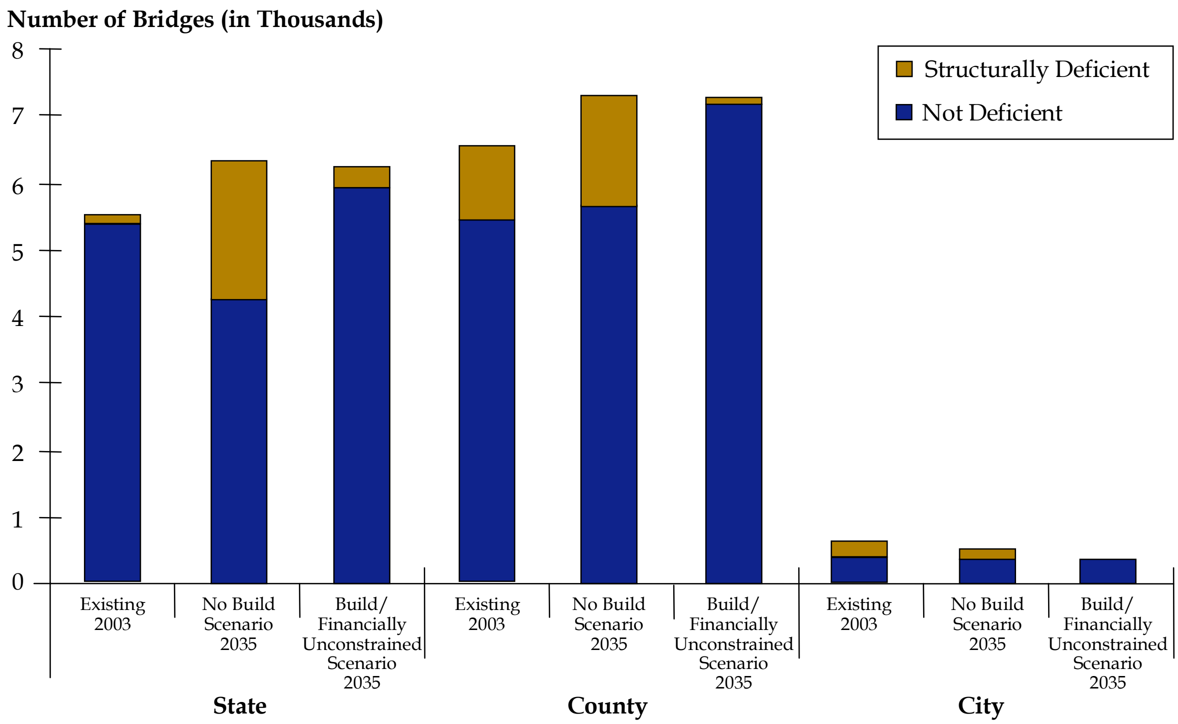
It is expected that GDOT will replace pavement not with the current design, but with pavement designs (e.g., thickness) that reflect increased ESALs that will last a longer period of time. For the Build/Financially Unconstrained forecast, assuming that pavement design modifications are followed, costs will increase by 13 percent over the current annual expenditures. The cumulative pavement treatment expenditure with pavement redesign would be $6.8 billion by 2035. The need for pavement resurfacing on city and county roads was found to be a function primarily of age and weather conditions and not of truck volumes. Consequently, pavement maintenance costs for the city and county roads were based on unit costs for paved and unpaved roads and the assumption that they would be resurfaced at appropriate intervals for the Build/Financially Unconstrained scenario.

Bridge Conditions

The most important bridge deficiency known as Structurally Deficient (SD) was forecast using the NBIAS software for two scenarios: a scenario with only minimum essential funding (No-Build) and a scenario where all economically justified bridge projects are completed (Build/Financially Unconstrained). The option of doing nothing does not exist for bridges. If no investment in bridge maintenance or rehabilitation is undertaken, most bridges would fail during the 30-year period of the Plan.

For the No-Build scenario, the number of SD bridges is forecast to increase. For state-owned bridges, the percentage that is SD is forecast to increase from its current 2 percent to 32 percent in 2035. For county-owned bridges, the percentage that is SD is forecast to increase from its current 14 percent to 23 percent in 2035. For city-owned bridges, the percentage that is SD is forecast to increase from its current 7 percent to 24 percent in 2035. For the Build/Financially Unconstrained scenario, the number of SD bridges would be minimized for all bridges to 5 percent or less, roughly equivalent to the condition of state-owned bridges today. These conditions are shown in Figure ES.12.

Figure ES.12 2035 Forecast Bridge Condition by Ownership



Safety

No existing systematic safety problems were found and future safety problems cannot be forecast since crashes were randomly distributed on all roads. Most crashes were the result of weather, driver behavior, or other conditions that do not have highway project solutions.

Increasing traffic volumes, an aging population, aggressive driving, speeding and driver attentiveness all create new challenges for transportation engineers. Some of these driver characteristics can be addressed with engineering-related solutions, while others involve education and enforcement. Recognizing the need to increase the focus on these efforts, GDOT developed the Strategic Highway Safety Plan (SHSP). Additionally, GDOT has committed resources to be an early implementer in creating a Comprehensive Safety Plan using the Integrated Safety Management Process. GDOT is participating in other safety-related efforts including the Lead State Initiative and the Federal Highway Administration's (FHWA) Safety Conscious Planning initiative.

The Department also jointly serves with the FHWA and several MPOs within the state on highway safety committees and task forces to continue developing strategies to reduce accidents on the state's highways.

GDOT's Division of Operations continues to take the lead in managing the SHSP that involves enforcement, the Governor's Office of Highway Safety, and other units of state and Federal government. GDOT has adopted the American Association of State Highway and Transportation Officials' (AASHTO) goal of a fatality rate of 1.0 per 100 Million Vehicle Miles Traveled (MVMT) by 2008. This ambitious goal is coupled with GDOT's internal strategic goal of reducing the total of number of crashes by 2 percent annually.

Security

The Department continually makes efforts to enhance the security of the state's transportation system. The implementation of a permanent contra-flow system on I-16 and provisions to accommodate contra-flow traffic movements on I-75 help to ensure the security of travelers within the state and Florida when evacuating due to approaching hurricanes. Projects are in place to set up security cameras on the Talmadge and Sidney Lanier Bridges.

Congestion

For the No-Build scenario, the centerline miles of state roads that experience congestion (defined as LOS D-F) is forecast to increase to 12 percent from the existing 2 percent. As shown in Figure ES.13 these roads are primarily in urban areas, where 53 percent of the centerline line miles of roads in the Atlanta region and 16 percent of the roads in the other MPO counties are forecast to be congested, while 3 percent of the centerline miles on roads in rural areas are forecast to be congested.

For the Build/Financially Unconstrained scenario, the centerline miles of state roads that are forecast to experience congestion will increase to 10 percent from the existing 2 percent. These roads are primarily in urban areas, where 45 percent of the centerline line miles of roads in the Atlanta region and 11 percent of the other MPO counties are forecast to be congested, while 3 percent of the centerline miles on roads in rural areas are forecast to be congested. This represents a reduction of congested centerline road miles by 8 percent and 5 percent respectively in the Atlanta region and in the other MPO counties compared to the No-Build scenario. This reduction in congestion does not take into account improvements within congested miles, e.g., reducing a LOS F to an LOS D or E. The reduction also does not take into account potential further improvements in the Atlanta region resulting from the implementation of ARC's *Aspirations Plan* highway and transit capacity improvements.

For the No-Build scenario, the amount of travel on state roads that is forecast to experience congestion will increase to 60 percent of all VMT from the existing 20 percent. As shown in Figure ES.14, these roads are primarily in urban areas, where 87 percent of the VMT in the Atlanta region and 48 percent of the VMT in other MPO counties is forecast to be congested, while 24 percent of the VMT in rural areas is forecast to be congested.

For the 2035 Build/Financially Unconstrained scenario, 50 percent of all VMT is forecast to be under congested conditions compared to the existing 20 percent. This congested travel is forecast to be primarily in urban areas, where 80 percent of the VMT in the

Atlanta region and 36 percent of the VMT in other MPO counties is forecast to be congested, while 15 percent of the VMT in rural areas is forecast to be congested. This represents a reduction of congested VMT by 7 percent, 12 percent and 9 percent respectively in the Atlanta, other MPO, and rural counties.

The above congested percentages are based on GDOT's standard definition of congestion as being LOS D-F. If the definition of congestion in urban areas was changed to LOS E-F only, about 5 percent of the urban congested centerline miles, and about 10 percent of the congested VMT, would be eliminated by definition since it is classified as LOS D. This effect is shown in Figures ES.13 and ES.14.

Figure ES.13 Congestion by Percent of Centerline Miles on State Roads
Existing Conditions versus 2035

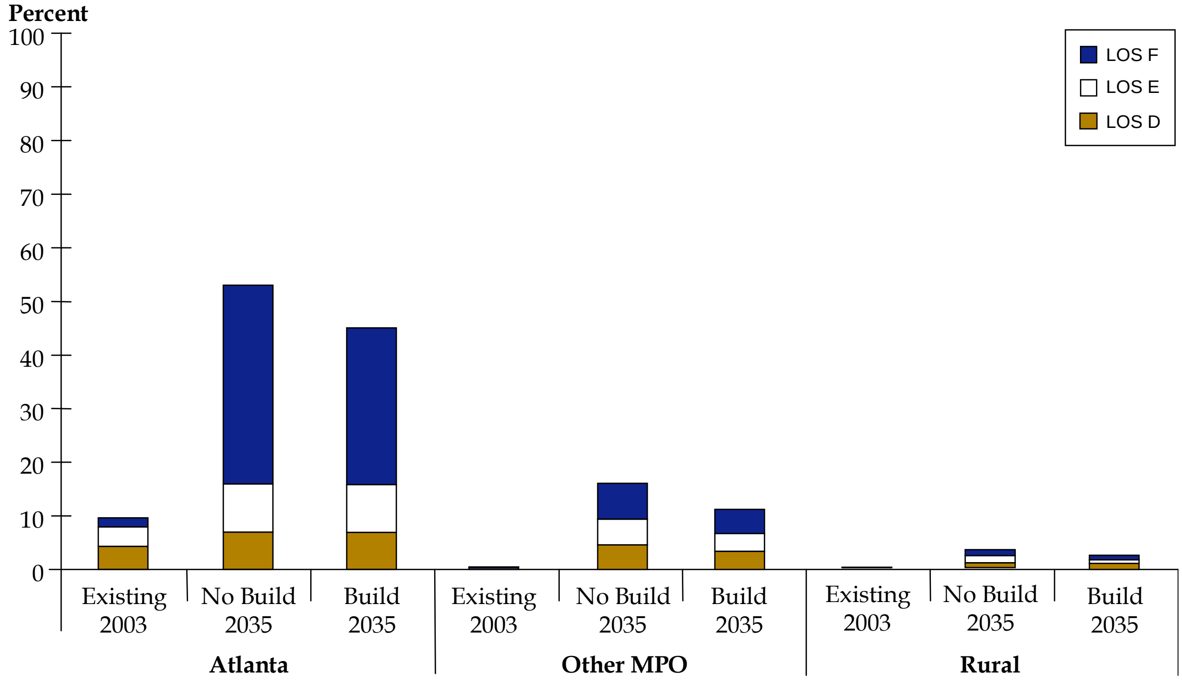
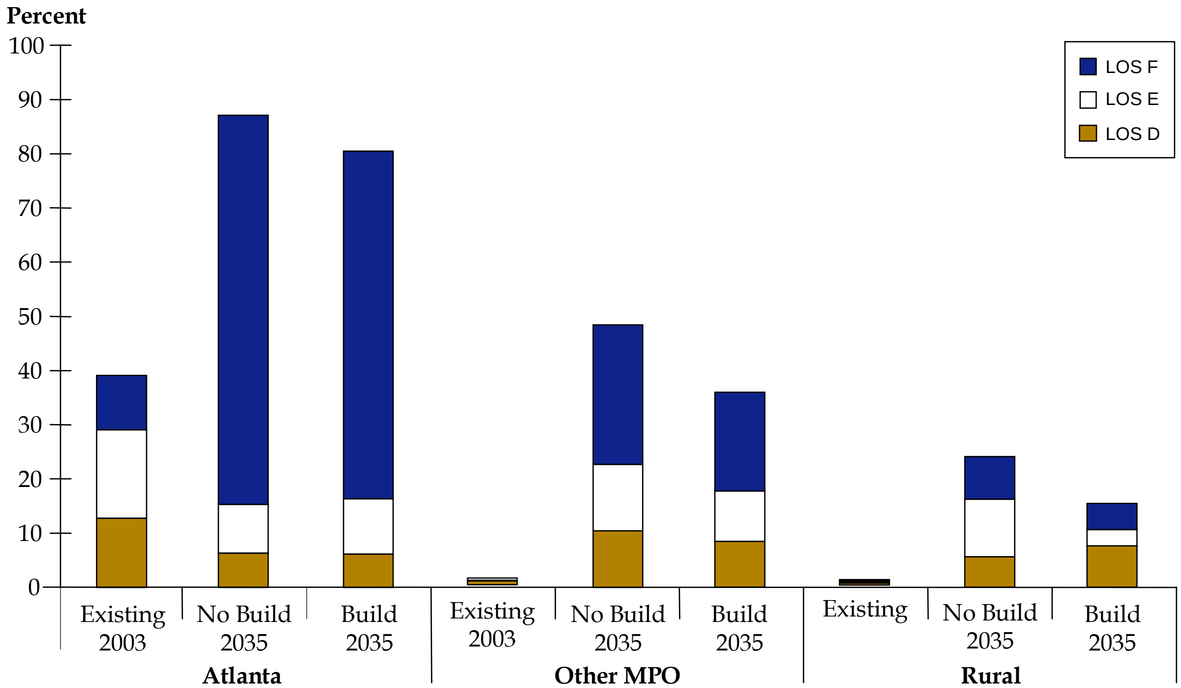


Figure ES.14 Congestion by Percent of VMT on State Roads
Existing Conditions versus 2035



Intermodal

The Build/Financially Unconstrained scenario presented in Table ES.3 includes all transit, rail, bicycle, pedestrian, and aviation projects identified in the needs assessment of the various transportation agencies. The No-Build scenario in each case would be to maintain existing service levels.

Table ES.3 Build/Financially Unconstrained Scenario Recommendations for Multimodal and Intermodal Initiatives
Costs in Millions of 2005 Dollars

Program Element	Description	Cost Estimate 30-Year	Cost Estimate Annual
Urban Transit	Implement all projects in constrained elements of the MPO RTPS plus the unconstrained elements of ARC's *Aspirations Plan*	$31,359.8	$1,045
Rural Transit	Expand service to all rural counties at current per-capita service levels	$1,312.5	$43

Passenger Rail	Construct and operate all commuter and inter-city services in Georgia Passenger Rail Program; capital costs for interstate high-speed rail service	$10,870.7	$362
Freight Rail	Fully fund Rail Freight Assistance Program	$492.2	$16
Aviation	Fully fund statewide maintenance and upgrades at projected level of need	$12,480.0	$416
Bicycle/Pedestrian	Fully funded Transportation Enhancement, MPO and rural projects	$3,360.0	$112
Total with Aviation		**$59,875.2**	**$1,994**
Total without Aviation		**$47,395.2**	**$1,578**

While data on program needs and costs were identified for aviation and ports, these programs are largely self-funded through various user fees, with the exception of intermodal highway connectors which are included in GDOT's highway program. Therefore, the costs of these programs are not included in the bottom line.

Transit

The No-Build scenario for urban transit is the continuation of service in existing transit systems and the associated operating and capital maintenance of existing equipment. It includes no expansion of existing service. The Build/Financially Unconstrained scenario for urban transit includes the continuation of existing service plus the expansion of service as described in the RTPs. This includes the transit projects in the financially unconstrained (*Aspirations Plan*) component of the ARC's *Mobility 2030* Plan.

The additional projects in ARC's *Aspirations Plan* are projected to contribute to a further 10 percent decrease[6] in the amount of auto travel that occurs in extremely congested conditions in the Atlanta region. Work trips via transit are projected to increase another 20 percent, and 8 percent more low-income households will have access to transit. These assumptions from the ARC plan could not be incorporated into the quantitative analysis of future highway congestion presented earlier.

For rural transit the No-Build scenario was taken as maintaining the existing service. This scenario would result in lower per capital levels of transit service given forecasted population growth. The Build/Financially Unconstrained scenario would increase the level of transit service to keep pace with population growth, while expanding geographic coverage to all rural (i.e., non-urbanized) counties. Transit service in existing counties would be increased to maintain the current statewide average rate of service per capita.

[6] Ibid.

Rail

The Georgia Rail Passenger Program (GRPP) has identified detailed capital improvement costs for the entire system and includes North Georgia commuter service, statewide inter-city service, and the downtown Atlanta Multimodal Passenger Terminal (MMPT). The Build/Financially Unconstrained scenario for High-Speed Rail is service for the corridors under active development, including the Southeast High-Speed Rail (SEHSR) and Jacksonville-Atlanta intercity passenger rail corridors. The No-Build scenario for passenger rail is defined as no expenditure.

Freight rail transportation needs are defined by the two complimentary aspects of the Georgia Rail Freight Assistance Program: 1) rehabilitation and related maintenance activities and; 2) nonmaintenance activities, including line acquisitions. Acquisition activities have been opportunity driven and are estimated in this plan based on historic requests for acquisition investment. Rehabilitation and maintenance needs have been estimated from the survey-based shortline capital needs inventory data contained within the *Georgia Freight Rail Plan: Update 2000*. The Build/Financially Unconstrained scenario includes the cost of the existing program plus new acquisitions. The No-Build scenario for Freight Rail is the continued support of the existing rehabilitation and related maintenance activities.

Aviation

The aviation system in Georgia is comprised of 106 open-to-the-public airports ranging in size from small general aviation airports to Hartsfield-Jackson Atlanta International Airport (HJAIA). Of the 106 open-to-the-public airports, nine airports have scheduled commercial airline service, and the remaining ones are exclusively general aviation airports. HJAIA needs are funded by a variety of Federal, state, and local funding sources and by airport revenue sources. No state grant dollars currently are received for aviation projects and no state money is expected for aviation projects during the life of the current $7.3 billion Master Plan. The *Georgia Aviation System Plan* (GASP) is a strategic approach to planning for future aviation systems that identifies the development needs of Georgia airports for the next 20 years.

Maritime

The costs for maintaining and improving ports and waterways in Georgia are the responsibility of the independent Georgia Ports Authority (GPA). The plans of the GPA and the funding of the projects in those plans do not impact the funding needs of the SWTP Update and are not part of the No-Build or Build/Financially Unconstrained scenarios.

Bicycle and Pedestrian

Transportation agencies in Georgia generally fund and implement bicycle and pedestrian projects in one of three ways: 1) as a stand-alone project in a local or regional transportation plan; 2) as a project within the State's Transportation Enhancements (TE) program; or

3) as an integral element of a roadway construction or maintenance project. This SWTP addresses bicycle and pedestrian projects as documented within local and regional transportation plans, and through the State's TE program. The needs assessment focuses on bicycle and pedestrian projects that are primarily transportation in nature, and largely excludes recreation-oriented needs. Projects include bicycle lanes and paths, sidewalks, and multiuse paths. In lieu of dedicating funds exclusively for physical improvements to accommodate bicyclists and pedestrians, GDOT has adopted procedures for designers to incorporate bicycle and pedestrian friendly elements into programmed roadway improvement projects. This approach should result in almost the entire state bicycle network being designed to standards that allow for safe and efficient movement of bicyclists. The MPOs in Savannah, Rome, Macon, Chattanooga, Augusta, and Atlanta provide a specific list of bicycle and pedestrian projects in their RTPs.

Freight

The 2035 forecasts show that freight tonnage in Georgia will increase by 2.7 percent per year. This represents a 171 percent increase in freight tonnage to 1.7 billion tons of freight moving to, from, within, and through Georgia in 2035. The value of freight will increase by 3.1 percent per year, a 204 percent increase in freight value to $3.3 trillion. Nearly 29 percent of the freight tonnage and 33 percent of the value moving on the transportation system in 2035 in Georgia is forecast to have neither an origin nor a destination in the State, but rather will serve the national economy.

Areas within 500 miles of Georgia' borders are forecast to receive 73 percent of its outbound shipments by tonnage and over 73 percent of its outbound shipments by value. Georgia's inbound freight also is forecast to come from areas within 500 miles, which are forecast to be the origin of 85 percent of its inbound shipments by tonnage and nearly 85 percent of its inbound shipments by value. This pattern is largely unchanged from existing conditions and reflects a continued dependence on truck travel for shipments moving within 500 miles of the State.

Trucks are forecast to carry an even larger share of Georgia's freight in the future increasing from 72 percent of the total tons shipped in 1998 to 79 percent in 2035. This increasing market share is forecast to come primarily at the expense of a decreasing market share for rail which is forecast to decline from 26 percent in 1998 to 20 percent in 2035. This is principally due to the changes forecast in the trading partners and commodities carried, which are primarily in high-value, time-sensitive goods more likely to be carried by truck.

■ Financing

The finances, policies, and spending decisions of Federal, state, and local governments will affect Georgia's economy and the State's ability to fund transportation capital investments in the future. This section provides revenue forecasts relevant to transportation funding in Georgia. Emphasis is placed on the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) programs, the two primary Federal funding sources, and the Georgia state motor fuel taxes. Other funding is provided through MARTA's sales tax, Special Purpose Local Option Sales Taxes (SPLOST), and local funding allocations for transportation investments. All funding projections were made in year-of-expenditure dollars (YOE dollars), and converted to 2005 dollars assuming an annual inflation rate of 2.5 percent, based on the average United States inflation rate in the past 10 years.[7] Expressing future revenues in 2005 dollars allows for comparison with program costs, which are estimated in 2005 dollars in the previous section. Total available dollars for funding the Build/Financially Unconstrained scenario is $86 billion versus a program cost of $160 billion, leaving a projected deficit of $74 billion.

According to Highway Statistics,[8] about 40 percent of Georgia's revenue used for highways came from Federal sources in fiscal year (FY) 2003. This compares to a national average of about 32 percent. The relatively heavy reliance on Federal funding in Georgia is due to the relatively low amount of revenue raised by the Georgia Motor Fuel Tax, which is the second lowest in the nation.

Funding allocations for Federal programs for FY 2005-2009 were obtained from the SAFETEA-LU Transportation Bill,[9] signed by the President on August 10, 2005. In developing the forecasts, the SAFETEA-LU funding allocations were reduced by 10 percent, assuming that the State of Georgia continues to receive obligational authority equal to 90 percent of the annual FHWA funding allocations for the State, based on historical experience. Post-2009, revenues were projected to grow at 2.47 percent per year, which is the average annual growth rate of the Highway Trust Fund (HTF). Total Federal Highway Administration (FHWA) revenues available to Georgia were estimated at $48.7 billion (YOE dollars) for the 2006-2035 period, or $32.4 billion in 2005 dollars.

Total Federal Transit Administration (FTA) formula revenues are estimated at $4.3 billion in 2005 dollars for the 2006-2035 period. FTA discretionary funding includes Section 5309 Bus Capital and Section 5309 New Starts. Section 5309 revenues are projected at $294.3 million in 2005 dollars. It was assumed that New Starts funding will be equivalent to the New Starts funding projections included in ARC's *Mobility 2030 Plan* estimated at $1.6 billion (2005 dollars) during the 2008-2030 period, based on a 50/50 share of Federal and local funding. An additional $1.5 billion (2005 dollars) of New Starts funding is also included in the ARC *Aspirations Plan* (which is financially unconstrained), but has not been included in this estimates since there are no local matching funds available for these projects.

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[7] Historical inflation was calculated using CPI factors from the Bureau of Labor Statistics, which can be found at http://www.bls.gov/.

[8] Federal Highway Administration. *2003 Highway Statistics.* Table SF-21, State Funding for Highways – Summary 2003. November 2004. Available at http://www.fhwa.dot.gov/policy/ohim/hs03/hf.htm.

[9] http://www.fhwa.dot.gov/reauthorization/conference.htm.

State funding sources for transportation projects include the 7.5 cent per gallon Motor Fuel Tax (MFT) and the 3 percent (the sales tax is actually 4 percent whereas 3 percent goes to GDOT and the other 1 percent goes to the General Fund via the General Assembly) Retail Sales Tax on Motor Fuel. The state funds described below are used to match FHWA funds to purely state projects, and to provide funds for local projects through the Local Assistance Road Program (LARP) and the State Aid Program.

Motor fuel tax revenues have increased over time as VMT has increased, but the tax rate of 7.5 cents per gallon has remained constant for over than 30 years. Therefore, motor fuel tax revenues do not increase with inflation. The retail sales tax of 3 percent on motor fuel will track with price changes on motor fuel because the percentage is based on the retail sales price. Motor fuel tax revenues have historically increased at a somewhat slower rate than VMT. Based on this historic relationship between VMT and MFT revenue growth, the forecast of VMT growth described previously was used to estimate future MFT growth. An annual growth rate of 1.91 percent in VMT will result in annual increases in the combined revenues from both motor fuel taxes of 1.33 percent.

GDOT uses bond proceeds to finance its transportation program. In FY 2006, GDOT's debt service payments include $26.9 million for Guaranteed Revenue bonds (GRB) bonds and $133.3 million for General Obligation (GO) bonds. Current debt service payments extend through FY 2024, and have been deducted from the total MFT revenues. Total state MFT revenues (after debt service) are estimated at $24.9 billion (YOE dollars) for the 2006-2035 period, or $16.6 billion in 2005 dollars. The $24.9 billion consists of about $18 billion in MFT revenue plus $9 billion in retail tax revenue, minus $2 billion in debt service.

Local governments rely mainly on local general fund appropriations and Special Purpose Local Option Sales Taxes (SPLOST) for funding local transportation and other needs such as education. This discussion refers only to SPLOSTs dedicated to providing the local share for Federal-aid and state roadway projects, and for local roadway projects. SPLOSTs are collected for diverse uses such as education, general fund, and transportation. These local option taxes have a life span of five years, at the end of which voters must decide whether the county will continue levying them to fund diverse infrastructure projects. Only a few counties do not levy SPLOSTs.

Projections of local revenues for highway-related expenditures were developed based on historical allocations. The average allocation of local funds for highway expenditures was estimated at $995.6 million between FY 1995 and 2002, for an average annual growth rate of 2.3 percent over that period. Local revenues for local highway capital projects are estimated at $19.5 billion (YOE dollars), or $13.0 billion during the 2006-2030 period.

Transit services are funded through a variety of Federal, state and local programs, as well as farebox revenue, advertising, and other nongovernmental sources. Most local government funding for urban and rural transit services is provided by general fund revenues of municipalities and/or counties. However, several counties have some transit capital projects funded through special local options sales tax revenue. Excluding MARTA sales tax levies and passenger revenues, and based on current expenditure patterns and adopted MPO plans, local fund availability for transit capital, operating and maintenance costs are expected to be $1.21 billion (2005 dollars) between 2006 and 2035.

MARTA sales tax forecasts were developed based on the sales tax levy growth over the past 10 years. Historical data on MARTA sales tax levies in Fulton and DeKalb counties indicate a compounded annual growth rate of 3.5 percent. Assuming that this growth will continue through the 30-year planning horizon of the statewide plan, MARTA is expected to levy $15.5 billion (YOE dollars), or $10.1 billion in 2005 dollars. MARTA fare revenues are estimated at $2.96 billion (2005 dollars) throughout the 30-year period. Fare revenues from passenger rail services for the Build/Financially Unconstrained scenario are estimated at $3.49 billion (2005 dollars) for the 30-year planning horizon.

1.0 Background and Purpose of the Statewide Planning Process

This section describes the legal requirements underpinning statewide transportation planning, the evolution, focus, and organization of this Plan, and next steps.

1.1 Legal Requirements and Plan Goals

The Federal government requires that each state develop, maintain, and update a Statewide Transportation Plan (SWTP). These requirements are codified in 23 CFR 450.214. The requirements, and the manner in which this Plan complies with the requirements, are outlined in Table 1.1. Accordingly, the Georgia State Transportation Board has adopted the following policy for the Georgia Department of Transportation (GDOT) to follow:

> The Department shall develop and maintain a long-range state transportation plan for all areas of the State as required under Title 32 of the Georgia Code, Section 32-2-3, and 23 Code of Federal Regulations, Part 450, Section 214. This plan shall provide for the development of transportation facilities that will function as an intermodal state transportation system and that will be a guide for implementation of transportation facilities in the State of Georgia.

Within GDOT, the Office of Planning is responsible for preparing the Statewide Transportation Plan. The goals for this Statewide Transportation Plan Development are similar to those for the 2000 Statewide Plan and were affirmed/developed early in the public outreach process, and are consistent with Federal requirements:

- Support the economic vitality of the United States, and the entire State of Georgia; especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety of the transportation system for all motorized and non-motorized users;
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system.

This Plan seeks to accomplish the following objectives:

Document existing transportation conditions across the State and across all modes;

Define and compare the performance of future No-Build and Build/Financially Unconstrained scenarios for the year 2035; and

Assess the funding available to the State over the 30-year planning horizon and compare the cost of the Build scenario to the available financial resources. It should be noted that unlike MPO long-range plans and Transportation Improvement Programs (TIPs), there is no regulatory requirement to develop a Financially Constrained Statewide Plan.

Ensure that the Statewide Transportation Plan and the Plan's goals support the objectives of land use management agencies and organizations; natural resource management agencies; environmental protection agencies; and conservation and historic preservation agencies.

Table 1.1 Federal Requirements for Statewide Planning

Federal Requirement (23 CFR 450.214)	Plan Compliance
1. Cover all areas of the State	The plan is statewide
2. Be Intermodal	All modes are included in the plan
3. Be reasonably consistent in time horizons among its elements, but cover at least 20 years	The plan is for 30 years; there may be some minor inconsistencies across modes depending on the individual planning horizons used

4. Contain an element for bicycle and pedestrian transportation	Bicycle and pedestrian plans are included
5. Be coordinated with MPO plans	MPO plans are incorporated by reference
6. Reference any applicable short-range planning studies, strategic plans, needs studies, etc.	Individual modal plans are incorporated by reference
7. Reference availability of financial resources to carry out the plan	A detailed analysis of financial resources is provided
8. Develop the plan in cooperation with MPOs	MPO plans are incorporated by reference
9. Cooperate with Indian tribal governments	Indian tribes were included in outreach efforts
10. Provide for public involvement as required under 450.212	An extensive public outreach effort was conducted as described in Section 2.0
11. Provide for substantive consideration and analysis as appropriate of specific factors as required under 450.208	This Plan is consistent with the 7 planning factors as now codified in 23 USC 135(c)
12. Provide for coordination as required under 450.210 with participating organizations, including data collection/analysis, STIPs and TIPs, land use planning, tourism and economic development, and financial planning	Extensive coordination on the full range of project issues was conducted through the Stakeholder Advisory Committee, and by incorporating data and analyses conducted by MPOs and others
13. Provide for a mechanism to establish the document as the official statewide transportation plan	The Plan was adopted by the State Transportation Board in January 2006
14. Be continually evaluated and periodically updated	GDOT has updated the plan every five years beginning in 1995
15. Consult with local officials	A Stakeholders Advisory Committee consisting of non-MPO local officials was organized and met three times during the course of plan development, in accordance with Department Policy on Consultation with Local Officials in Non-Metropolitan Areas

These goals are consistent with the eight Planning Factors defined in 23 USC 135:

- Support the economic vitality of the United States, and the entire State of Georgia; especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety of the transportation system for all motorized and non-motorized users;
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
- Promote efficient system management and operation;
- Emphasize the preservation of the existing transportation system.

1.2 Evolution of Statewide Plans in Georgia and Focus and Organization of This Plan

GDOT developed its first statewide plan in 1965. More recently, the statewide plan in 1995, entitled "Intermodalism – Bringing Transportation Together," reflected the changes in federal transportation policy enacted by the Intermodal Surface Transportation Efficiency Act (ISTEA) and covered the 20-year period between 1995-2015. That Plan underwent a major update and revision in 2000, reflecting the further policy changes of the Transportation Equity Act for the 21st Century (TEA-21), and was extended to a 25-year planning horizon to 2025. The final Plan report was published in February 2002.

This Plan extends the planning horizon to 30 years (2005-2035) and builds on these past efforts. Given that a major update was undertaken five years ago, this Plan was intended to provide continuity with that prior effort. In updating its plan every five years, GDOT is exceeding regulatory requirements. This Plan is more comprehensive than the last plan in that it includes city and county roadway needs which are eligible for Federal aid, in addition to those of the state highway system. Also, several key data sources are now available which were not available five years ago. In particular, GDOT's TPro project database now provides a much more complete inventory of programmed highway projects than was the case five years ago. Secondly, the Atlanta Regional Commission (ARC) has developed a financially unconstrained Build alternative called the *Aspirations Plan* which includes many more highway and transit projects than are included in its official financially constrained plan *Mobility 2030.* These two sources – GDOT's TPro database and

ARC's *Aspirations Plan* – enable this plan to present a complete picture of the financially unconstrained transportation program needs of the State.

This Plan seeks to accomplish the following objectives:

-Document existing transportation conditions across the State and across all modes;

-Define and compare the performance of future No-Build and Build/Financially Unconstrained scenarios for the year 2035;

-Assess the funding available to the State over the 30-year planning horizon and compare the cost of the Build scenario to the available financial resources;

-Ensure the state remains economically productive and efficient; and

-Comply with new SAFETEA-LU planning requirements as codified in 23CFR450 issued by FHWA and FTA in February 2007.

The focus of this planning effort was on assessing the asset management and capacity expansion needs of the State's transportation systems, and on providing GDOT with technical tools that it can use in future updates and refinements of the Plan. The focus is not on the development of dramatic new policy directions which are more appropriately developed by GDOT's State Transportation Board. The Plan also is not intended to select specific projects but rather to present a programmatic assessment of the State's transportation systems. This focus is consistent with legal guidance as stated in 23 USC 135 as follows:

> (4) Financial Plan – The long-range transportation plan may (*but is not required to)* include a financial plan that demonstrates how the adopted long-range transportation plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs. The financial plan may (*but is not required to)* include, for illustrative purposes, additional projects that would be included in the adopted transportation plan if reasonable additional resources beyond those identified in the financial plan were available.
>
> (5) Selection of projects from illustrative list – Notwithstanding paragraph (4), a State shall not be required to select any project from the illustrative list of additional projects included in the financial plan under paragraph (4).

This Plan meets the requirements of these sections as follows:

- "Indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan."
- "Includes … additional projects that would be included in the adopted transportation plan if reasonable additional resources beyond those identified in the financial plan

were available." Examples of additional projects include those recommended in GDOT's Interstate System Plan (ISP)[10] but not yet incorporated into the TPro database of projects; projects included in ARC's financially unconstrained *Aspirations Plan*, and projects beyond currently accepted plans in other modes, including rural transit, passenger rail, aviation, and pedestrian and bicycle facilities.

This Plan does not take the following optional steps:

- "Recommends any additional financing strategies for needed projects and programs." It is the responsibility of the legislature to determine state revenue raising policies. Unlike MPO Plans, the Statewide Plan is not required to be financially constrained.
- "A State shall not be required to select any project from the illustrative list of additional projects included in the financial plan under paragraph (4)." Project selection is the responsibility of the MPOs, modal operating agencies, and GDOT's functional offices.

The remainder of the Plan is organized as follows:

- Section 2.0 describes the public outreach effort that supported the Plan development;
- Section 3.0 describes the technical methodology used to conduct the analyses presented in the Plan;
- Section 4.0 describes existing conditions;
- Section 5.0 describes the economic forecasts which were used to drive the forecasts of transportation conditions in the future;
- Section 6.0 describes future conditions under the No-Build and Build scenarios;
- Section 7.0 describes available financial resources and compares them to the cost of the Build scenario;
- Appendix A – Public involvement material;
- Appendix B – Endorsed long-range transportation plans; and
- Appendix C – Consultant responsibilities.

As part of this Plan development project, the project team created and delivered to GDOT two tools which will facilitate GDOT's efforts to update the Plan in the future, as well as to conduct other planning-related studies. The *Georgia Highway Economic Analysis Tool*

[10]Georgia Department of Transportation, *Interstate System Plan,* April 2004.

(GA HEAT)[11] will enable GDOT to assess the economic costs and benefits of highway projects and to test a series of "what if" scenarios. The *Georgia Statewide Planning Toolkit for LRS Database Integration and Query* will make it possible for GDOT to link various key databases to analyze transportation performance. Linked databases include GDOT's Road Characteristics (RC) file, Highway Performance Monitoring System (HPMS), Pavement Condition Evaluation System (PACES) pavement data, and the Crash database.

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[11] HEAT was originally developed by Cambridge Systematics, Inc. for the Montana Department of Transportation and adapted for Georgia as part of this Plan development effort.

2.0 Public Involvement Process and Results

This section describes the process of ensuring public involvement in the development of the Statewide Plan Update, and the major comments and themes which emerged from that process.

2.1 Process

2.1.1 Overview

The requirements for the public involvement process as it relates to the development of a Statewide Transportation Plan are defined in U.S. 23 CFR 450.212, and in GDOT's Transportation On-Line Policy and Procedure System (TOPPS) 3140-2 "Consultation Process with Local Officials in Non-Metropolitan Areas of the State." The state requirements (GDOT's Local Government Consultation Policy) were met primarily by means of three Stakeholder Advisory Committee meetings and a rural transportation planning workshop. The federal requirements, and how they were met by this project, are outlined in Table 2.1. In general, "the public involvement processes shall be proactive and provide complete information, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement."

Figure 2.1 shows the project schedule. Three forms of public outreach meetings were conducted:

1. General public meetings;
2. Stakeholder Advisory Committee meetings; and
3. Transportation planning workshop.

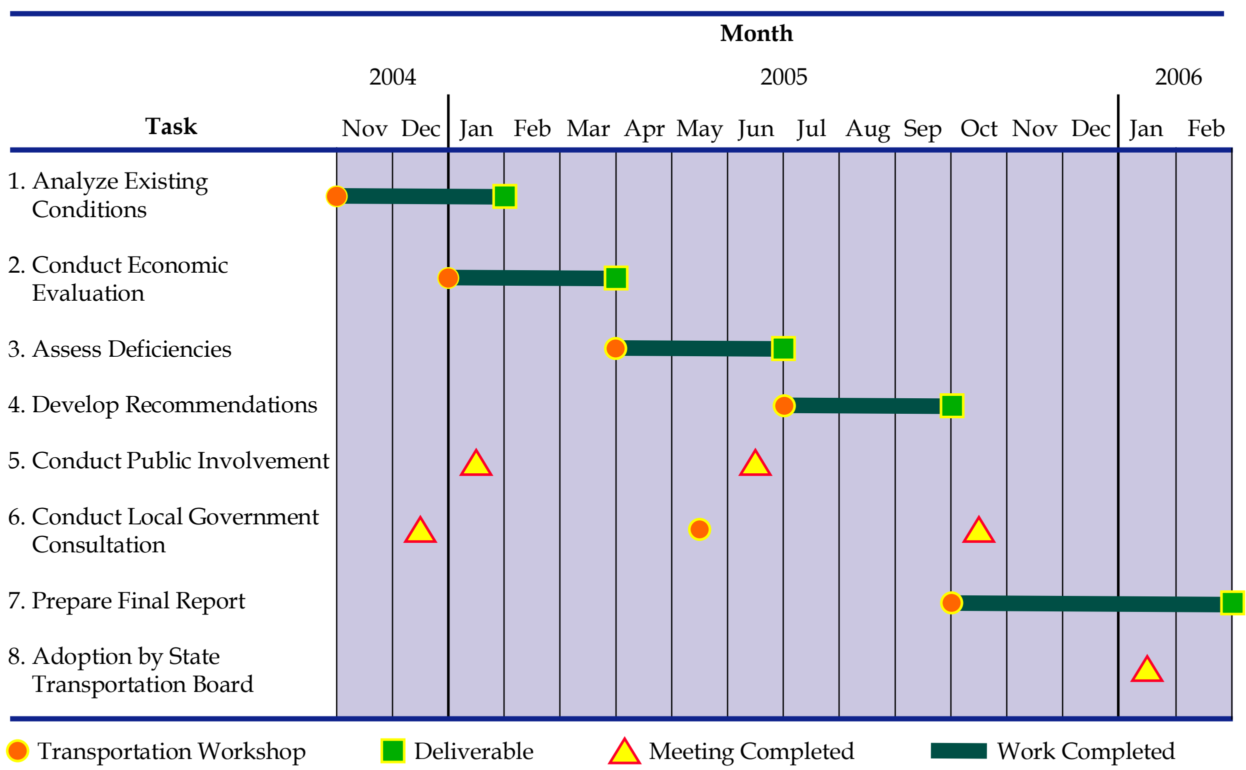
Two rounds of public meetings were held across the State in Atlanta, Savannah (two meetings), Tifton, Moultrie, and Commerce. The first round was held in the third month of the study – January 2005. The purpose of the meetings was to present Existing Conditions data, and the Scope of Work for conducting the remainder of the study. This enabled the public to comment on the approach to the study before it was fully underway. The second round of meetings was held in the eighth month of the study – June 2005. Data on future deficiencies was presented at these meetings providing the public with the key building blocks of information which the project team would use to fashion recommendations, before the process of developing the recommendations began.

Table 2.1 Requirements for Public Involvement and Actions Taken

Federal Requirement (23 CFR 450.214/450.210)	Plan Compliance
1. Early and continuing involvement opportunities	Public and stakeholder meetings were held in the second and third months of the project to review existing conditions, and the scope of work for further analysis. Two additional rounds of meetings were held to review key project findings.
2. Timely information about transportation issues and processes to citizens and affected agencies and providers	Meetings were held with the general public and with engaged stakeholders in the transportation field, in which the key data findings of the study were shared.
3. Reasonable public access to technical and policy information used in the plan development.	Information was shared at the outreach meetings, via newsletters and fact sheets, and by posting technical documents on the project web site.
4. Adequate public notice of activities and time for public review and comment at key decision points.	Meetings were noticed beginning one month in advance using a variety of media, including the project web site, direct mailings (including e-mail) to registered participants, print and electronic media notices, and using GDOT's Family of Partners mailing list. Follow-up phone calls and e-mails were sent to key stakeholders.
5. A process for demonstrating explicit consideration and response to public input during the study.	Meeting minutes were prepared and disseminated. Comment cards were provided to meeting participants and subsequently reviewed and summarized. Key findings are documented in this section of the Final Report.
6. A process for seeking out and considering the needs of those traditionally underserved by existing transportation systems.	Special efforts were made to reach out to Environmental Justice (EJ) communities, including minority, low-income, elderly, and the disabled. Significant representation of the disabled community in particular was achieved at many key meetings. Outreach was achieved by coordination with organizations representing the interests of EJ communities, including advocacy and community groups, RDCs, the GMA and the GTA; distribution of project information via community institutions, provision of translation services as needed, and adherence to ADA requirements.
7. Periodic review of the effectiveness of the process	The project team and GDOT met frequently to review and discuss the process as it moved forward at each key milestone set of meetings.
8. Make public information available in electronically accessible format and means, such as the World Wide Web	A project website was established and all documents, information was posted on the website.
9. Use visualization techniques to present information	Powerpoint presentations, charts, graphs, maps, pictures, written text, etc. were used to present information at pubic meetings.
10. Ensure meetings are held at convenient, accessible times and develop a process for seeking EJ involvement	Meetings were scheduled at times and locations which were easily accessed by all persons; including EJ and disable persons. Discussions were held with SWTP Team Members to select locations in order to reach low income and traditionally underserved populations.

Stakeholder Advisory committee meetings were held in the month prior to each of the public meetings. This sequence enabled the professional transportation planning and operating community to provide input to the process and comment on the data before it was taken out to the general public. At the second meeting milestone, a technical workshop was held with members of the transportation stakeholder community to provide an opportunity for more detailed policy and technical input. A third meeting with the Stakeholder Advisory Committee was held in the 12th month of the study – October 2005 – to review the study's final conclusions before development of the Final Report began.

Figure 2.1 Schedule and Scope of Work



2.1.2 Goals and Objectives of the Public Involvement Plan (PIP)

The SWTP Public Involvement Plan (PIP) sought to involve the public as participants in the planning process and enable them to provide meaningful input to the outcomes of the SWTP Update. Outreach efforts were designed to educate, inform, and involve the public as to the purpose and progress of the update process by highlighting relevant issues, technical considerations, and implications of programmatic recommendations. Outreach techniques were designed to encourage participation in the public process and to generate meaningful feedback. The plan provided tools for both disseminating project-related information and gathering public input that reflects community interests and concerns.

The goals of the Statewide Transportation Plan Update Public Involvement Plan were to:

- **Initiate early activities to inform and involve the public.** The PIP allowed GDOT to educate, learn from, and listen to the public early and often in the SWTP Update cycle. Overall project success often depends on the success of the public involvement effort. It was the goal of the SWTP to make sure those affected by this project were aware of project goals, timelines, and information throughout the duration of the project.

- **Provide flexibility in order to be responsive to the public's request for information and ongoing involvement.** A project of this magnitude, is likely to have changes in scope or direction. The PIP was built to ensure flexibility, and it was revised throughout the project duration as needed to reflect the needs of the community and GDOT.

- **Listen to the concerns and issues of stakeholders across the State and ensure that they are incorporated into the planning process.** This approach enabled the fair treatment and meaningful involvement of all potentially affected communities. Special efforts also were made to ensure that the concerns of Environmental Justice (EJ) populations were taken into consideration during the planning process.

- **Consult with community leaders about ideas for solutions to transportation problems.** This process was an opportunity for the community to voice their concerns and opinions as to what best suits their transportation needs. The project team considered these ideas as potential input to the identified problems.

2.1.3 Stakeholder Identification

One of the basic principles of public involvement for Federally funded transportation projects is to proactively reach out to the public. It is first necessary to identify the appropriate stakeholders and define the types of "publics" that are the target audiences.

GDOT seeks to establish a working relationship with the community through the identification of key stakeholders, including government officials, agency representatives and staff, the business community, property owners, civic and advocacy groups, the general public and environmental justice populations. For the SWTP Update process, it was important to review the outreach efforts of the previous Update and to identify additional stakeholder groups located in the study areas that may have emerged or been previously overlooked. Therefore, outreach activities incorporated a range of techniques designed to reach a diverse public. The levels of experience and interest in transportation planning vary greatly across key stakeholder groups. The techniques identified and outlined as part of the public involvement process addressed the needs of all stakeholders interested in the SWTP Update project, taking into account their varying interest and experience levels.

Special efforts were made to reach out to minority, low-income, elderly, disabled, and other transportation disadvantaged populations during the public involvement process.

These populations are recognized as key stakeholders for the Statewide Transportation Plan Update. The SWTP Update public involvement process included an environmental justice program that was designed to build and sustain meaningful participation for the transportation-disadvantaged. Specifically, the approach included:

- Coordination with organizations representing the interests of environmental justice populations of concern, including advocacy groups and neighborhood groups, Regional Development Centers (RDC), the Georgia Municipal Association and the Georgia Transit Association;
- Distribution of project information via libraries, schools, social and community organizations;
- Translation services, as needed, to ensure suitable communication; and
- Adherence to Americans with Disabilities Act (ADA) requirements for public information.

2.1.4 Participation Strategies

The SWTP Update participation approach was centered on information dissemination to the public with opportunities for input at key project milestones when it could be incorporated into the technical process. These public participation efforts were supplemented by a strong agency coordination component. The following sections outline the participation strategies that were utilized during the SWTP Update Process: agency coordination, process documentation, and public involvement techniques.

Agency Coordination

The SWTP Update encompassed the jurisdictions of a number of agencies responsible for formulation of policies and implementation with respect to transportation projects. Coordination efforts with various agencies were conducted through a Stakeholder Advisory Committee that met at key milestones during the SWTP Update process. The Advisory Committee consisted of transportation agency staff and officials from the non-MPO areas of the State. Members of the committee were asked to provide feedback to the project team early in the project in order to identify key concerns and priorities, and were tasked to review preliminary findings and solicit community perspectives on the Statewide Transportation Plan Update. The agency involvement process was structured to provide insight and recommendations at key milestones during the process. Members of the Stakeholder Advisory Committee included representatives from the following organizations (a complete list of invitees and attendees is included in Appendix A):

- Association of County Commissioners of Georgia (ACCG);
- Central Savannah River Area RDC;
- Chattahoochee/Flint RDC;

- Coastal Georgia RDC;
- Coosa Valley RDC;
- Georgia Economic Developers Association (GEDA);
- Georgia Mountains RDC;
- Georgia Municipal Association;
- Georgia Rural Development Council;
- Georgia Transit Association;
- Heart of Georgia-Altamaha RDC;
- Lower Chattahoochee RDC;
- McIntosh Trail RDC;
- Middle Flint RDC;
- Middle Georgia RDC;
- North Georgia RDC;
- Northeast Georgia RDC;
- South Georgia RDC;
- Southeast Georgia RDC;
- Southwest Georgia RDC;
- Georgia Department of Natural Resources;
- Georgia Department of Economic Development;
- Georgia Department of Community Affairs;
- State Road and Tollway Authority (SRTA); and
- State Transportation Board.

Furthermore, numerous agencies were involved in developing the Department's Resource Agency Consultation Process and Environmental Mitigation Discussion; see Appendix E (Resource Agency Consultation Process) and Appendix F (Environmental Mitigation Discussion).

2.1.5 Process Documentation

Documenting all aspects of the public involvement process helped GDOT to maintain continuity in project decision-making. The project team maintained a detailed record of all the public involvement tasks to ensure Federal compliance and maintain the integrity of the project through a superior level of documentation.

The public involvement process deliverables included the following:

- Public Involvement Plan;
- Meeting Summaries;
- Stakeholder Database;
- Public Comments;
- Informational Materials;
- Project Web Site;
- Media Advisories, Press Releases; and
- Final Public Involvement Report.

2.1.6 Public Involvement Techniques

The SWTP public involvement plan included the following public outreach techniques that were intended to engage a wide range of citizens in the process.

Public Meetings

All meetings used an interactive approach among the project team, GDOT, local government officials and the general public. This approach provided affected communities with an opportunity to ask questions to members of the project team while giving the State a snapshot of local concerns and reactions to study findings. Various maps and graphics depicting relevant information were on display. Comment forms were provided at each meeting to generate feedback on specific project-related issues. Two series of three public involvement meetings took place at locations across the State in order to maximize participation by various stakeholder groups. Notice of the meetings was announced via press releases and published/posted on the web site and in flyers that were mailed and e-mailed to the members listed in the stakeholder database. The objectives of these meetings were to: 1) provide an overview of the 2000 SWTP and garner input for the 2005

SWTP; 2) summarize input collected at each series of meetings; and 3) present the findings of the study thus far.

Transportation Workshop

A transportation workshop was held following the completion of the statewide needs assessment to solicit feedback from local municipalities and interest groups from non-MPO areas across the State. The workshop's objectives were to: 1) explain the purpose of the Statewide Transportation Plan; 2) present and gather feedback on the project's needs assessment; and 3) discuss and gather input on identified funding priorities.

Stakeholder Database

GDOT's Family of Partners Mailing List, which includes elected officials, agency representatives, business and property owners, neighborhood organizations, and interested citizens, served as the basis for the Statewide Transportation Plan Update database. This list was enhanced as the SWTP process moved forward and was used to assist GDOT in informing the public of upcoming public information events. During the course of the project, the mailing list was updated with contact information via sign-in sheets at public open houses and other related events. The database allowed the list of stakeholders to be managed so as to isolate specific groups of stakeholders such as property owners, elected officials, and business owners for distribution of flyers and/or project update newsletters. The project team compiled contact information to maintain the database, and utilized the database to prepare mailings, as required.

Information/Graphic Materials

Several public information techniques were applied to generate public awareness: fact sheets, presentations and media/governmental affairs coordination are all proven techniques in reaching and communicating with the public. Fact sheets and press releases were drafted for each round of the public meetings to both attract participants and to educate the general public on the SWTP Update. A visual presentation was given at each meeting.

Web Site

A project web site was developed and linked to the GDOT homepage at www.dot.state.ga.us/DOT/plan-prog/planning/swtp/index.shtml. The web site was used as a vehicle to provide project background information to the public. All public meeting materials were available for download via the web site, including fact sheets, copies of public meeting presentations, meeting summaries, and comment forms. It included information on upcoming events and incorporated a mechanism for feedback such as an e-mail address or online form for public comments and questions.

Media Outreach

Media outreach was utilized to inform stakeholders about the SWTP Update through mass media such as newspapers, radio, and television. Working through the GDOT Office of Communications, the project team disseminated information via press release to the general public about upcoming events regarding the SWTP Update.

Comment Analysis

The project team cataloged comments received throughout the public involvement process and analyzed the content for trends that helped GDOT to draw conclusions regarding public sentiment toward the SWTP Update. Acknowledgment in a timely manner of each public comment received, regardless of submission method (mail, e-mail, web site, comment form, fax) was a goal of the project team. Comments and responses from each round of public meetings were reviewed, summarized, and taken into consideration. A sample comment form is shown in Appendix A.

2.1.7 Public Involvement Plan Evaluation

Evaluation of the effectiveness of public involvement efforts is a key aspect of completing the public involvement plan. Spurred by Federal interest, regional planning organizations and other agencies have started evaluating all public involvement efforts in order to determine which public involvement tools are effective for specific uses and under what circumstances they are not. Evaluation measures also are important in documenting the level of public involvement achieved. Table 2.2 outlines the major tasks and the findings of the key performance measures.

■ 2.2 Input from the Public Involvement Process

Three types of public input are discussed in the subsections below: 1) comment forms completed by participants at the two rounds of general public meetings; 2) responses gathered at the facilitated break-out groups held at the Transportation Workshop; and 3) qualitative comments frequently heard at the general public and Advisory Committee meetings.

2.2.1 General Public Responses

The comment forms distributed at the public meetings provide a quantitative way to assess the attitudes of the general public toward transportation issues in the State. This attitudinal collection effort was not intended to provide a statistically significant sample of responses. As shown in Figure 2.2, most meeting attendees (79 percent) are at least somewhat satisfied with the State's transportation system, while only 21 percent are dissatisfied.

Figure 2.3 shows the priorities assigned by attendees to regional and state transportation issues. As shown, reducing congestion is the clear priority at the regional level, while reducing congestion and improving intermodal connectivity are the priorities at the state level.

Table 2.2 2005-2035 Statewide Transportation Plan Update
Public Involvement Plan Evaluation

Task	Performance Measures	Evaluation
Public Involvement Plan	Successful implementation of strategies and techniques	All elements of the public involvement plan were implemented to the satisfaction of GDOT, project team, and participants.
	Participant feedback	Positive feedback was heard universally from participants.
Public Meetings	Number of attendees	128 (2 rounds of 3 meetings each)
	Number of comments received	47 comment forms
	Types of comments received	Attendees responded to specific questions on preprinted comment forms regarding such issues as funding priorities and mechanisms as well as major transportation issues and needs.
	Participant feedback	Positive feedback was heard regarding meeting locations and presentation of material.
Transportation Workshop	Number of attendees	25
	Number of comments received	Attendees were asked to participate in two interactive group exercises regarding the needs assessment and funding allocation. Individual comments were not collected.
	Participant feedback	Attendees were pleased with the opportunity to participate. The exercises were regarded as engaging and innovative.
Study Database/ Mailing List	Number of contacts	434
	Number of mailings	A flyer was prepared and distributed in conjunction with each round of public meetings. Flyers were distributed by mail and e-mail to the contact list.
Graphic/ Informational Materials	Number of fact sheets distributed	A project fact sheet was developed and distributed in conjunction with each round of public meetings. Approximately 150 fact sheets were distributed over the six meetings.
	Reader feedback	Project material was written in an easy-to-understand manner and presented in a visually appealing format.

Web Site	Number of visitors to the site Number of comments received	This information is available via the website. The SWTP Update page utilized a link from the GDOT main web site. Comments were directed to project principle's e-mail addresses; more than 30 comments were received
Media Outreach	Amount of media coverage	A press release was developed and distributed in conjunction with each round of public meetings by GDOT's Communications Department.

Figure 2.2 Public Meeting Attendees Level of Satisfaction with State Transportation System

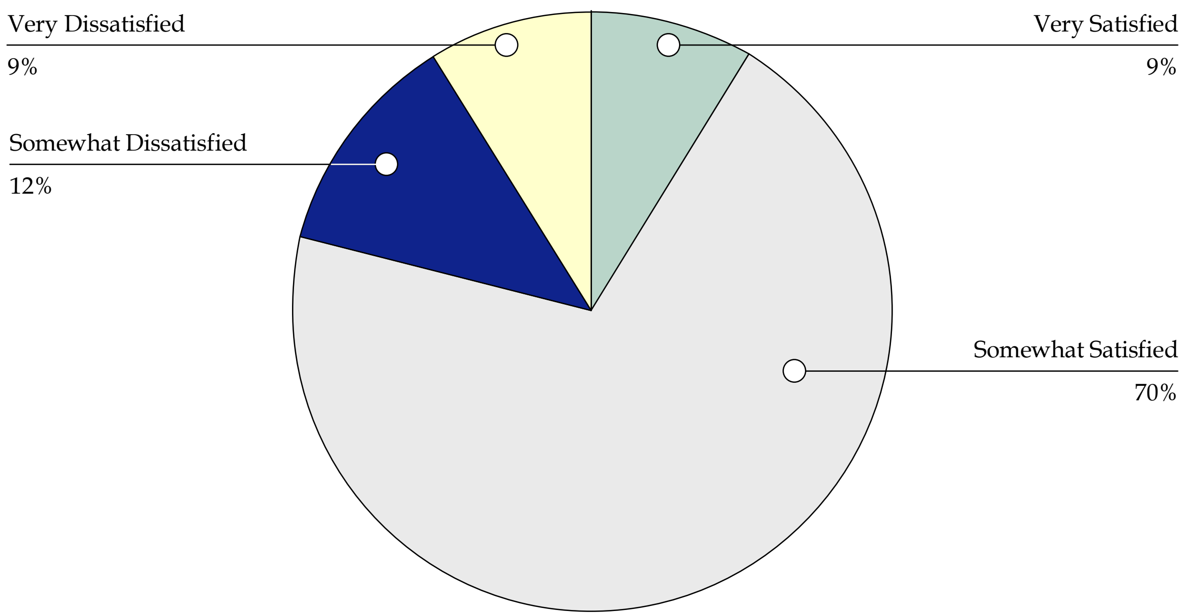
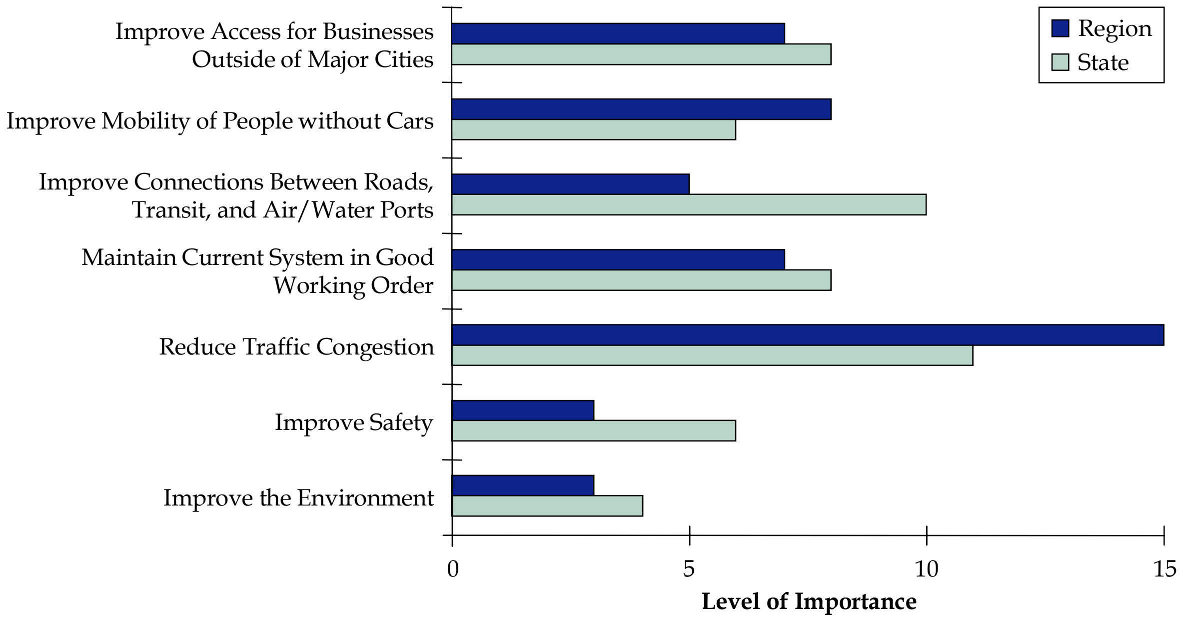


Figure 2.3 Transportation Priorities of Meeting Attendees



As shown in Figures 2.4 and 2.5, attendees were asked to rank their funding priorities by mode and by transportation need. The highest funding priorities by mode were assigned to the state and local highways systems, followed by public transit. The highest funding priorities by need were assigned to mobility/accessibility, system maintenance, and economic development. These responses were quite similar to those received from the stakeholder representatives who participated in the transportation workshop as described in Section 2.2.2.

2.2.2 Transportation Workshop

Participants in the Transportation Workshop were assigned to break-out groups and asked to rank funding priorities by mode and by need, much as was done with the public comments.

The distribution of funds by mode as shown in Table 2.3 revealed a variety of priorities. The funds allocated for state highways ranged from 19 to 48 percent, whereas local highways received anywhere from 23 to 37 percent. It is interesting to note that the group giving the lowest percentage of total funds to the state highways gave the highest percentage to local highways. The average allotment of total funds for state and local highways is comparable, 29.25 and 30 percent respectively, and overall highways received from 45 to 75 percent of allocated funds. Transit received a wide range of funding, from 5 to 33 percent, which revealed an average of 17 percent. Bicycle and pedestrian facilities were allocated 0 to 13 percent of the funds, averaging just 6.25 percent. Aviation facilities received a similar range, from 0 to 17 percent, with an average of 8.25 percent of total funds. Finally, ports received the most consistent level of funding, ranging from 5 to 15 percent, averaging 9 percent.

The allocation of funding by need also demonstrated a wide array of priorities by the participants as shown in Table 2.4. Environmental protection received the lowest amount of funding, ranging from 0 to 14 percent of the total funds of each group, and averaging only 6.5 percent. Safety concerns also were allocated a relatively low budget, ranging from 0 to 22 percent, with an average of 14 percent. Mobility and accessibility received 8 to 33 percent of the total funding, displaying the largest range and an average of 16 percent. Although economic development received just 12 to 25 percent, with an average of 18.25 percent of the total funding, it did receive the highest amount of funding given by one of the groups, revealing it to be their top priority. Congestion relief received 10 to 34 percent, with an average of 19.75 percent. Maintenance and preservation was three of the four groups' top priority, receiving an average of 34.5 percent.

Figure 2.4 Funding Priorities by Mode
General Public

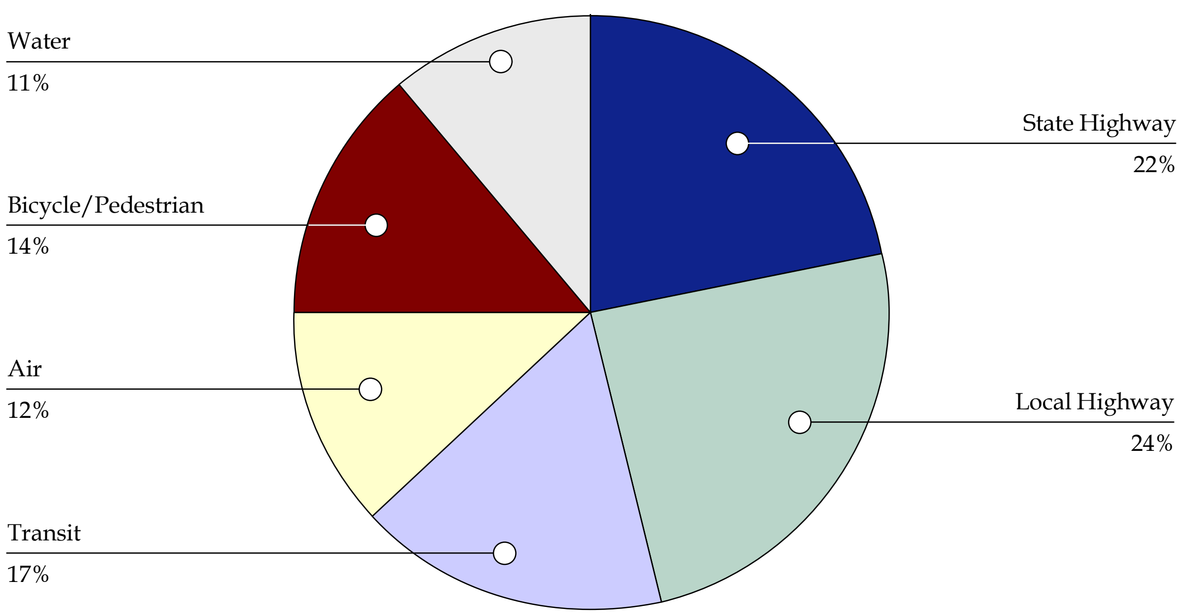


Figure 2.5 Funding Priorities by Need
General Public

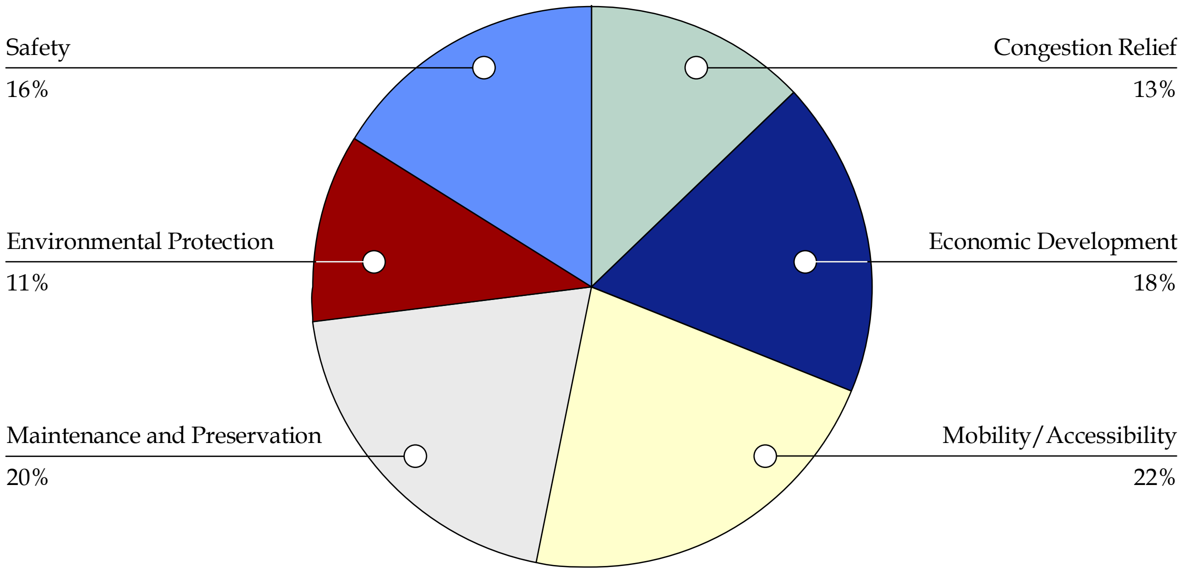


Table 2.3 Funds Allocated by Mode
Transportation Workshop

State Highway	Air
Group 1 – 19%	Group 1 – 11%
Group 2 – 22%	Group 2 – 17%
Group 3 – 28%	Group 3 – 0%
Group 4 – 48%	Group 4 – 5%
Local Highway	**Bicycle/Pedestrian**
Group 1 – 37%	Group 1 – 5%
Group 2 – 23%	Group 2 – 13%
Group 3 – 33%	Group 3 – 0%
Group 4 – 27%	Group 4 – 7%
Transit	**Water (Ports)**
Group 1 – 13%	Group 1 – 15%
Group 2 – 17%	Group 2 – 8%
Group 3 – 33%	Group 3 – 5%
Group 4 – 5%	Group 4 – 8%

Table 2.4 Funds Allocated by Need
Transportation Workshop

Congestion Relief	Maintenance and Preservation
Group 1 – 34%	Group 1 – 45%
Group 2 – 10%	Group 2 – 23%
Group 3 – 17%	Group 3 – 33%
Group 4 – 18%	Group 4 – 37%
Economic Development	**Environmental Protection**
Group 1 – 12%	Group 1 – 14%
Group 2 – 25%	Group 2 – 10%
Group 3 – 17%	Group 3 – 0%
Group 4 – 19%	Group 4 – 2%
Mobility/Accessibility	**Safety**
Group 1 – 8%	Group 1 – 22%
Group 2 – 14%	Group 2 – 19%
Group 3 – 33%	Group 3 – 0%
Group 4 – 9%	Group 4 – 15%

2.2.3 Frequently Raised Issues and Concerns

Several issues and concerns were raised qualitatively at many of the meetings and on many response forms. These issues are addressed below. They are not listed in any order of precedence or priority. The response of the project team and GDOT to the issue follows the outline of the issue. Many other issues were raised, some of which involved topics which are not explicitly addressed by this study such as advancement of specific projects or engineering design standards. In such cases, the participants were directed to the proper channels for addressing the issue.

Rural and special needs transportation service levels and coordination – Several issues are covered by this topic: including 1) inadequate levels of service in some jurisdictions; 2) service coverage which is defined by political jurisdiction rather than transportation need and travel markets, including cross-county and interstate services; and 3) abandonment of existing intercity bus services and the limited amount of intercity rail services.

- Rural transportation services vary widely across the State and some counties still do not offer any services (although far fewer than at the time of the last SWTP Update in 2000). Service levels are initiated and largely funded at the local level often using locally approved SPLOST taxes. There is a relatively small amount of Federal and state funding, and no mandates for minimum service levels. The Build/Financially Unconstrained Plan presented in Section 6.0 presumes that all identified needs would be met and service levels in all counties brought up to the average standards in existence today.

- There are a number of state and local initiatives underway to improve the level of coordination of rural and special needs transportation services. GDOT's Office of Intermodal Programs is conducting a study assessing how to better coordinate GDOT and Georgia Department of Human Resources (DHR) transportation programs. The Coastal Georgia RDC is conducting a pilot project to merge GDOT and GDHR transportation services. Services can cross jurisdictional boundaries if there is coordination among the jurisdictions involved.

- GDOT's Office of Intermodal Programs is working with private intercity bus providers to address the abandoned route issue. An extensive program of commuter, intercity and interstate rail has been defined and is included in the Build/Financially Unconstrained Program.

Bicycle and pedestrian planning – The concern was mainly around the need to better integrate bicycle and pedestrian planning into urban roadway planning and design, and emphasize more than intercity and recreational needs. There is a need for a shoulder widening program per se, not directly related to roadway widenings.

- Many of the specific urban design issues are addressed at the Metropolitan Planning Organization (MPO) level, not at the statewide level. Any roadway that is upgraded with curb and gutter also will get a sidewalk under current regulations. In these cases, state standards require 16-foot shoulders and a maximum 2 percent cross grade. Transportation Enhancement (TE) funds (which constitute a 10 percent set aside of Federal STP funds granted to the State) also can be applied to this purpose. State motor fuel tax revenue must be used within the roadway shoulders under current interpretations of the state constitution.

Local roadway and bridge maintenance funding and standards are inadequate.

- This is proven out by the data in this report, and is not surprising given the greater financial resources available to the State. GDOT is able to provide funding directly to all Federal-aid roadways (regardless of ownership) and makes an effort to assist local jurisdictions with roadway maintenance and improvement projects. The Build/Financially Unconstrained program outlined in this study would fully fund local roadway programs and bring maintenance quality up to that of the state roadway system.

Support was expressed for, and more information requested, about the proposed new interstate highways I-3 (Savannah to Knoxville) and I-14 (Augusta-Mississippi).

- Responsibility for the advancement of these projects rests with the Federal Highway Administration (FHWA). GDOT is working with FHWA and neighboring states on advancing planning and engineering studies. These projects are not sufficiently advanced at the present time to be included in the Build/Financially Unconstrained program.

There is a need for increased funding for transportation.

- Sections 6.0 and 7.0 of this report document the funding gap facing the State. Many analyses have been conducted of strategies for raising additional revenue to fund transportation programs in the State. This is a matter for the legislature's consideration.

3.0 Data Sources and Methodology

The 2005 SWTP was prepared, to the maximum extent feasible, using existing transportation and transportation-related databases and plans. This approach minimized the need for costly new data collection, maintained consistency with existing plans and programs, maximized the resources devoted to analysis, and supports future SWTP updates using these same data sources and plans.

3.1 Data Sources and Tools

3.1.1 2003 RC File

A primary data source for existing highway infrastructure is the Road Characteristics (RC) database maintained by GDOT. The most recent complete database available for the 2005 SWTP was for the year 2003. The RC database is a complete inventory of all roads in Georgia. It includes information on administrative characteristics of roads (e.g., ownership, functional classification), physical characteristics (e.g., lane width, pavement type), operational characteristics (e.g., speed limits, turning lanes), infrastructure condition (e.g., PACES – Pavement Condition Evaluation System), and usage (e.g., AADT – Average Annualize Daily Traffic).

The RC file includes a Linear Referencing System (LRS) ID, the RCLINK number. Together with the beginning and ending milepost attributes, each RC segment is uniquely identified, and can be combined with other databases that use the same LRS/RCLINK system. The RCLINK also can be combined with geographic files of roads which allows maps to be created of any attributes.

3.1.2 2001-2003 Crash Database

The primary source for highway safety data was the Crash Analysis and Statistics Information database prepared from accident reports. The database was prepared by the then Georgia Department of Motor Vehicle Safety (DMVS), now part of GDOT. The database used in this Plan contains all crash records from 2001 to 2003. By averaging crash data over a three-year period it is possible to minimize statistical anomalies that could occur in any given year. The database contains information on the nature of the accident based on the forms submitted to the DMVS, (e.g., number of vehicles, number of fatalities, cause of accident, etc.) and additional administrative and locational information (e.g., road functional classifications, route identifiers, county, etc.). The location of the crash is uniquely identified by RCLINK and milepost, which allows the crash data to be combined with the RC and other databases.

3.1.3 2003 HPMS File

The Highway Performance Monitoring System (HPMS) file is a national highway data system, maintained by the Federal Highway Administration (FHWA), of the extent, condition, performance, use, and operating characteristics of the Nation's highways. Georgia's portion of the HPMS is submitted annually by GDOT's Office of Transportation Data (OTD) as derived from the RC database. While basic infrastructure and operations data is included for all arterial and collector functional system sections (universe records), more detailed infrastructure and operations data is collected for a statistically derived sample of roads (sample sections). Sample sections are statistically chosen with appropriate expansion factors to allow state- and national-level information to be developed.

While the HPMS is derived from the RC database, it does contain other information not included in the RC file (e.g., capacity, volume service flow, etc.) that supports analysis in the Plan. The HPMS submittal also contains pavement condition data for state roads that is developed from a separate database on pavement conditions maintained by GDOT's Maintenance Office using its own LRS location identifier. The inclusion of this information in the HPMS, together with the RCLINK and milepost fields in the HPMS database, allows the PACES information on state roads to be combined with other databases.

3.1.4 NBI Bridge Inventory (NBI)

The National Bridge Inventory (NBI) is a compilation of data supplied by the state DOTs to the FHWA as required by the National Bridge Inspection Standards for bridges located on public roads. GDOT is responsible for conducting bridge inspections and preparing the NBI in Georgia.

The NBI includes reports on all public bridges, including city and county bridges in addition to bridges that are owned by the State. The NBI has various bridge physical, operational and condition characteristics that can be used by bridge management systems to forecast bridge conditions and needs. The base year data in the NBI includes an assessment of the current bridge conditions.

The NBI does not use the RCLINK and milepost identifiers which prevents it from being integrated with other GDOT databases. It does include ownership, functional classification, and longitude and latitude information that allows the location of the bridge to be identified and mapped.

3.1.5 The National Bridge Investment Analysis System (NBIAS)

The National Bridge Investment Analysis System (NBIAS) is a comprehensive bridge model used by the FHWA. NBIAS can examine bridge repair, rehabilitation, and improvement needs, in dollars and number of bridges; the distribution of work done; and forecast conditions of bridges expressed as Structurally Deficient (SD) or Functionally Obsolete (FO), using the National Bridge Inventory (NBI) database. A bridge is Structurally Deficient if it is in relatively poor condition, or has insufficient load-carrying capacity. The insufficient load capacity could be due to the original design but is generally due to deterioration. The bridge remains operationally safe under the posted conditions, but will likely require major rehabilitation or replacement in the near future. A bridge is considered Functionally Obsolete if it is otherwise structurally sound but it is narrow, has inadequate under-clearances, is poorly aligned with the roadway, or can no longer adequately service today's traffic. NBIAS selects improvements based on maintenance of bridge elements. A bridge replacement need is recognized when one of three conditions is met: 1) a bridge has an improvement need that is considered infeasible for the structure's design type; 2) a bridge has multiple improvement needs; or 3) the benefit/cost ratio for replacement is greater than that for improvement.

3.1.6 Digital Line Graph Features (DLG-Fs)

A measured Geographic Information System file of all roads in Georgia with RCLINK IDs can be used to join the various databases that support the RCLINK LRS and to produce maps of the data included and derived from those databases. GDOT prepares these GIS files, Digital Line Graphs Features (DLG-F), from county-level maps that can be used to produce maps of all roads in Georgia.

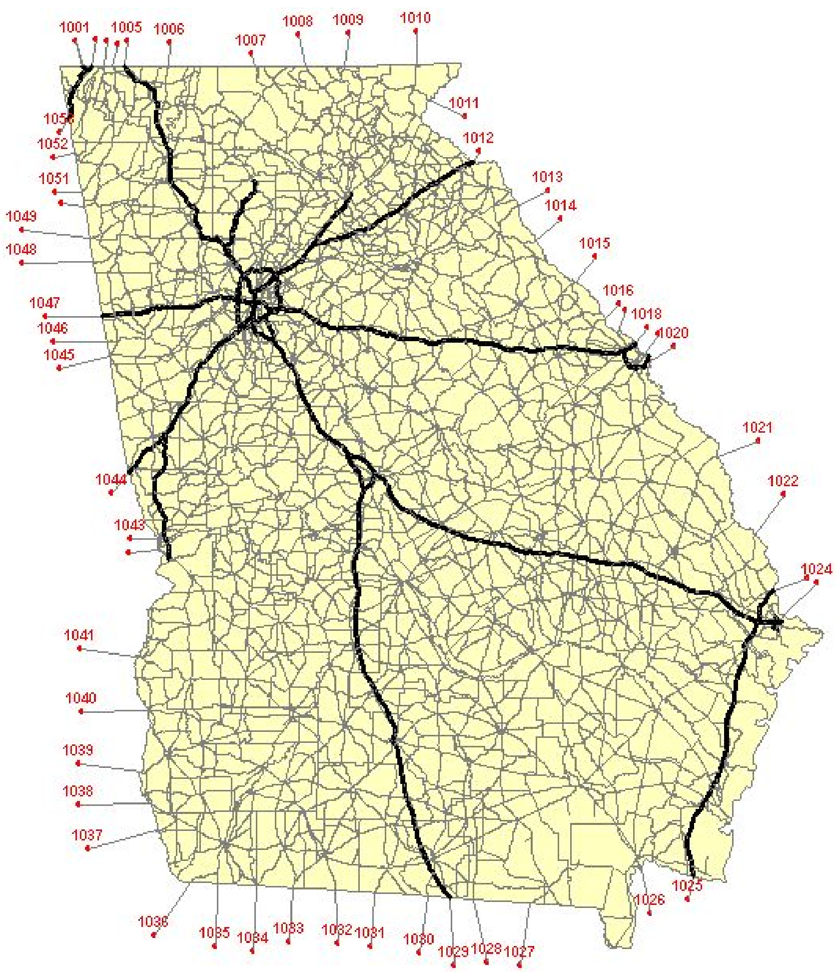
3.1.7 Multimodal Transportation Planning Tool (MTPT)

The MTPT was developed for GDOT to assist in statewide, regional, and local transportation planning activities. The MTPT provides planning capabilities for highway, rural transit, aviation, passenger rail, intercity bus, pedestrian and bicycles, environmental justice, and air quality in nonurbanized areas of Georgia. For the SWTP update, the highway component of the MTPT was used to estimate future traffic volumes, congested areas, and project improvements on non-MPO roadways under city and county jurisdiction. The MTPT results were aggregated to the statewide level and compared to the local plan information to arrive at a unified average.

3.1.8 TP+ Statewide Travel Demand Forecasting Model

A statewide travel demand model (TDM) provides the ability to forecast volumes and speeds on the Interstate highways and their connector roads in response to changes in infrastructure, demand, and/or operations. A "virtual" statewide TDM was created for GDOT as part of the Interstate System Plan.[12] That statewide TDM included a highway network developed from attributes in the RC file for all state roadways. The model is compatible with the TP+ software package used by GDOT. Figure 3.1 shows the model roadway network for the existing and future No-Build conditions.

Figure 3.1 TP+ Model Network



[12]Georgia Department of Transportation, *Interstate System Plan*, April 2004.

A single Traffic Analysis Zone (TAZ) was identified for each Georgia county and was connected to the roadway network with one or more connector roads depending on the county's population density. External zones for the network were located where either an interstate or other major road roadway crosses the state boundary.

Trip tables for autos and trucks were developed from the 2001 Annual Average Daily Traffic (AADT) data as reported in the 2001 RC file, using TransCAD's Origin Destination Matrix Estimation (ODME) procedure. A commodity truck trip table also was developed using commodity flow data from Global Insight's TRANSEARCH database as previously purchased by GDOT. In all, trip tables for three types of vehicle classes were developed.

While the model produces useful and credible results for forecasting, it cannot perform all of the functions of a complete four-step statewide travel demand model. The zone structure of the model is based on counties. Consequently, the model can only load traffic at a few points in the system, which leads to uneven distribution of volumes. In addition, the model is unable to assign traffic that begins and ends in the same county. For this reason, the model volumes were used to prepare growth rates that are used to adjust observed traffic counts.

For the 2005 Statewide Transportation Plan, 2035 trip tables were created by factoring the 2001 trip table based on changes in county-level employment and population as reported in Section 5.0. The future freight truck table was produced by applying state-to-state forecasts of truck shipments by Standard Transportation Commodity Classification (STCC) code[13] to Georgia's TRANSEARCH freight truck trip table.

The growth rates on the statewide TDM highway network links were matched with and transferred to comparable road sections in the enhanced RC file. These updated growth factors were used to create future AADT for autos and trucks. The TP+ statewide TDM network was updated with different road scenarios to include new links or additional capacity to existing links, and was used in this Plan to develop scenario-specific growth factors and, thus, volume forecasts for each highway link.

3.1.9 TPro

GDOT maintains TPro, a comprehensive database of all projects for which any planning, design, or construction work is anticipated. This database is used to develop GDOT's six-year Construction Work Program (CWP) and three-year State Transportation Improvement Program (STIP). While TPro contains an estimated schedule of dates for project lettings (not all of which will be realized), the type of work to be accomplished by each project does not change substantially over time. The TPro database was used to determine the nature and location of projects that would impact congestion. The information in TPro was used to update the TP+ statewide model for the Build/Financially Unconstrained scenario.

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[13] Developed by the FHWA's Freight Analysis Framework Study.

3.1.10 Metropolitan Planning Organizations (MPO) and Other Referenced Plans

MPO plans were used as an information source on highways and transit within their jurisdictions. As noted in Section 1,0, this state Plan is required to be consistent with MPO plans. The use of the information and forecast in these plans ensures this consistency. The MPO and local plans used in this SWTP Update are listed in Appendix B.

Numerous transit data, maintained by GDOT's Office of Intermodal Programs (OIP), were used in the SWTP Update. The *Georgia Transit Programs Fact Book* for 2004 contains inventories, operational data, and performance data for both urban and rural transit programs. Data for the Federal Transit Administration (FTA) Section 5307 (urban) programs are provided both in summary fashion and by individual agency, while FTA Section 5311 (rural) data are aggregated at the district level in the *Fact Book*. Some data also are provided for intercity bus travel in the *Fact Book*. The National Transit Database (NTD) was used to identify more detailed operating and performance data for each FTA Section 5307 recipient in Georgia.

GDOT's most current modal system plans were used to evaluate existing and forecast conditions and are referenced in Appendix B. Additional airport enplanement, operation, and air cargo data were obtained from the Federal Aviation Administration (FAA). Facility and operational data for maritime ports were obtained from the Georgia Ports Authority, the U.S. Army Corps of Engineers, the U.S. Maritime Administration, and from studies for the individual ports. Information on walk and bicycle commuting was obtained from the Year 2000 Census.

3.1.11 TRANSEARCH

GDOT acquired the TRANSEARCH database from Reebie Associates (now Global Insight). This database is the accepted standard for freight analysis and is widely used in state and Federal studies. The complete 1998 TRANSEARCH database was the basis for the FHWA's still current Freight Analysis Framework. It is based on expansions of surveys of freight shippers and carriers of manufactured products. The 1998 Georgia portion of TRANSEARCH, the current database at that time, was acquired for use in the Central Georgia Corridor Study and the Interstate System Plan.

■ 3.2 Analysis Methods

This section describes the analysis methods used for each mode of transportation.

3.2.1 Highways – Overview

All state highways in Georgia, whether located in urban or rural areas, were analyzed using identical procedures. Similarly, transit, pedestrian, bicycle and other nonroadway modes throughout Georgia were analyzed using common procedures regardless of their location. Roadways that are under city and county jurisdiction were analyzed using slightly different procedures depending upon their location with respect to MPO boundaries:

- Roadways within counties that are completely outside of current MPO boundaries were considered "non-MPO roadways" for analysis purposes.

- Roadways within counties that are completely or partially inside of MPO boundaries that existed prior to 2000 were considered "MPO roadways." These roads were analyzed using the findings in the adopted Regional Transportation Plans (RTP) of the respective MPOs. The partial counties within this category include Catoosa, Columbia, Dade, Jones, Muscogee, Oconee, and Walker.

- Roadways within counties that were designated after 2000 as being within an MPO, either in whole or in part, and that currently do not have an adopted RTP, were considered "non-MPO roadways," for analysis. This includes Hall, Liberty, Lowndes, Madison, Peach and Whitfield counties.

- Roadways within counties that were designated after 2000 as being within an MPO, either in whole or in part, and that currently have an adopted RTP, were considered "MPO roadways." This includes Barrow, Bartow, Newton, Spaulding and Walton counties.

3.2.2 State Highways

Volumes and VMT

The volumes on existing roads and the Vehicle Miles of Travel (VMT) on those roads was taken directly from GDOT's 2003 RC file. Forecast volumes and VMT were developed using the TP+ Statewide Model with 2035 vehicle trip tables, to identify the rate of growth between 2003 and 2035. That growth rate was applied to observed volumes in the RC file for the same sections of highway.

Bridges

The existing bridge conditions were taken from the NBIAS summaries and are based on existing bridge inspections. Forecast bridge conditions were estimated by NBIAS using the existing bridge inspections and funding levels associated with optimal and minimum maintenance strategies.

Pavement

The existing pavement conditions were taken from GDOT's own PACES records. Ratings were averaged (weighted by road miles of each record) by functional classification. The percentage of miles by pavement condition was defined as very good, good, fair, poor, and very poor according to GDOT's classification system. Pavement condition was not calculated for roads where surface type was listed as unpaved, gravel, or other low-type surface penetration treatments. Forecast pavement needs were estimated qualitatively based on a continuation of GDOT's maintenance practices and the damage associated with different levels of truck growth.

Congestion

Daily capacity information was developed from HPMS. Volume to Service Flow (VSF) ratios were obtained for each road section by dividing its daily volume by its Service Flow (daily capacity). The operational Level of Service (LOS) was established according to the Volume to Service Flow Ratio ranges (VSF less than 0.2 – LOS A; 0.2-.04 – LOS B; 0.4-0.7 – LOS C; 0.7-0.8 – LOS D; 0.8-0.95 – LOS E; 0.95 and greater – LOS F). The results were summarized by centerline miles and by vehicle miles of travel (VMT). Based on standard GDOT definitions, LOS D-F is considered "congested." However, in large urban areas, LOS D is often considered acceptable. Congestion for the urban areas is presented both ways, while data for the rest of the State uses GDOT's standard definition.

Safety

The analysis of existing state highways was based on accident rates on sections of state highway compared to statewide averages by type of road. The accident rates were computed from volumes and the three-year annual average of crashes reported for each road section. Based on the analysis, crashes were found to be largely random events unrelated to road conditions and therefore future crashes and rates could not be forecast.

3.2.3 City and County Roadways Outside of MPO Areas

Volume and VMT

Annual Average Daily Traffic (AADT) and VMT on existing roads were calculated from GDOT's RC file. Forecast volumes and VMT were computed by applying growth factors from the statewide TP+ model. The model's growth rates were summarized by county and by type of road.

Bridges

Existing and forecast condition on city and county bridges was estimated using NBIAS in the same manner as that described for state roads.

Pavement

Existing pavement conditions were taken from the PACES information reported in GDOT's RC file. Future pavement needs were estimated separately for high type paved and surface treated/unpaved roads. Future pavement needs on city and county roads were determined to be mostly a function of age not usage. Annual unit costs for pavement replacement were computed from GDOT records and were applied to city and county road mileage.

Safety

The analysis of city and county roads was based on an analysis of accident rates on sections of city and county roads compared to statewide average by type of road. The same conclusion was reached as for State roads.

Congestion

The MTPT was used to estimate LOS on city and county roadways within non-MPO areas. County-level transportation and comprehensive plans did not contain sufficient information to be directly used for determining existing conditions on city and county roadways, but the plans were used for qualitative insight into existing system conditions.

3.2.4 City and County Roadways Within MPO Areas

Volume and VMT

The existing and forecast volumes and VMT came directly from RTPs prepared by the MPOs.

Bridges

Existing and forecast condition on city and county bridges was estimated using NBIAS in the same manner as that described for state roads.

Pavement

Existing pavement conditions and forecast pavement needs were calculated in the same manner as for city and county roads outside of MPOs.

Safety

Existing safety conditions were calculated in the same manner as for city and county roads outside of MPOs.

Congestion

Existing congestion was not consistently described for city and county roads within MPO RTPs. Existing congestion was determined for these roads using methods described for state roads, since the MTPT-based process is intended for nonurbanized areas. Future congestion on city and county roads in MPO counties was taken from the RTPs.

3.2.5 Intermodal

Transit

Existing transit conditions and needs were estimated from the existing transit data described above. Urban transit service is provided almost exclusively within areas served by MPOs. The future transit conditions and needs for urban transit were therefore taken from the MPO RTPs. Rural public transit operations in Georgia are demand-responsive services, and are generally available through subscription service and advance reservation. Rural transit needs were estimated for Georgia by applying current usage patterns to counties not currently served by transit.

Passenger Rail

Existing passenger rail service in Georgia consist of limited intercity Amtrak service. Future conditions and needs for commuter passenger rail is taken from the Georgia Rail Passenger Program's (GRPP) plans. High-speed passenger rail conditions and needs were taken for the corridors under active study, including the Southeast High-Speed Rail (SEHSR) and Jacksonville-Atlanta intercity passenger rail corridors.

Freight Rail

Existing and future freight rail conditions and needs were identified for the shortline operators of Georgia by the Georgia Rail Freight Assistance Program's *Georgia Freight Rail Plan: Update 2000.*

Bicycles

The suitability of all roadways in Georgia for use by bicyclists was analyzed using the MTPT. The MTPT calculates the appropriateness, or bicycle suitability, of each road based on such factors as the type of road, the type and condition of the pavement, the volume, the width of the travel lane, speed limits, etc. Also considered were the usage of bicycling as reported in the U.S. Census and the GDOT crash rates.

Ports

Existing conditions are based on information from the Georgia Ports Authority (GPA). Future conditions and needs for Georgia's water ports are the responsibility of the independent GPA, and are not considered in the SWTP Update as they are funded by dedicated revenue sources outside of the standard ground transportation funding programs.

Aviation

Different methods were used for analyzing Hartsfield-Jackson Atlanta International Airport (HJAIA) and for the other commercial and general aviation airports in Georgia. For HJAIA the existing condition and forecast conditions and needs were taken from the HJAIA Capital Development Program (CDP) that includes both a Master Plan and Capital Improvement Program (CIP). The existing conditions and forecast conditions and needs for the other commercial and general aviation airports in Georgia were taken from the *Georgia Aviation System Plan* (GASP). The focus of the GASP was not on emphasizing the needs of HJAIA, but to evaluate and determine the needs of the general aviation airports, new reliever airports, replacement airports, and the other eight airports with commercial service.

Freight

Existing movements of freight were calculated from Georgia's TRANSEARCH database. The FHWA's FAF calculates future freight flows using an econometric model of the United States. Those state-to-state growth rates by commodity were applied to the records in the Georgia TRANSEARCH database and were extrapolated to 2035. The facilities used to transport freight in Georgia were identified by using information included in the TRANSEARCH database. TRANSEARCH includes the highway paths used by truck shipments for each specific origin, destination, and commodity record. It also includes the rail paths used by carload and intermodal container rail shipments for each specific origin, destination, and commodity. These paths, which are sequences of segments of the highway and rail networks, were used to identify the routes in Georgia with the highest volumes of freight. The shipments by air and water are only identified by the county in which the port or airport is located.

4.0 Existing Conditions

The SWTP Update is a multimodal plan. The evaluation of existing conditions has therefore been prepared for all modes. As travel on Georgia's highway system constitutes the largest volume of travel, highway analysis is discussed separately from other modes. Recognizing that GDOT is responsible for the most heavily used highways, but that responsibility is shared on the less heavily utilized roads with cities and counties, the analysis of existing highway conditions is presented separately for state roads and city and county roads. This breakdown by mode and ownership is consistent with the differences in data sources and the analysis methods that are available.

4.1 Highways

This section describes the extent of the highway system, usage, pavement and bridge conditions, safety performance, and congestion.

4.1.1 Extent

As shown in Table 4.1, there are almost 120,000 miles of public roads in Georgia primarily owned by the State (17 percent), counties (70 percent), and cities/municipalities (12 percent). Roads owned by other state agencies, Federal agencies or private entities together with ramps and collector distributor roads constitute approximately 2 percent of the road miles.

Road miles in Georgia have been classified according to function and use in accordance with guidelines developed by the FHWA. Those roads with a higher functional classification than "local road" are eligible for the Federal Aid highway programs administered by GDOT. These Federal Aid roads represent 34 percent (40,584 miles) of all centerline road miles in Georgia (see Table 4.1). The State owns half of these roads (50 percent), with the counties (46 percent) and the cities/municipalities (4 percent) owning the other half.

The amount of road maintenance required is typically related not only to the length of roads, but also to the width of the road in lanes. A higher portion of the roads owned by the State are more than two lanes and therefore the State's share of lane-miles (21 percent) is slightly greater than its share of centerline miles (17 percent).

Table 4.1 Centerline Road Miles by Functional Classification and Ownership

	State	County	City	Others	Total
1 – Rural Interstate	799	–	–	–	799
2 – Rural Principal Arterial	3,111	106	2	0	3,219
6 – Rural Minor Arterial	5,839	77	9	0	5,925
7 – Rural Major Collector	5,880	7,295	41	2	13,218
8 – Rural Minor Collector	1	7,361	25	13	7,400
11 – Urban Interstate	600	–	–	–	600
12 – Urban Freeway	149	7	–	1	158
14 – Urban Other Principal Arterial	1,880	199	61	3	2,143
16 – Urban Minor Arterial	1,860	2,073	583	12	4,528
17 – Urban Collector	22	1,694	874	4	2,594
Subtotal Federal Aid	**20,141**	**18,812**	**1,595**	**35**	**40,584**
	50%	46%	4%	0%	–
9 – Rural Local	141	48,688	3,488	616	52,934
19 – Urban Local	36	16,100	8,987	1,169	26,293
Subtotal Non-Federal Aid	**177**	**64,788**	**12,475**	**1,785**	**79,227**
	0%	82%	16%	2%	–
Total	**20,320**	**83,601**	**14,070**	**1,821**	**119,811**
	17%	**70%**	**12%**	**2%**	**–**

4.1.2 Usage

As shown in Table 4.2 by ownership and functional classification, in 2003, there were almost 298 million Daily Vehicle Miles of Travel (VMT) on public roads in Georgia. The majority of this travel occurs on roads owned by the State (64 percent), with the remainder of the VMT occurring on roads owned by counties (29 percent) and cities/municipalities (7 percent). Travel is primarily (77 percent) on those functionally classified roads eligible for the Federal Aid highway programs administered by GDOT. Travel on roads in urban areas represents 60 percent of all VMT in Georgia.

Table 4.2 Vehicle Miles of Travel by Ownership and Functional Classification

	State	County	City	Total
1 – Rural Interstate	29.3	–	–	29.3
2 – Rural Principal Arterial	18.7	0.0	0.0	18.7
6 – Rural Minor Arterial	20.0	0.2	0.0	20.3
7 – Rural Major Collector	10.7	7.4	0.1	18.2
8 – Rural Minor Collector	–	10.7	0.0	10.7
11 – Urban Interstate	52.9	–	–	52.9
12 – Urban Freeway	6.8	0.2	–	7.1
14 – Urban Other Principal Arterial	28.6	3.0	0.7	32.3
16 – Urban Minor Arterial	22.6	17.1	5.0	44.7
17 – Urban Collector	0.2	8.5	3.4	12.1
Subtotal Federal Aid	**189.8**	**47.1**	**9.2**	**246.3**
	77%	19%	4%	100%
9 – Rural Local	0.0	19.2	2.4	21.7
19 – Urban Local	0.1	19.7	10.2	30.0
Subtotal Non-Federal Aid	**0.1**	**38.9**	**12.6**	**51.7**
	0%	75%	24%	100%
Total	**189.9**	**86.0**	**21.8**	**298.0**
	64%	**29%**	**7%**	**100%**

The truck travel identified for each road section by ownership and functional classification is shown in Table 4.3. In 2003, there were almost 26.1 million Truck Vehicle Miles of Travel (TVMT) per day on public roads in Georgia, 8.8 percent of total VMT. The majority of this travel occurs on roads owned by the State (77 percent), with the rest on roads owned by counties (18 percent) and cities/municipalities (5 percent). Truck travel is primarily on those roads eligible for the Federal Aid highway programs administered by GDOT, even more so than total traffic. These Federal Aid roads represent 24.2 million TVMT per average day, 93 percent of all truck travel in Georgia. This travel on Federal Aid eligible roads is primarily on state-owned roads (84 percent), with the counties (13 percent) and the cities/municipalities serving the remainder (3 percent). The Interstate Highway System alone carried over 50 percent of all TVMT in Georgia.

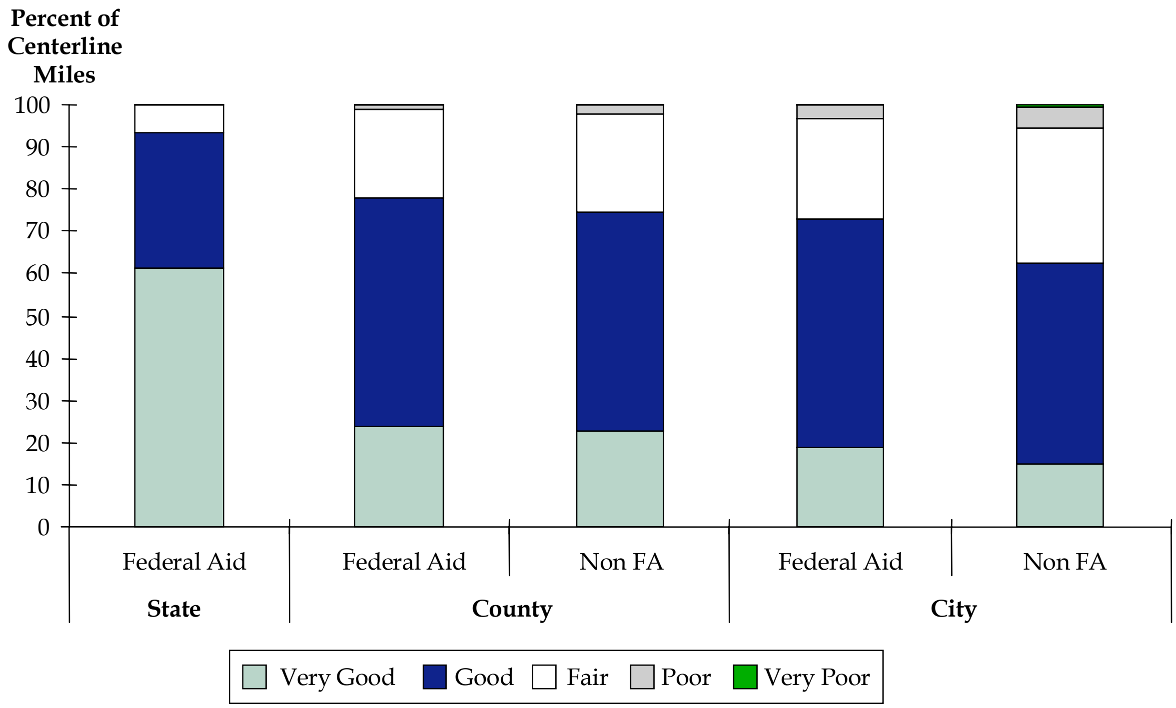
Table 4.3 Truck Vehicle Miles of Travel by Ownership and Functional Classification

	State	County	City	Total
1 – Rural Interstate	7.0	–	–	7.0
2 – Rural Principal Arterial	1.9	0.0	0.0	1.9
6 – Rural Minor Arterial	2.9	0.0	0.0	2.9
7 – Rural Major Collector	1.1	0.7	0.0	1.8
8 – Rural Minor Collector	0.0	0.7	0.0	0.7
11 – Urban Interstate	6.1	0.1	0.0	6.2
12 – Urban Freeway	1.3	0.5	0.1	1.9
14 – Urban Other Principal Arterial	0.0	0.2	0.1	0.3
16 – Urban Minor Arterial	0.0	0.7	0.4	1.2
17 – Urban Collector	0.0	0.2	0.1	0.3
Subtotal Federal Aid	**20.3**	**3.1**	**0.7**	**24.2**
	84%	13%	3%	100%
9 – Rural Local	0.0	0.6	0.1	0.7
19 – Urban Local	0.0	0.7	0.4	1.2
Subtotal Non-Federal Aid	**0.0**	**1.3**	**0.5**	**1.9**
	0%	68%	26%	100%
Total	**20.3**	**4.4**	**1.2**	**26.1**
	78%	**17%**	**5%**	**100%**

4.1.3 Pavement Condition

Pavement condition on roads is shown in Figure 4.1 estimated by the PACES rating, and averaged by functional classification and weighted by centerline miles. The percentage of miles classified from very good to very poor according to the GDOT's categories is also shown by ownership and eligibility for Federal Aid. Federal Aid roads of all ownership types are in better condition than non-Federal Aid roads, and state-owned roads are in better condition than county and city-owned roads, as indicated by the percentage of centerline miles by category of pavement condition. Unpaved, gravel, or surface treated county roads have been excluded from the pavement conditions analysis.

Figure 4.1 Pavement Condition by Federal Aid Designation and Ownership



The average weighted value for PACES on the state-owned roads, which are virtually all eligible for the Federal Aid road system, is 83.4. Eighty-three percent (83.1 percent) of the centerline miles are rated in very good or good condition, 6.7 percent of the roads are in fair condition, only 0.2 percent is rated in poor condition and no centerline miles are rated in very poor condition. Based on these values, it can be concluded that overall pavement conditions on state roads are excellent and that there are no systemwide deficiencies, only isolated deficiencies.

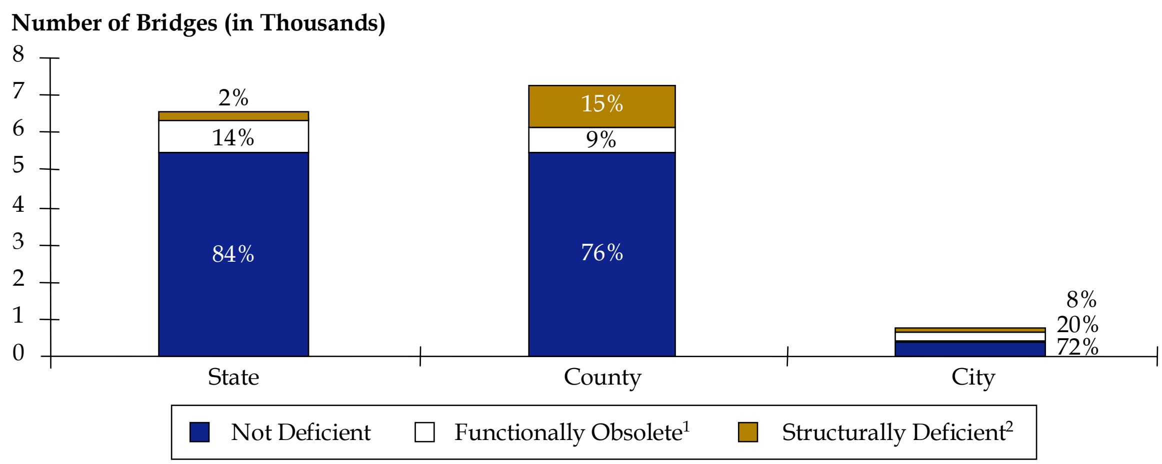
While only 22 percent of the county-owned high-type paved roads are part of the Federal Aid system, there is very little difference between the PACES condition on Federal Aid eligible roads and that on the high-type paved roads that are eligible for only state or local funding. The average weighted value for PACES on the entire county high-type paved system is 72.05, compared to 73.0 for Federal Aid eligible roads. While pavement conditions on county-owned roads are not as good as those on state roads, they are still in good condition.

While only 12 percent of city-owned high-type paved roads are part of the Federal Aid system, as is the case for county-owned roads, there is very little difference between their PACES condition and that on the high-type paved roads that are eligible for only state or local funding. The average weighted value for PACES on the entire city-owned high-type paved system is 67.99 compared to 70.08 on Federal Aid eligible roads. While pavement conditions on city-owned roads are not as good as those on state roads, and are slightly worse than those on county roads, they are still in overall good condition.

4.1.4 Bridge Conditions

The National Bridge Inventory includes rating for each bridge in Georgia based on GDOT's inspections. No new analysis was required for each bridge. The number of bridges rated as Structural Deficient (SD) and Functionally Obsolete (FO) was totaled by ownership and by functional classification. The results for state-owned bridges are shown in Figure 4.2. Slightly over 2 percent (132 out of 6,455 bridges) of state-owned bridges are rated SD, almost all on rural lower functionally classed roads. FO bridges do not necessarily indicate a condition that needs to be addressed except at the time a bridge is to be replaced (e.g., skewed angle approaches, inconsistency with approach road layout, shoulder width less than current design standard, etc.). Based on these ratings the state-owned bridges have no systemwide problem, only isolated issues.

Figure 4.2 Bridge Condition by Ownership



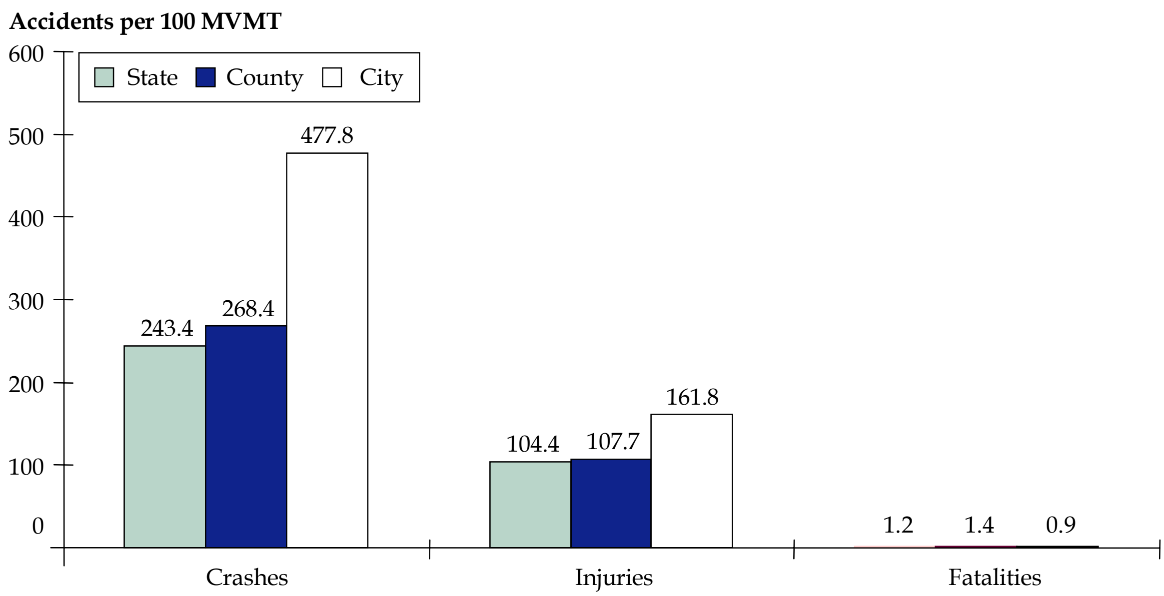
[1] Does not handle traffic well as designed.
[2] Will need physical repairs – but not unsafe today.

A higher percentage of county bridges are Structurally Deficient compared to state bridges. Almost 15 percent (1,078 out of 7,244 bridges) of county-owned bridges are SD compared to 2 percent of the State's bridges. All bridges, regardless of functional classification, are eligible for Federal Aid. Based on these ratings the county-owned bridges have higher than expected structural issues, particularly on rural local and collector roads. While relatively few bridges are city-owned, a higher percentage of city bridges are SD compared to state bridges. Almost 8 percent (44 out of 508 bridges) of city bridges are SD.

4.1.5 Safety

The crash, injury, and fatality totals for the 2001-2003 period were summarized by functional classification. The daily VMT for those classifications was annualized and rates, expressed as annual averages per 100 million miles of annual VMT (100 MVMT), were calculated based on the three-year averages. Sections of roads with rates greater than one standard deviation (STD) above the average are considered deficient. The mileage that is above this threshold was calculated by functional classification. Figure 4.3 summarizes the total crash, injury, and fatality rates. The highest crash and injury rates are on city roads which typically have heavy traffic volume operating under less than optimal design conditions. However, fatality rates are higher on state and county roads where speed is more apt to be a contributing factor.

Figure 4.3 Accident Rates by Road Ownership – Existing Conditions
2001-2003



The number of crashes, injuries, and fatalities are highest on the Interstate System, but that system also carries the greatest amount of travel and consequently has among the lowest crash, injury, and fatality rates. Conversely, the number of crashes, injuries, and fatalities on the lower functionally classified urban roads are lower because these roads carry much less traffic, but the rates are higher than the statewide averages.

The establishment of national standards for crash and injury rates is made difficult by the different reporting standards that are used, in terms of when reports are made and how they are classified. There is far more consistency for fatality rates, however there is considerable latitude in how annual VMT is calculated. In 2003 the National Highway Traffic Safety Administration cited a national highway fatality rate of 1.48 per 100

MVMT.[14] That same report cites the Georgia fatality rate as 1.47 per 100 MVMT. While this rate is different than the one developed from the Crash database, this in part can be due to different annualization of VMT as well as the use of data for a single year. The important point is that the Georgia fatality rate is almost identical to the United States average and it is assumed that the crash and injury rates would also be comparable to national averages. In most cases the safety rates above the threshold (one standard deviation) represent fairly small percentages of state centerline road miles by functional classifications.

For city and county roads, crash statistics are also based on an analysis of the year 2001 through 2003 crash. Crash and injury rates are higher on urban roadways than rural ones, although the opposite is true for fatalities. The crash, injury, and fatality rates are higher on state roadways for each individual functional classification. However, the total rates are higher on county roadways than on state roadways; this apparent paradox results from the large portion of state highway VMT that occurs on freeways and principal arterials (that have relatively low crash rates) versus the large portion of county roadway VMT that occurs on collectors and local roads (that have relatively high crash rates). The total crash and injury rates are substantially higher on city roadways than on state or county roadways, but the fatality rate is lowest on city roadways.

4.1.6 Congestion

State Highways

Congestion can be measured based on the extent of the problem, the number of centerline road miles affected, or by its affect on travel (e.g., the amount of VMT affected). The Volume to Service Flow ratios, (Daily Volume to Capacity ratio) for each road segment was used to determine the Level of Service as described in Section 3.2.2.

Using standard GDOT practice, congestion is defined as LOS D and below, although LOS E is sometimes used as the baseline in very large urban areas (and is the standard used in the ARC *Mobility 2030 Plan*). Based on the practice of defining LOS D as congested everywhere, the number of congested road miles in Georgia is relatively small, less than 2 percent of all state road miles. As shown in Figure 4.4, congestion is greater in urban areas, where 8 percent of all state road miles are congested (according to the LOS D or greater standard), while 5 percent would be considered congested under the LOS E or greater standard. As shown in Figure 4.5, within urban areas, congested centerline miles are greater on state roads that are classified as Interstates (34 percent LOS D or greater, 20 percent LOS E or greater) or Freeways (24 percent LOS D or greater, 18 percent LOS E or greater).

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[14] National Highway Traffic Safety Administration, U.S. DOT, *Traffic Safety Facts 2003*, 2003.

Figure 4.4 Congested Centerline Miles on State Roads
Level of Service D or Greater

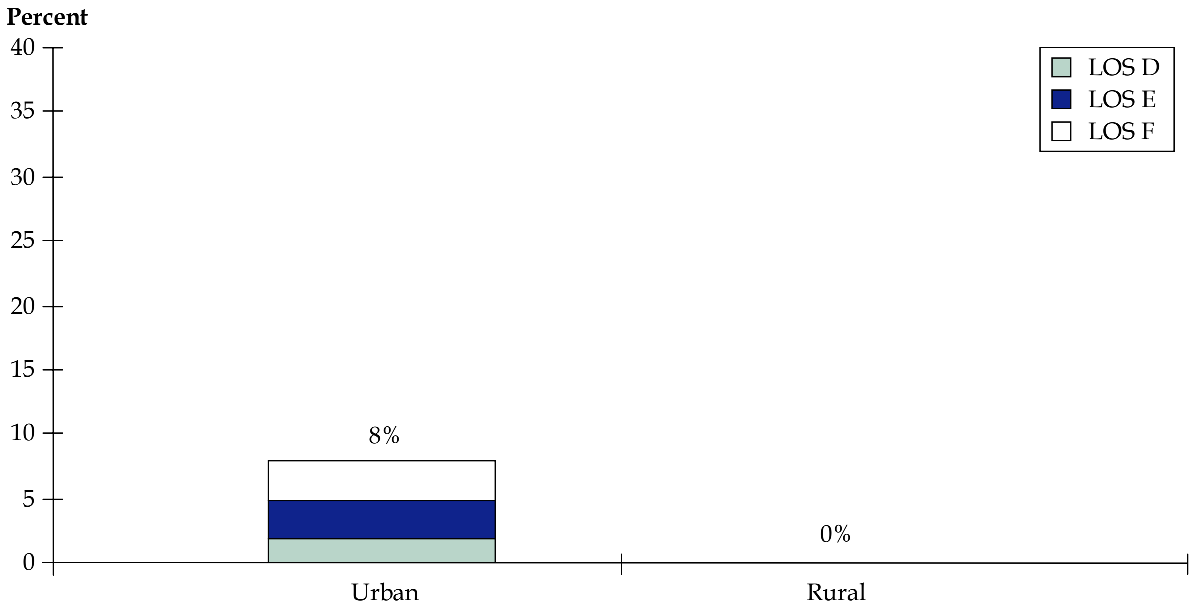
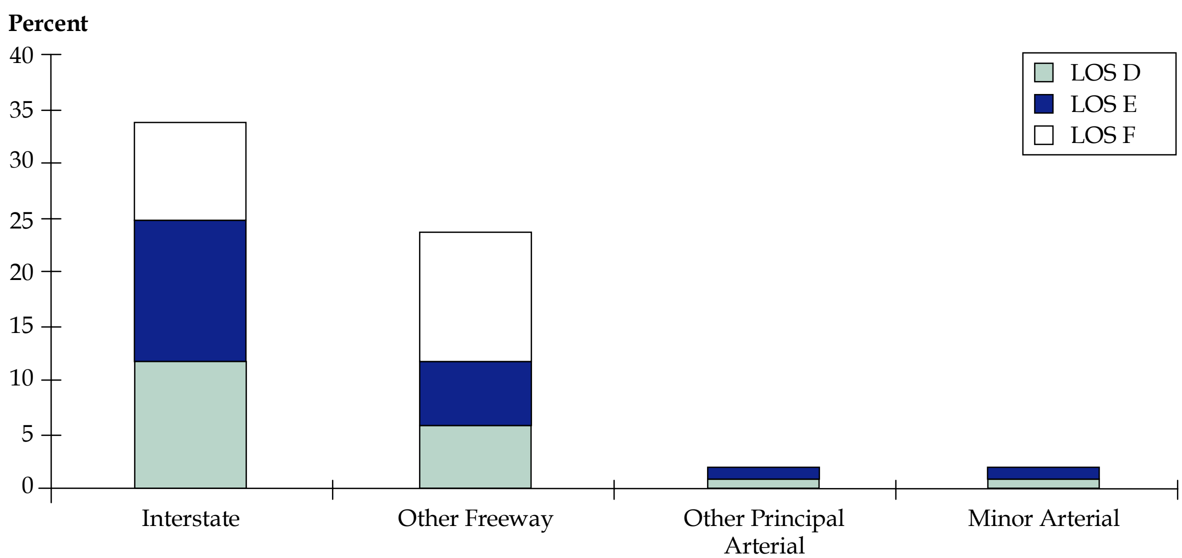


Figure 4.5 Congested Urban Centerline Miles on State Roads
Level of Service D or Greater



Congestion affects a much larger percentage of travel on state roads compared to the congested centerline road miles. Twenty percent of all travel on state roads occurs under congested conditions (based on the percentage of VMT at LOS D or greater), while only 2 percent of the centerline road miles are congested. As shown in Figure 4.6, this congestion is primarily in urban areas, where 35 percent of all VMT is at LOS D or greater (24 percent at LOS E or greater), while only 3 percent of the rural VMT is at LOS D or greater. As shown in Figure 4.7, in urban areas congestion is greatest on the Interstates (59 percent at LOS D or greater, 43 percent at LOS E or greater) and Freeways (55 percent at LOS D or greater, 43 percent at LOS E or greater). These data on urban highway congestion by VMT best capture the impact of congestion in the Atlanta metropolitan area on statewide data.

The evaluation of existing congestion also included the truck travel that is affected. Relatively more truck travel than total travel occurs on rural state roads, consequently truck travel is less affected by congestion compared to general traffic. Sixteen percent of all truck travel on state roads occurs under congested conditions, compared to 20 percent of general travel. Within urban areas however, truck travel is even more congested than general traffic. As shown in Figure 4.6, 36 percent of all truck VMT on state roads in urban areas operates at LOS D or greater. As shown in Figure 4.7, in urban areas truck congestion is greatest on the Interstates (51 percent at LOS D or greater) and Freeways (50 percent at LOS D or greater).

City and County Roadways Within MPO Areas

Most centerline mileage of city and county roadways tend to be of a collector or local functional classification, although some arterial roadways also fall under city or county jurisdiction. Urban arterials and rural collectors have the highest percentage of congested centerline miles among county and city roadways in MPO areas. While very few centerline miles of city and county roadways in MPO counties operate at LOS D or worse, 10 percent of VMT on county roads and 3 percent of VMT on city roads operate under congested conditions. Travelers on urban roadways in these counties experience congested conditions more often than those on rural roadways. Rural collectors and urban arterials and collectors experience the highest percentage of VMT at LOS D through F for both city and county roadways. Local streets, however, have little to no VMT experiencing congestion.

In MPO areas, 9 percent of truck VMT occurs in congested conditions on county roadways. On city roadways, about 3 percent of truck VMT occurs in congested conditions. The percentage of truck travel in congested conditions is relatively similar on both urban and rural city and county roadways. Similar to overall traffic, trucks experience more congested conditions on city and county rural collectors, urban arterials, and urban collectors. However, a significant percentage of truck VMT on county-owned local roads also occurs in congestion – 11 percent for rural and 8 percent for urban.

Figure 4.6 Congested VMT on State Roads
Level of Service D or Greater

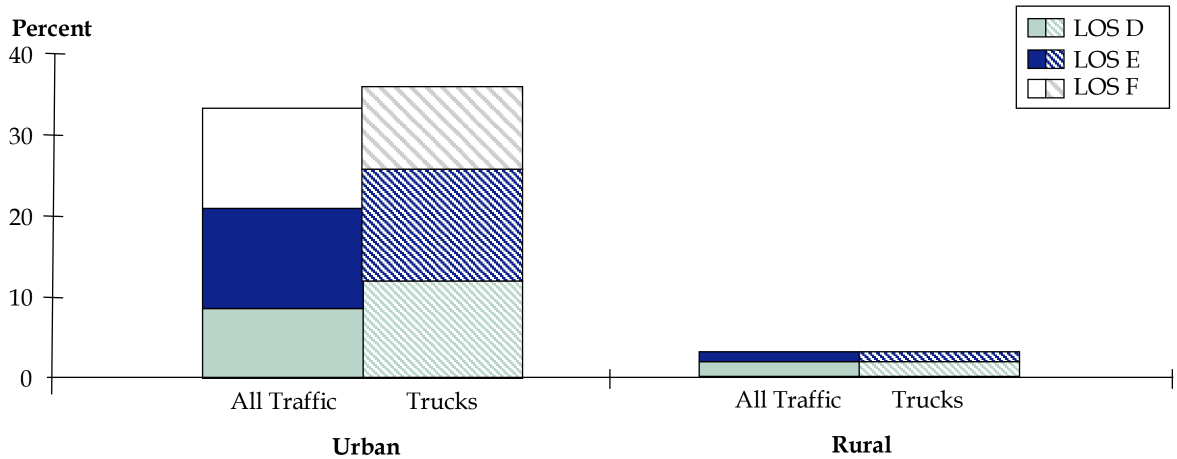
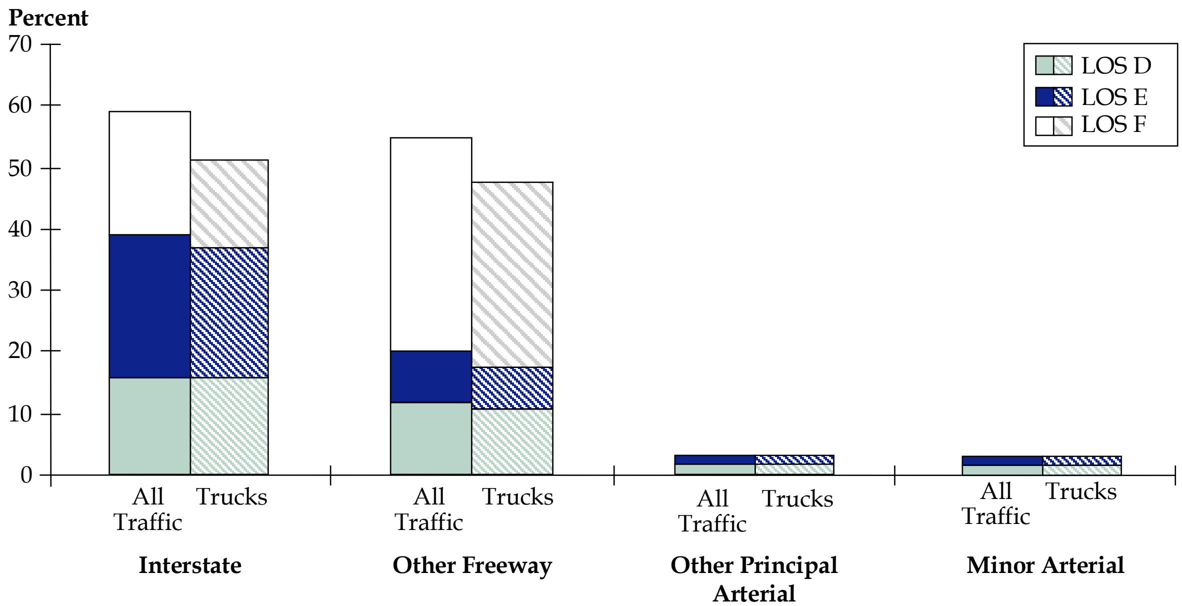


Figure 4.7 Congested Urban VMT on State Roads
Level of Service D or Greater



City and County Roadways Outside of MPO Areas

Defining congestion as conditions at LOS D or worse, almost no centerline miles of county roadways in rural areas are congested. While, as expected, roads in urban areas of the non-MPO counties are more congested, only 3 percent of county roads are congested. There are more than 25 times as many centerline miles of county-owned roadways in rural areas than in urban areas. The analysis for city roadways indicates similar trends as those for county roadways. Due to the constraints in output from the MTPT, no analysis of overall VMT by LOS or truck VMT by LOS was performed.

Overall Congestion Comparison

Figure 4.8 presents a comparison of the congestion levels (measured in percent of centerline miles by LOS) on urban roadways of different jurisdiction. Figure 4.9 shows the same comparison by VMT. The percent of urban roadway centerline miles that is congested is relatively low regardless of the jurisdiction. State roads have the highest percentage that are congested at 8 percent. However, a disproportionately high amount of VMT occurs on the small percentage of congested state, city, and county roadways. Roadways with a rural functional classification exhibit minimal congestion.

Figure 4.8 Level of Service Comparison by Highway System Component
Percent Centerline Miles

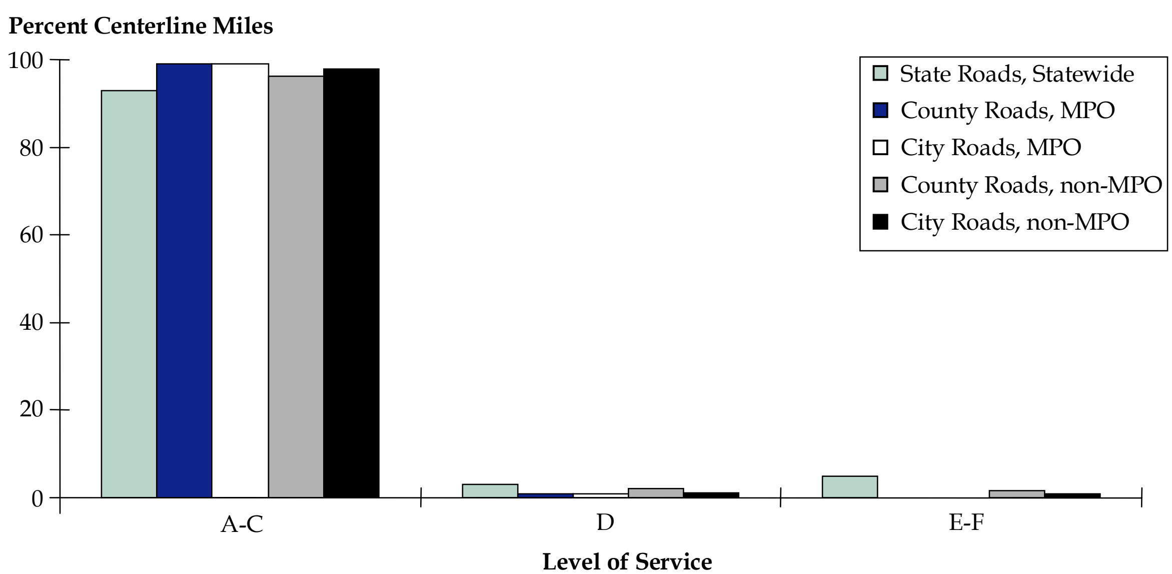
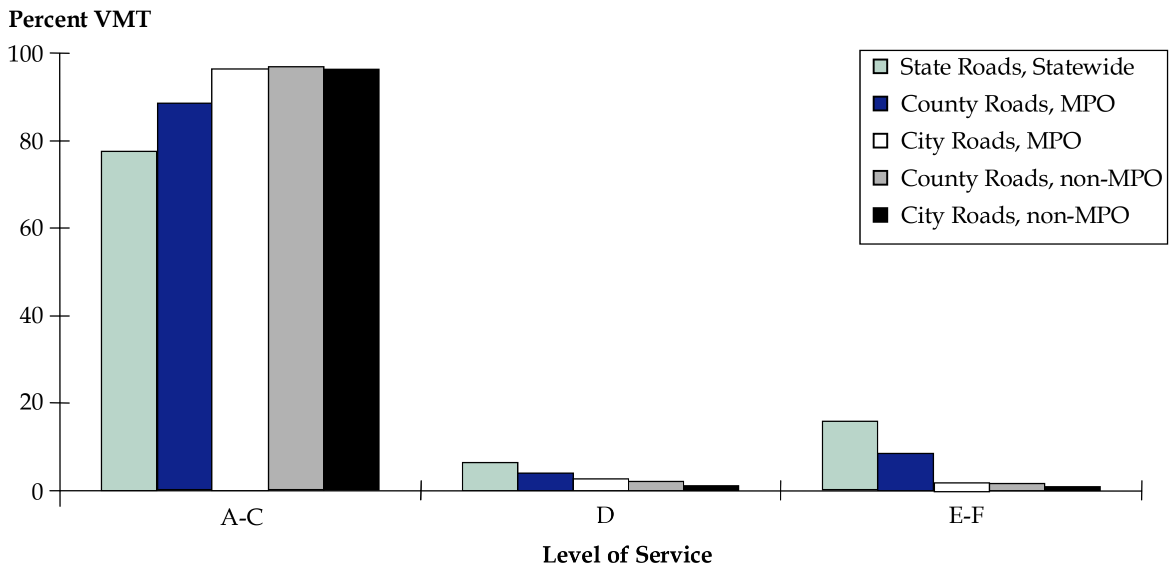


Figure 4.9 Level of Service Comparison by Highway System Component
Percent VMT



4.2 Intermodal

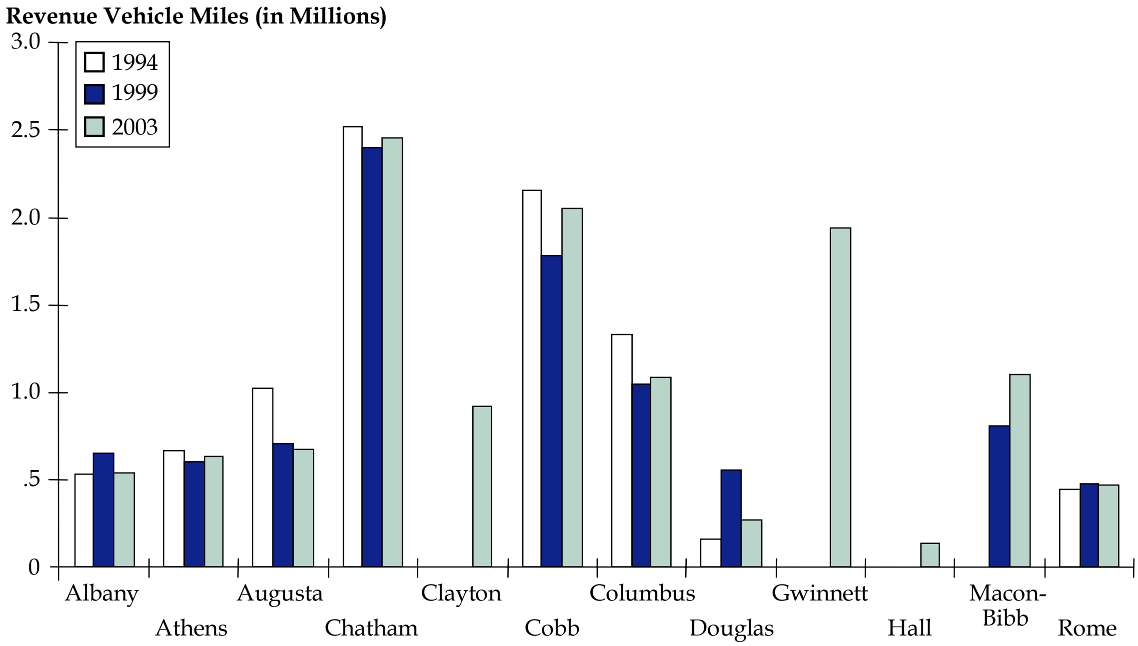
4.2.1 Transit

Urban Public Transit Programs

In Fiscal Year (FY) 2003, Georgia had 13 urban public transportation systems in operation. These operators provide a range of services that primarily focus around a fixed-route bus system and complementary paratransit service for individuals with mobility limitations. Douglas County operates a vanpool service rather than fixed-route services. MARTA operates a heavy-rail system in addition to its bus and paratransit services. MARTA is, of course, the largest system in the state with over 50 million annual revenue vehicle miles and 142 million annual trips. Figures 4.10 and 4.11 present revenue miles and ridership, respectively, for transit operators other than MARTA. Results are presented for FY 1994, 1999, and 2003, which correspond to data in the last two SWTPs and most recent data available.

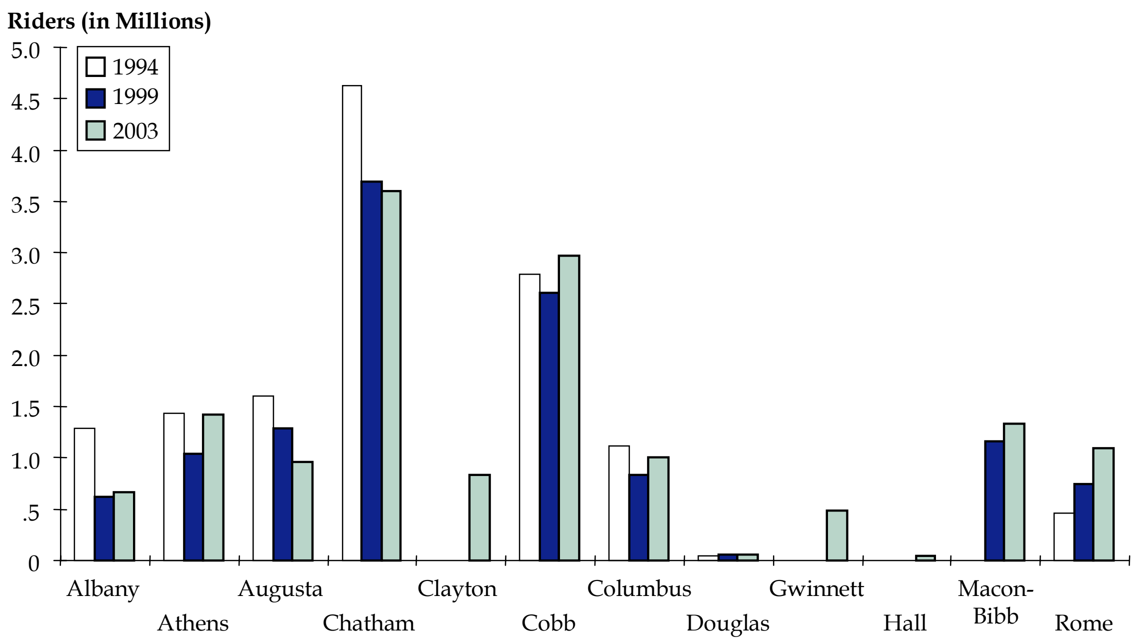
Of the nine non-MARTA transit operators that provided service in 1999, seven have experienced ridership increases between 1999 and 2003, and two experienced declines. Ridership increased by about 10 percent or more on almost all of these systems, with Rome and Athens seeing the largest increases at 47 and 37 percent, respectively. Augusta (25 percent) and Chatham County (2 percent) experienced declines. However, ridership is below 1994 levels for all systems, except for Athens, Douglas, and Rome.

Figure 4.10 Annual Urban Revenue Miles of Service
Excluding MARTA



Sources: *Georgia Department of Transportation's Statewide Transportation Plan Final Report*, February 2002; *2003 Georgia Transit Programs Fact Book.*

Figure 4.11 Annual Urban Transit Riders
Excluding MARTA

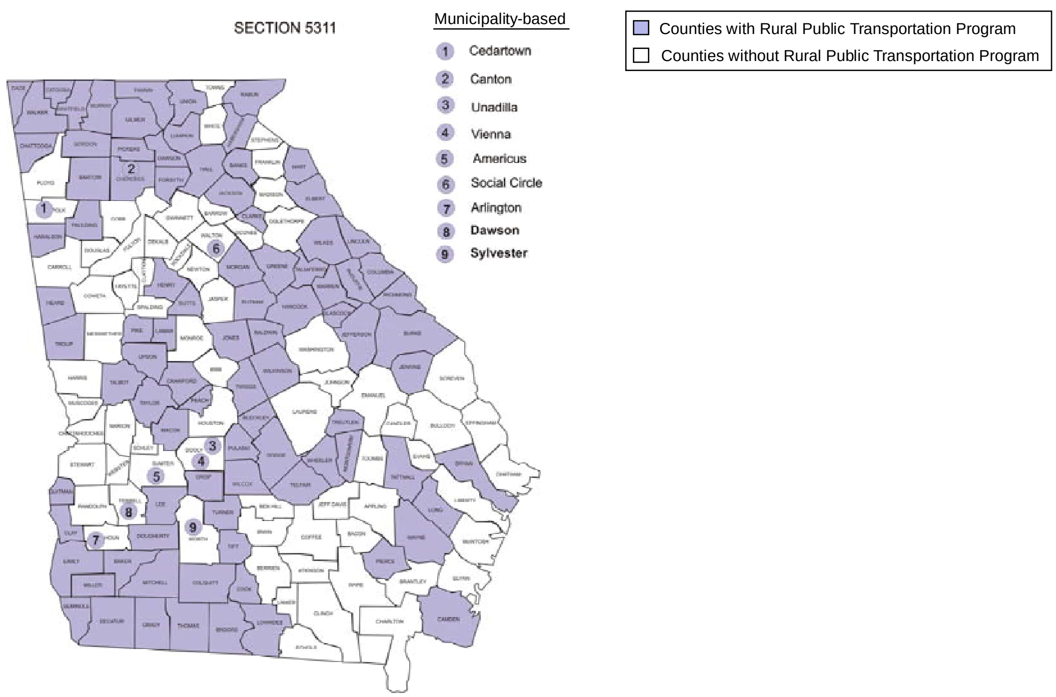


Sources: *Georgia Department of Transportation's Statewide Transportation Plan Final Report*, February 2002; *2003 Georgia Transit Programs Fact Book.*

Rural Public Transit Programs

In FY 2004, 97 of Georgia's 159 counties offered public transit service to the general population under GDOT's rural public transit program. Rural public transit operations in Georgia are demand-responsive services, and are generally available through subscription service and advance reservation. Figure 4.12 displays the counties that provided rural public transit service during 2004.

Figure 4.12 Public Transportation Programs



Source: Georgia Department of Transportation, Office of Intermodal Programs.

While the number of counties with service increased by 43 percent and the revenue miles of service offered increased by 120 percent since 1994, ridership increased by only 8 percent. Rural public transit riders in Georgia tend to be low-income, elderly, and transit-dependent individuals. Most rural public transit trips tend to be for personal business and medical reasons.

Rural operations in Georgia cover a range of sizes, with six counties having a fleet size of 10 or greater in 2004. In general, Georgia's rural public transit fleet is getting newer every year, with only 10 of the 379 total vehicles over five years in age. While about 2.6 percent of the vehicles operated in 2004 were over five years old, 8.3 percent were over five years old in 1999.

Intercity Bus Program

Intercity bus service is primarily operated by private firms which make decisions regarding routes, service levels, and fares. Intercity bus is an important component of the statewide transportation system, particularly for lower-income individuals; and funding programs are available to encourage the private operators to initiate or continue specific routes. In FY 2003, intercity bus services provided over 11 million revenue vehicle miles of service.

Ridership forecasting activities for the statewide intercity rail program considered the potential use of intercity bus as a travel mode. Based on trip surveys and travel data collected from Greyhound, the report estimated that about 540,000 intercity bus trips began or ended in Georgia in 1995. Of this total, about 70 percent were made for nonbusiness reasons. The largest single travel market for intercity bus was between Atlanta and Macon, with 51,100 annual trips. However, travel between Georgia cities other than Atlanta accounted for nearly 100,000 annual trips, and travel between these non-Atlanta cities and locations outside of Georgia accounted for an additional 120,000 annual trips.

4.2.2 Rail

Georgia's current rail network consists of a total of 4,836 miles of trackage. This is 102 miles more than reported in the 2000 Statewide Transportation Plan. The rail network is owned and operated by two Class I railroads and 21 short-lines (or Class III) railroads (see Figure 4.13). The two Class I railroads are Norfolk-Southern (NS) and CSX Transportation (CSX), which combined own and/or operate 3,510 miles of track or 73 percent of the statewide total. The short-line railroads operate 1,326 miles of light density lines.

Freight Traffic

The rail network is a critical link in the movement of commodities, accounting for the transport of approximately 195 million tons per year (mtpy) of originating, terminating, intrastate and through freight in 2003. About 45 percent of this total is through shipments, 35 percent is terminating, 12 percent is originating, and 8 percent is intrastate. Based on the 1998 data, the top five commodity categories carried are: coal (28.6 percent), stone/clay/glass (8.2 percent), pulp, paper, or allied products (6.7 percent), chemicals or allied products (7.9 percent), and hazardous materials (7.5 percent). Origins were fairly evenly spread throughout the State while terminating freight is more heavily focused on the coastal, Atlanta and northwest areas.[15] Figure 4.14 depicts the daily average number of trains on each rail line in Georgia. As can be seen, the major flows radiate from Atlanta in every direction. The busiest corridors in Atlanta lead in and out of large rail yards in Northwest Atlanta.

[15]Source: *Georgia Rail Freight Plan Update 2000.*

Figure 4.13 Georgia Rail System

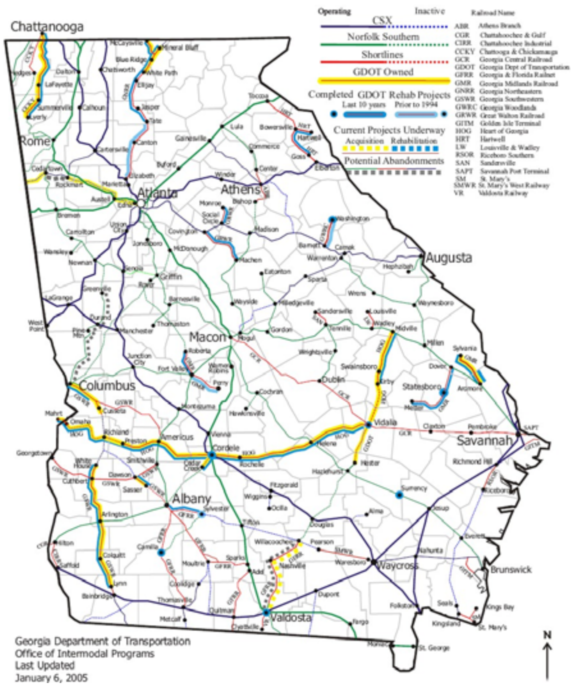
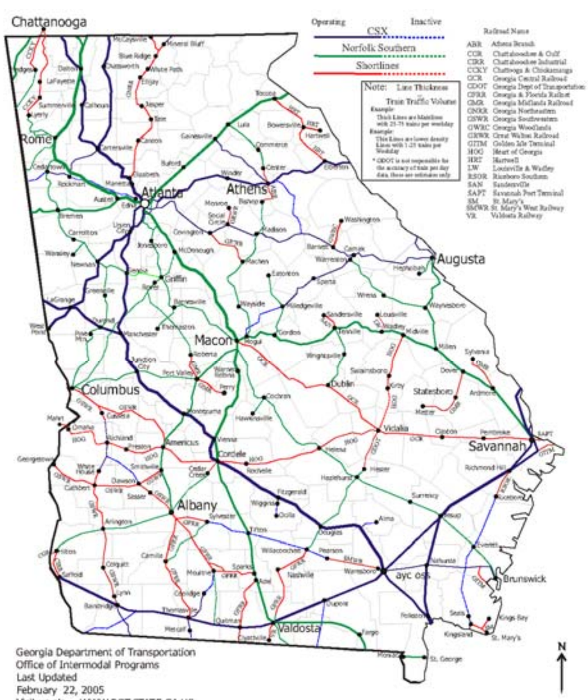


Figure 4.14 Rail Line Traffic



Passenger Rail

Currently, the only intercity rail passenger service in Georgia is provided by Amtrak in two corridors. The *Crescent* operates daily (once in each direction) between New Orleans and New York through Atlanta, Gainesville, and Toccoa. Amtrak also operates three routes along a coastal corridor through Georgia. The *Palmetto* operates once per day between New York and Savannah. The *Silver Star* and *Silver Meteor* also operate daily (once in each direction) between New York and Miami with stops in Savannah and Jesup.

4.3 Aviation

The aviation system in Georgia consists of 106 open-to-the-public airports. Of these facilities, nine are commercial air carrier airports, including Hartsfield-Jackson Atlanta International Airport (HJAIA). The remaining open-to-the-public airports include 94 publicly owned general aviation facilities and three privately owned facilities.

4.3.1 Air Carrier Airports

The nine air carrier airports handled over 1.4 million aircraft operations and over 43 million enplaned passengers in 2004. This total includes nearly 42 million passengers at HJAIA, which continues to be the world's busiest airport. Of the eight air carrier airports outside of Atlanta, Savannah-Hilton International and Augusta Regional at Bush Field were the busiest airports. Both airports provide commuter service to multiple hub airports, and Savannah-Hilton International provides large jet service from multiple carriers. The total 2004 enplanements for each facility are shown in Table 4.4.

Cargo Trends

Air cargo is carried in the belly of passenger aircraft or on the dedicated all-cargo carriers such as UPS and Federal Express. The three airports served by all-cargo carriers are HJAIA, Southwest Georgia Regional Airport (Albany), and Savannah-Hilton International Airport. HJAIA handles over 95 percent of the statewide total. Air cargo is one of the fastest growing elements of freight transportation in the United States, but overall carries very small percentages (in weight) of total cargo, and somewhat larger percentages in value (see Section 4.2.6).

General Aviation Airports

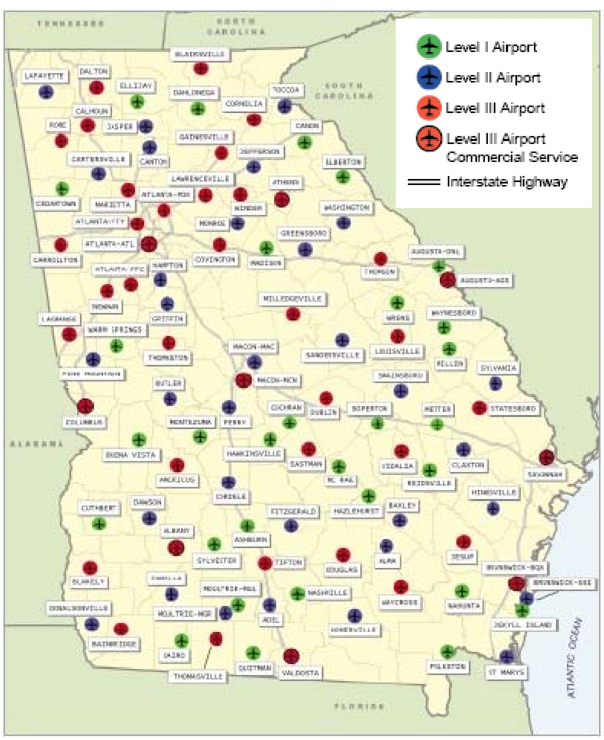
Georgia currently has a system of 94 general aviation airports that are publicly owned and operated. The 2003 Georgia Statewide Aviation System Plan (GSASP) classified the publicly owned general aviation facilities into three levels for planning and investment prioritization purposes (see Figure 4.15):

Table 4.4 Georgia Air Carrier Airports
2004 Enplanements

Atlanta – Hartsfield-Jackson Atlanta International	41,803,291
Albany – Southwest Georgia Regional	36,399
Athens – Ben Epps	11,209
Augusta – Augusta Regional at Bush Field	170,358
Brunswick – Brunswick-Golden Isles	40,392
Columbus – Columbus Metropolitan	55,548
Macon – Middle Georgia Regional	37,936
Savannah – Savannah-Hilton International	969,173
Valdosta – Valdosta Regional	46,301
Total	**43,170,607**

Sources: Georgia GDOT of Transportation, Office of Intermodal Programs.

Figure 4.15 Current General Aviataion Airports in Georgia



Source: Georgia Aviation System Plan.

- **Level III – Business Airports of Regional Impact –** These airports are expected to have a minimum runway length of 5,500 feet (minimum 100 feet wide), precision instrument approaches, improved communications and lighting, and a terminal building of at least 2,500 square feet. The GSASP goal is to have a Level III airport within a 45-minute drive of any location in the State.

- **Level II – Business Airports of Local Impact –** These airports are expected to have a minimum runway length of 5,000 feet (minimum 100 feet wide), nonprecision approach instrumentation, improved communications and lighting, and a terminal building of at least 1,500 square feet. The GSASP goal is to have a Level II airport within a 30-minute drive of any location in the State.

- **Level I – Minimum Standard General Aviation Airports –** These airports are expected to have a minimum runway length of 4,000 feet (minimum 75 feet wide), nonprecision approach instrumentation, improved lighting, and a terminal building of at least 750 square feet.

Stratification of the airports within the Georgia Aviation System into three levels provided a baseline for evaluating the existing airport system in the GSASP. Four performance measures, with specific benchmarks for each measure, were used to evaluate the system:

1. **Capacity –** Ability to provide airside/landside facilities to meet existing and future needs;

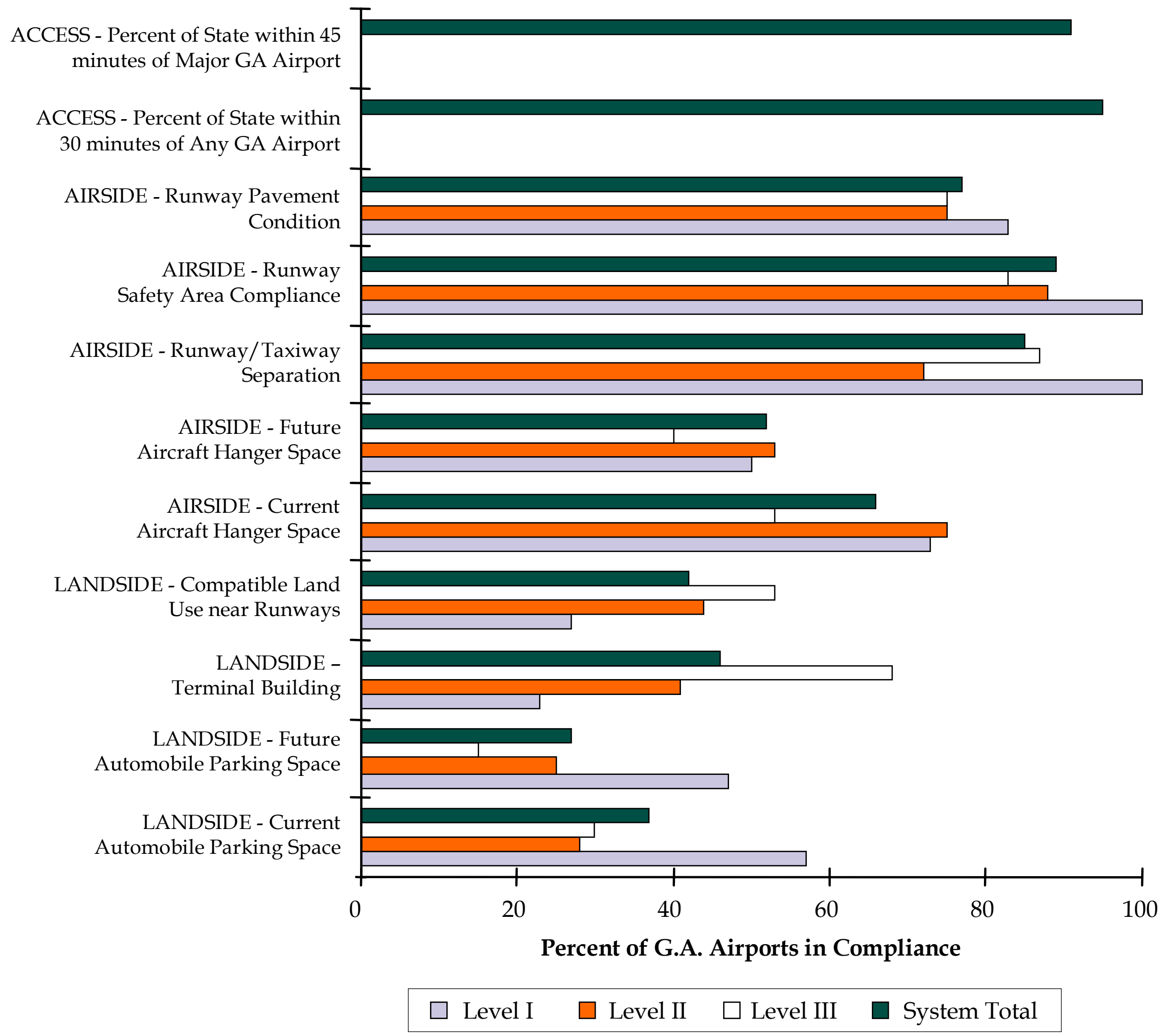
2. **Standards –** Ability to meet applicable design standards;

3. **Flexibility –** Compatibility of airports to meet the needs of local communities; and

4. **Accessibility –** Accessibility of system airports from both the air and ground.

Each performance measure was evaluated using benchmarks. Figure 4.16 illustrates key results from this analysis. In general, existing conditions tend to be better on airside characteristics than on landside. In particular, incompatible land uses are common, especially near smaller airports. Overall, however, smaller airports tend to have better overall conditions than larger airports.

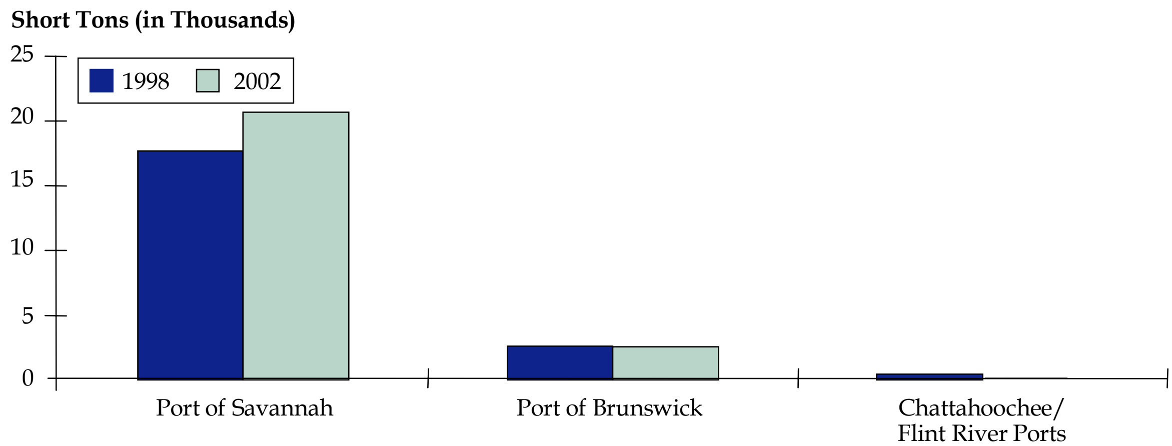
Figure 4.16 Current Airport System Performance



4.3.2 Maritime

Georgia's ports and waterways – both publicly and privately owned/operated – are a vital component of its statewide transportation system and its link to international markets. Operations through the Georgia Ports Authority (GPA) terminals and port-related industries account for over 80,000 jobs and state/local taxes of $1.4 billion annually. Taken together, more than 23.2 million tons of commodities were moved through nearly 40 public and private terminals in the State of Georgia in calendar year 2002. A summary of the growth in commodity shipments through Georgia's maritime ports is shown in Figure 4.17.

Figure 4.17 Growth in Georgia's Maritime Traffic



Port of Savannah

The Port of Savannah is one of the premier port complexes in the United States. It is comprised of public and private terminals, arrayed along the Savannah River, and handles a diverse range of containerized and noncontainerized cargoes. In 2002, the Port of Savannah ranked sixth among United States container ports with 1.13 million Twenty-foot Equivalent Units (TEUs) of containers handled. It was also the 33rd most active maritime port for total tonnage with 17.7 million short tons, up from 39th in 1998. Over the past decade, the Port of Savannah has been one of the fastest-growing ports in the country, and it continues to improve its facilities, its accessibility, and its information systems to successfully accommodate its anticipated continued growth.

Port of Brunswick

The Port of Brunswick is comprised of public and private terminals, arrayed along multiple waterways (the Brunswick, Turtle, East and Back rivers, along with the Academy, Terry and Dupree creeks), and handling a diverse range of noncontainerized cargoes (automobiles, forest products, petroleum products, agricultural products, etc.). In 2002, the Port of Brunswick, with 2.6 million short tons, was ranked 106th on the U.S. Army Corps of Engineers list of the top 150 United States tonnage ports, ranking it as a complex of both statewide and national significance.

Apalachicola-Chattahoochee-Flint Inland Waterway System

The Ports of Bainbridge and Columbus are barge ports on the Apalachicola-Chattahoochee-Flint (ACF) River inland waterway system, which links the interior of Georgia with the Gulf of Mexico and the Gulf Intracoastal Waterway. While they do not rank among the top 150 United States tonnage ports, as calculated by the U.S. Army Corps of Engineers, they play a role in serving the needs of Georgia's agricultural, forest products, construction and transportation industries by providing an alternative to rail and truck transportation. Because both ports are part of the overall ACF system, they are considered together in this discussion. Waterborne commerce on the entire ACF system was 18,000 short tons in 2002.

The Port of Bainbridge is located on the Flint River at Bainbridge, in the southwest corner of Georgia. The Flint River joins with the Chattahoochee River at Chattahoochee, Florida to form the Apalachicola River. The Port of Bainbridge handles liquid and dry bulk commodities moved on shallow-draft barges. The Port of Columbus is located on the Chattahoochee River at Columbus, on the western border of Georgia, nearly halfway between Florida and Tennessee. Like the Port of Bainbridge, the Port of Columbus handles liquid and dry bulk commodities moved on shallow-draft barges.

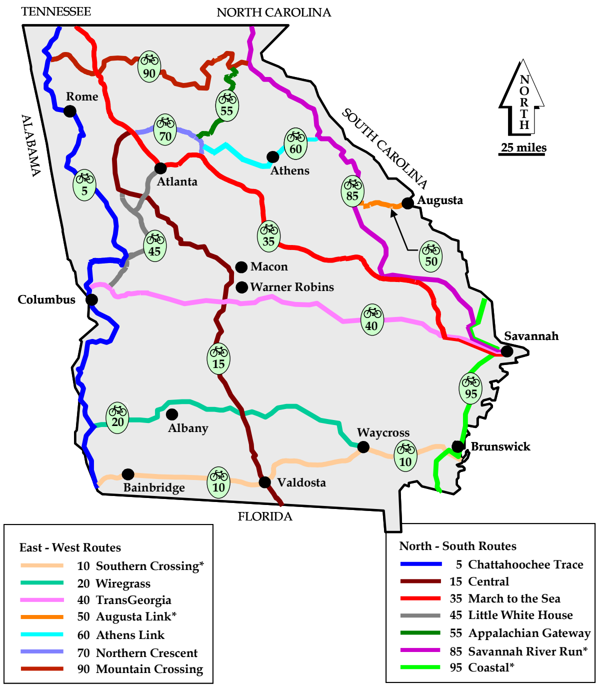
4.3.3 Bicycle and Pedestrians

Bicycle and pedestrian planning have been an integral part of the transportation planning process at the state level for well over a decade. State transportation plans are required to include a bicycle and pedestrian element, and regionally significant bicycle and pedestrian projects and programs must be included in the Statewide Transportation Improvement Program. The *Georgia Bicycle and Pedestrian Plan: Statewide Route Network* was developed in 1997 and updated in 1998 and serves as the primary resource for this effort. GDOT has begun preparation of a stand-alone statewide pedestrian plan.

Georgia's statewide bicycle system includes 14 routes, some of which traverse the State while others provide connectivity between routes. The statewide system covers 2,943 miles, but overlap between segments reduces actual roadway distance to 2,798 miles. Ten of the 14 routes run common with at least one other route at one or more locations. The two longest routes are over 400 miles in length. Approximately 70 percent of the statewide system is on the state highway system. Figure 4.18 provides a map of the various routes and assigned Bicycle Route numbers in the statewide system.

An analysis of bicycle facility conditions was undertaken using GDOT's Multimodal Transportation Planning Tool (MTPT). The percent of state roadways judged to be suitable for bicycle travel is shown in Table 4.5. In general, roadways of higher functional classification tend to have higher volumes and speeds, and therefore require greater roadway and/or shoulder width to be considered suitable for bicycle travel. The MTPT considers all roadways that are functionally classified as "local" to be suitable for bicycle travel, regardless of their physical conditions. This consideration is important since a large percentage of centerline miles of city and county roadways have a "local" functional classification. In 2005, GDOT contracted with each RDC (except ARC) to develop a Bicycle/Pedestrian plan (see Appendix B for complete list).

Figure 4.18 Georgia Bicycle and Pedestrian Plan
Statewide Route Network



Source: MTPT Technical Documentation – Version 3.0.

Table 4.5 Current Suitability of Public Roadways for Bicycle Travel

Roadway Jurisdiction	Suitability for Bicycle Travel (Percent of Total Centerline Miles)		
	Fully Suitable	Moderately Suitable	Not Currently Suitable
City	91%	2%	7%
County	80%	0%	20%
State	37%	3%	60%
Other Public Road	96%	0%	4%
Total	**76%**	**1%**	**23%**

Source: Multimodal Transportation Planning Tool.

For the analysis of existing conditions, any road segment that was found by the MTPT to have sufficient width and pavement/shoulder conditions was classified as "fully suitable" for bicycle travel. Any roadway segment for which only the pavement condition was substandard (corresponds to MTPT upgrade of "minor 1") was classified as "moderately suitable" for bicycle travel. Any roadway segment that has insufficient roadway and/or shoulder width (corresponds to MTPT upgrade of "minor 2," "major 1" and "major 2," as shown in Table 4.6) was classified as "not currently suitable" for bicycle travel. In general, state roadways have the lowest percentage of fully suitable roadways of all jurisdictions. City and county roadways have a high percentage of "fully suitable" roadways owing in large part to the preponderance of local roads (all of which are classified as "fully suitable" for bicycle travel in the MTPT).

Table 4.6 Roadway Upgrade Description Categories

Minor 1	**A roadway improvement on the order of a pavement overlay**
Minor 2	**A roadway improvement on the order of:** **Minor widening of a lane (<= 1 foot) or shoulder (<= 4 feet); or** **Reconstruction or installation of a paved shoulder to a maximum width of 4 feet.**
Major 1	**A roadway improvement on the order of a widening project.**
Major 2	**An improvement on the order of full roadway reconstruction and roadway widening.**

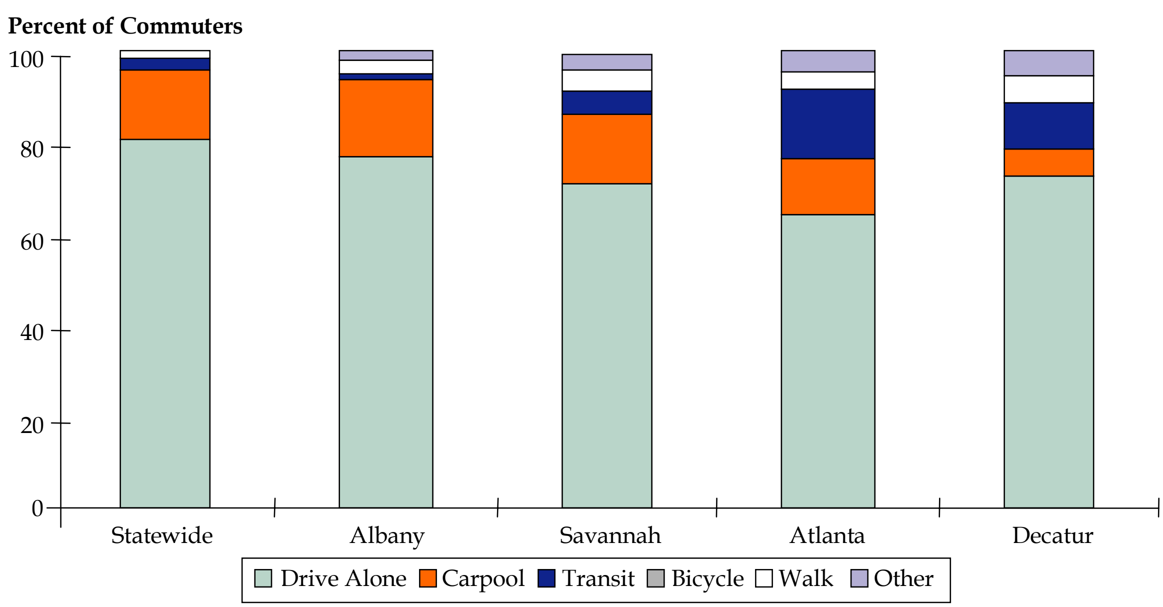
As shown in Table 4.7, the TransGeorgia, Augusta Link, Northern Crescent, and Coastal Routes have the highest suitability for bicycle travel compared to the state average on *state* roads only. The Appalachian Gateway, Chattahoochee Trace, Central, Mountain Crossing, and Athens Link routes have the highest percentage of roadway mileage rated as not currently suitable for bicycle travel.

Figure 4.19 displays commuting patterns from the 2000 Census for the State as a whole and four representative jurisdictions. On a statewide basis, 0.1 percent of commuters bicycle to work and 1.1 percent walk to work. While there are some communities such as Albany that mirror these statewide patterns, there are many communities that greatly exceed these statewide averages. Savannans walk to work at twice the state average and bicycle to work at 10 times the state average. Residents of Decatur walk to work at a rate over three times the state average. Atlantans walk to work at twice the state average, in addition to their heavy transit usage.

Table 4.7 Current Suitability of Roadways on the State Bicycle Route Network

Bicycle Route Number	Bicycle Route Name	Suitability for Bicycle Travel (Percent of Total Centerline Miles) Fully Suitable	Moderately Suitable	Not Currently Suitable
5	Chattahoochee Trace	17%	3%	80%
10	Southern Crossing	21%	2%	77%
15	Central	23%	1%	77%
20	Wiregrass	39%	1%	60%
35	March to the Sea	34%	2%	64%
40	TransGeorgia	47%	4%	48%
45	Little White House	26%	1%	73%
50	Augusta Link	44%	17%	39%
55	Appalachian Gateway	15%	4%	81%
60	Athens Link	24%	3%	73%
70	Northern Crescent	50%	2%	48%
85	Savannah River Run	28%	12%	61%
90	Mountain Crossing	24%	1%	75%
95	Coastal	51%	6%	43%
Total		**29%**	**3%**	**68%**

Figure 4.19 Commuting Patterns in Georgia



4.3.4 Freight

Understanding the flow of freight by weight provides insights into the infrastructure needs in Georgia (e.g., roadway pavement and capacity, railroad tracks, etc.). Understanding the flow of freight by value provides insights into the economic impact of freight flows (e.g., cost of shipping, economic development, location of markets). The information in this section is not meant to supplement the movement of freight discussed previously for the specific highway/truck, rail, and air modes.

An analysis of the 1998 data showed 634 million tons of freight moving to, from, within, and through Georgia. That freight was valued at $1.1 trillion. The intrastate component of that freight is the largest by tonnage, but the other directions (inbound, outbound, and through) are also sizable and fairly evenly distributed as shown in Figures 4.20 and 4.21. Nearly 33 percent of the freight tonnage and 37 percent of the value moving on the transportation system in Georgia have neither an origin nor destination in the State, but rather serve the national economy.

Freight Origins and Destinations

Georgia's outbound freight is principally destined for areas within 500 miles of Georgia's borders, which receive 73 percent of its outbound shipments by tonnage and also 73 percent of its outbound shipments by value. Georgia's inbound freight also comes from areas within 500 miles, which are the origin of 87 percent of its inbound shipments by tonnage and nearly 80 percent of its inbound shipments by value. Miami is Georgia's largest trading partner with respect to value. Lexington, Kentucky with 22.6 million tons is Georgia's largest trading partner with respect to tonnage. This freight is almost exclusively low-value coal shipped by rail to Georgia's coal powered electrical utilities.

Commodities

The importance of certain commodities in Georgia, as determined by their share of freight, is quite different when ranked by weight or value. Modes that carry the largest share of weight place the most demand on the freight infrastructure. The commodities that these modes carry tend to be high-density and low-value, require low shipping costs, and are not time-sensitive. The distribution of commodities by weight in 1998 is shown in Figure 4.22. The top commodity by weight moving in Georgia is flows to and from distribution centers.[16] Three of the other five freight commodities moving in Georgia by tonnage are high-weight, low-value bulk shipments: clay, concrete, glass, and stone; lumber; and chemicals.

As shown in Figure 4.23, the top five freight commodities overall moving in Georgia by value are warehousing and distribution, transportation equipment, chemicals, food products, and electrical machinery. (While most chemicals by weight are low-value commodities, this category also includes high-value pharmaceuticals and cosmetics.)

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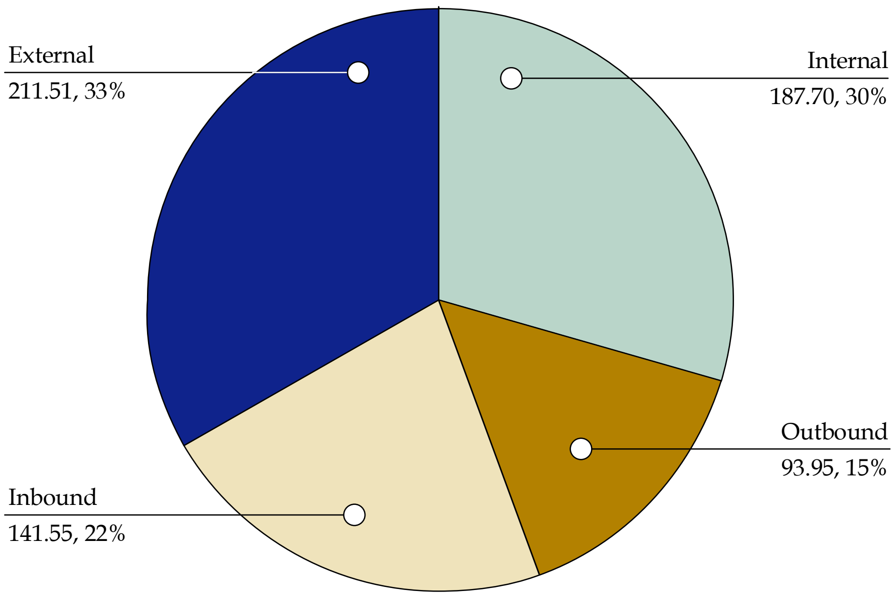
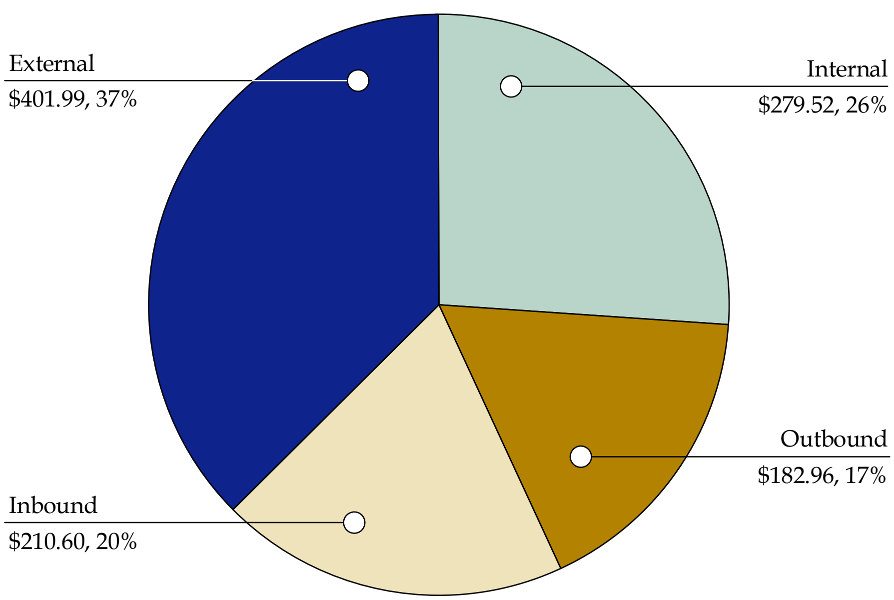
[16] Distribution centers are rail terminal, airports, water ports, and large trucking warehouses that ship and receive freight between states or metropolitan areas. It does not include centers that ship freight primarily within metropolitan areas.

Figure 4.20 Directional Flows by Weight
1998 Annual Tons (in Millions)



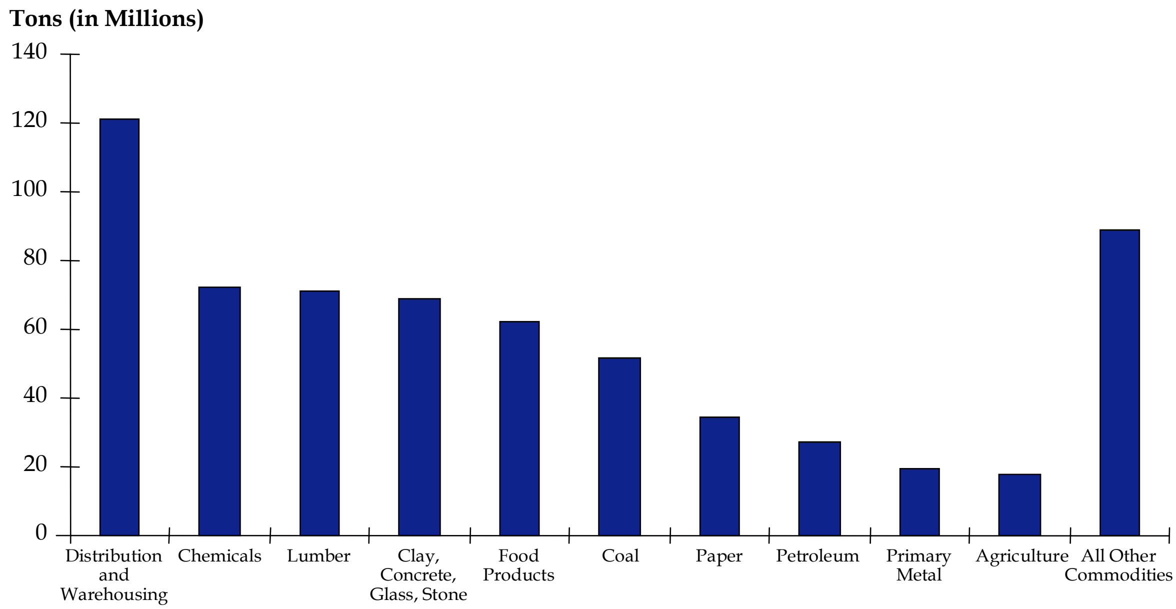
Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.21 Directional Flows by Value
1998 Annual Dollars (in Billions)



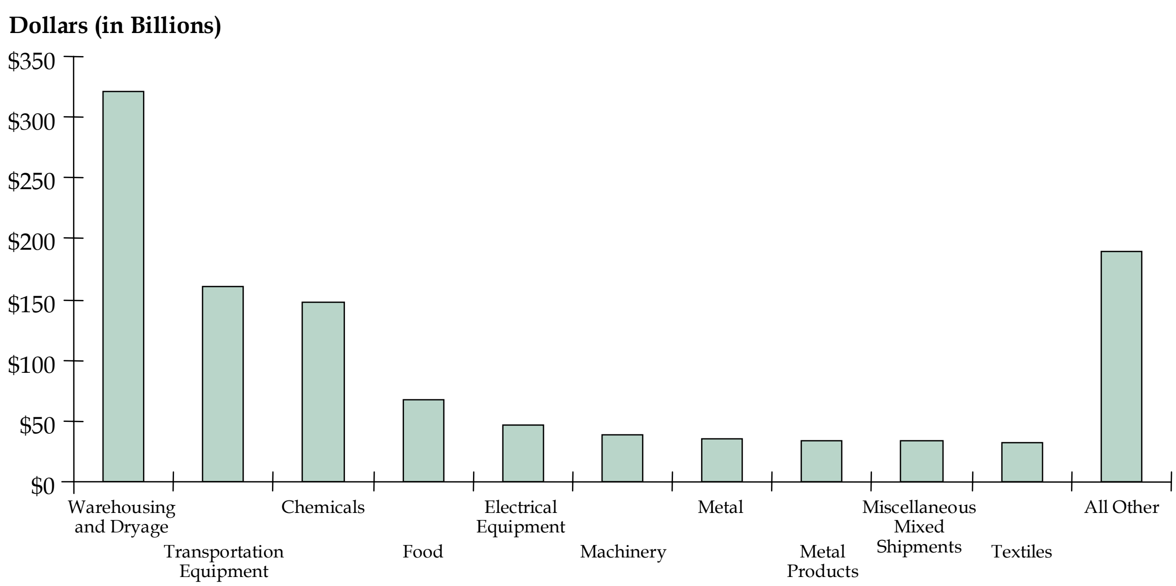
Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.22 1998 Annual Commodity Weight



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.23 1998 Annual Commodity Value



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Modes

Overall, trucks carry the largest proportion of freight in Georgia (72 percent by weight and 82 percent by value) as shown in Figures 4.24 and 4.25 respectively. Georgia's major ports (Savannah and Brunswick and to a lesser degree Bainbridge) are the principal locations serving Georgia's domestic water freight. However, the ports of Savannah and Brunswick handle primarily international cargo and only the domestic landside portion of the shipment (the rail or truck movement to or from the port) is reported in TRANSEARCH. The port of Savannah, according to the U.S. Army Corps of Engineers,[17] handles 21.5 million tons of international cargo in addition to its 1 million tons of domestic cargo and the port of Brunswick handles 1.875 million tons of international cargo in addition to its 12,000 tons of domestic cargo. Air cargo accounts for a negligible percentage of tons of Georgia's domestic freight movement.

Goods carried by trucks tend to have higher value-weight ratios than goods carried by rail and water. Therefore, trucking carries a higher percentage of the value of the goods shipped in the State than it does the percentage of tonnage shipped. Figure 4.25 shows that the truck mode carries 82 percent of the total value of all shipments, compared to 72 percent of all shipments in terms of tons. Conversely, the rail mode carries 17 percent of the total value of all shipments compared to 26 percent of the total tonnage. The total mode share carried by air and water is less than 1 percent of all domestic freight carried, although air cargo is 1.7 percent of the value of all inbound freight.

Georgia Counties

The counties with the largest existing volumes of domestic freight by tonnage are those counties located in urban areas where freight is produced and consumed. As shown in Figure 4.26, the top freight flows ranked by tonnage are almost exclusively to counties within urban areas. The exception is Monroe County because of the shipment of coal by rail to its Scherer electric power plant. Fulton County ships and receives the highest volume by tonnage in Georgia, an amount that is more than 3.6 times that of the second ranked county, Chatham (Savannah). In addition to Fulton County, the Atlanta urban area contains 6 of the top 15 counties ranked by total tonnage. Shipments by value follow similar patterns.

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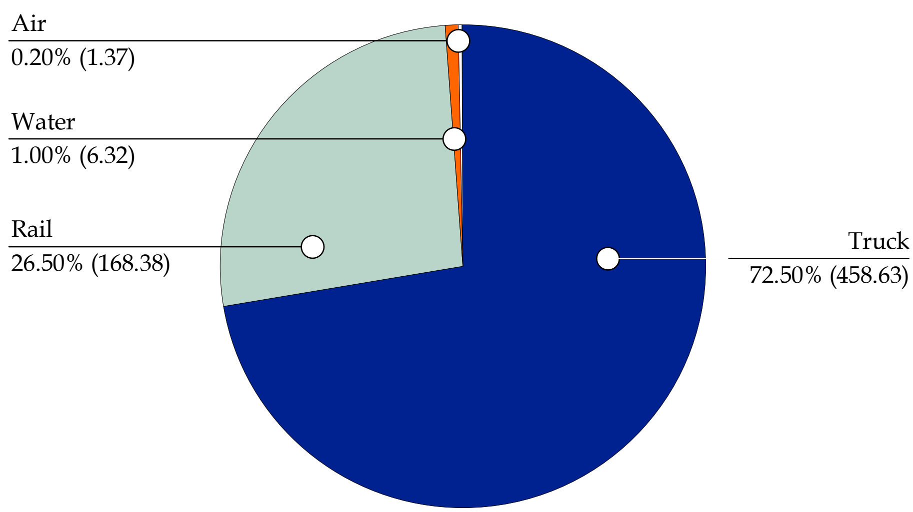
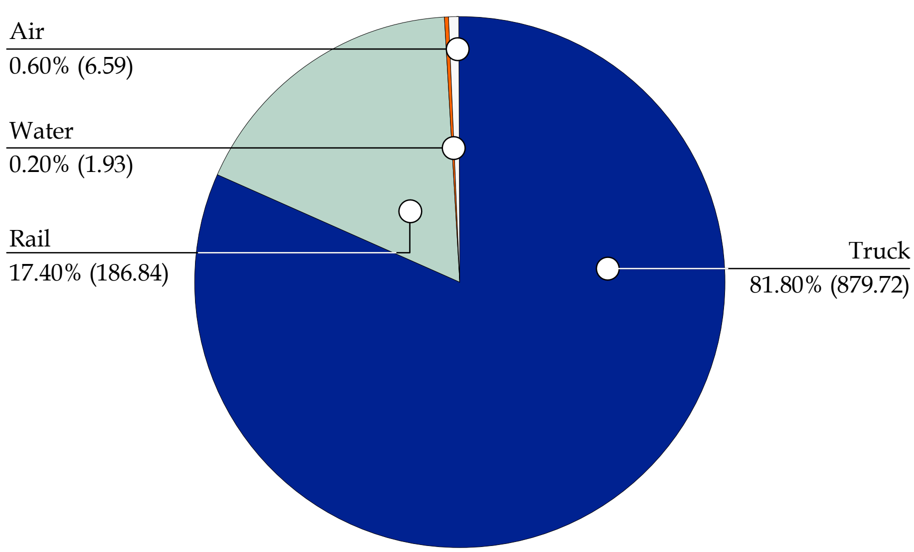
[17] *Waterborne Commerce of the United States: Calendar Year 2003: Part 1 – Waterways and Harbors Atlantic Coast*, GDOT of the Army Corps of Engineer, Institute for Water Resources IWR-WCUS-03-1.

Figure 4.24 1998 Mode by Weight
Millions of Tons



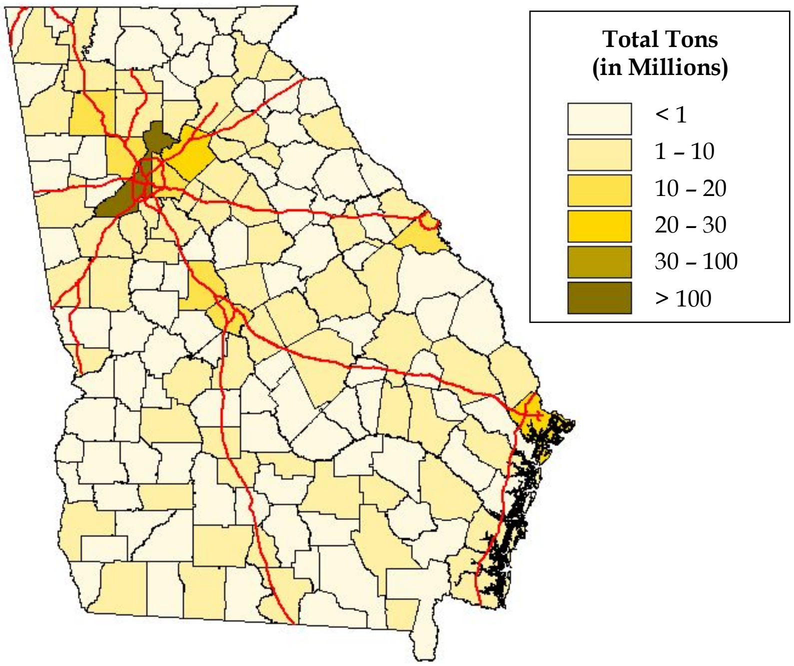
Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.25 1998 Mode by Value
Millions of Dollars



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.26 1998 Tonnages by County for All Modes



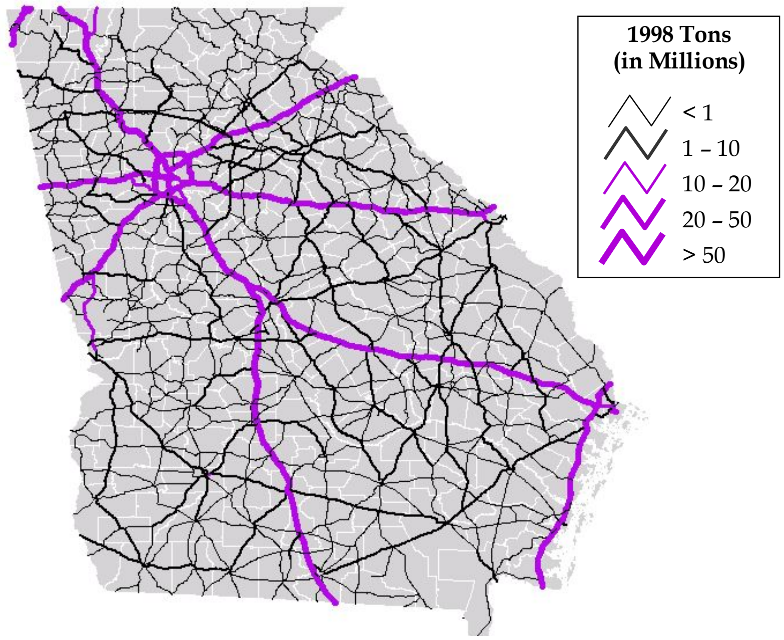
Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Freight Routes

As shown in Figure 4.27, the principal highways used in the transport of freight are Georgia's interstate highways, by both weight and value. This is not surprising given that freight shipments in Georgia are primarily of commodities that support the service industries in Georgia's urban areas and the interstate system connects these urban areas. The section of the interstate that transports the highest tonnage in Georgia is I-75 between Atlanta and Macon, with some sections transporting over 90 million tons per year. At an average payload of 17 tons per truck, this equates to 530,000 trucks per year or almost 14,000 freight trucks per day. This is also the section of highway that carries the highest value of freight, with some sections carrying freight valued at over $175 billion per year.

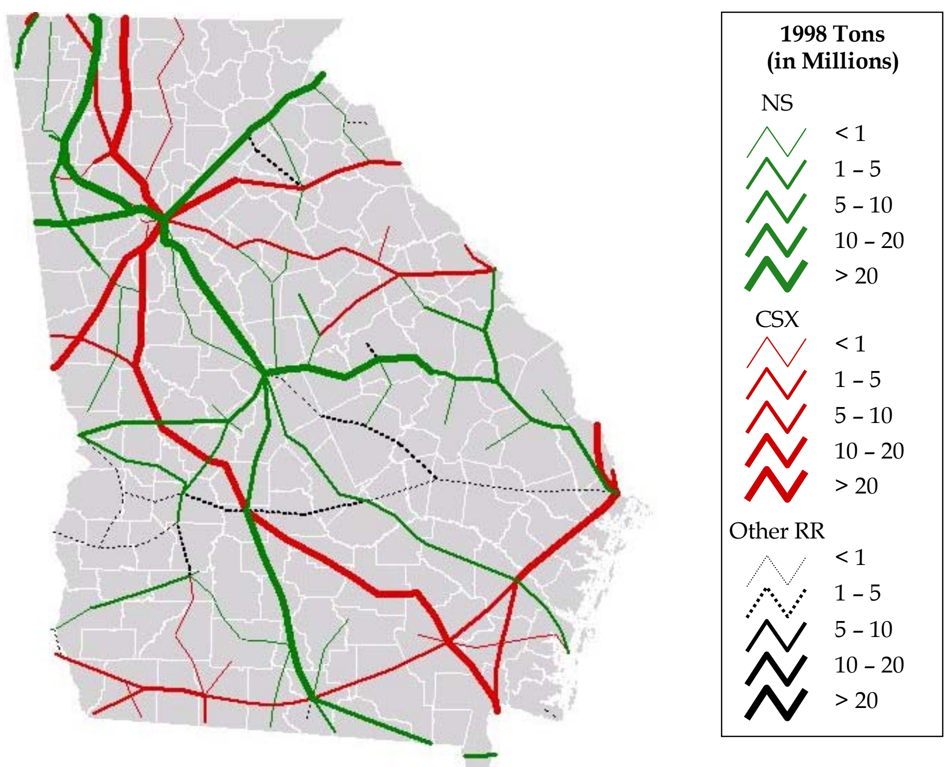
As shown in Figure 4.28, tracks owned by the two Class I railroads in Georgia, Norfolk Southern and CSX, carry the highest volumes of freight by tonnage and value. The highest volumes on the NS system are on the main track between Macon and Chattanooga through Atlanta which currently carries freight with a weight from 20 million to 40 million tons and with a value of from $40 billion to $60 billion per year. This equates to 800 to 1,600 loaded rail cars per day. The highest freight volumes on the CSX system are the main track between Atlanta and Chattanooga, which currently carries freight with a weight from 20 million to 30 million tons and a value of from $20 billion to $50 billion per year. The regional and short-line railroads provide important accessibility to other locations in Georgia, but the volumes of freight that they carry are much lower than those of the Class I railroads.

Figure 4.27 1998 High-Tonnage Truck Corridors



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

Figure 4.28 1998 High-Tonnage Rail Corridors



Source: Global Insight, Inc., 1998 TRANSEARCH database for Georgia.

HJAIA is the busiest passenger airport in the United States with a reported 39 million passenger enplanements in 2003, almost 20 percent more than Chicago's O'Hare the second busiest airport. However, as reported by the Federal Aviation Administration, HJAIA's landed weight of 2.3 million tons in 2003 ranks only 15th among United States airports, significantly less than the 17.5 millions tons landed at Memphis International, a major hub for FedEx. Air cargo is carried both in dedicated cargo airplanes, such as FedEx planes, and as belly cargo in passenger planes. While the passenger activity at HJAIA excludes the extent of dedicated cargo planes to the degree utilized in Memphis, the volumes of passenger planes could support belly cargo operations which would increase the cargo ranking of HJAIA.

5.0 Economic Forecasts

Future transportation needs in Georgia will be influenced by the interplay among a variety of factors that will have a bearing on transportation demand. These factors include employment growth, industry structure, logistics patterns, and changes in the size and composition of the State's population. Decisions made outside of Georgia, such as major infrastructure investments in neighboring states, also will affect how goods and people move. The performance and shape of Georgia's transportation system in 2035 will be the result of how these factors unfold over the next 30 years. This section describes recent economic trends in Georgia, and the forecasts for economic growth over the next 30 years which drive the transportation performance indicators shown in Section 6.0. Forecasts are provided on a statewide, industry, MPO, and Service Delivery Region basis.

■ 5.1 Recent Economic Trends

5.1.1 Employment

Job growth in Georgia during the 1990s was remarkable. The State added 1.2 million net new jobs, an increase exceeded only by California, Texas, and Florida – all states that are significantly larger than Georgia. The rate of job growth between 1990 and 2000, 32.6 percent, was significantly higher than the rate, 19.6 percent, posted by the United States (see Figure 5.1). However, Georgia's employment growth, like the nation's, has plateaued since 2000.

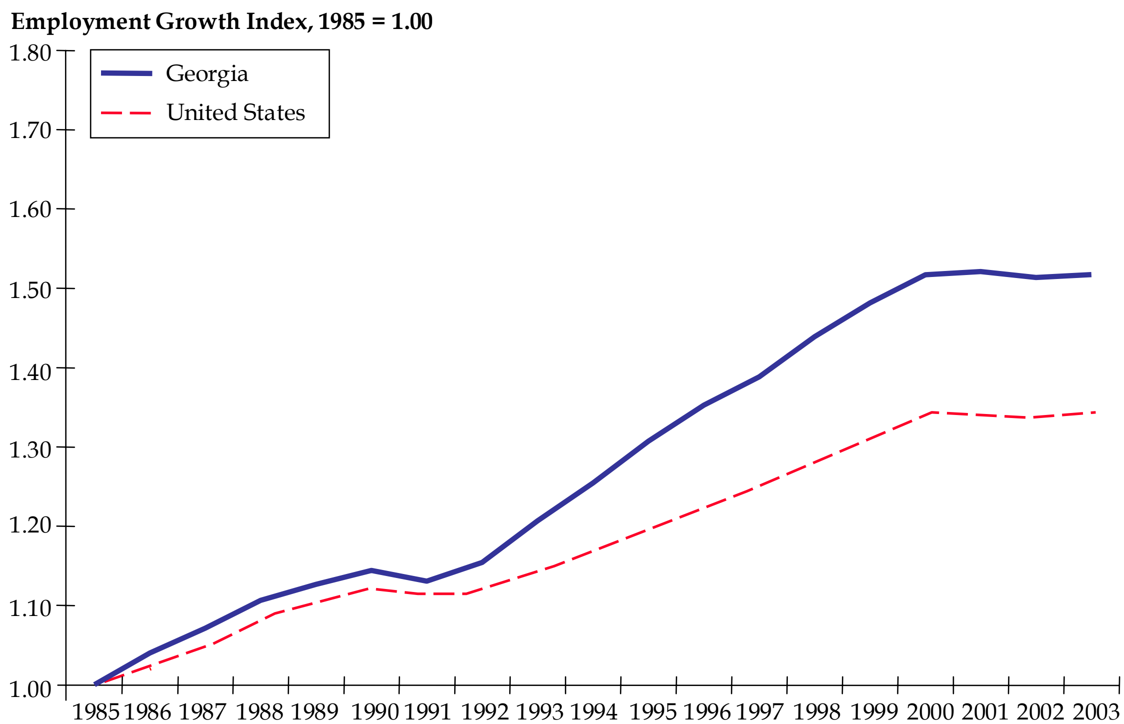
Georgia's economy slowed during the 2000-2003 recession, losing about 150,000 jobs, performing below much of the rest of the nation. Since mid-2003, job growth has picked up in Georgia, but not to 1990s levels (by late 2004, year-over-year job gains in Georgia had inched up to about 40,000, compared to the 110,000 to 130,000 annual gains that were common in the late 1990s).[18]

The Georgia economy is recovering at a moderate pace from the employment decline experienced during the 2000-2003 recession. However, the recovery is not across the board, favoring some industries over others. The information (publishing, telecommunications, data processing, broadcasting, etc.) and hospitality (accommodation and food services)

[18] Figures based on the Bureau of Labor Statistics "Current Employment Statistics" data series. http://data.bls.gov/cgi-bin/dsrv?sm.

industries are now showing strong growth, and the sharp losses in manufacturing employment have waned. However, the air transportation industry, a leading employer in Georgia, continues to undergo substantial changes as it responds to security concerns, higher gasoline prices, and lower yields.

Figure 5.1 Employment Growth
1985-2003



Source: Bureau of Economic Analysis (total full- and part-time employment). www.bea.gov.

5.1.2 Population

In conjunction with economic growth, the magnitude of population increases in Georgia through 2035 will have a significant impact on transportation demand in the State. Where (city, suburb, outer suburb, rural) and how (dense multifamily, apartment tower, small lot single family, or large lot single family) people choose to live will have direct implications on the types of transportation investments that will be needed to maintain or improve mobility in Georgia, both for the State's residents and its businesses. The composition (age, domestic and/or foreign immigrants) of the State's population growth and how that reflects on living preferences and economic choices also will have a tangible effect on Georgia's transportation system in the future.

Figure 5.2 compares the rate of population growth between decennial census periods for Georgia and the United States. It has only been since the 1960 to 1970 period that Georgia has consistently outgrown the nation. Since that time, Georgia's population growth has accelerated as the State became a Sunbelt magnet for domestic and international migrants.[19] The 1990s marked the fastest population growth in modern Georgia history (post-1900) as the State added 1.7 million people, growing at a rate (26.4 percent) twice as fast as the nation's (13.2 percent). Since 2000, however, population growth has slowed somewhat in Georgia. Although the State added about 500,000 people between 2000 and 2003, the average annual rate of growth declined to 2.0 percent from the 2.4 percent average posted through the 1990s. Georgia's growth rate remains significantly higher than the United States average (1.1 percent), but the difference has narrowed.

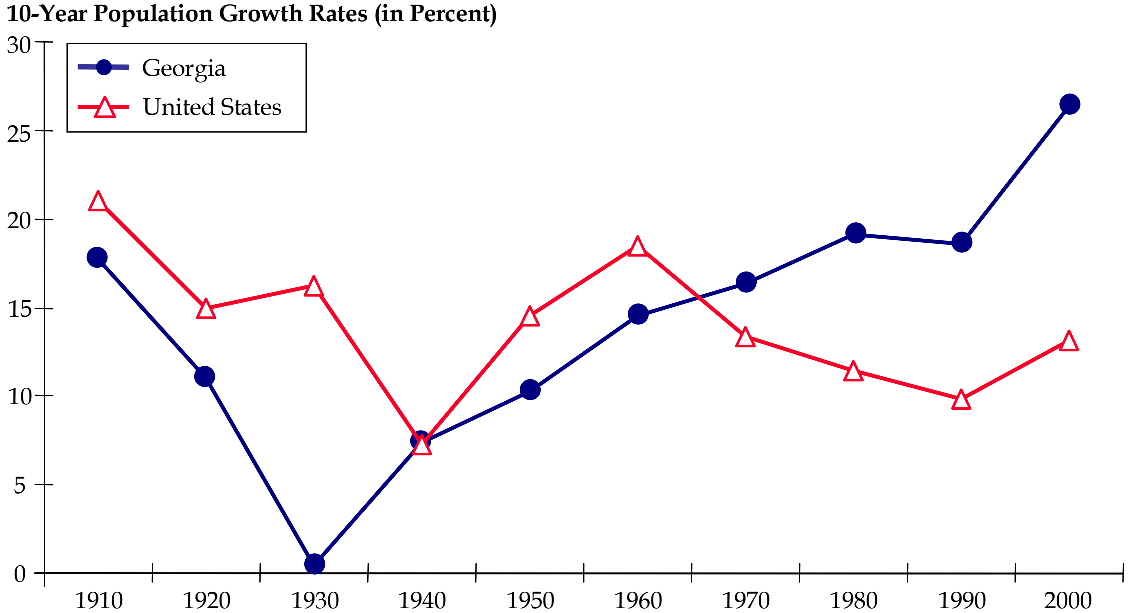
The slower population growth experienced in Georgia between 2000 and 2003 (2.0 percent annual versus 2.4 percent annual in 1990s) may be due, at least in part, to the recession. One factor that may be contributing to the slower growth is a rise in the cost of living. The Metro Atlanta area's housing costs have increased compared to regional standards. New single family homes in the "Big Four" counties central to Atlanta – Fulton, DeKalb, Gwinnett, and Cobb – are now running into the $500,000 range as buildable sites become scarcer and land values increase. This is stimulating growth in outer counties, but forcing longer commutes. The population data for the 2000 to 2003 period show that Greater Atlanta's counties are absorbing a greater share of the region's and the State's population growth.

After increasing at a faster rate than the United States in the 1990s, population growth in the parts of Georgia outside of the Atlanta region fell sharply during the 2000 to 2003 period according to U.S. Census Bureau estimates. Several rural and urban counties outside of Greater Atlanta, including Chatham, Lowndes, Dougherty, Mucosgee, Richmond, Sumter, Washington, Emanuel, Bulloch, and Bibb, experienced slowing growth between 2000 and 2003. With a greater concentration of jobs in manufacturing, regions beyond the Atlanta metropolitan area were more strongly impacted by the 2000-2003 recession than the capital city.[20] These economic difficulties would translate into lower population growth rates.

[19] The number of foreign-born Georgia residents more than tripled between 1990 and 2000 and they now account for 7.1 percent of the State's population. Foreign and domestic Hispanics are attracted to Georgia while the rates of other domestic migration has gone down since the 1990s. Georgia is attracting and retaining more highly educated people.

[20] Between 2000 and 2003, the Atlanta metropolitan area and the "rest of Georgia" (Georgia, excluding the Atlanta region) lost 2.3 percent and 3.1 percent of their jobs, respectively. During that period, manufacturing also declined at a faster rate in the rest of Georgia than Greater Atlanta.

Figure 5.2 Long-Term Historical Population Growth Trends

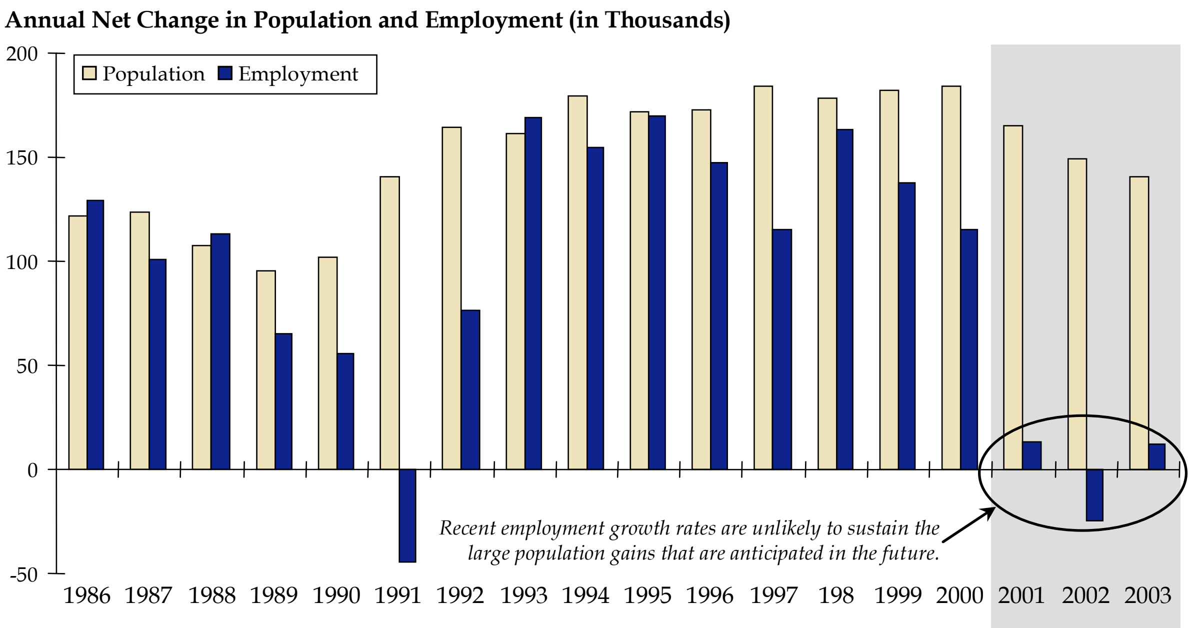


Source: U.S. Census Bureau.

5.1.3 Population and Employment Growth Comparison – What It Means for the Forecast

The strong employment gains experienced by Georgia in the 1990s were a catalyst for population growth as people moved to Georgia from around the United States and from abroad to participate in the opportunities afforded by the State's rapidly expanding economy. Figure 5.3 compares annual increases in net employment and population in the State. Through much of the 1990s, Georgia was adding about 175,000 people and 140,000 jobs, respectively, on an annual basis. Since 2000, however, the pattern has shifted and population and employment are no longer growing in tandem. Georgia continues to show impressive population gains, but with little or none of the 1990s-type employment growth. In fact, the number of jobs in Georgia actually *declined* between 2001 and 2002, the only time that has occurred since 1992. While all forecasts predict that the State's robust population growth will continue, strong job generation must resume at some point to justify and sustain these population increases. Preliminary data for 2004 suggest that the State's economy is gaining momentum, but job growth is only moderate compared to the 1990s. Employment growth rates in Georgia will need to rise from present levels to sustain the large population increases that are expected in the future. If these employment gains do not materialize, the State's population growth rate may come in lower than presently forecast.

Figure 5.3 Annual Change in Population and Employment
1986-2003



Source: Bureau of Economic Analysis.

5.1.4 Trends and Events That Could Alter Economic Growth in Georgia – Risks to the Forecast

Several interviews were conducted with experts regarding Georgia's economic and demographic trends. These were supplemented by reviewing the analyses presented at the 2005 Georgia Economic Outlook meeting, an initiative of the University of Georgia, held in Atlanta in December 2004. Additionally, materials were gathered from other sources such as Georgia newspapers and the Federal Reserve Bank of Atlanta. Although current trends and all available forecasts indicate solid growth in Georgia through 2035, there are events that may disrupt or change the patterns of growth in the State. These events could affect transportation demand, land use, or trip patterns should they transpire. While the following brief analyses of possible events does not represent an exhaustive list of the factors that may affect the forecast in coming years, it does characterize what Georgia experts and the Georgia media see as possible concerns.

- **Delta Airlines Restructuring –** Delta declared bankruptcy late in this study due to the legacy of problems beginning with the 9/11 terrorist attack, and culminating in the rapid increase in fuel costs following Hurricane Katrina. A weakened Delta could result in depressing airline-related wages and the relocation of some jobs to other airport hubs.

- **Military Spending –** Georgia has the fifth highest level of military spending among the states. Military expenditures ($11.3 billion in 2002 according to the U.S. Department of Defense) helped to stimulate the State's economy and offset employment losses in other industries during the recent recession. The future of two large Georgia-based programs – Lockheed Martin's F-22 fighter and C-130 transport programs – currently are under review.[21] Should both programs be canceled without a replacement, the Marietta plant would be shuttered in 2009. As a leading Georgia employer (about 8,000 jobs in 2005), any changes to the Lockheed-Martin facility in Marietta will have a bearing on the State's economy and traffic volumes.

- **Pace of Job Recovery from Previous Recession –** Georgia's economy had 4 million nonfarm jobs in February 2001, a record. Subsequently, employment dropped by about 150,000 jobs until hitting a trough in June 2003. Since that time, Georgia's economy has been in a mild recovery. As of late 2004, the State remained about 70,000 jobs short of its February 2001 peak. The speed of Georgia's current recovery will be an early indicator of its prospects in meeting growth projections that show a return to stronger employment.

- **Global Recession –** A global economic downturn would lower import and export volumes, reducing business at Georgia's deep-water ports. Export growth has been a key driver for Georgia's nascent economic recovery and any reduction in overseas' demand would dampen the recovery's momentum and weaken long-term growth prospects. The lower demand for goods, the possibility of higher interest rates, and lower employment levels would reverberate through the Georgia economy.

- **Offshoring of Production –** Georgia has had notable success tapping into world markets to boost the State's exports. While globalization has introduced opportunities for growth, it also has resulted in a significant shift of jobs, starting in manufacturing and now increasingly affecting the services industries, from the United States to lower-cost, overseas locations. Locations that can offer efficient intermodal connections, reliable roadways and railways, and gateways for accessing distant domestic and international business centers will have advantages over other areas that cannot offer these attributes.

- **Rising Energy Prices –** Fuel prices rose rapidly at the end of this planning study. While some believe lofty prices will remain or increase further, others believe prices will retreat from today's levels. At least initially, the higher fuel prices are likely to slow the rate of economic growth in Georgia and the United States. The rise in the cost of gasoline is beginning to alter people's housing and lifestyle choices. Demand for housing within the city limits of Atlanta is rising and developers are constructing new and denser housing in such areas as Midtown. Nevertheless, these concerns have not yet become evident on a large scale as Georgia's population growth between 2000 and 2003 continued to favor Atlanta's outer suburban counties. In the future, rising gasoline prices (should they continue) may have a pronounced effect on Georgia's development patterns and the use of its transportation systems.

[21] Information provided by Lockheed Martin's Marietta facility, current as of February 2005.

- **Role of Atlanta as Southeastern Economic Hub –** Atlanta has staked out a position as the leading business city in the South. As a transportation, media and educational center and unchallenged "capital" of the large and fast-growing South, Atlanta offers attributes that attract high-wage jobs. Hartsfield-Jackson Atlanta International Airport is the largest in the United States. As a rail hub and a nexus of the U.S. Interstate System, Atlanta ranks with Northern New Jersey, Los Angeles-Riverside, Chicago, and Dallas-Fort Worth as one of the largest warehousing and distribution centers in the United States.[22] The city's complementary roles as a center for business and professional services, transportation, and distribution make it the crossroads for the South, a crucial economic asset for the entire region. Keeping Atlanta in these leading national economic roles is critical for the continued economic growth in the State.

- **Competition from Other States' Transportation Facilities –** The efficiency of the ship-to-rail and ship-to-truck intermodal connections (as measured by quality of service and infrastructure capacity) at Georgia's ports, as well as waterside factors such as channel depth and berthing space, will be a determinant in how successfully Savannah (and to a lesser extent Brunswick) compete against aggressively expanding ports in Houston, Mobile, Charleston, and Hampton Roads (Port of Virginia). Similar to the deep water ports, competition between Hartsfield-Jackson Atlanta International Airport and airports located in other states also is fierce. Historically, Atlanta has succeeded in this competition and now handles more passengers than any other airport in the world. However, once a fifth major runway is completed in 2006 (about one-third of the new runway will be built on the opposite side of I-285 from the rest of the airport), there will be insufficient land available for building any additional long runways. Major competitors for Atlanta include airports in Miami, Dallas-Fort Worth, Houston, Orlando, and Charlotte.

- **Aging of the Population and Driving Habits –** The baby boom generation represents a significant demographic bulge that is nearing retirement. This will present a need to anticipate and respond to the safety and mobility implications of a burgeoning older population.[23] As people become older, eyesight deteriorates and reaction times become slower, creating safety concerns. Steps can be taken to make roadways safer for older drivers. The use of private automobiles is a virtual requirement to function in the rural and suburban areas where most seniors live. Providing transportation options (e.g., the provision of transportation alternatives for a diverse traveling public, including transit services for those capable of driving as well as those unable to drive) and encouraging the development of communities that are senior-friendly allow older people greater mobility while improving safety.

[22] According to Colliers International's Fourth Quarter 2004 Market Report, metropolitan Atlanta has nearly 450 million square feet of rentable warehouse space.

[23] Today, nearly 10 percent of Georgia's population is over 65 years old. By 2030-2035, this figure is expected to jump to 16 percent.

5.2 Economic Forecasts

The 2035 economic forecast developed for the Statewide Transportation Plan Update is based on a combination of existing public and private projections. Prior to selecting the most suitable forecasts to be used as the foundation of the 2035 employment forecast, the project team inventoried available forecasts and evaluated them on a number of factors, including forecast horizon, cost, and levels of geographic and industry detail.

5.2.1 Methodology

On the public side, a number of state and university officials, including the University of Georgia, Georgia State University, the Georgia Department of Labor, and the Governor's Office of Planning and Budget were contacted. Each of these organizations was asked about the availability of publicly generated economic forecasts, regardless of where they were produced. This process developed a comprehensive inventory of available public forecasts. Although the universities produce their own employment forecasts, the time horizons are typically short (only one to two years). These forecasts were useful for identifying recent Georgia trends but could not be used as a basis for developing a forecast to 2035. The Georgia Department of Labor (GDOL), however, released a 2002 to 2012 employment forecast in the fall of 2004 that was incorporated into the 2035 forecast.

Information also was gathered concerning the offerings of several private producers of proprietary economic forecasts, including Regional Economic Models, Inc. (REMI), Global Insight, Woods & Poole (W&P), and Economy.com. From these, a combination of Woods & Poole with Economy.com was selected, using W&P for county allocations and Economy.com for statewide employment, retail, and manufacturing growth trends.

All publicly and privately available forecast options were then evaluated based on five factors – cost, time horizon, date of last update, geographic detail, and industry detail. From these, a recommended approach for the 2035 employment forecast was developed. After evaluating the public and private projections that would feed into the 2035 employment forecast, a combination of the GDOL and Woods & Poole forecasts with the addition of Economy.com statewide forecasts to use as controls, were selected as the building blocks for the 2035 employment forecast. Together, these public and private forecasts provide high levels of geographic and industry detail.

With the exception of the application of the Economy.com forecast as a control, the overall approach is similar to that used for the previous Georgia Statewide Transportation Plan (2000). However, the 2035 economic forecast benefits from several improvements made to the public and private forecasts since 2000. The Georgia Department of Labor employment forecast is very current (released in November 2004) and now goes through 2012. The Woods & Poole forecast has been improved significantly since 2000, and now fully incorporates the findings of the 2000 Census.[24] Economy.com provides robust forecasting capabilities (e.g., it captures a leveling in retail employment as the population ages and also maintains a steady decline in manufacturing jobs) and is thus used as a control for the 2035 employment forecast.

As part of their transportation planning responsibilities, each of Georgia's MPOs has developed its own long-term employment forecast. As a check, the forecast developed for the Statewide Plan was compared to the aggregate MPO forecasts. This comparison showed that the growth rate of the sum of MPOs is comparable to the aggregate of their component counties taken from the forecast developed for the Georgia Statewide Transportation Plan Update (i.e., the annual growth rates from the MPO and state plan forecasts were 1.7 percent and 1.67 percent, respectively). The concurrence with the MPOs suggests that the plan forecast is reasonable given today's trends and current expectations regarding the future.

5.2.2 Statewide Forecast

Three employment forecasts were developed for the Georgia Statewide Transportation Plan, representing low-, medium-, and high-growth scenarios. The recommended employment forecast for use in the Plan represents a midrange growth projection (the "medium" forecast) for the 2000-2035 period. The differences between the forecasts, in terms of 2000 to 2035 growth rates for total employment, compound annual growth rates, and the employment totals that would result in 2035 based on each approach, are illustrated in Table 5.1. A forecast developed by the Brookings Institution also is included to underline the range in employment growth rates that result from varied approaches to forecasting.[25]

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[24] The population, both for the United States and Georgia, recorded by the Census in 2000 was significantly higher than what had been anticipated (the Census estimate for Georgia was 7,875,000 and the official figure came in at 8,186,000). Forecasts completed prior to the full release of the 2000 Census would likely start from a base year that underestimated the actual recorded population levels.

[25] Brookings Institution, *Toward a New Metropolis: The Opportunity to Rebuild America*, December 2004.

Table 5.1 Economic Forecast Comparison, Georgia Total Employment
2000-2035

Forecast	Employment Growth Rate 2000-2035	Compound Annual Growth Rate	Total Employment[d] 2035
Low[a]	60.3%	1.36%	7,885,980
Medium[b]	**67.8%**	**1.49%**	**8,250,370**
High[c]	71.5%	1.55%	8,432,426
Brookings Institution	72.7%	1.57%	8,493,576

Note: The Brookings Institution Forecast is for 2000-2030 and has been interpolated through 2035.

[a] Based on Woods & Poole growth rates.

[b] Based on Economy.com growth rates.

[c] Combined Georgia Department of Labor and Economy.com growth rates.

[d] Total full-time and part-time employment; each series begins with 4,918,110 jobs in 2000.

A cross-check of the Medium employment projection with Georgia's MPO forecasts revealed similar growth projections. The project team gathered the employment forecasts generated by Georgia's 13 MPOs and compared them with the growth rates of its own forecast. The compound annual growth rate (CAGR) of the sum of the MPO forecasts was 1.7 percent for the 2002 to 2030 period while the CAGR for the same counties using the Medium projection was 1.67 percent (the growth rates were calculated for 2002-2030 for comparability with the MPO forecasts which all ended in 2030, not 2035).[26] The cross-check affirmed that the aggregate of individually developed forecasts were consistent with the results of the forecast developed for the Georgia Statewide Transportation Plan.

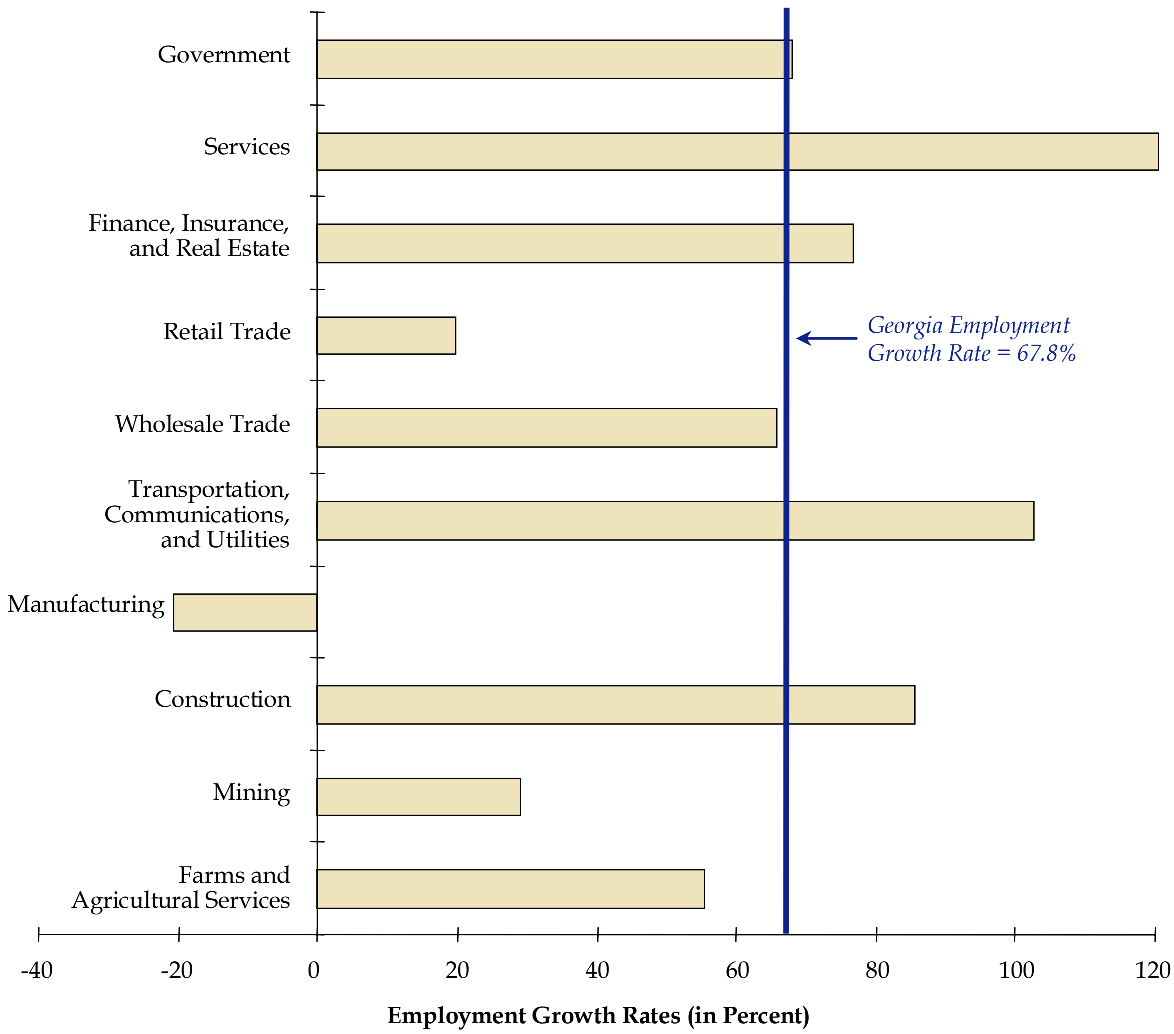
5.2.3 Forecast Industry Trends, 2000 to 2035

Several major industry employment trends already taking place today in Georgia are expected to continue over the next 30 years. Job increases will continue to be dominated by the services sector, the major sector that includes business and professional services (e.g., engineering, architecture, administrative, and managerial), healthcare, recreation, and education (see Figure 5.4). Manufacturing, due to heightened competition from overseas and increased productivity, is likely to continue losing jobs. A decline in manufacturing employment, however, may not translate directly into declines in output as manufacturers implement labor saving techniques while maintaining and sometimes increasing production.

[26] Most (seven) MPOs forecasts were for the 2002 to 2030 period, however, four began in 2000, one began in 2001, and one began in 2003. The compound annual growth rate was calculated for the 28-year, 2002-2030 period.

Between 2000 and 2035, services are expected to grow from 29 percent of all of Georgia's jobs to 38 percent, while manufacturing is anticipated to decline from 12 percent to 6 percent over the same period. The long-term decline in manufacturing and the upsurge in the services sector can be seen clearly in Figure 5.5 tracing employment shares by major industry sector historically from 1980 to 2004 and for the 2004 to 2035 forecast period.

Figure 5.4 Georgia Baseline Employment Forecast by Industry
2000-2035



Source: Georgia Department of Labor, Woods & Poole, Economy.com, and Cambridge Systematics, Inc.

Figure 5.5 Employment Shares by Major Sector
1980-2035

Source: Woods & Poole and Cambridge Systematics, Inc. (2035 forecast).

Other growth sectors include construction; transportation, communications, and utilities (TCU); and finance, insurance, and real estate (FIRE). The construction industry will continue to prosper in Georgia as large amounts of commercial space (office, warehousing, retail, etc.) will be needed to keep up with the State's anticipated employment increases while new and rehabilitated infrastructure and housing will be needed to meet the demands of Georgia's growing population. Construction already is a large industry in the State and will continue to be well into the future.[27] The growth in TCU, although there are some hurdles that will need to be overcome (i.e., Delta Airlines resumed prosperity), also underlines expectations that Georgia will continue to be a major United States transportation, telecommunications, and broadcasting center. The finance, insurance, and real estate industry will experience faster than average growth for some of the same reasons as growth in the services sector – an aging and growing population combined with higher-income levels.

[27] Georgia, although it is ranked ninth in population size, had the fourth highest number of housing starts and sixth highest value of construction contracts among the states in 2000.

5.2.4 Population and Employment Forecasts for Metropolitan Planning Organizations (MPO) and Service Delivery Regions (SDR)

In addition to the employment forecast, a statewide and county-level population forecast was formulated to estimate Georgia's future demographic trends through 2035. Georgia's population growth and changes in economic activity, together, provide the basis for predicting future transportation demand and how the State's transportation system will be used. This section explains how the population forecast was developed and describes regional growth trends in Georgia through 2035, based on the population and employment forecasts.

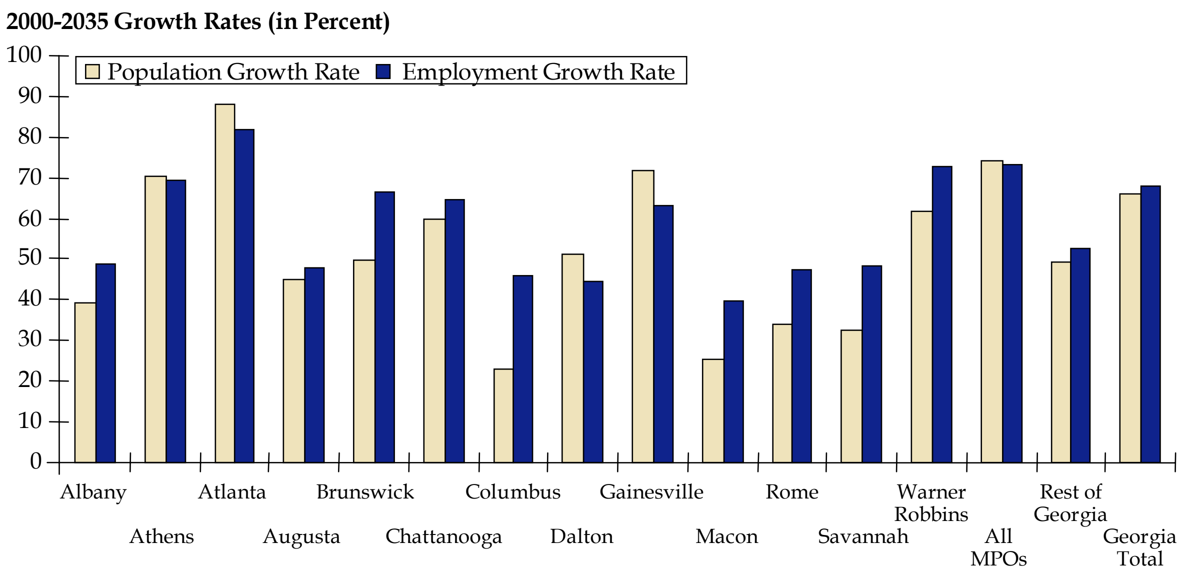
The approach used for the 2035 population forecast combines elements from the Georgia Governor's Office of Planning and Budget (OPB), Woods & Poole, and the Medium employment forecast (in large part based on Economy.com). OPB's existing forecast forms the basis of the 2000 to 2010 part of the 2035 forecast. The OPB forecast uses Georgia's 2000 Census results as the starting point for its projection – this is important because the 2000 Census population counts came in significantly higher than initial estimates. By 2010, the horizon for the OPB forecast, the OPB projects Georgia will have a population approaching 9.6 million, about 900,000 more people than the U.S. Census Bureau's 2003 estimate.

Following 2010, the population forecast is based on the ratio of employment to population as estimated by Woods & Poole, but applied to the employment figures presented in the Medium employment forecast. Using this approach, the population derived from the Medium employment forecast, is almost exactly the same as the OPB's (there is a difference of only 0.1 percent between the two), thus establishing that the Medium employment forecast is a reasonable tool (as it provides continuity from the OPB forecast) for projecting Georgia's population to 2035. At a subregional level, county populations are derived by taking the total population estimate for Georgia and multiplying that by each county's share of statewide population as allocated by Woods & Poole data. Finally, the county-level data are aggregated to show the population and employment forecasts conforming to Georgia's MPOs and Service Delivery Regions (SDR).

In total, Georgia is expected to grow from about 8.2 million people in 2000 to 13.6 million people in 2035. While the addition of 5.4 million people is impressive, this would be achieved by growing at a slower annual rate of increase (1.45 percent) than recorded in recent decades (2.4 percent annual growth in the 1990s and 1.7 to 1.8 percent annual growth in the 1970s and 1980s). The decline in the annual growth rate is expected given that each year's growth is now starting from a higher level than in previous decades, making absolute changes in population consistent (about 1.5 million people per decade through 2035) despite the lower growth rates.

The area within the jurisdiction of the Atlanta MPO will continue to account for the majority of Georgia's population and employment growth through 2035. By 2035, the Atlanta MPO region will account for 51 percent of the State's population and 56 percent of the State's jobs, compared to 45 percent and 52 percent, respectively, in 2000. Following Atlanta, two MPOs, just beyond metropolitan Atlanta, Gainesville, and Athens, will experience the second and third fastest population growth rates among Georgia MPOs between 2000 and 2035 (see Figure 5.6). Atlanta, Warner Robins, Athens, Brunswick, and Chattanooga are expected to have the most pronounced increases in jobs. Employment growth in the Savannah MPO (Chatham County) is forecast to grow much more quickly than population. This is perhaps due to commuting patterns, as population is expected to exceed increases in employment in outlying Effingham and Bryan counties.[28] In general, Georgia's population and employment increases are expected to be led by the counties within the State's 13 MPOs. Population and job growth, however, also will be significant beyond the State's largest urban areas. The "Rest of Georgia" (all parts of the State not within an MPO) is projected to add over 1.3 million residents and 650,000 jobs between 2000 and 2035.

Figure 5.6 2035 Population and Employment Forecast by MPO



Source: Woods & Poole, Economy.com, Georgia Department of Labor, Governor's Office of Planning and Budget, Cambridge Systematics, Inc.

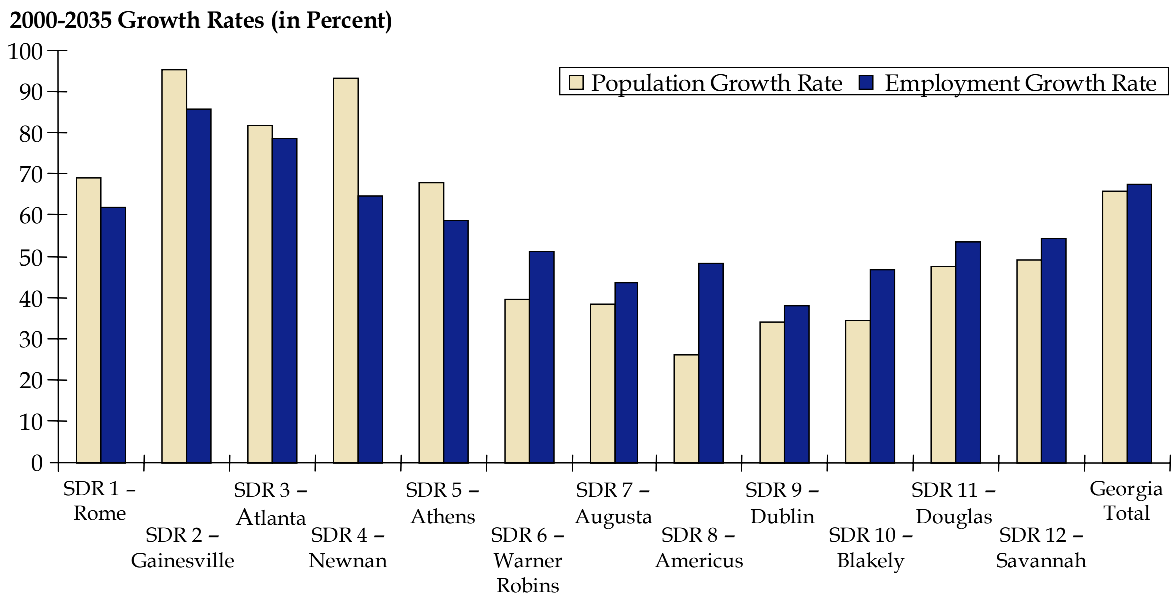
Note: Due to data constraints, figures are for whole counties only (e.g., the data for the Macon MPO includes all of Jones County even though only part of that county is under the MPO's planning jurisdiction).

[28] The Woods & Poole forecast for 2000 to 2030 indicates that the same is true for Jasper County, South Carolina, just across the Savannah River from Savannah.

5.2.5 Service Delivery Region Forecast Results

Georgia is divided on county lines into 12 Service Delivery Regions (SDR). SDRs were created in 1998 to establish common regional boundaries for delivering services from state agencies, including GDOT. Consistent with the employment and population forecasts for the MPOs, the Atlanta SDR is expected to account for the majority of Georgia's growth through 2035 (Figure 5.7). The four SDRs just beyond Atlanta, including Gainesville, Rome, Athens, and Newnan, all will rank among the fastest growing regions in Georgia. Although these five SDRs within or in proximity to greater Atlanta will be responsible for most of the State's job and population increases, the seven SDRs in central and southern Georgia also are expected to experience strong growth that is generally comparable with prevailing United States growth rates.

Figure 5.7 2035 Population and Employment Forecast by Service Delivery Region



Source: Woods & Poole, Economy.com, Georgia Department of Labor, Governor's Office of Planning and Budget, Cambridge Systematics, Inc.

6.0 Forecast Conditions No-Build versus Build/ Financially Unconstrained

For the 2035 forecast year of this SWTP Update, the performance of the transportation system was estimated and compared for two scenarios, the No-Build and the Build/ Financially Unconstrained. The No-Build scenario assumes that no new capital spending on capacity upgrades on the highway system will be undertaken but that minimal spending on the preservation of pavement and bridges and other associated spending would continue. For the intermodal system, the No-Build scenario consists of maintaining the existing systems, but not undertaking any additional service. No costs are shown for the No-Build scenario. It is presented for illustrative purposes and does not reflect current or proposed GDOT policy. Costs are presented for the Build/Financially Unconstrained scenario as reflected in the existing plans and programs of GDOT, the MPOs, the RTAs, cities and counties, and other transportation agencies. The total cost of this scenario is \$160 billion, including \$113 billion for highways and \$47 billion for intermodal programs. The exact nature of the projects assumed under each element of the plan will be discussed further in the subsections below. As in Section 4.0, highway and intermodal forecasts are presented separately.

6.1 Highways

This section describes the nature of the two scenarios with respect to the highway system, and the usage, pavement and bridge conditions, safety performance and congestion associated with each scenario.

6.1.1 Scenarios

The No-Build scenario consists of three key elements of the highway system: bridges, pavement, and miscellaneous. Pavement maintenance would proceed at the current rates and assumptions, while bridge rehabilitation and replacement would decline at the state level from an optimal to a minimal strategy more similar to that practiced today by counties and cities with a greater degree of deferred maintenance. Miscellaneous expenditures on programs including ITS, enhancement, safety, and environmental protection would continue. No new capacity upgrades would be funded. The key elements of the No-Build scenario are shown by program in Table 6.1.

Table 6.1 No-Build Scenario Recommendations for Highways by Category

Program	Element Description
Bridges	Deferred maintenance, minimal investment.
Pavement	Assume trucks grow at same rates as autos
Highway Upgrades	None
Miscellaneous	Safety, ITS, enhancement, environmental, operational continue

The Build/Financially Unconstrained scenario consists of the same elements as the No-Build plus capacity upgrades. The bridge program (among all bridge owners) will address all capital costs when economically beneficial, much as the State attempts to do today. Pavement maintenance costs will be increased to accommodate an expected faster rate of growth for trucks. All capacity upgrade projects in GDOT's approved TPro database and the endorsed Interstate System Plan (ISP), and in the endorsed Regional Transportation Plans (RTPs) of the MPOs will be undertaken. In addition, the highway capacity upgrades contained in the Atlanta Regional Commission's (ARC) financially unconstrained *Aspirations Plan* are also included.[29] Miscellaneous expenditures on programs including ITS, enhancement, safety, and environmental protection would continue. The key elements of the Build/Financially Unconstrained scenario are shown by program in Table 6.2.

6.1.2 Usage

Forecasts of highway usage, expressed in terms of daily VMT, were developed by using the population and employment forecasts from Section 5.0 to factor the statewide TDM trip table to 2035. The trip table was assigned to the existing Statewide Model highway network to develop growth forecasts for a 2035 No-Build scenario. The average growth rate was forecast to be 2 percent per year for all traffic and 2.9 percent per year for truck traffic. By 2035, these growth rates will result in a forecast increase of 90 percent for total VMT and 151 percent for truck VMT on state roads from 2003 traffic.

[29] ARC is the only MPO with significant differences between its constrained and unconstrained programs. The Savannah MPO also has some minor differences. Although the projects in the *Aspirations Plan* are included for costing purposes, they are not included in the performance analysis described below because they are not included in GDOT's TPro database, and consequently could not be coded into the statewide model network.

Table 6.2 Build/Financially Unconstrained Scenario Recommendations for Highways by Category
Costs in Millions of 2005 Dollars

Program	Element Description	Estimate 30-Year Cost	Estimate Annual Cost
Bridges	Replace/repair at optimal rates	$5,400	$180
Pavement	Assume trucks grow faster than autos (3% versus 2% annual)	$32,290	$1,076
Highway Upgrades	All TPro projects, ISP projects, MPO constrained RTP projects, ARC *Aspirations Plan* projects	$70,090	$2,336
Miscellaneous	No change	$5,000	$167
Total		**$112, 780**	**$3,759**

The capacity improvement projects in GDOT's TPro database, the endorsed Interstate System Plan, and the endorsed Regional Transportation Plans of the MPOs were coded onto the Statewide Model highway network as the Build/Financially Unconstrained scenario. These projects will increase the overall system capacity on existing state roads by approximately 18 percent. The trip table was assigned to the modified Statewide Model network in order to develop growth forecasts for a 2035 Build/Financially Unconstrained scenario. The average growth rate was forecast to be 2 percent per year for all traffic and 2.8 percent per year for truck traffic. By 2035, this amounts to a forecast increase of 86 percent for total VMT and 143 percent for truck VMT on state roads from 2003 traffic.

The increase in capacity under the Build/Financially Unconstrained scenario appears to reduce congestion in a manner that lessens the diversion of traffic to alternate routes. This is likely the reason why the 2035 VMT growth is slightly less for the Build/Financially Unconstrained scenario compared to the No-Build scenario.

Table 6.3 shows both the 2003 Existing Conditions and 2035 No-Build total VMT on state roads by Functional Classification. The travel on state roads of all vehicles is forecast to increase by an average of 2 percent per year, an 89 percent increase in travel by 2035. Travel on state rural roads is forecast to grow at a rate of 1.9 percent per year, slightly lower than the urban growth rate of 2.1 percent per year, while travel on lower classes of roads is forecast to be higher (over 2 percent) than for urban interstates (1.7 percent). Because the forecasts were developed using a statewide model that is responsive to congestion, the lower growth rate for urban interstate roads and the higher growth rate on lower classified urban state roads are most likely reflective of diversion of traffic from urban interstates to these lower classes of roads in response to congestion.

Table 6.3 Daily Travel on State Roads by Functional Classification
No-Build Scenario (VMT in Millions)

Functional Classification	2003	2035	Growth Percent Per Year
1 – Rural Interstate	6.36	53.7	1.9%
2 – Rural Principal Arterial	3.12	32.3	1.7%
6 – Rural Minor Arterial	3.64	37.6	2.0%
7 – Rural Major Collector	2.35	19.8	1.9%
Subtotal Rural	**78.60**	**143.4**	**1.9%**
11 – Urban Interstate	42.40	91.7	1.7%
12 – Urban Freeway	5.51	14.4	2.4%
14 – Urban Other Principal Arterial	13.14	60.0	2.3%
16 – Urban Minor Arterial	16.18	50.0	2.5%
17 – Urban Collector	0.12	0.3	2.0%
Subtotal Urban	**111.10**	**216.4**	**2.1%**
Total	**189.80**	**359.8**	**2.0%**

Source: Cambridge Systematics, Inc., 2005.

The No-Build travel on state roads by trucks is forecast to increase by an average of 2.9 percent per year, a 151 percent increase in truck travel by 2035; much greater than the growth in total traffic of 2 percent per year and 89 percent by 2035. Truck travel is expected to increase at comparable rates on both urban and rural roads, but for all roads the forecast increase of truck traffic is significantly greater than that of general traffic. These forecasts of higher increases in truck traffic than auto traffic are consistent with national trends and reflect changing logistics patterns in the country.

Table 6.4 shows the existing 2003 and 2035 Build/Financially Unconstrained total VMT on state roads by Functional Classification. The travel on state roads of all vehicles is forecast to increase by an average of 2 percent per year, an 86 percent increase in travel by 2035. This increase is slightly less than the increase in VMT forecast under the No-Build scenario, because the capacity increases will reduce congestion and the diversion of traffic to alternate routes. Since congestion is more pronounced on urban roads, this results in a slightly lower growth forecast of traffic on urban roads.

The travel on state roads by trucks is forecast to increase by an average of 2.8 percent per year, a 142 percent increase in truck travel by 2035; much greater than the growth in total traffic of 2 percent per year and 89 percent by 2035, but less than the growth forecast for the No-Build scenario. As for the No-Build scenario, truck travel is expected to increase at comparable rates on both urban and rural roads, but for all roads, the forecast increase of truck traffic is significantly greater than that of general traffic.

Table 6.4 Daily Travel on State Roads by Functional Classification
Build Capacity Improvements (VMT in Millions)

Functional Classification	2003	2035	Growth Percent Per Year
1 – Rural Interstate	6.36	52.0	1.8%
2 – Rural Principal Arterial	3.12	33.8	1.9%
6 – Rural Minor Arterial	3.64	37.2	2.0%
7 – Rural Major Collector	2.35	19.1	1.8%
Subtotal Rural	**78.60**	**142.0**	**1.9%**
11 – Urban Interstate	42.40	89.9	1.7%
12 – Urban Freeway	5.51	14.2	2.3%
14 – Urban Other Principal Arterial	13.14	58.4	2.3%
16 – Urban Minor Arterial	16.18	47.8	2.4%
17 – Urban Collector	0.12	0.3	2.0%
Subtotal Urban	**111.10**	**210.6**	**2.0%**
Total	**189.80**	**352.6**	**2.0%**

Source: Cambridge Systematics, Inc., 2005.

6.1.3 Pavement Condition

Pavement needs on state highways are scaled from current expenditures using the expected growth in truck traffic, the primary component of Equivalent Single Load Axles (ESAL), which is the major factor in pavement design. GDOT's current practices assume that truck traffic, and thus ESALs, grow at a rate equivalent to the growth in total traffic. At the forecast growth rates of 2 percent per year, total traffic in 2035 will be 82 percent higher than existing traffic. The cumulative ESALs that will be experienced by pavement during this period are forecast to grow by 38 percent. The costs associated with the current GDOT practice is defined as the No-Build scenario.

At the forecast growth rates for truck traffic of 2.9 percent per year, the No-Build rate chosen to represent a worst case assessment, total truck traffic in 2035 will be 140 percent higher than existing truck traffic. The cumulative ESALs that would be experienced by pavement during this period would grow by 61 percent. The cost associated with the need to meet the increase in pavement damage is reflected in the Build/Financially Unconstrained scenario. This relationship is shown in Table 6.5.

Table 6.5 Increases in Pavement Design Period Loadings, 2001 to 2035

Scenario	Truck Growth Rate	Cumulative Growth in ESALS to 2035 at Truck Traffic Growth Rate
No-Build	2.0%	38%
Build	2.9%	61%

Source: Cambridge Systematics, Inc., 2005.

GDOT estimates routine pavement rehabilitation expenditures on state roads will be approximately $200[30] million per year to the year 2035. Through 2008, GDOT anticipates additional heavy interstate pavement reconstruction (deep milling of asphalt, replacing total lanes of concrete pavement), an expenditure of approximately $750 million dollars.

It is expected that GDOT will replace pavement not with the current design, but with pavement designs (e.g., thickness) that reflect increased ESALs that will last a longer period of time. For the purposes of the SWTP Update, it is assumed that GDOT will increase pavement designs appropriately and thus the cumulative No-Build pavement treatment expenditure with pavement redesign would be approximately $6.5 billion by 2035.

The Build/Financially Unconstrained forecast is based on the understanding that truck traffic will increase by 2.9 percent annually. It is assumed that pavement design modifications are followed and that costs will increase by 13 percent over the current annual expenditures. The cumulative pavement treatment expenditure with pavement redesign would be $6.8 billion by 2035.

The need for pavement resurfacing on city and county roads was found to be a function primarily of age and weather conditions and not of truck volumes. Consequently pavement maintenance costs for the city and county roads were based on unit costs for paved and unpaved roads and the assumption that they would be resurfaced at appropriate intervals for the Build/Financially Unconstrained scenario.

[30] The estimated pavement funding would be sufficient to meet GDOT's goal of resurfacing roads on a 10-year cycle. According to GDOT's Office of Maintenance, recent state funding has been inadequate to meet this goal. Overall pavement condition increased from an average PACES rating of 86 (out of 100) for state roads in 1998 to a rating of 89 in 2001. According to the Office of Maintenance, the rating declined slightly to 88 in 2003 and is continuing to decline as a result of funding levels that do not support GDOT's goal of a resurfacing cycle of 10 years.

6.1.4 Bridge Conditions

The bridge deficiencies, expressed as Structural Deficient (SD) and Functionally Obsolete (FO) bridges, were forecast using the NBIAS software for two scenarios: a scenario with only minimum essential funding (No-Build) and a scenario where all economically justified bridge projects are completed (Build/Financially Unconstrained). The option of doing nothing does not exist for bridges. If no investment in bridge maintenance or rehabilitation is undertaken, most bridges would fail during the 30-year period of the plan. A SD rating for a bridge is more serious than a rating of FO. Resources are generally first devoted to structural problems. In the course of rehabilitation and replacement of those structurally deficient bridges, most functionally obsolete issues also are corrected.

For the No-Build scenario, the number of SD bridges is forecast to increase. For state-owned bridges, the percentage that is SD is forecast to increase from its current 2 percent to 32 percent in 2035. For county-owned bridges, the percentage that is SD is forecast to increase from its current 14 percent to 23 percent in 2035. For city-owned bridges, the percentage that is SD is forecast to increase from its current 7 percent to 24 percent in 2035. The No-Build scenario is essentially a deferred maintenance strategy. While the costs during the period of the plan would be kept at a minimum and bridges would be kept operationally safe (albeit with various operational restrictions), the needs that would have to be addressed in the future, during a period after this plan, would increase.

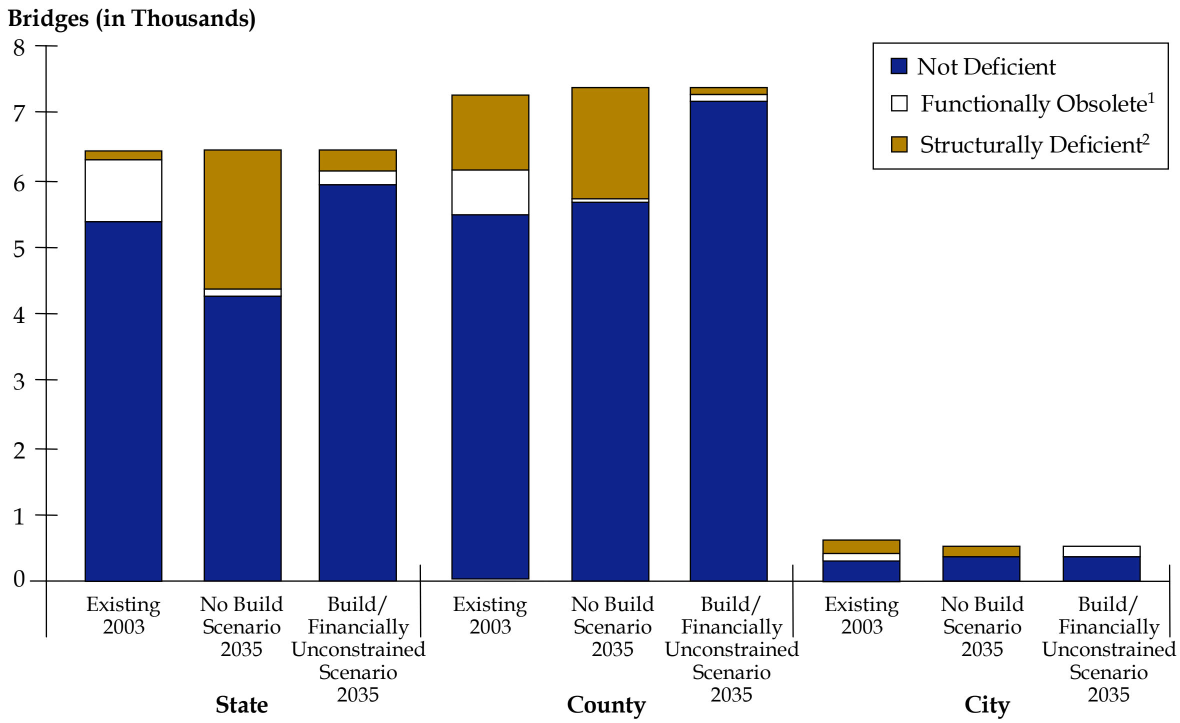
For the Build/Financially Unconstrained scenario, the number of SD bridges would be minimized. For state-owned bridges, the percentage that is SD would increase slightly from its current 2 to 5 percent in 2035. (This condition could be kept at 2 percent, but it would require undertaking work on state bridges in advance of when it is economically justified according to the bridge analysis software.) For county-owned bridges, the percentage that is SD would decrease from its current 14 percent to 2 percent in 2035. For city-owned bridges, the percentage that is SD would decrease from its current 7 percent to 2 percent in 2035. These impacts are summarized in Figure 6.1. Note that few bridges in any scenario are rated as Functionally Obsolete because the SD rating takes precedence.

The Build/Financially Unconstrained strategy of undertaking all bridge projects with a benefit/cost ratio greater than one would increase the investment in bridges during the period of the plan, while reducing bridge needs in the years after the plan.

6.1.5 Safety

No existing systematic safety problems were found and future safety problems cannot be forecast since crashes appear to be essentially random events. Crash locations were randomly distributed on all roads. Most crashes were a result of weather, driver behavior, or other conditions that do not have highway project solutions.

Figure 6.1 2035 Forecast Bridge Condition by Ownership



[1] Does not handle traffic well as designed.
[2] Will need physical repairs – but not unsafe today.

Increasing traffic volumes, an aging population, aggressive driving, speeding and driver attentiveness all create new challenges for transportation engineers. Some of these driver characteristics can be addressed with engineering-related solutions, while others involve education and enforcement. Recognizing the need to increase the focus on these efforts, GDOT supported the development in 2004 of a *Safety Action Plan*. Additionally, GDOT has committed resources to be an early implementer in creating a Comprehensive Safety Plan using the Integrated Safety Management Process. GDOT has also agreed to participate in another safety-related effort entitled Lead State Initiative, participating in the Lane Departure category.

GDOT's Division of Operations will take the lead in developing the Comprehensive Safety Plan that will involve enforcement, the Governor's Office of Highway Safety, and other units of state and Federal government. GDOT has adopted the American Association of State Highway and Transportation Officials' (AASHTO) goal of a fatality rate of 1.0 per 100 Million Vehicle Miles Traveled (MVMT) by 2008. This ambitious goal is coupled with GDOT's internal strategic goal of reducing the total of number of crashes by 2 percent annually.

6.1.6 Congestion

Congestion can be measured based on the extent of the problem – the number of road miles affected, or by its effect on travel – the amount of VMT affected. For the 2005 SWTP Update, the RC file, enhanced by capacity, was used to calculate the VSF ratios, (daily volume-to-capacity ratio) for each road segment. The VSF ratio was used to determine the LOS as shown previously in Section 3.2.2. For Georgia, congestion, as discussed in Section 4.0, is considered to be LOS D through F, but for large metropolitan areas such as Atlanta congestion might be considered as LOS E through F.

For the No-Build scenario, the centerline miles of state roads that experience congestion is forecast to increase to 12 percent from the existing 2 percent. As shown in Figure 6.2 these roads are primarily in urban areas, where 53 percent of the centerline line miles of roads in the Atlanta region and 16 percent of the other MPO counties are forecast to be congested, while 3 percent of the centerline miles on roads in rural areas are forecast to be congested.

For the Build/Financially Unconstrained scenario, the centerline miles of state roads that are forecast to experience congestion will increase to 10 percent from the existing 2 percent. These roads are primarily in urban areas, where 45 percent of the centerline line miles of roads in the Atlanta region and 11 percent of the other MPO counties are forecast to be congested, while 3 percent of the centerline miles on roads in rural areas are forecast to be congested. This represents a reduction of congested centerline road miles by 8 percent and 5 percent respectively in the Atlanta region and in the other MPO counties compared to the No-Build scenario. This reduction in congestion does not take into account improvements within congested miles, e.g., reducing a LOS F to an LOS D. The reduction also does not take into account potential further improvements in the Atlanta region resulting from the implementation of ARC's *Aspirations Plan* highway and transit capacity improvements.

For the No-Build scenario the amount of travel on roads that is forecast to experience congestion will increase to 60 percent of all VMT from the existing 20 percent. As shown in Figure 6.3, these roads are primarily in urban areas, where 87 percent of the VMT in the Atlanta region and 48 percent of the VMT in other MPO counties is forecast to be congested, while 24 percent of the VMT in rural areas is forecast to be congested.

For the 2035 Build/Financially Unconstrained scenario, 50 percent of all VMT is forecast to be under congested conditions compared to the existing 20 percent. This congested travel is forecast to be primarily in urban areas, where 80 percent of the VMT in the Atlanta region and 36 percent of the VMT in other MPO counties is forecast to be congested, while 15 percent of the VMT in rural areas is forecast to be congested. This represents a reduction of congested VMT by 7 percent, 12 percent and 9 percent respectively in the Atlanta, other MPO, and rural counties.

The above congested percentages are based on GDOT's standard definition of congestion as being LOS D-F. If the definition of congestion was changed to LOS E-F in urban areas, about 5 percent of the urban congested centerline miles, and about 10 percent of the congested VMT, would be eliminated by definition since it is classified as LOS D. This effect is shown in Figures 6.2 and 6.3.

Figure 6.2 Congestion by Percent of Centerline Miles on State Roads

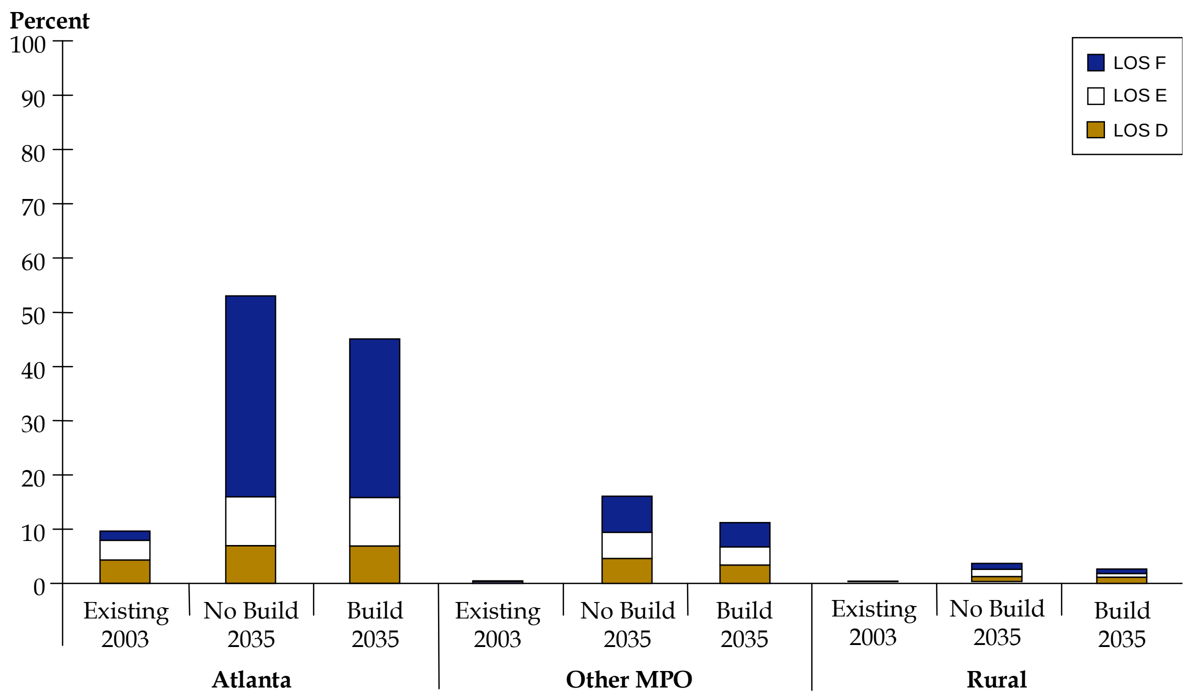
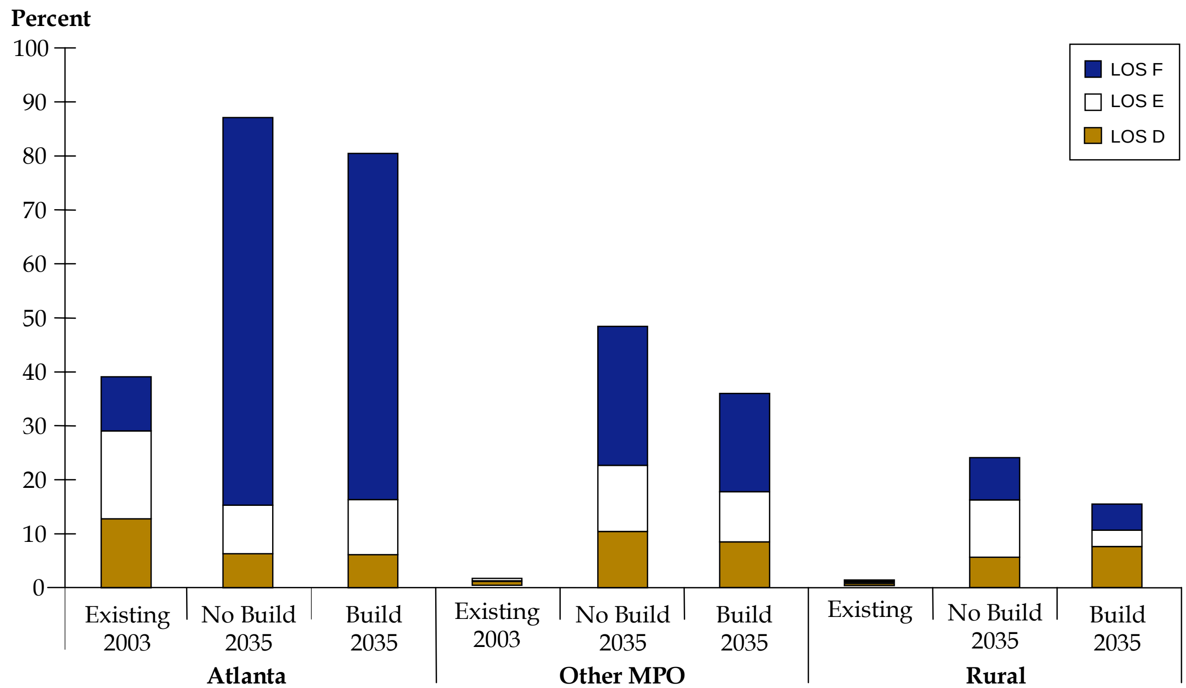


Figure 6.3 Congestion by Percent of VMT on State Roads



6.2 Intermodal

The Build/Financially Unconstrained scenario presented in Table 6.6 includes all transit, rail, bicycle, pedestrian, and aviation projects identified in the needs assessment of the various transportation agencies. The No-Build scenario in each case would be to maintain existing service levels.

Table 6.6 Build/Financially Unconstrained Scenario Recommendations for Multimodal and Intermodal Initiatives
Costs in Millions of 2005 Dollars

		Cost Estimate	
Program Element	**Description**	**30-Year**	**Annual**
Urban Transit	Implement all projects in constrained elements of the MPO RTPS plus the unconstrained elements of ARC's *Aspirations Plan*	$31,359.8	$1,045
Rural Transit	Expand service to all rural counties at current per capita service levels	$1,312.5	$43
Passenger Rail	Construct and operate all commuter and intercity services in Georgia Passenger Rail Program; capital costs for interstate high-speed rail service	$10,870.7	$362
Freight Rail	Fully fund Rail Freight Assistance Program	$492.2	$16
Aviation	Fully fund statewide maintenance and upgrades at projected level of need	$12,480.0	$416
Bicycle/Pedestrian	Fully fund Transportation Enhancement, MPO and rural projects	$3,360.0	$112
Total with Aviation		**$59,875.2**	**$1,994**
Total without Aviation		**$47,395.2**	**$1,578**

While data on program needs and costs were identified for aviation, these programs are largely self-funded through various airport fees, with the exception of intermodal highway connectors which are included as part of GDOT's highway program. Therefore, since the aviation program is not funded by the Federal, state and local surface transportation funding mechanisms, the costs are not included in the bottom line costs of the identified statewide surface transportation program. Similarly, although existing port conditions were identified in Section 4.0 and in Technical Memorandum 1, it was not possible to obtain data on future needs, and like aviation, these needs are largely self-financed under programs administered by the Georgia Ports Authority (GPA).

6.2.1 Public Transit

Urban Transit

The No-Build scenario for urban transit is the continuation of service in existing transit systems and the associated operating and capital maintenance of existing equipment. It includes no expansion of existing service. The Build/Financially Unconstrained scenario for urban transit includes the continuation of existing service plus the expansion of service as described in the RTPs. This includes the transit projects in the financially unconstrained (*Aspirations Plan*) component of the ARC's *Mobility 2030* Plan.

The additional projects in ARC's *Aspirations Plan* are projected to contribute to a further 10 percent decrease[31] in the amount of auto travel that occurs in extremely congested conditions in the Atlanta region. Work trips via transit are projected to increase another 20 percent, and 8 percent more low-income households will have access to transit. These assumptions from the ARC plan could not be incorporated into the quantitative analysis of future highway congestion presented in Section 6.1.6 above.

Rural Transit

Rural public transit operations in Georgia are primarily demand-responsive services, and are generally available through subscription service and advance reservation. For rural transit the No-Build scenario was taken as maintaining the existing service. This scenario would result in lower per capita levels of transit service given forecasted population growth.

The Build/Financially Unconstrained scenario would increase the level of transit service to keep pace with population growth, while expanding geographic coverage to all rural (i.e., nonurbanized) counties. Transit service in existing counties would be increased to maintain the current statewide average rate of service per capita.

6.2.2 Rail

The State has been actively involved in the development of both freight and passenger rail service. Georgia currently invests in the capacity enhancement and preservation of shortline freight service, and has pursued commuter and intercity passenger rail options to ease mounting congestion pressures on the highways.

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[31] Ibid.

Passenger Rail

The Georgia Rail Passenger Program (GRPP) has identified detailed capital improvement costs for the entire system and includes North Georgia commuter service, statewide intercity service, and the downtown Atlanta Multimodal Passenger Terminal (MMPT). Estimated annual operating assistance/surplus values have been published based on projected fares, ridership, and other anticipated revenue sources.

The No-Build scenario for passenger commuter rail is taken to be no expenditures on commuter or intercity rail. The Build/Financially Unconstrained scenario is taken as the cost of providing statewide intercity services, and commuter rail service throughout North Georgia. The latter would be centered on Atlanta and would provide peak-period service along seven lines to 45 proposed stations, including Macon, Griffin, Athens, Canton, Bremen, Augusta, Senoia, and Gainesville. Current estimates provide service for 10.7 million commuters and 2.1 million intercity passengers in 2030.

The No-Build scenario for high-speed rail is taken to be no expenditures on service. The Build/Financially Unconstrained scenario is service for the corridors under active development, including the Southeast High-Speed Rail (SEHSR) and Jacksonville-Atlanta intercity passenger rail corridors. Due to substantial uncertainty regarding high-speed rail operations, only capital cost estimates have been included in this plan.

Freight Rail

Freight rail transportation needs have been identified within this plan for the shortline operators of Georgia. These needs are defined by the two complimentary aspects of the Georgia Rail Freight Assistance Program: 1) rehabilitation and related maintenance activities; and 2) nonmaintenance activities, including line acquisitions. Acquisition activities have been opportunity driven and are estimated in this plan based on historic requests for acquisition investment. Rehabilitation and maintenance needs have been estimated from the survey-based shortline capital needs inventory data contained within the *Georgia Freight Rail Plan: Update 2000*.

The rehabilitation and maintenance needs for shortline railroads for the 2000-2010 period were obtained from the 2000 update of the *Georgia Freight Rail Plan*. This data was annualized and extrapolated to reflect a 30-year planning horizon. Given that acquisition activities in the State have been opportunity-driven, historical data was used in order to estimate future needs. Budget requests made between 1996 and 1999 were used to compute an average annual request. This amount was then extrapolated to obtain the projected needs through 2035.

The No-Build scenario for Freight Rail is the continued support of the existing rehabilitation and related maintenance activities. The Build/Financially Unconstrained scenario includes the cost of the existing program plus new acquisitions.

6.2.3 Aviation

The aviation system in Georgia is comprised of 106 open-to-the-public airports ranging in size from small general aviation airports to Hartsfield-Jackson Atlanta International Airport (HJAIA). Of the 106 open-to-the-public airports, nine airports have scheduled commercial airline service, and the remaining ones are exclusively general aviation airports. This section reports the aviation needs identified for HJAIA and Georgia's remaining publicly owned commercial and general aviation airports. Because of its size and uniqueness within the Georgia Aviation System, the needs associated with HJAIA are presented in a separate section from the rest of the State.

Hartsfield-Jackson Atlanta International Airport

HJAIA needs are funded by a variety of Federal, state, and local funding sources and by airport revenue sources. No state-grant dollars currently are received for aviation projects and no state money is expected for aviation projects during the life of the current $7.3 billion Master Plan.

Georgia's Other Commercial and General Aviation Airports

The *Georgia Aviation System Plan* (GASP) is a strategic approach to planning for future aviation systems that identifies the development needs of Georgia's airports for the next 20 years. In order to develop future needs, the GASP classified airports into three levels based on each airport's current status. Level I represents the minimum level of development and consists of general aviation-only airports. Business airports with local impacts are considered Level II, while Level III airports are business airports with regional impacts and include air carrier airports. In the GASP, development costs were estimated for each system airport by comparing existing facilities, recommended function levels, and facility/service objectives. These plans include meeting the needs of both passenger and air cargo services. HJAIA is the only airport in the State which currently and is projected to play a major role in air cargo. Air cargo is discussed separately in the Section 6.2.7.

6.2.4 Maritime

The costs for maintaining and improving ports and waterways in Georgia are the responsibility of the independent Georgia Ports Authority (GPA). The plans of the GPA and the funding of the projects in those plans do not impact the funding needs of the SWTP Update and are not part of the No-Build or Build/Financially Unconstrained scenarios.

6.2.5 Bicycle and Pedestrian

Transportation agencies in Georgia generally fund and implement bicycle and pedestrian projects in one of three ways:

1. As a stand-alone project in a local or regional transportation plan;

2. As a project within the State's Transportation Enhancements (TE) program; or

3. As an integral element of a roadway construction or maintenance project.

This section addresses bicycle and pedestrian projects as documented within local and regional transportation plans, and through the State's TE program. The needs assessment focuses on bicycle and pedestrian projects that are primarily transportation in nature, and largely excludes recreational-oriented needs. Projects include bicycle lanes and paths, sidewalks, and multiuse paths.

It is recognized that significant additional investment in bicycle and pedestrian infrastructure is made by GDOT and local agencies as part of their roadway work in both urban and rural areas. In lieu of dedicating funds exclusively for physical improvements to accommodate bicyclists and pedestrians, GDOT has adopted procedures for designers to incorporate bicycle and pedestrian friendly elements into programmed roadway improvement projects. This approach should result in almost the entire state bicycle network being designed to standards that allow for safe and efficient movement of bicyclists.

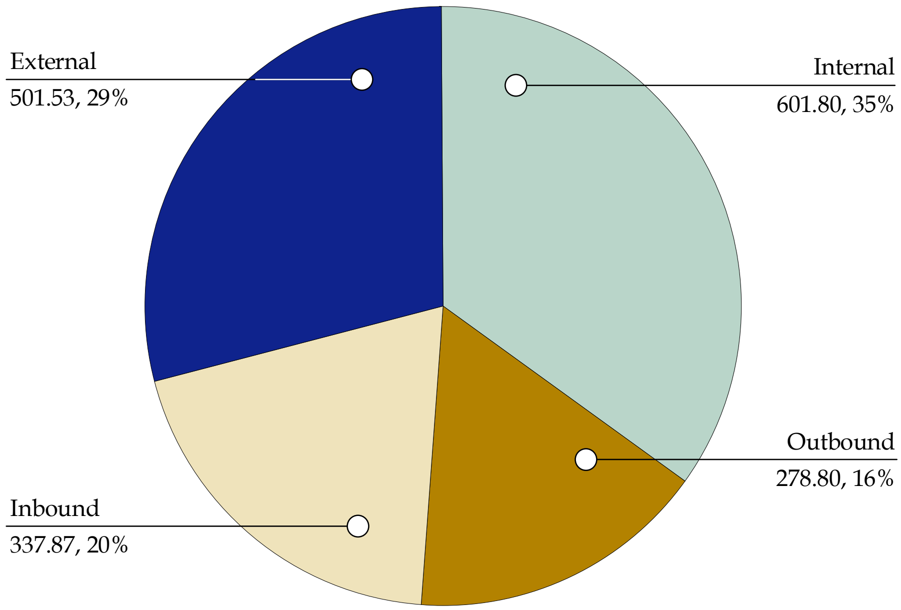
Savannah, Rome, Macon, Chattanooga, Augusta, and Atlanta all provide a specific list of bicycle and pedestrian projects in their RTPs. The project information was extracted from the most recent RTPs, adjusted to year 2005 dollars, summed over the life of the respective RTPs, and then annualized. These annual averages for each MPO were combined to arrive at a total for the SWTP. The needs for the counties described above were extrapolated to account for the rest of the population outside of MPO areas.

6.2.6 Freight

The information in this section is not meant to supplement the movement of freight discussed previously for the specific highway/truck, rail, air, and water modes. It presents a multimodal forecast for all freight movements. The forecasts presented in this section are independent of the transportation improvement scenarios, but are rather driven by underlying economic forecasts.

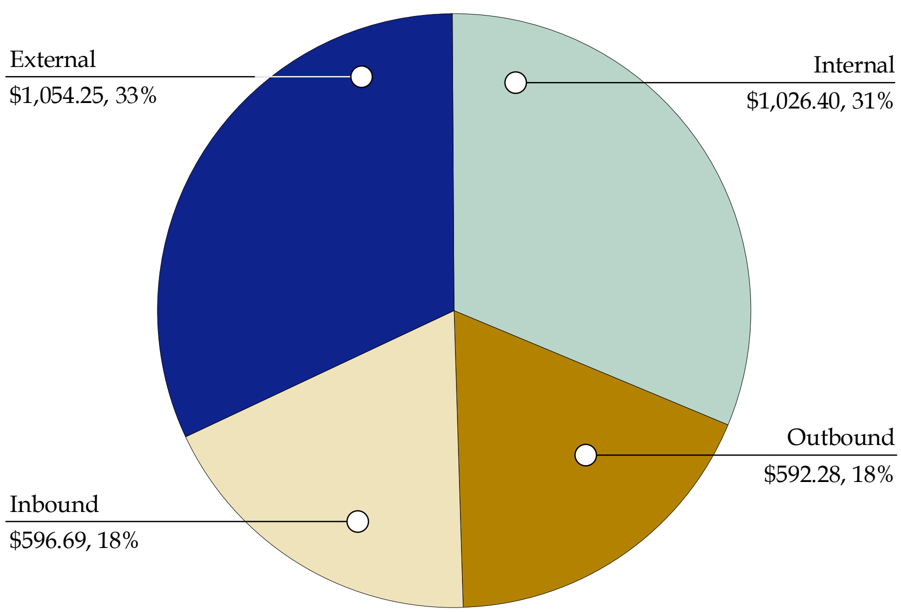
The 2035 forecasts show that tonnage is expected to increase by 2.7 percent per year. This represents a 171 percent increase in freight tonnage to 1.7 billion tons of freight moving to, from, within, and through Georgia in 2035. The value of freight will increase by 3.1 percent per year. This represents a 204 percent increase in freight value to $3.3 trillion. The intrastate component of that freight will remain the largest share by tonnage and that share is forecast to increase, but the other directions (inbound, outbound, through) also are sizable and fairly evenly distributed as shown in Figures 6.4 and 6.5. Nearly 29 percent of the freight tonnage and 33 percent of the value moving on the transportation system in 2035 in Georgia is forecast to have neither an origin nor a destination in the State, but rather serves the national economy.

Figure 6.4 Directional Flows by Weight
2035 Annual Tons (in Millions)



Source: Cambridge Systematics, Inc.

Figure 6.5 Directional Flows by Value
2035 Annual Dollars (in Billions)



Source: Cambridge Systematics, Inc.

Freight Origins and Destinations

Areas within 500 miles of Georgia' borders are forecast to receive 73 percent of its outbound shipments by tonnage and over 73 percent of its outbound shipments by value. Georgia's inbound freight also is forecast to come from areas within 500 miles, which are forecast to be the origin of 85 percent of its inbound shipments by tonnage and nearly 85 percent of its inbound shipments by value. This pattern is largely unchanged from existing conditions and reflects a continued dependence on truck travel for shipments moving within 500 miles of the State.

Commodities

The forecast distribution of commodities by weight in 2035 is shown in Figure 6.6. The top commodities by weight moving in Georgia are forecast to remain flows to and from distribution centers. While the other top five commodities by weight are forecast to remain the same as in 1998, the rank order is forecast to change.

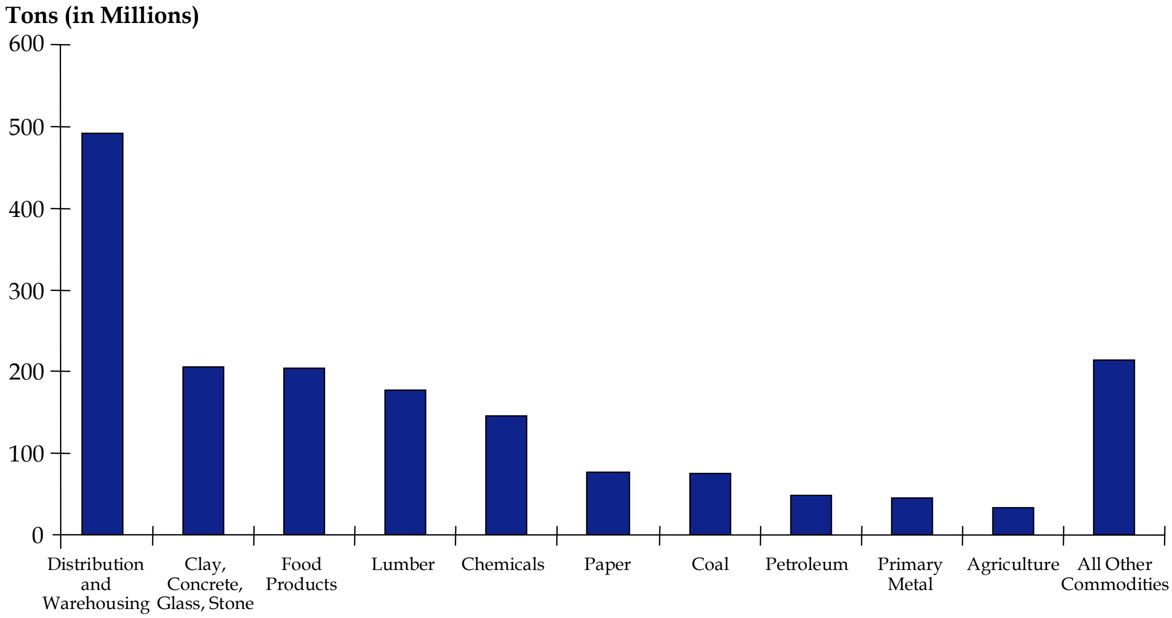
As shown in Figure 6.7, the top freight commodities overall moving in Georgia in 2035 by value are forecast to remain mostly unchanged from those in 1998, while the rank order is forecast to change slightly. The only exception is that building materials (clay, concrete, glass, and stone) is forecast to supplant textiles in the list of top 10 commodities.

Modes

As shown in Figure 6.8, trucks are forecast to carry an even larger share of Georgia's domestic freight in the future increasing from 72 percent of all the total tons shipped in 1998 to 79 percent in 2035. This increasing market share is forecast to come primarily at the expense of a decreasing market share for rail which is forecast to decline from 26 percent in 1998 to 20 percent in 2035. This is principally due to the changes forecast in the trading partners and commodities carried, which are primarily in high-value, time-sensitive goods more likely to be carried by truck. The share of freight tonnage forecast to be carried by water will decline while the share forecast to be carried by air will increase, but each mode is still forecast to carry less than 1 percent of all domestic tonnage. (Note that the Port of Savannah is likely to continue to grow its share of East Coast international water trade, but these data are not reflected in the figures below).

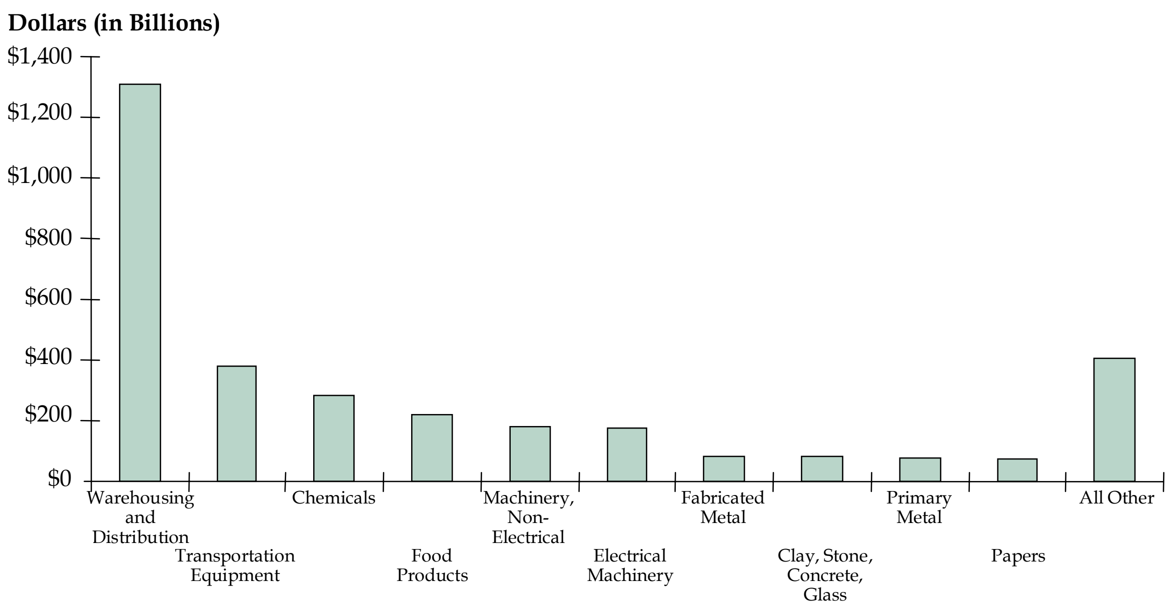
Similar to the forecast of mode share by tonnage, trucks are forecast to carry an increasing share of the value of Georgia's domestic freight. As shown in Figure 6.9, the mode share for trucks of the value of freight is forecast to increase from 82 percent in 1998 to 86 percent in 2035. Again, this increase is primarily at the expense of the share carried by rail which is forecast to decrease from 17 percent in 1998 to 13 percent in 2035. As was the case for the forecast of mode share by value, the mode share carried by water is forecast to decrease between 1998 and 2035 while that carried by air is forecast to increase. However, each mode is still forecast to carry less than 1 percent of the value of domestic freight.

Figure 6.6 2035 Annual Commodity Weight



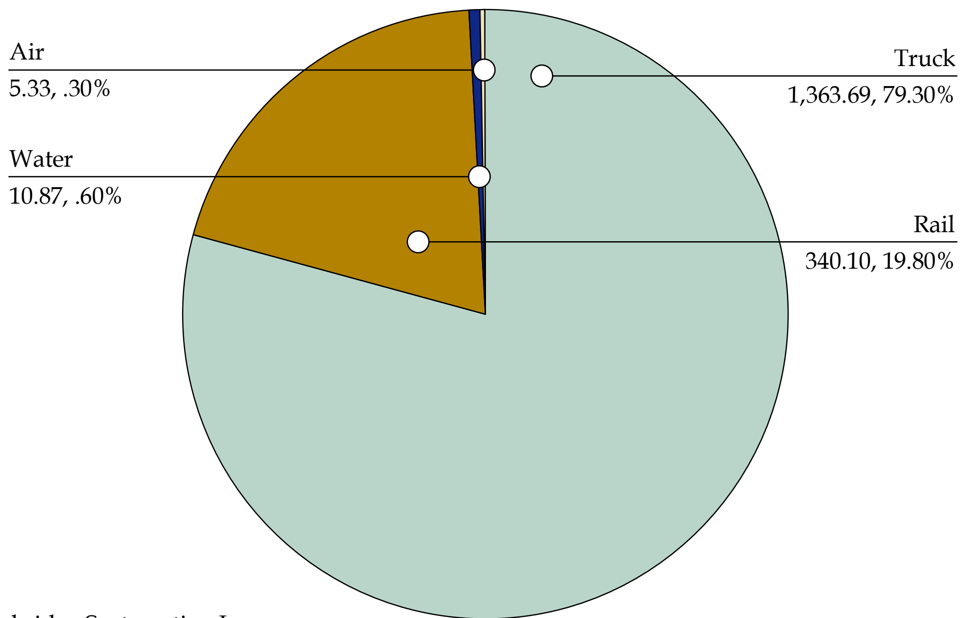
Source: Cambridge Systematics, Inc.

Figure 6.7 2035 Annual Commodity Value



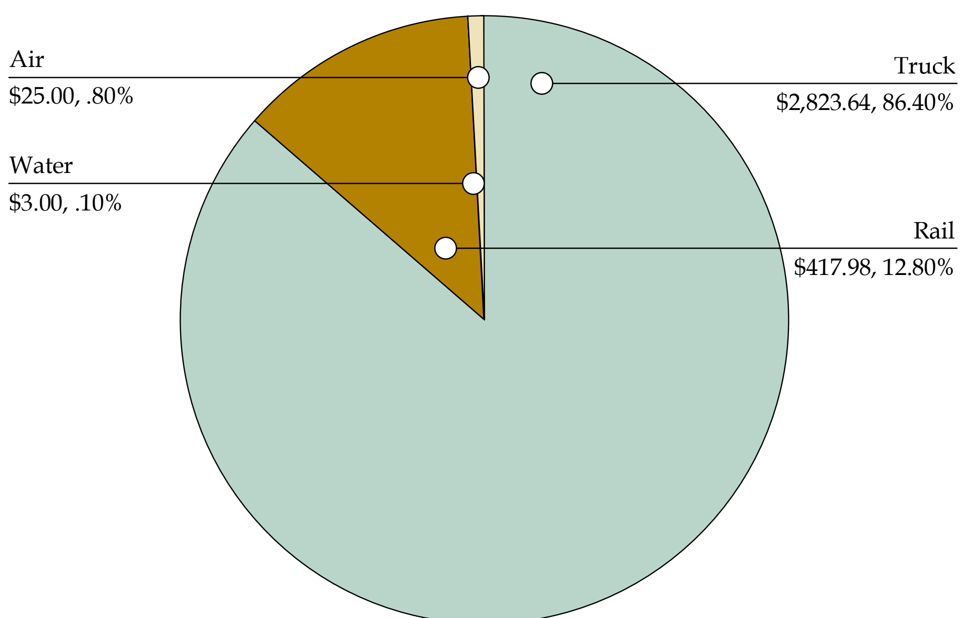
Source: Cambridge Systematics, Inc.

Figure 6.8 2035 Mode by Weight
Millions of Tons



Source: Cambridge Systematics, Inc.

Figure 6.9 2035 Mode by Value
Billions of Dollars



Source: Cambridge Systematics, Inc.

Georgia Counties

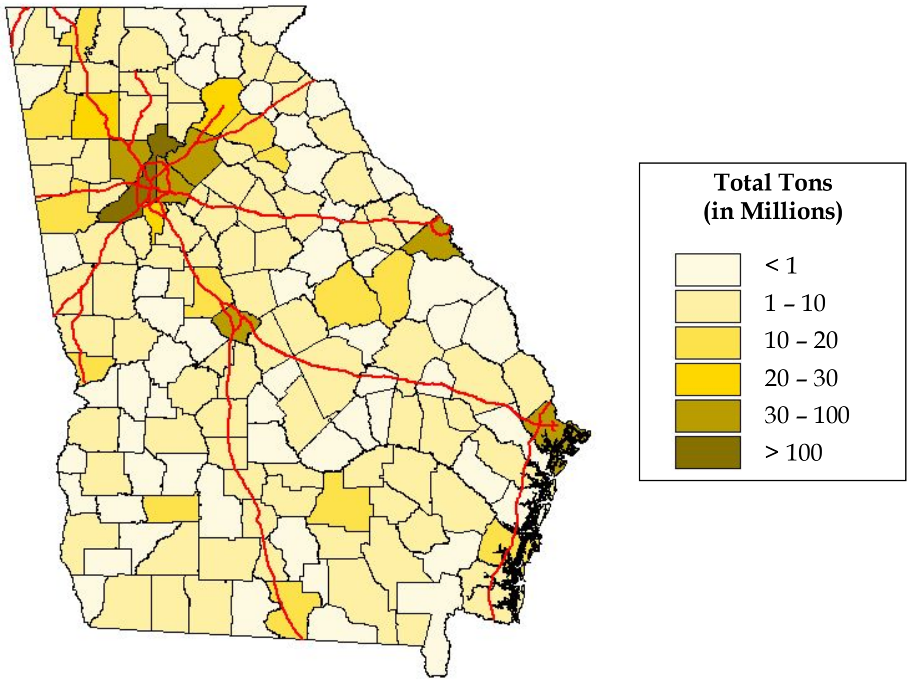
The counties with the largest 2035 forecast volumes of domestic freight by tonnage remain those counties located in urban areas where freight is produced and consumed. As shown in Figure 6.10, the top freight flows ranked by tonnage are almost exclusively to counties within urban areas. The exception is Monroe County which is in the top 15 counties by tonnage because of the shipment of coal by rail to its Georgia Power's Scherer electric power plant. Fulton County ships and receives the highest volume by tonnage in Georgia, an amount that is forecast to increase by 215 percent. Further, the forecast tonnage for Fulton County is forecast to increase to an amount that is 3.8 times that of the second ranked county, Chatham (Savannah). In addition to Fulton County, the Atlanta urban area contains six of the top 15 counties ranked by total tonnage. Shipments by value follow a similar pattern.

Routes

As shown in Figure 6.11, while the interstate highways remain important to the transport of freight, many principal arterials are forecast to transport amounts comparable to the existing volumes on the interstates. Sections of roads that are part of the GRIP system, such as U.S. 280/U.S. 82 (the South Georgia Parkway), the Fall Line Freeway between Macon and Augusta, U.S. 441, as well as roads providing other access between the interstate system and urban areas, such as SR 300 between Albany and I-75, are forecast to carry tonnages in excess of 10 million tons and values in excess of $25 billion per year. The section of highway that is forecast to carry the most freight in 2035 will remain I-75 from Atlanta to Macon which is forecast to carry 250 million tons per year worth $500 billion. At an average of 17 tons per truck, this equates to 40,000 freight trucks per day compared to 14,000 trucks under existing conditions – almost a threefold increase in truck volume.

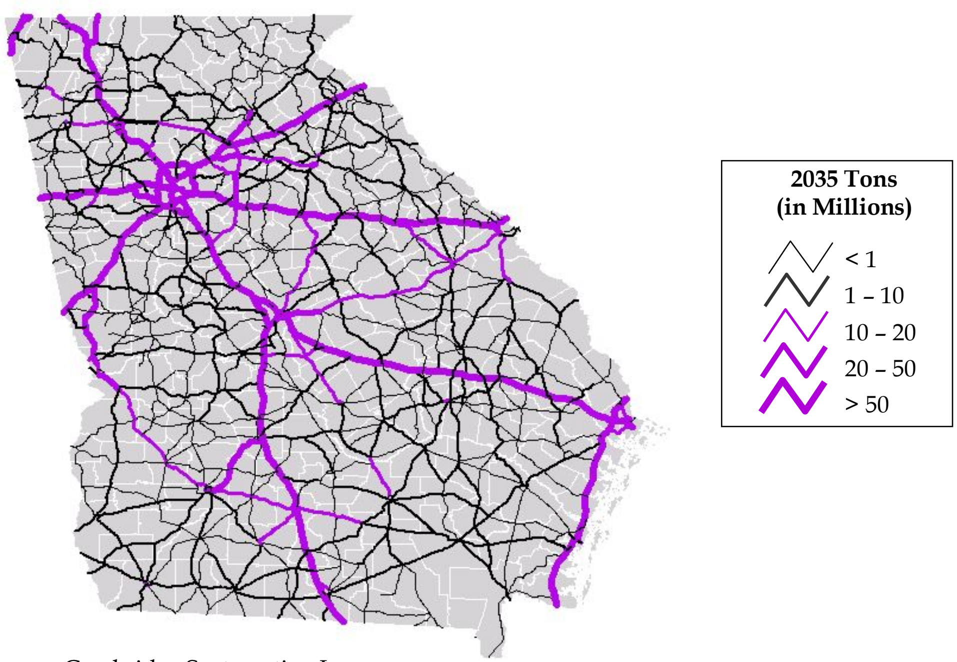
As shown in Figure 6.12, tracks owned by the two Class I railroads in Georgia, Norfolk Southern and CSX, are forecast to continue to transport the highest volumes of freight by tonnage and value. The highest volumes on the NS system are forecast to be on the main track between Macon and Chattanooga through Atlanta where freight is forecast to carry a weight of 40 million tons and a value of $120 billion per year, almost double the current amounts. This equates to 1,600 loaded rail cars per day. The highest freight volumes on the CSX system are forecast to be on the main track between Atlanta and Chattanooga which is forecast to carry a weight of 60 million tons and a value of $100 billion per year, which equates to 2,400 loaded rail cars per day, also almost double the current amounts. The regional and short-line railroads are forecast to continue to provide important accessibility to other locations in Georgia, but the volumes of freight that they carry are much lower than the volumes of the Class I railroads.

Figure 6.10 2035 Tonnages by County for All Modes



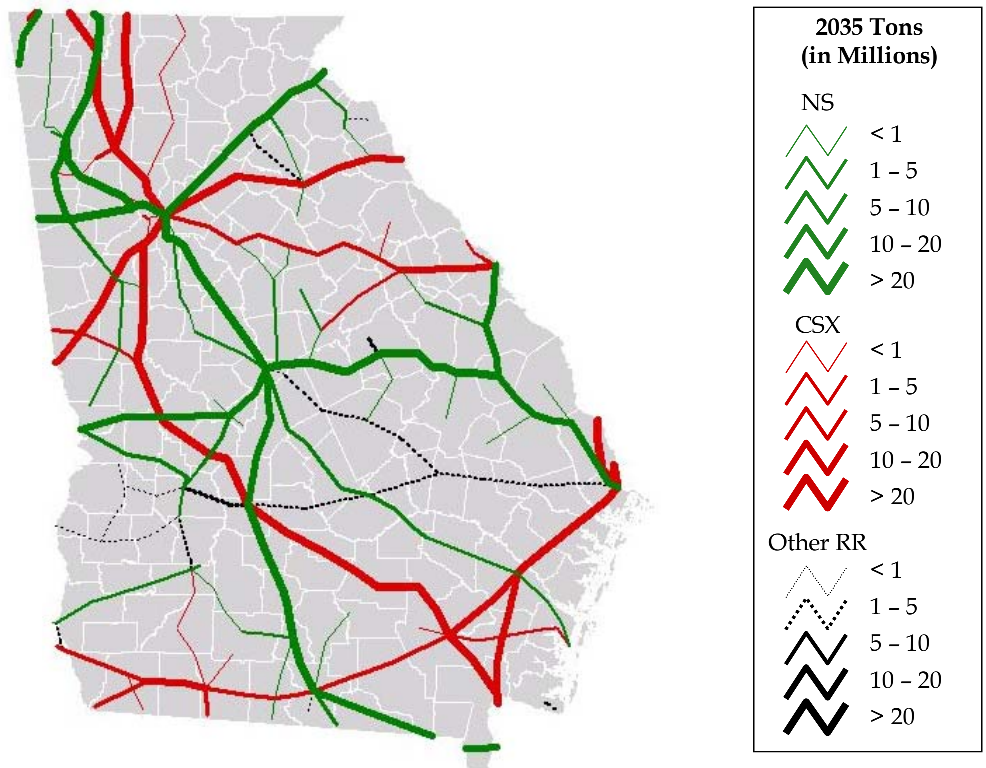
Source: Cambridge Systematics, Inc.

Figure 6.11 2035 High-Tonnage Truck Corridors



Source: Cambridge Systematics, Inc.

Figure 6.12 2035 High-Tonnage Rail Corridors



Source: Cambridge Systematics, Inc.

Domestic water freight is forecast to grow by 71 percent by 2035, but the mode share is declining and the relative importance of the ports is forecast to remain the same. Water transport in Georgia remains concentrated in the port of Savannah, with secondary functions served by the ports of Brunswick, Columbus, and Bainbridge. In 2035, HJAIA is forecast to handle almost all of the air cargo activity in Georgia with an expected 3.2 million tons of domestic air cargo with a value of $14.2 billion, which continues to represent over 99 percent of all domestic air cargo in Georgia. In addition to Southwest Regional and Savannah-Hilton International, Muscogee County's Columbus Metropolitan and Richmond County's Augusta Regional Airports also are forecast by 2035 to transport domestic air cargo with a value in excess of $1 million per year.

7.0 Revenue Forecast of Transportation Funding Sources

The finances, policies, and spending decisions of Federal, state, and local governments will affect Georgia's economy and the State's ability to fund transportation initiatives in the future. This section provides historical trends and revenue forecasts relevant to transportation funding in Georgia. Emphasis is placed on the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) programs, the two primary Federal funding sources, and the Georgia state motor fuel taxes. Other funding is provided through annual state General Fund appropriations, MARTA's sales tax, Special Purpose Local Option Sales Taxes (SPLOST), and local funding allocations for transportation investments.

A forecasting timeframe from 2006 to 2035 was used, under the assumption that the Federal fiscal year 2005 will end in September, and presumably those revenues have been already spent by the State on its current transportation program. All funding projections were made in year-of-expenditure dollars (YOE dollars), and converted to 2005 dollars assuming an annual inflation rate of 2.5 percent, based on the average U.S. inflation rate in the past 10 years.[32] Expressing future revenues in 2005 dollars allows for comparison with project costs, which are estimated in 2005 dollars in Section 6.0.

This section is organized as follows:

- Projections of Federal funding;
- Projections of state motor fuel taxes;
- Projections of local revenues; costs and comparison to the 2000 Plan Update; and
- Summary of Revenue Sources.

Total revenue for the 30-year Plan period is forecast to be $86 billion compared to the cost of the Build/Financially Unconstrained scenario defined in Section 6.0 of $160 billion, resulting in a projected deficit of $74 billion.

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[32]Historical inflation was calculated using CPI factors from the Bureau of Labor Statistics, which can be found at http://www.bls.gov/.

7.1 Projections of Federal Funding

According to Highway Statistics,[33] about 40 percent of Georgia's revenue used for highways came from Federal sources in fiscal year (FY) 2003. This compares to a national average of about 32 percent. The relatively heavy reliance on Federal funding in Georgia is due to the relatively low amount of revenue raised by the Georgia Motor Fuel Tax, which is the second lowest in the nation. FTA funding obligations for the State of Georgia in FY 2003 were approximately $196.0 million.

7.1.1 Federal Highway Administration Funds

Funding allocations for FHWA programs for FY 2005-2009 were obtained from the SAFETEA-LU Transportation Bill,[34] signed by the President on August 10, 2005.

SAFETEA-LU includes these existing funding programs:

- **Interstate Maintenance (IM) –** This program provides funding for resurfacing, restoring, rehabilitating, and reconstructing Interstate System roadways. Added capacity cannot be funded with IM funds, except for the construction of auxiliary and HOV lanes.
- **National Highway System (NHS) –** In general, NHS funds are used for "construction, reconstruction, resurfacing, restoration and rehabilitation of the National Highway System," according to Title 23 U.S. Code – Section 103(b)(6)(A). However, TEA-21 expanded the potential uses of this funding source to include projects such as highway safety improvements, research and planning, Intelligent Transportation Systems (ITS) capital improvements, transit improvements in NHS corridors, and carpool and vanpool projects. SAFETEA-LU adds a provision to allow NHS funds to be used for environmental restoration and pollution abatement, and control of noxious weeds.
- **Surface Transportation Program (STP) –** According to TEA-21, some of the uses of STP funds include surface transportation infrastructure projects on any Federal-aid facility, bridge projects on any public road, transit capital projects, environmental provisions, and ITS improvements.
- **Bridge –** This program provides funding for replacement and rehabilitation of bridges, bridge painting, seismic retrofitting, application of anti-icing compositions, and installation of scour countermeasures. Other eligible uses added in SAFETEA-LU

[33] Federal Highway Administration. *2003 Highway Statistics.* Table SF-21, State Funding for Highways – Summary 2003. November 2004. Available at http://www.fhwa.dot.gov/policy/ohim/hs03/hf.htm.

[34] http://www.fhwa.dot.gov/reauthorization/conference.htm.

include systematic preventive maintenance. The State must use a minimum of 15 percent of the funding for projects on off-system bridges (i.e., on non Federal-aid roadways). The 35 percent cap on Bridge funding for off-system bridges was removed with the new bill.

- **Congestion Mitigation and Air Quality Improvement (CMAQ) Program –** CMAQ funds are used for projects in designated nonattainment areas. These projects should improve air quality, and examples include HOV construction, ITS strategies implementation, and improved signalization.

- **Equity Bonus –** This program replaces the Minimum Guarantee program in TEA-21. The Equity Bonus is designed to ensure that each state's share of apportionments is at least 92 percent of its contributions to the Highway Account of the Highway Trust Fund by 2009.

- **Appalachian Development Highway System –** This program provides funding for the construction of the Appalachian Corridor highways in 13 states, including Georgia. By the end of FY 2004, Georgia had completed the construction of 75 percent of the corridor miles within the State.

- **Recreational Trails –** This program provides funding for existing and new recreational trails. Funds must be distributed as follows: 40 percent for diverse use trails; 30 percent for motorized recreation; and 30 percent for nonmotorized recreation.

- **Metropolitan Planning –** Existing Federal program for transportation planning activities in metropolitan regions.

- **Rail-Highway Crossings –** This program provides funding for protective devices at rail-highway crossings.

New funding programs from SAFETEA-LU include:

- **Highway Safety Improvement Program (HSIP) –** SAFETEA-LU creates the HSIP, which replaces the STP set-aside for safety. It requires states to develop a State Highway Safety Plan and Program. Eligible projects under this program include (but are not limited to): intersection safety improvements; installation of warning devices; improvements for bicycle or pedestrian safety; installation of priority control systems for emergency vehicles at signalized intersections; safety conscious planning; and construction and operational improvements at high-risk rural roads. The program requires that states set aside a portion of the funding (for a total of $90 million nationwide) for safety projects on high-risk rural roads.

- **Safe Routes to School –** This new formula program authorizes $612 million at the national level over fiscal years 2005 through 2009, that could be used for safety improvements on any public road, bike path, or pedestrian facility within two miles of a school. Federal share is 100 percent, and the formula is based on the State's student enrollment as a percentage of the U.S. total, with a minimum apportionment of $1 million per year. Between 10 to 30 percent of the funding must be allocated to non-infrastructure-related activities, which include: public awareness campaigns; traffic education and enforcement; student sessions on pedestrian and bicycle safety; and training.

In developing the forecasts, the SAFETEA-LU funding allocations were reduced by 10 percent, assuming that the State of Georgia continues to receive obligational authority equal to 90 percent of the annual FHWA funding allocations for the State, based on historical experience. Post-2009, revenues were projected to grow at 2.47 percent per year, which is the average annual growth rate of the Highway Trust Fund (HTF), according to forecasts from the Congressional Budget Office (CBO) and the Treasury Department. Total Federal revenues available to Georgia are estimated at $48.7 billion (YOE dollars) for the 2006-2035 period, or $32.4 billion in 2005 dollars.

7.1.2 FTA Formula Funding

Forecast FTA formula funding allocations for Georgia for Fiscal Years 2004-2009 were obtained from SAFETEA-LU.[35] Actual 2004 and 2005 obligations for the State of Georgia were obtained from FTA's web site.[36] Forecast funding allocations for Fiscal Years 2006-2009 were broken down by year using the annual funding distributions from the SAFETEA-LU bill. FTA formula programs include:

- **Section 5307 Urbanized Area –** This program provides funding for transit capital expenditures in urbanized areas; however, urbanized areas with populations of less than 200,000 can allocate funding for operating assistance. Funds can also be used for preventive maintenance.

- **Section 5309 Fixed Guideway Modernization –** This program is for transit agencies with fixed guideway systems (e.g., heavy rail or light rail and commuter rail systems) that are at least seven years old for modernization and improvement.

- **Section 5311 Non-Urbanized Area –** Areas with population less than 50,000 receive Section 5311 funds for transit capital and operating assistance. SAFETEA-LU includes a set-aside of $45.0 million for grants to Indian Tribes for providing public transportation on Indian Reservations. The Tribal Program allocations for Georgia are very small, estimated at $18,675 throughout the 30-year planning horizon.

- **Section 5310 Elderly and Persons with Disability –** This funding program provides financial assistance to nonprofit private transportation providers for demand responsive services for the elderly and people with disabilities.

[35] Summary available on-line at FTA's web site, http://www.fta.dot.gov/17003_ENG_HTML.htm.

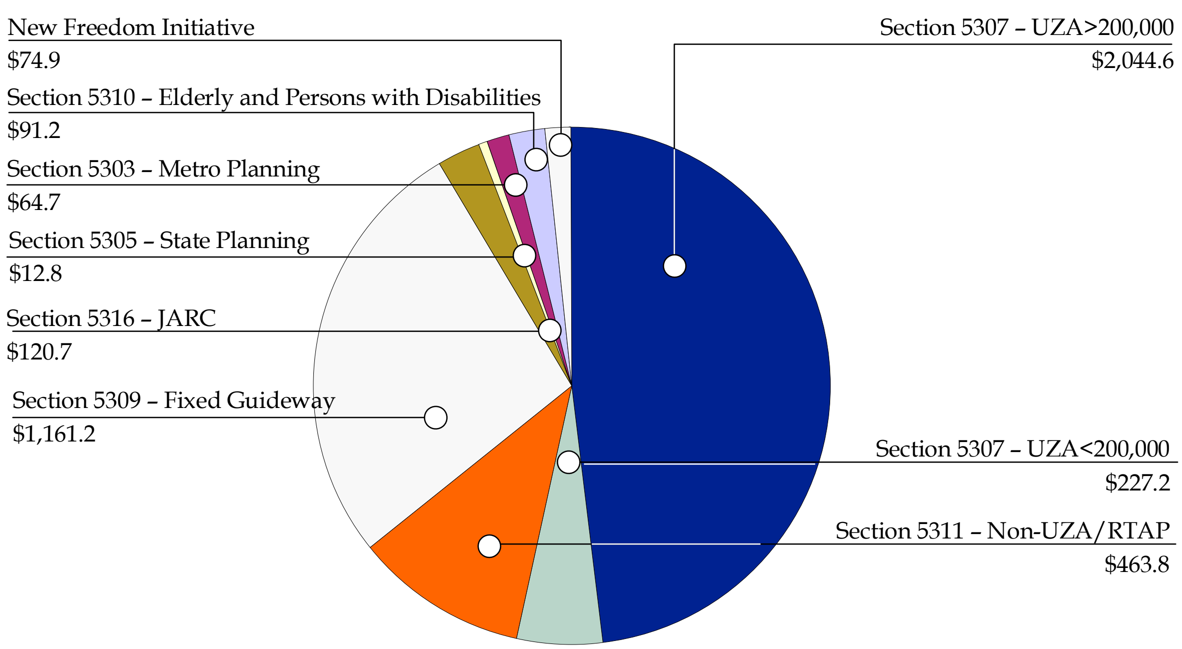
[36] Available at http://www.fta.dot.gov/grant_programs/overview/14968_ENG_HTML.htm.

- **Section 5316 Job Access and Reverse Commute (JARC) –** This grant program provides funding for transit services that facilitate access to jobs for low-income people and to suburban employment centers.

- **Section 5305 State Planning/Section 5303 Metropolitan Planning –** Funding programs to facilitate transit planning at the state and local level.

Annual growth in FTA programs was assumed to be 2.47 percent post-2009, the same rate as for highway funding. Total FTA formula revenues are estimated at $4.3 billion in 2005 dollars for the 2006-2035 period. Funding by program is shown in Figure 7.1.

Figure 7.1 FTA Formula Funding Projections by Program
2006-2035 (Millions of 2005 Dollars)



7.1.3 FTA Discretionary Funds

FTA discretionary funding includes Section 5309 Bus Capital and Section 5309 New Starts. Spending for these two categories has varied considerably over the past 10 years, as indicated in Table 7.1.

Table 7.1 Recent FTA Discretionary Spending in Georgia
Thousands of Dollars

Fiscal Year	Section 5309	
	New Starts	Bus Capital
1995	–	$4,000
1996	$41,900	$3,722
1997	$64,617	$3,037
1998	$45,453	$8,971
1999	$52,714	$15,384
2000	$45,269	$21,339
2001	$24,766	$8,170
2002	$24,750	$19,404
2003	$15,845	$16,364
2004	$2,115	$31,224
2005	$263	$13,459

Source: Federal Transit Administration.

It is reasonable to assume that future FTA discretionary funds will also vary in the future, but not in predictable ways. Section 5309 Bus Capital earmarks for FY 2006-2009 were obtained from SAFETEA-LU. For the purpose of estimating future allocations (post-2009) to Georgia from this program, it was assumed that the average funding will grow annually at the same rate of growth of the HTF (2.47 percent) beginning in 2010. Total revenues for the 2006-2035 period are projected at $294.3 million in 2005 dollars.

To estimate the total New Starts funding that will be available for Georgia, it was assumed that New Starts funding will be equivalent to the New Starts funding projections included in ARC's *Mobility 2030 Plan*. ARC's Constrained scenario assumes a total allocation of New Start funding estimated at $1.6 billion (2005 dollars) during the 2008-2030 period, based on a 50/50 share of Federal and Local funding. An additional $1.5 billion (2005 dollars) of New Starts funding is also included in the ARC *Aspirations Plan* (which is financially unconstrained), but has not been included in these estimates, since there are no local matching funds available for these projects. New Starts projects in the ARC *Mobility 2030 Plan* include several BRT projects along Interstate and arterial corridors, and the Inner Core Transportation Corridor. It is important to remember that any assumption of New Starts funding for the State of Georgia also assumes the availability of the local matching funds.

7.2 State Funding Sources

State funding sources for transportation projects include the 7.5 cent per gallon Motor Fuel Tax (MFT) and the 3 percent Retail Tax on Motor Fuel, and General Fund appropriations. (Note that the total Retail Tax is 4 percent, with 3 percent assigned to GDOT and 1 percent to the General Fund.) The state funds described in the following sections are used to match FHWA funds (see Section 7.1.1) to purely state projects, and to provide funds for local projects through the Local Assistance Road Program (LARP) and the State Aid Program.

7.2.1 State Motor Fuel Taxes

There are two motor fuel taxes in Georgia. The traditional motor fuel tax charges 7.5 cents per gallon of motor fuel. Motor fuel tax revenues have increased over time, but the tax rate has remained constant for over than 30 years. Therefore, motor fuel tax revenues do not increase with inflation. There is also a retail sales tax of 3 percent on motor fuel (as noted above). This component of the motor fuel tax will track with price changes on motor fuel because the percentage is based on the retail sales price. The State also earns interest each year on motor fuel tax fund balances and transfers motor fuel tax to other purposes. The first concept adds to GDOT's appropriation, while the second detracts from available funds. While total motor fuel taxes have been steadily increasing over time, the interest and transfers do not show a consistent pattern. Interest and transfers are not included in the revenue forecast due to the difficulty in predicting these two components, and the fact that they offset each other to a large degree. Historical estimates, starting in 1980, of motor fuel tax collections targeted to GDOT were provided by GDOT, and summarized on Table 7.2.

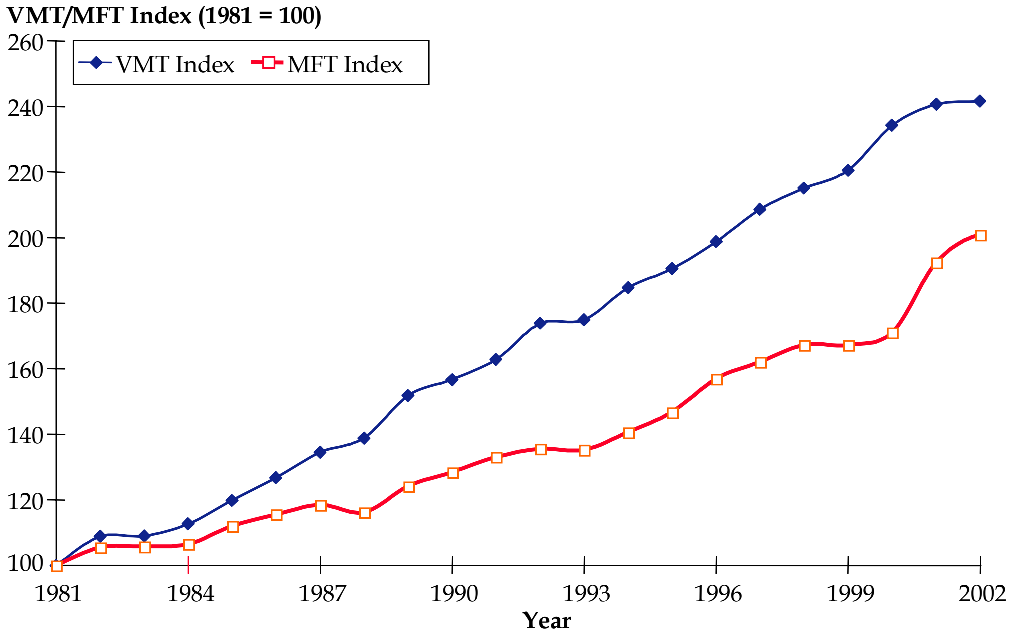
The methodology to forecast motor fuel tax revenues relies on the relationship between vehicle miles traveled (VMT) and motor fuel consumption. Figure 7.2 shows the historical relationship between VMT and motor fuel tax revenues between 1981 and 2003. Motor fuel tax revenues have increased at a slower rate than VMT, which could be the result of several factors including improvements in average fuel efficiency (primarily early in the period), and the introduction of alternative fuel, hybrid, and electric vehicles. However, neither of these factors is likely to fully account for the relationship. Fluctuations in motor fuel tax revenues can also be impacted by changes in the price of gasoline.

Table 7.2 Historical Georgia Motor Fuel Tax Revenues
Thousands of YOE Dollars

Fiscal Year	Motor Fuel Tax	3 Percent Retail Tax on Motor Fuel	Total Motor Fuel Taxes	Interest on Motor Fuel Tax Funds	Motor Fuel Tax Transfer	Total MFT Appropriated DOT
1985	$264,069	$103,745	$367,814	$36,267		$404,081
1986	$275,726	$103,655	$379,381	$44,807		$424,188
1987	$287,030	$102,108	$389,138	$46,652		$435,790
1988	$300,711	$80,797	$381,508	$47,796		$429,304
1989	$314,381	$93,249	$407,630	$45,133		$452,763
1990	$324,542	$96,961	$421,502	$49,846		$471,348
1991	$325,624	$111,072	$436,696	$51,538	-$2,555	$485,679
1992	$321,009	$124,102	$445,111	$49,028	-$84,260	$409,879
1993	$328,693	$115,139	$443,832	$37,352	-$68,310	$412,874
1994	$342,094	$119,501	$461,594	$37,957	-$54,700	$444,852
1995	$361,509	$120,067	$481,576	$25,446	-$61,000	$446,022
1996	$376,087	$139,056	$515,143	$34,525	-$70,000	$479,668
1997	$391,695	$140,249	$531,945	$35,640	-$35,000	$532,585
1998	$383,834	$165,167	$549,000	$45,145	-$35,000	$559,146
1999	$401,719	$147,304	$549,024	$48,935	-$35,000	$562,959
2000	$424,391	$137,246	$561,638	$44,721	-$50,000	$571,358
2001	$443,409	$187,921	$631,330	$58,463	-$26,774	$639,793
2002	$436,530	$222,804	$659,334	$64,237	-$51,000	$696,797
2003	$452,823	$195,534	$648,358	$49,812	-$66,000	$647,169
2004	$458,675	$216,560	$675,235	$42,110	-$161,000	$651,346
2005	$491,204	$234,853	$726,057	$22,852	-$35,000	$592,909

Source: Georgia Department of Transportation.

Figure 7.2 Index of VMT in Georgia and Motor Fuel Tax Revenues
7.5 Cents per Gallon and 3 Percent Retail Sales Tax



Sources: VMT, FHWA Highway Statistics; MFT Revenues, Georgia Department of Transportation.

A regression analysis of the relationship between VMT and MFT receipts was used to predict percentage changes in motor fuel tax revenues given a percentage change in VMT.[37] The elasticities for the two components of MFT revenues are:

1. Elasticity of Motor Fuel Tax (7.5 cents per gallon) = 0.653; and

2. Elasticity of 3 percent Retail Tax on Motor Fuel = 0.810.

These elasticities were applied to the forecast of VMT growth to estimate future MFT growth. The travel demand model used to estimate future transportation needs for the Statewide Plan estimates an annual growth of 1.91 percent in VMT; therefore, growth rates for the 7.5 cents per gallon MFT and 3 percent Retail Tax on Motor Fuel are estimated at 1.25 percent and 1.55 percent respectively. On average, the combined revenues from both motor fuel taxes are projected to increase at an annual rate of 1.33 percent.

In addition to MFT revenues and general fund appropriations (discussed below), GDOT uses bond proceeds to finance its transportation program. Since GDOT does not have the authority to issue bonds, either the State (through General Obligation Bonds) or the State

[37] The estimation involved the following regression equation: log (Motor Fuel Tax) = constant + log (VMT) + error. VMT and motor fuel tax revenues were both in year-of-expenditure dollars.

Road and Tollway Authority (SRTA) (through Guaranteed Revenue Bonds) issues the bonds, and then GDOT pays them back using MFT revenues. For instance, in FY 2006, GDOT's debt service payments include $26.9 million for GRB bonds and $133.3 million for GO bonds. Current debt service payments extend through FY 2024, and have been deducted from the total MFT revenues.

Total state MFT revenues (after debt service) are estimated at $24.9 billion (YOE dollars) for the 2006-2035 period, or $16.6 billion in 2005 dollars. The $24.9 billion consists of about $18 billion in MFT revenue plus $9 billion in retail tax revenue, minus $2 billion in debt service.

7.2.2 General Fund Appropriations

State motor fuel tax revenues have historically fallen short of GDOT's funding needs. Motor fuel tax receipts are used to pay for highway-related debt service, operating and maintenance expenditures (which are not eligible for Federal funding), capital programs, and matching Federal funds. Therefore, GDOT receives annual appropriations from the General Fund to complement its Transportation Trust fund revenue. General Fund allocations are subject to the annual appropriation process and are primarily used for highway-related operating expenses including GDOT's own administrative costs, not capital programs. Therefore, they are not included in the revenue forecast.

7.3 Local Revenues for Transportation

7.3.1 Local Revenues for Highway Needs

Currently, local governments rely mainly on local general fund appropriations and Special Purpose Local Option Sales Taxes (SPLOST) to provide their share for Federal-aid and state projects and for local roadway projects. SPLOSTs are collected for diverse uses such as education, general fund, and transportation. These local option taxes have a life span of five years, at the end of which voters must decide whether the county will continue levying them to fund diverse infrastructure projects. Only a few counties do not levy SPLOSTs.

Projections of local revenues for highway-related expenditures were developed based on historical allocations, as reported in FHWA's *Highway Statistics* (Table LGF-1). SPLOSTs should be reported under "other local imposts"; however, GDOT staff indicated that in some counties, these revenues are deposited into the General Fund, and thus are reported as such to FHWA. For the purpose of the local revenue forecast, SPLOSTs and other local revenues were combined. The average allocation of local funds for highway expenditures was estimated at $995.6 million between FY 1995 and 2002, for an average annual growth rate of 2.3 percent over that period. Capital outlay expenditures accounted for about 42 percent of all highway-related expenditure over the same period. Local revenues for local highway capital projects are estimated at $19.5 billion (YOE dollars), or $13.0 billion during the 2006-2030 period.

7.3.2 Local Revenues for Transit and Passenger Rail

Transit services are funded through a variety of Federal, state and local programs, as well as farebox revenue, advertising, and other nongovernmental sources. Most local government funding for urban and rural transit services is provided by general fund revenues of municipalities and/or counties. However, several counties such as Cobb and Bibb have some transit capital projects funded through special local options sales tax revenue. Chatham Area Transit (CAT) receives operating and capital support through a special property tax assessment within a transit district. MARTA receives operating and capital support through a 1 percent sales tax in Fulton and DeKalb counties. The CAT and MARTA funding programs were authorized by the Georgia legislature, and approved by the counties.

Excluding MARTA sales tax levies and passenger revenues, and based on current expenditure patterns and adopted MPO plans, local fund availability for transit costs are expected to be $1.21 billion (2005 dollars) between 2006 and 2035.

MARTA sales tax forecasts were developed based on the sales tax levy growth over the past 10 years. Historical data on MARTA sales tax levies in Fulton and DeKalb counties indicate a compounded annual growth rate of 3.5 percent. Assuming that this growth will continue through the 30-year planning horizon of the statewide plan, MARTA is expected to levy $15.5 billion (YOE dollars), or $10.1 billion in 2005 dollars.

MARTA fare revenue projections for the 30-year planning horizon were estimated based on planned operating expenditures and historical farebox recovery ratio. Farebox recovery data was obtained from MARTA's *2004 Annual Report*. The 10-year farebox recovery ratio average is estimated at 21.6 percent, and the 30-year operating costs are estimated at $13.7 billion. MARTA fare revenues are estimated at $2.96 billion (2005 dollars) throughout the 30-year period.

Passenger Rail operating costs for the 30-year plan have been estimated at $5.21 billion for the full implementation of commuter and intercity rail services. Commuter rail operating costs are projected to account for 55 percent of the total passenger rail operating costs, with a farebox recovery ratio of 57 percent.[38] Intercity rail operating costs are projected to account for the remaining 45 percent, and the farebox recovery ratio is estimated at 79 percent.[39] Therefore, fare revenues from passenger rail services for the Unconstrained scenario are estimated at $3.49 billion (2005 dollars) for the 30-year planning horizon.

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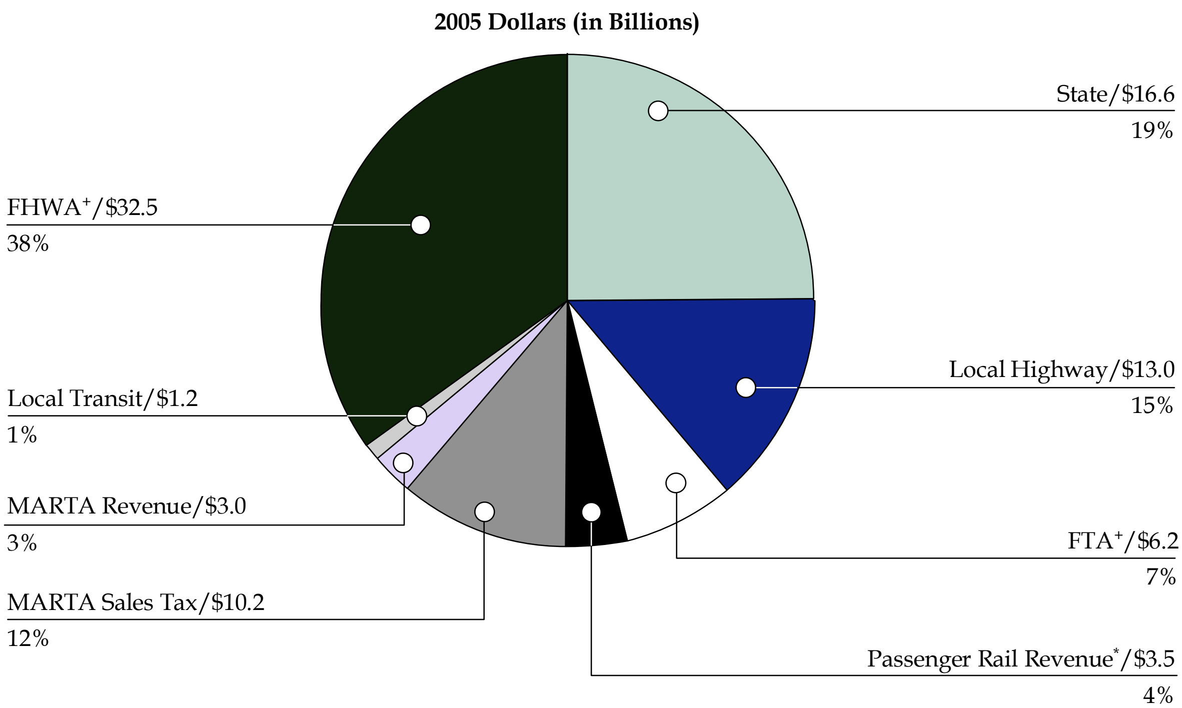
[38] Based on analysis of operating cost data from Georgia Rail Passenger Program, *Presentation of Updated GRPP Riders, Revenues, Costs, and Benefits (March 6, 2003)* and *2005 Fact Sheet.* These documents are available at http://www.garail.com/.

[39] Ibid.

7.4 Summary of Revenues and Costs, and Comparison to 2000 SWTP

Figure 7.3 summarizes the total revenues estimated to be available for transportation expenditures (including capital,[40] operations, and maintenance) for the period between 2006 and 2035 in 2005 dollars. Total revenues are forecast at $86 billion for the 30-year plan, compared to total costs of the Build/Financially Unconstrained scenario defined in Section 6.0 of $160 billion, leaving a funding gap of $74 billion.

Figure 7.3 Total Available Transportation Revenue by Source ($86 Billion)
2006-2035



* Assumes complete system is built.
\+ Assumes SAFETEA-LU authorization levels.

[40] FHWA funds can be only applied to capital expenditures; some FTA funding can be used for Preventive Maintenance (Section 5307) and for operations in rural areas.

The 2000 Statewide Plan Update, covering the 25-year period from 2000-2025, estimated an Unconstrained deficit of $30 billion, less than half of the currently forecasted deficit. There are a number of reasons for this change both in underlying substantive issues, and in the methodology used in the two Plans:

- The new plan, by starting in the year 2005 rather than 2000, reflects five additional years of inflation. While inflation was modest during this time period, there was still a compounded increase of 12 percent in the Consumer Price Index (CPI) during the five year period, projected forward into the new 30-year period.

- The new plan covers a 30-year period compared to a 25-year period covered in the last plan. This reflects a 20 percent increase in the time period covered.

- The new plan reflects unconstrained needs, whereas the old plan was really based on an estimate of constrained needs with a relatively small add-on of $15 billion to try to meet some additional needs. The two largest drivers of unconstrained needs are the ARC's *Aspirations Plan* (on both the highway and transit sides), and GDOT's own TPro database of highway capacity expansion projects, neither of which existed in 2000.

- The new plan includes city and county roadway needs, whereas the old plan included only state roadway needs.

- While the new plan reflects an increase in Federal funding allocations resulting from the enactment of SAFETEA-LU, it reflects a decrease in MFT funding due to a change in the method of calculation. In 2000, MFT revenue was forecast to increase at the same rate as personal income. In this Plan, MFT was forecast to increase at the rate of VMT increases adjusted for the historical relationship between VMT and MFT revenue growth. As shown previously, MFT revenue has grown more slowly than VMT. This is a more accurate way of forecasting MFT revenue growth. In addition, the cost of paying back with interest bonds issued in anticipation of MFT revenue was included in the financing estimate, but was not included in 2000.

Appendix A

Public Involvement Material

Public Involvement Material

■ SWTP Stakeholder Advisory Committee Meetings – List of Attendees

Meeting #1

December 8, 2004, 1:00 p.m.
James H. "Sloppy" Floyd Building, Empire Room, Atlanta, Georgia

Attendees

Matthew Hicks, ACCG
Christopher Bryant, Lower Chattahoochee RDC
Jerry Presley, Georgia Mountains RDC
Dana Lemon, GDOT Board Member
Scott Haggard, Gwinnett Chairman's Office
Cullen Larson, GEDA
Barry Tarter, North Georgia RDC
Bill Kuhlke, GDOT Board Member
George Patty, Augusta MPO
Lanier Boatright, McIntosh Trail RDC
Jerry Usry, Georgia Rural Development Council
Tom Sills, Chattahoochee-Flint RDC
Garland Pinholster, GDOT Board
Tim Kassa, GDOT
Joe Palladi, GDOT
Tom McQueen, GDOT
Matthew Fowler, GDOT
Marc Cutler, CS
George Mazur, CS
Jim Hullett, RS&H
Liz Sanford, SCI
Claudia Bilotto, SCI

Meeting #2

Meeting Date: May 17, 2005, 12:00 p.m.
Location: Middle Georgia Regional Development Center, Conference Room, Macon, Georgia

Attendees

Lanier Boatwright, McIntosh Trail RDC
Anthony Dukes, McIntosh Trail RDC
Dan Bollinger, SW Georgia RDC
Sharon Caton, SE Georgia RDC
Shelley Stevens, SE Georgia RDC
Paul DeCamp, Augusta MPO
Matthew Hicks, ACCG
Cullen Larson, GEDA
Emory McClinton, GDOT Board
Paul Smith, Coastal Georgia RDC
Tim Kassa, GDOT
Joe Palladi, GDOT
Marc Cutler, CS
George Mazur, CS
Liz Sanford, SCI
Claudia Bilotto, SCI
Rebecca Jablon, SCI

Transportation Workshop

Meeting Date: May 17, 2005, 2:00 p.m.-5:00 p.m.
Location: Middle Georgia Regional Development Center, Conference Room, Macon, Georgia

Attendees

Bobby Arnold, Baldwin County
Jack Bareford, GREDC
Gail Bembry, City of Vienna
Lanier Boatwright, McIntosh Trail RDC
Anthony Dukes, McIntosh Trail RDC
Christopher Bryant, LCRDC
Bob Dallas, GOHS
Eugene Dyal, Bacon County
Billy Flycock, Bacon County, Alma
Donald Taylor, Bacon County, Alma
Mitch Ellerbee, Thomaston-Upton Co. Airport
Doug Hawkins, Baldwin County

Matthew Hicks, ACCG
Fred Houston, Dublin Air Service
David Jarvis, Polk County
Jerilyn Leverett, Disability Connections, SILC
Ronnie Musgrove, City of Cordele
Tom O'Bryant, GMRDC
Paul Smith, Coastal Georgia RDC
Raymond Teal, City of Tifton
Gerald Thompson, City of Fitzgerald
Henry Tyson, City of Fitzgerald
Jim Tonn, MGRDC
Randy Weitman, Georgia Ports Authority
James Wright, City of Eastman
Tim Kassa, GDOT
Joe Palladi, GDOT
Marc Cutler, CS
George Mazur, CS
Liz Sanford Stepp, SCI
Claudia Bilotto, SCI
Rebecca Jablon, SCI

Meeting #3

Meeting Date: October 7, 2005, 10:00 a.m.

Location: GDOT Macon Area Office, Macon, Georgia

Attendees

Lanier Boatwright, McIntosh Trail RDC
Don ten Bensel, Middle Flint RDC
Phil Clark, Middle Georgia RDC
Ward Edwards, GDOT Board
Matthew Hicks, ACCG
George Patty, Augusta-Richmond County
Jerry Usry, Georgia Rural Development Council
Tim Kassa, GDOT
Matthew Fowler, GDOT
Joe Palladi, GDOT
Marc Cutler, CS
Beverly Davis, RS&H
Kristine Hansen-Dederick, SCI

Georgia Department of Transportation

GDOT Statewide Transportation Plan Update 2005-2035
Comment Form – Public Meetings #1
(Please Print Clearly and Use Reverse of Sheet if Necessary)

1. **What do you think is the major transportation problem facing the state? Facing your region?**

2. **What do you think is the most important transportation improvement you would like To see in the state? In your region?**

3. **What are your thoughts on the following ways to raise additional funds to achieve the improvements you identified in #2, or other similar improvements?**

   Increase the gas tax? ______________________________
   Construct more toll roads or dedicated toll lanes? ______________________________
   Increase motor vehicle registration fees? ______________________________
   Increase local option sales tax available for transportation purposes? ______________
   Additional borrowing? ______________________________
   Other (Please List)______________________________

4. **How would you describe your level of satisfaction with the state's and your region's transportation system?**

	State	Region
Very Satisfied	[ ]	[ ]
Somewhat Satisfied	[ ]	[ ]
Somewhat Dissatisfied	[ ]	[ ]
Very Dissatisfied	[ ]	[ ]

5. **What is the most important priority to accomplish by investing in the state's and your region's transportation system?**

	State	Region
Improve the environment	[ ]	[ ]
Improve Safety	[ ]	[ ]
Reduce traffic congestion	[ ]	[ ]
Maintain current system in good working order	[ ]	[ ]
Improve connections between roads, transit, and air/water ports	[ ]	[ ]
Improve mobility of people without cars	[ ]	[ ]
Improve access for businesses outside of major cities	[ ]	[ ]

6. **How did you hear about tonight's meeting?** ______________________________

Return form to: Tim Kassa, GDOT Project Manager, No. 2 Capitol Square, Room 330, Atlanta, GA 30334, Fax: (404)-657-5228, or email: Tamrat.Kassa@dot.state.ga.us

Georgia Department of Transportation

GDOT Statewide Transportation Plan Update 2005-2035
Comment Form – Public Meetings #2
(Please Print Clearly and Use Reverse of Sheet if Necessary)

1. **What do you think are the major transportation needs facing the state? Facing your region?**

2. **Please rank order your funding priorities from 1 to 6 (1=most important, 6=least important), by mode, and by need:**

By Mode	By Need
____ State Highway	____ Congestion Relief
____ Local Highway	____ Economic Development
____ Transit	____ Mobility/Accessibility
____ Air	____ Maintenance & Preservation
____ Bicycle/Pedestrian	____ Environmental Protection
____ Water (Ports)	____ Safety

3. **Are there any policy changes you would like to see in how the state goes about funding, managing, and improving its transportation system?**

4. How did you hear about tonight's meeting? ______________________________

Return form to: Tim Kassa, GDOT Project Manager, No. 2 Capitol Square, Room 330, Atlanta, GA 30334,
Fax: (404)-657-5228, or email: Tamrat.Kassa@dot.state.ga.us

Appendix B

Endorsed Long-Range Transportation Plans and Other Referenced Studies

Endorsed Long-Range Transportation Plans

The Long-Range Transportation Plans (LRTPs) of Georgia's Metropolitan Planning Organizations (MPOs) are incorporated into this SWTP Update. The currently endorsed LRTPs by MPO are shown in Table B.1.

Table B.1 Endorsed Long-Range Transportation Plans

MPO	Adopted	Name of Plan	Years Covered
Dalton	June 2005	2030 Long-Range Transportation Plan	2005-2030
Savannah	9/22/04	Metropolitan Planning Organization 2030 Long-Range Transportation Plan	2005-2030
Hinesville	10/20/05	Long-Range Transportation Plan, Hinesville Area Metropolitan Planning Organization	2005-2030
Warner Robins	11/1/05	2030 Long-Range Transportation Plan	2005-2030
Macon	5/12/05	Long-Range Transportation Plan for 2030	2005-2030
Gainesville	12/14/04	Gainesville-Hall Transportation Study 2030 Long-Range Transportation Plan	2005-2030
Augusta	9/1/05	Augusta Regional Transportation Study Long-Range Transportation Plan	2006-2030
Albany	12/9/04	Dougherty Area Regional Transportation Study 2030 Transportation Plan	2005-2030
Chattanooga	6/21/05	Chattanooga Hamilton County North Georgia 2030 Long-Range Transportation Plan	2000-2030
Rome	April 2004	FRUTS LRTP 2030	2005-2030
Valdosta	9/20/05	Metro 2030 Long-Range Transportation Plan	2005-2030
Atlanta	12/1/04	Mobility 2030	2005-2030
Columbus	12/17/04	Columbus-Phoenix City Long-Range Transportation Plan Year 2030	2005-2030
Athens	8/25/04	MACORTS – **M**adison-**A**thens-**C**larke-**O**conee **R**egional **T**ransportation **S**tudy 2030 Long-Range Transportation Plan	2005-2030
Brunswick	10/17/05	Brunswick Area Transportation Study 2030 Transportation Plan	2005-2030

In addition to the MPO Plans, the SWTP Update incorporates long-range multimodal studies conducted or sponsored by GDOT in several jurisdictions including the following:

- Banks, Franklin, and Jackson Counties;
- Pike, Upson, Lamar Counties;
- Habersham, Rabun, Stephens, and White Counties;
- Dublin, Oscilla, and Tifton;
- Bartow County;
- Walton County;
- Newton County; and
- St. Simons.

The SWTP Update includes the following Intermodal Plans:

- Georgia Transit Programs Fact Book (2004);
- Intercity Bus Plan (1994);
- Intercity Rail Passenger Plan (1996);
- Commuter Rail Plan (1995);
- Georgia Freight Rail Plan: Update (2000);
- Georgia Bicycle and Pedestrian Plan Update (1998);
- Georgia Aviation System Plan (2003);
- Hartsfield-Jackson Atlanta International Airport Master Plan (1999); and
- Safety Action Plan (2004).

The SWTP Update includes the following Bicycle/Pedestrian plans developed by each RDC (except ARC):

- Southwest Georgia Regional Bicycle and Pedestrian Plan (adopted March 2005);
- Southeast Georgia Regional Bicycle and Pedestrian Plan (adopted 2005);
- South Georgia Regional Bicycle and Pedestrian Plan (2005);
- Northeast Georgia Regional Bicycle and Pedestrian Plan (adopted April 30, 2005);
- Regional Bike and Pedestrian Facilities Plan for the North Georgia Region (June 2005);
- Middle Flint Regional Bicycle and Pedestrian Plan (2005);
- Bicycle/Pedestrian Plan for the Middle Georgia Region (March 2005);
- Georgia Mountains Regional Bicycle and Pedestrian Plan (August 25, 2005);
- CSRA Bicycle and Pedestrian Plan (June 2005);

- Chattahoochee-Flint Bicycle and Pedestrian Plan (April 2005);
- Coastal Georgia Regional Bicycle and Pedestrian Plan (May 11, 2005);
- Coosa Valley Regional Bicycle and Pedestrian Plan (June 2005);
- Heart of Georgia Altamaha Regional Bicycle/Pedestrian Plan (June 2005);
- Regional Bicycle and Pedestrian Plan for the Lower Chattahoochee Region (2005); and
- McIntosh Trail Region: Regional Bicycle and Pedestrian Pathway Plan (April 2005).

Appendix C

Area of Responsibility by Consultant

Area of Responsibility by Consultant

Task	Lead Firm	Supporting Firm	Supporting Firm
1.0 – Background and Purpose of the Statewide Planning Process	Cambridge Systematics, Inc.		
2.0 – Public Involvement Process and Results	Sycamore Consulting, Inc	Cambridge Systematics, Inc.	
3.0 – Data Sources and Methodology	Cambridge Systematics, Inc.	GeoStats, LP	Reynolds, Smith and Hills, Inc.
4.0 – Existing Conditions	Cambridge Systematics, Inc.	Reynolds, Smith and Hills, Inc.	
5.0 – Economic Forecasts	Cambridge Systematics, Inc.		
6.0 – Forecast Conditions No-Build versus Build/ Financially Unconstrained Scenarios	Cambridge Systematics, Inc.	Reynolds, Smith and Hills, Inc.	
7.0 – Revenue Forecast of Transportation Funding Sources	Cambridge Systematics, Inc.		

CAMBRIDGE SYSTEMATICS

2005-2035 Georgia Statewide Transportation Plan Update

Appendix D: Year of Expenditure Program Costs

Year of Expenditure Program Costs

prepared for

Georgia Department of Transportation

prepared by

Cambridge Systematics, Inc.

June 2006

www.camsys.com

final technical memorandum

2005-2035 Georgia Statewide Transportation Plan Update

Appendix D: Year of Expenditure Program Costs and Revenues

prepared for

Georgia Department of Transportation

prepared by

Cambridge Systematics, Inc.
100 CambridgePark Drive, Suite 400
Cambridge, Massachusetts 02140

June 2006

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Executive Summary

Here are the GDOT's Office of Planning Recommended ***Year of Expenditure (YOE)*** Assumptions/Findings:

- Revenues are forecasted to grow at 2.5% per year
- Costs are forecasted to grow at 2.5% per year
- Total Revenue @ an annual 2.5% inflation rate = $129.10 Billion
- Total Costs @ an annual 2.5% inflation rate = $240.10 Billion
- Funding Gap = $111 Billion

The following table summarizes potential gaps **($ in billions)** in funding assuming that revenues will increase at an annual inflation rate of 2.5% and with costs increasing at varying rates of annual inflation ranging from 2.5% to 30%.

Annual Growth in Costs	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	7.5%	10.0%	20.0%	30.0%
Annual Growth in Revenue	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Costs	$240.15	$261.51	$285.14	$311.28	$340.23	$372.29	$593.19	$965.63	$7,568.77	$60,565.73
Revenues	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10
Gap	$111.05	$132.41	$156.04	$182.18	$211.13	$243.19	$464.09	$836.54	$7,439.67	$60,436.63

Here is a comparison between our 2005 Dollars and YOE Dollars assumptions:

	Costs	**Revenues**	**GAP**
$2005	$160 Billion	$86 Billion	$74 Billion
$YOE	$240 Billion	$129 Billion	$111 Billion
Difference	**$80 Billion**	**$43 Billion**	**$37 Billion**

1.0 Introduction

The 2005-2035 Georgia Statewide Transportation Plan (SWTP), *as adopted by the State Transportation Board in January 2006*, adjusts funding forecasts to 2005 dollars, to be consistent with the cost estimates in the GDOT's 2005 TPRO capital program database and other contemporaneous sources. This restatement of the funding forecast in the same terms as the cost estimates was necessary to properly analyze potential shortfalls (gaps) between funds and costs over the 30 year period of the Plan. In developing alternative funding strategies to help close the gap that was identified in the Plan, GDOT has determined that it would be useful to restate the costs in the Plan, as developed from TPRO and other sources, in Year of Expenditure (YOE) dollars. This is necessary because funding alternatives that involve fixed–rate taxes, such as fuel taxes, are most conveniently stated in the year in which they are collected (i.e., YOE) dollars.

In the 2005-2035 SWTP Technical Memorandum *Task 4 Program Cost, Revenue, and Performance* forecasts of funding from existing sources have already been presented in YOE dollars for five year periods over the 30 years of the SWTP. Those revenues were also converted to 2005 dollars using a **2.5** annual discount factor, consistent with the recent historical rate of inflation established by the Bureau of Labor Statistics Consumer Price Index. In this memorandum those same factors are used to convert the 5 year estimates of costs in the SWTP, as presented in the Task 4 Technical Memorandum, such that the costs are presented in YOE dollars consistent with the funding projections.

Simply applying an inflation adjustment to the 30 year total costs in the SWTP does not recognize that projects will be constructed over time and that the inflation adjustment for a project constructed in 2015 is different than the adjustment for a project constructed in 2025. It also recognizes that applying the cost adjustments to individual projects based on their year of implementation given in TPRO or other sources, while technically correct, does not recognize the fluidity of project development and the variable nature of the implementation date. Applying the adjustments to overall plan expenditures in five-year increments avoids the difficulty of assigning project-specific implementation years within the plan, or of treating all costs over the 30-year period as being the same.

Recognizing that this memorandum may be reviewed separately from the SWTP Task 4 Technical Memorandum, material from that memorandum is repeated and/or summarized, as appropriate, for illustrative purposes in this memorandum.

2.0 Revenues

The 2005-3035 SWTP presented a shortfall between the forecasts of revenues and costs for the 30 year period of the Plan. The forecast of revenues were developed from a variety of federal, state, and local funding sources. In the majority of cases, those sources presented funding forecasts without regard to inflation. That is, the funding forecast of revenue to be raised in 2035 by a motor fuel tax was based on the expectation that the usage tax rates, e.g. the 7.5 cent per gallon Georgia Motor Fuel Tax, would not be adjusted to account for inflation. The revenues stated in that manner for a future year are those that are available to finance costs in that same year, i.e. the Year of Expenditure. The cost estimates available for the SWTP were stated in then current year of 2005 dollars, not adjusted for inflation, based on the information in the Tpro database. In order to allow direct comparison of revenues and costs, the SWTP reduced revenues by an expected discount rate and restated those revenues in the then current year 2005 dollars. In this section, the revenues are restated in their original YOE form, as originally presented in the SWTP Task 4 Technical memorandum.

The revenue sources identified in the SWTP included the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) programs, the two primary Federal funding sources, and the Georgia state motor fuel taxes. Other funding is provided through annual state General Fund appropriations, MARTA's sales tax, Special Purpose Local Option Sales Taxes (SPLOST), and local funding allocations for transportation investments. The Task 4 Technical Memorandum reduced those revenues to 2005 dollars using a discount rate of 2.5 percent per year based on the assumption that inflation would average 2.5 percent over the period, the historical rate of growth for the preceding 10 years. In this Section, the revenues are restated without any discounts to account for inflation.

The total amount of forecast revenue was discounted to reflect financing costs of bond issues over the 30-year period. Bonds are not a source of revenue, but are a financing mechanism which must be paid off with interest. Thus, just like home mortgages, they reflect liabilities not assets, particularly when looking out over a long period of time.

2.1 Projections of Federal Funding

2.1.1 Federal Highway Administration Funds

Funding allocations for FHWA programs for FY 2005-2009 were obtained from the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

In developing the forecasts, the SAFETEA-LU funding allocations were reduced by 10 percent, assuming that the State of Georgia continues to receive obligational authority equal to 90 percent of the annual FHWA funding allocations for the State, based on historical experience. Post-2009, revenues were projected to grow at 2.47 percent per year, which is the average annual growth rate of the Highway Trust Fund (HTF), according to forecasts from the Congressional Budget Office (CBO) and the Treasury Department. Total Federal highway revenues available to Georgia are estimated at $48.7 billion (YOE dollars) for the 2006-2035 period.

2.1.2 FTA Formula Funding

Forecast FTA formula funding allocations for Georgia for Fiscal Years 2004-2009 were also obtained from SAFETEA-LU. Actual 2004 and 2005 obligations for the State of Georgia were obtained from FTA's web site.[41] Forecast funding allocations for Fiscal Years 2006-2009 were broken down by year using the annual funding distributions from the SAFETEA-LU bill.

Annual growth in FTA programs was assumed to be 2.47 percent post-2009, the same rate as for highway funding. The amount available for FTA Formula Funding was combined with the FTA Discretionary Funding in the Task 4 Memorandum and the total from both sources will be reported in the next subsection.

2.1.3 FTA Discretionary Funds

FTA discretionary funding includes Section 5309 Bus Capital and Section 5309 New Starts. Spending for these two categories has varied considerably over the period 1995 to 2004. It is reasonable to assume that future FTA discretionary funds will also vary in the future, but not in predictable ways. Section 5309 Bus Capital earmarks for FY 2006-2009 were obtained from SAFETEA-LU. For the purpose of estimating future allocations (post-2009)

[41] Available at http://www.fta.dot.gov/grant_programs/overview/14968_ENG_HTML.htm.

to Georgia from this program, it was assumed that the average funding will grow annually at the same rate of growth of the HTF (2.47 percent) beginning in 2010.

To estimate the total New Starts funding that will be available for Georgia, it was assumed that New Starts funding will be equivalent to the New Starts funding projections included in ARC's *Mobility 2030 Plan*. ARC's Constrained scenario assumes a total allocation of New Start funding estimated at $ 1.6 billion (2005 dollars) during the 2008-2030 period, based on a 50/50 share of Federal and Local funding. New Starts funding is also included in the ARC *Aspirations Plan* (which is financially unconstrained), but has not been included in these estimates, since there are no local matching funds available for these projects. New Starts projects in the ARC *Mobility 2030 Plan* include several BRT projects along Interstate and arterial corridors, and the Inner Core Transportation Corridor. It is important to remember that any assumption of New Starts funding for the State of Georgia also assumes the availability of the local matching funds.

The total of Formula and Discretionary Funding from FTA over the period of the SWTP is estimated to be $9.18 billion (YOE dollars)

■ 2.2 State Funding Sources

State funding sources for transportation projects include the 7.5 cent per gallon Motor Fuel Tax (MFT) and the 3 percent Retail Tax on Motor Fuel, and General Fund appropriations. (Note that the total Retail Tax is 4 percent, with 3 percent assigned to GDOT and 1 percent to the General Fund.) The state funds described in the following sections are used to match FHWA funds (see Section 2.1.1) to purely state projects, and to provide funds for local projects through the Local Assistance Road Program (LARP) and the State Aid Program.

2.2.1 State Motor Fuel Taxes

There are two motor fuel taxes in Georgia. The traditional motor fuel tax charges 7.5 cents per gallon of motor fuel. Motor fuel tax revenues have increased over time, but the tax rate has remained constant for over 30 years. Therefore, motor fuel tax revenues do not increase with inflation. There is also a retail sales tax of 3 percent on motor fuel (as noted above). This component of the motor fuel tax will track with price changes on motor fuel because the percentage is based on the retail sales price. The State also earns interest each year on motor fuel tax fund balances and transfers motor fuel tax to other purposes. The first concept adds to GDOT's appropriation, while the second detracts from available funds. While total motor fuel taxes have been steadily increasing over time, the interest and transfers do not show a consistent pattern. Interest and transfers are not included in the revenue forecast due to the difficulty in predicting these two components, and the fact that they offset each other to a large degree.

Historical estimates, starting in 1980, of motor fuel tax collections targeted to GDOT were provided by GDOT. The forecasts of motor fuel tax revenues relied on the relationship between vehicle miles traveled (VMT) and motor fuel consumption. Motor fuel tax revenues have increased at a slower rate than VMT, which could be the result of several factors including improvements in average fuel efficiency (primarily early in the period), and the introduction of alternative fuel, hybrid, and electric vehicles. However, neither of these factors is likely to fully account for the relationship. Fluctuations in motor fuel tax revenues can also be impacted by changes in the price of gasoline.

The travel demand model used to estimate future transportation needs for the Statewide Plan estimates an annual growth of 1.91 percent in VMT; therefore, growth rates for the 7.5 cents per gallon MFT and 3 percent Retail Tax on Motor Fuel are estimated at 1.25 percent and 1.55 percent respectively (the historic relationship between fuel tax revenue and VMT growth). On average, the combined revenues from both motor fuel taxes were projected to increase at an annual rate of 1.33 percent.

In addition to MFT revenues, GDOT uses bond proceeds to finance its transportation program. Since GDOT does not have the authority to issue bonds, either the State (through General Obligation Bonds) or the State Road and Tollway Authority (SRTA) (through Guaranteed Revenue Bonds) issues the bonds, and then GDOT pays them back using MFT revenues. For instance, in FY 2006, GDOT's debt service payments include $26.9 million for GRB bonds and $133.3 million for GO bonds. Current debt service payments extend through FY 2024, and have been deducted from the total MFT revenues.

Total state MFT revenues (after debt service) are estimated at $24.9 billion (YOE dollars) for the 2006-2035 period. The $24.9 billion consists of about $18 billion in MFT revenue plus $9 billion in retail tax revenue, minus $2 billion in debt service.

2.2.2 General Fund Appropriations

State motor fuel tax revenues have historically fallen short of GDOT's funding needs. Motor fuel tax receipts are used to pay for highway-related debt service, operating and maintenance expenditures (which are not eligible for Federal funding), capital programs, and matching Federal funds. Therefore, GDOT receives annual appropriations from the General Fund to complement its Transportation Trust fund revenue. General Fund allocations are subject to the annual appropriation process and are primarily used for highway-related operating expenses including some of GDOT's own administrative costs, not capital programs. Therefore, they were not included in the revenue forecast.

2.3 Local Revenues for Transportation

2.3.1 Local Revenues for Highway Needs

Currently, local governments rely mainly on local general fund appropriations and Special Purpose Local Option Sales Taxes (SPLOST) to provide their share for Federal-aid and state projects and for local roadway projects. SPLOSTs are collected for diverse uses such as education, general fund, and transportation. These local option taxes have a life span of five years, at the end of which voters must decide whether the county will continue levying them to fund diverse infrastructure projects. Only a few counties do not levy SPLOSTs.

Projections of local revenues for highway-related expenditures were developed based on historical allocations, as reported in FHWA's *Highway Statistics* (Table LGF-1). SPLOSTs should be reported under "other local imposts"; however, GDOT staff indicated that in some counties, these revenues are deposited into the General Fund, and thus are reported as such to FHWA. For the purpose of the local revenue forecast, SPLOSTs and other local revenues were combined. The average allocation of local funds for highway expenditures was estimated at $995.6 million between FY 1995 and 2002, for an average annual growth rate of 2.3 percent over that period. Capital outlay expenditures accounted for about 42 percent of all highway-related expenditure over the same period. Local revenues for local highway capital projects are estimated at $19.5 billion (YOE dollars) during the 2006-2030 period.

2.3.2 Local Revenues for Transit and Passenger Rail

Transit services are funded through a variety of Federal, state and local programs, as well as farebox revenue, advertising, and other nongovernmental sources. Most local government funding for urban and rural transit services is provided by general fund revenues of municipalities and/or counties. However, several counties such as Cobb and Bibb have some transit capital projects funded through special local options sales tax revenue. Chatham Area Transit (CAT) receives operating and capital support through a special property tax assessment within a transit district. MARTA receives operating and capital support through a 1 percent sales tax in Fulton and DeKalb counties. The CAT and MARTA funding programs were authorized by the Georgia legislature, and approved by the counties.

Excluding MARTA sales tax levies and passenger revenues, and based on current expenditure patterns and adopted MPO plans, local fund availability for transit costs are expected to be $1.8 billion (YOE dollars) between 2006 and 2035.

MARTA sales tax forecasts were developed based on the sales tax levy growth over the past 10 years. Historical data on MARTA sales tax levies in Fulton and DeKalb counties indicate a compounded annual growth rate of 3.5 percent. Assuming that this growth will continue through the 30-year planning horizon of the statewide plan, MARTA is expected to levy $15.5 billion (YOE dollars).

MARTA fare revenue projections for the 30-year planning horizon were estimated based on planned operating expenditures and historical farebox recovery ratio. Farebox recovery data was obtained from MARTA's *2004 Annual Report*. The 10-year farebox recovery ratio average is estimated at 21.6 percent, and the 30-year operating costs are estimated at $13.7 billion. MARTA fare revenues are estimated at $4.41 billion (YOE dollars) throughout the 30-year period.

Passenger Rail operating costs for the 30-year plan have been estimated at $5.21 billion for the full implementation of commuter and intercity rail services. Commuter rail operating costs are projected to account for 55 percent of the total passenger rail operating costs, with a farebox recovery ratio of 57 percent.[42] Intercity rail operating costs are projected to account for the remaining 45 percent, and the farebox recovery ratio is estimated at 79 percent.[43] Therefore, fare revenues from passenger rail services for the Unconstrained scenario are estimated at $5.22 billion (YOE dollars) for the 30-year planning horizon.

2.4 Summary of Revenues

Total revenues are forecast at $129.1 billion (YOE dollars) for the 30-year plan as shown in Table 2.1, compared to the $86 billion in 2005 dollars reported in SWTP Final Report. Also shown are the expected revenues for five year increments within that period. All revenues are consistent with those presented in the SWTP Task 4 Memo and those shown in the SWTP Final Report, which were stated in 2005 dollars.

[42] Based on analysis of operating cost data from Georgia Rail Passenger Program, *Presentation of Updated GRPP Riders, Revenues, Costs, and Benefits (March 6, 2003)* and *2005 Fact Sheet.* These documents are available at http://www.garail.com/.

[43] Ibid.

Table 2.1 Revenues 2006-2035 (*YOE $*)
Reversal of Discount Rate of 2.5 Percent in Billions of Dollars

Revenues		Total	2006-2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035
FHWA Funds		$48.65	$5.85	$6.61	$7.46	$8.43	$9.53	$10.77
FTA Funds		$9.18	$1.24	$1.11	$1.24	$1.90	$2.17	$1.52
State Funds		$24.90	$2.88	$3.36	$3.97	$4.46	$4.94	$5.27
Local Funds	Highway	$19.47	$2.39	$2.68	$3.01	$3.37	$3.78	$4.24
	Transit	$1.80	$0.22	$0.24	$0.28	$0.31	$0.35	$0.40
MARTA	Passenger Revenues	$4.41	$0.53	$0.60	$0.68	$0.76	$0.87	$0.98
	Sales Tax	$15.47	$1.61	$1.91	$2.26	$2.70	$3.20	$3.80
Passenger Rail Fare Revenues		$5.22	$0.62	$0.71	$0.80	$0.91	$1.02	$1.16
Total Revenues		$129.10	$15.33	$17.23	$19.70	$22.85	$25.87	$28.13

3.0 Costs and Gaps

In the SWTP Task 4 Technical Memorandum, two scenarios were defined – the "Minimal" and the "Build/Financially Unconstrained" scenarios. The latter was advanced into the SWTP Final Report because it fully reflects the transportation needs facing the state of Georgia, and unlike MPO plans, there is no requirement that a Statewide Plan be financially constrained. This Build/Financially Unconstrained Scenario has been advanced for the additional analysis in this Addendum to the Statewide Plan. In the Task 4 Memorandum, the costs were presented in current year 2005 dollars unadjusted for inflation. To allow comparison with the Year of Expenditure (YOE) dollars presented in Section 2.0, these costs are converted to YOE dollars using the same 2.5% inflation rate assumed in Section 2.0. The total YOE costs are also compared to the YOE revenues calculated in Section 2.0 and the difference is shown as a Gap in funding. The implications of different inflation rates will be discussed in Section 4.0.

3.1 Transportation Costs in 2005 Dollars

Table 3.1 summarizes the definition of the Build/Financially Unconstrained scenario as used in the SWTP Final Report. Most MPOs have extensively documented only their constrained programs, so that for the purpose of this analysis there are no substantive differences between the MPO constrained and unconstrained programs. The one notable exception is the Atlanta Regional Commission's (ARC) *Aspirations Plan*, which identifies several major transit and highway expansion projects on top of its financially constrained *Mobility 2030 Plan*.[44] The *Aspirations Plan* cost elements are embedded in the Urban Transit and Highway Upgrade categories.

[44] There are also some differences between the Savannah MPO's constrained and unconstrained plans.

Table 3.1 Scenario Definitions

Mode	Unconstrained
Bridges	Optimal
Pavement	3% annual growth in truck VMT
Highway Upgrades	All Tpro projects, ISP, and MPO constrained RTPs*
Urban Transit	MPO constrained RTPs*
Rural Transit	Meet future needs in all counties
Passenger Rail	Complete CR, intercity and interstate HSR programs
Freight Rail	Fully funded Rail Freight Assistance Program
Bicycle/Pedestrian	Fully funded Enhancement needs
Ports/Airports	NA

*ARC *Aspirations Plan* is also included.

Table 3.2 shows the costs of the Build/Unconstrained Scenario by major program categories in 2005 dollars. The largest items are highway capacity upgrades, pavement maintenance, and urban transit improvements. As shown in the table, the total cost of the programs is $160.1 billion.

Table 3.2 Program Costs *2006-2035*

Category	Cost
Bridges	$5.4
Pavement	$32.3
Highway Upgrade	$70.1
Bicycle/Pedestrian	$3.4
Miscellaneous Highway	$5.0
Urban Transit	$31.4
Rural Transit	$1.3
Passenger Rail	$10.9
Freight Rail	$0.5
Total	**$ 160.1**

3.2 Transportation Costs in Year of Expenditure Dollars

In order to convert the costs in Table 3.2 to YOE$ it is necessary to apply an inflation rate. As discussed in Section 2.0, the discount rate that was applied to revenues in the SWTP was the then historical inflation rate of 2.5% per year. In order to adjust 2005 dollars to Year of Expenditure dollars that same value is applied as an inflation rate. Applying the inflation rate to costs is not a simple matter of applying the compound growth rate to the 30 year total costs. The program will be implemented continually during the period of the SWTP. The costs of implementing a project in 2020 will be subject to cost increases related to 15 years of inflation while those implemented in 2030 will be subject to cost increases related to 30 years of inflation. It is therefore necessary to develop an incremental program of costs in order to apply the appropriate inflation rates.

The costs in Table 3.2 were evenly allocated by five year period for the Build/Financially Unconstrained Scenario. While the costs are shown for individual programs, it is recognized that the implementation program by category will vary over the 30 year period of the SWTP. For example, in some years more spending may be necessary on bridges, in other years more spending may be necessary on pavements. However, as long as the total costs, as adjusted for inflation, remain the same, the conclusions reached will remain the same. It is our understanding that while funding by category has varied over recent history, the total expenditures, in 2005 dollars, have remained fairly constant over time.

Within each five year increment the costs are further adjusted for inflation for each year. Thus, the costs for the period 2021 to 2025 assume that yearly costs are evenly distributed during that period and that costs in 2021 reflect 16 years of inflation from 2005, costs in 2022 reflect 17 years of inflation, etc.

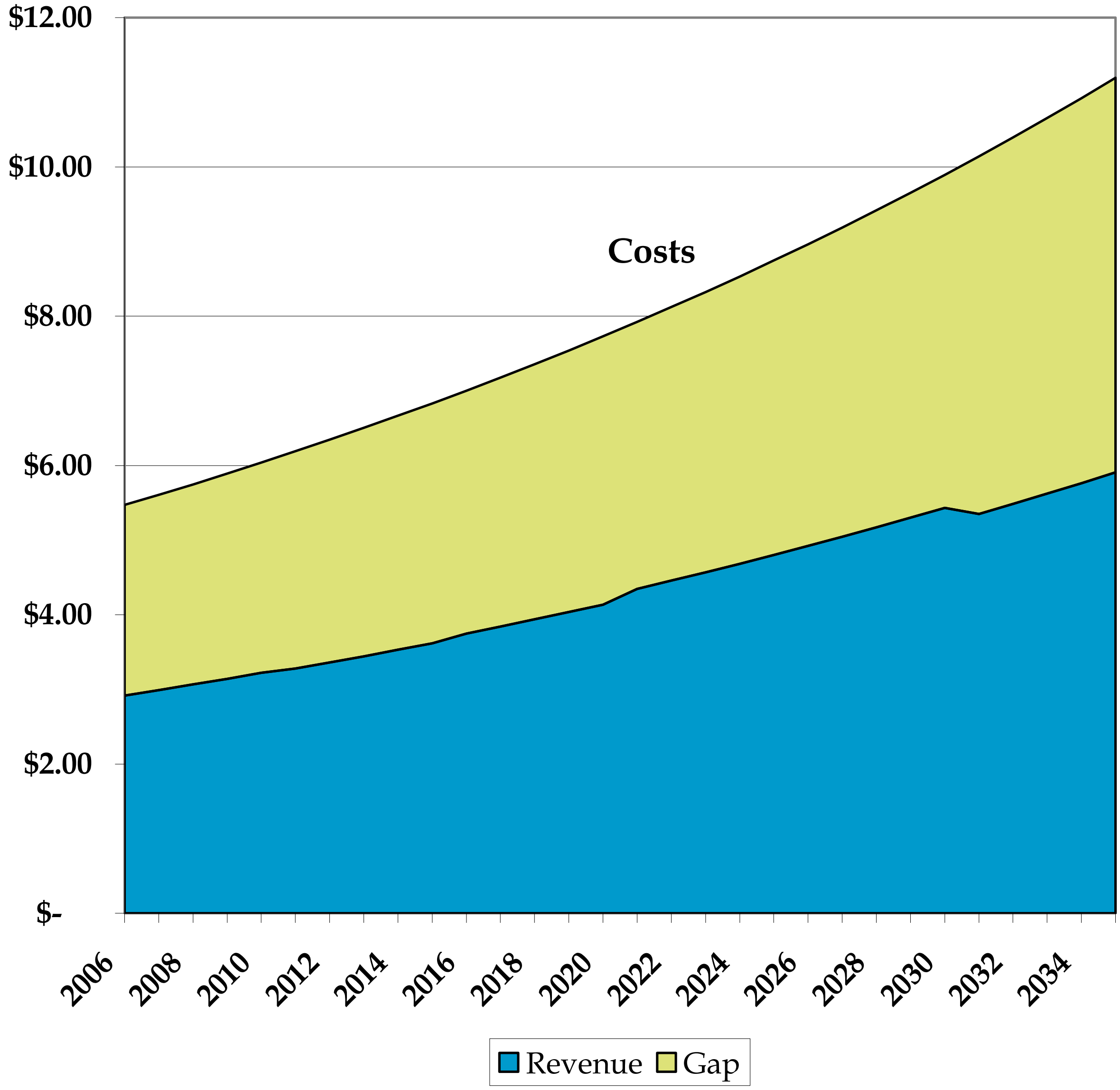
Table 3.3 Unconstrained Scenario Costs by Category by Five Year Period
Billions (YOE $) Using an annual 2.5% inflation rate

Categories	2006-2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	Total
Bridges	$0.97	$1.10	$1.24	$1.40	$1.59	$1.80	$8.10
Pavement	$5.80	$6.56	$7.43	$8.40	$9.51	$10.75	$48.45
Highway Upgrade	$12.59	$14.24	16.11	18.23	20.63	23.34	105.15
Bicycle/Pedestrian	$0.61	$0.69	$0.78	$0.88	$1.00	$1.13	$5.10
Miscellaneous Highway	$0.90	$1.02	$1.15	$1.30	$1.47	$1.66	$7.50
Urban Transit	5.60	$6.34	$7.18	$8.11	9.19	10.39	$46.80
Rural Transit	$0.23	$0.26	$0.30	$0.34	$0.38	$0.43	$1.95
Passenger Rail	$1.96	$2.21	$2.51	$2.84	$3.21	$3.63	$16.35
Freight Rail	$0.09	$0.10	$0.11	$0.13	$0.15	$0.17	$0.75
Total Cost	**$28.8**	**$32.5**	**$36.8**	**$41.6**	**$47.1**	**$53.3**	**$240.1**
Total Revenue[a]	**$15.3**	**$17.2**	**$19.7**	**$22.9**	**$25.9**	**$28.1**	**$129.1**
Total Gap	***$13.5***	***$15.3***	***$17.1***	***$18.7***	***$21.2***	***$25.2***	***$111.0***

[a] from Section 2.

As shown in Table 3.3, there will be a gap between funding and costs of $111 billion (YOE$) over the 30 year period for the Build/Financially Unconstrained scenario compared to the gap of $74 billion in 2005 dollar reported in SWTP Final Report. This gap will be $15.3 billion for the period 2006 to 2010 and with inflation of 2.5% per year will increase to $25.2 billion for the period 2031 to 2035. These gaps are shown graphically for the Build/Financially Unconstrained scenario in Figure 3.1.

Figure 3.1 Build/ Financially Unconstrained Funding and Gap
in Billions of YOE$ (using an annual 2.5% inflation rate)



4.0 Inflation Rates

The Revenues and Costs presented in Year of Expenditure dollars in Sections 2 and 3 are based on the assumption that the historical rate of inflation of 2.5% observed over the previous ten years will apply to both costs and revenues, that the inflation rate in the future will be the same as the historical rate, and that the same inflation rate is appropriate for both cost and revenues. At the request of GDOT, all of these assumptions were examined and this section reports on the results of those examinations.

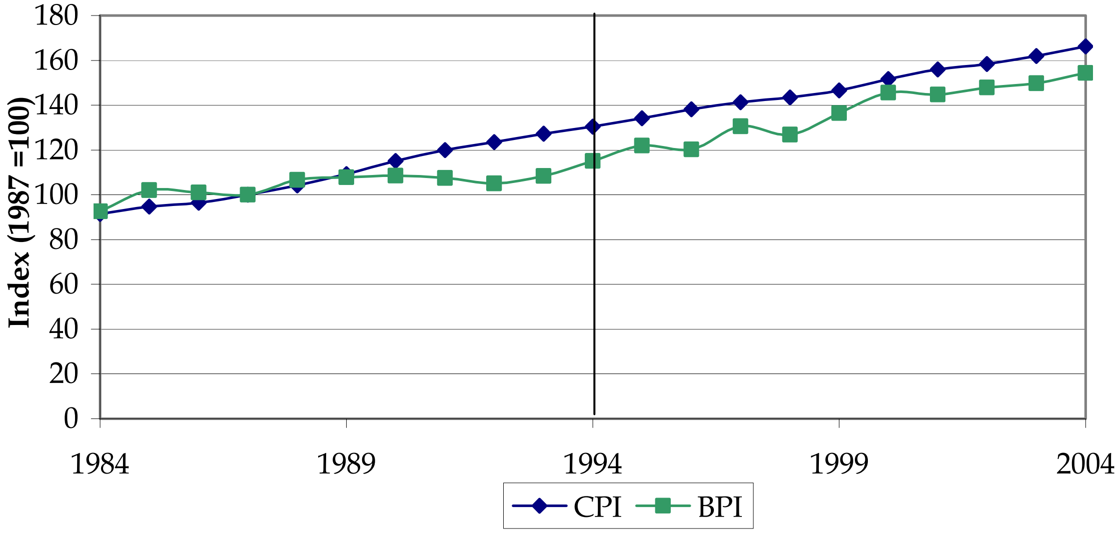
4.1 Revenue versus Cost Inflation

While not a perfect correspondence, it is assumed that revenue will increase at a rate commensurate to the rate of inflation. This assumption has been historically correct for Federal funding, where Congress has increased Federal funding at a rate approximately equal to inflation in each authorization bill, and for the sales tax portion of the Georgia Motor Fuel Tax and for local funding. It should be noted, however, that federal motor fuel tax revenue has eroded significantly since the tax was last increased in 1993, such that authorized funding levels for the SAFETEA-LU timeframe may not be achievable without some change in the fund-raising mechanism. The assumption that revenue will rise commensurate with inflation is even less certain for the fixed tax per gallon portion of the Georgia Motor Fuel Tax and for MARTA farebox revenue, but for the sake of simplicity all revenues were assumed to increase at a rate approximately equal to that of inflation. The inflation rate, defined as the Consumer Price Index (CPI) maintained by the U.S. Department of Labor was examined for the period 1972 to 2005.

Cost inflation in highway projects is reported by the Federal Highway Administration as a Bid Price Index (BPI). This index reports on the bids received for highway construction projects, by category. The composite BPI was available for the period 1984 to 2004. (Only first quarter result for 2005 was available at the time this memorandum was prepared.) The composite price index for highway projects is assumed to be comparable to the cost increases in all transportation projects.

The CPI and the BPI are indexed to different years. For the purposes of this memorandum a common index year of 1987 was used where both the BPI and CPI are set equal to 100. A comparison of the historical CPI and BPI is shown in Figure 4.1.

Figure 4.1 Consumer Price Index versus Bid Price Index



As shown in Figure 4.1, the CPI and the BPI have on average increased at a comparable rate for the period from 1984 to 2004. The BPI was relatively flat during the period from 1985 to 1993. The subsequent increases in the BPI have been comparable to the annual increases in the CPI. The recent "conventional wisdom" that construction costs has increased dramatically faster than the underlying inflation rate is largely based on the comparison to that period where annual costs did not increase relative to general inflation. Based on analysis of the CPI and the BPI, as shown in Figure 4.1, the assumption in this memorandum that revenues and costs will increase at the same rate of inflation appears to be justified.

■ 4.2 Inflation Forecast Sensitivity Test

While the historical inflation rate over the preceding 10 years has averaged 2.5 percent per year, there is no assurance that inflation will remain at this rate for the 30 year period of the SWTP. While it is not possible to produce credible forecasts of rates of inflation by year or by five year periods during the 30 years of the SWTP, it is possible to consider average inflation rates for amounts different than 2.5 percent per year. The methods used to adjust revenue and costs, which were applied to the 2.5 percent inflation rate used in Sections 2 and 3 of this memorandum, were then also applied to average annual inflation rates of 3.0 percent, 3.5 percent, 4.0 percent, 4.5 percent, 5.0 percent, 7.5 percent, and 10 percent. These rates are not forecast, they are included so that the impact of inflation comparable to these rates can be considered. Inflation rates of 10 percent annually were in fact experienced during the late 1970s under the pressure of rapidly escalating oil prices. If there were to be no inflation at all over the period, the results would the 2005 dollar costs as presented in the SWTP Final Report.

The results of this analysis for total revenue and total costs are shown in Table 4.1for the "Build/Financially Unconstrained" scenario. This scenario represents the commitments of transportation agencies in Georgia, including GDOT, and, unless those commitments change, this is the scenario for which the gaps and the impact of inflation should be considered.

Table 4.1 Revenues, Costs, and Gaps for Various Average Inflation Rates
Billions (YOE$)

Inflation Rate	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	7.5%	10.0%
Costs	$240.15	$261.51	$285.14	$311.28	$340.23	$372.29	$593.19	$965.63
Revenues	$129.10	$140.59	$153.30	$167.37	$182.94	$200.18	$318.90	$518.84
Gap	$111.05	$120.92	$131.83	$143.91	$157.29	$172.11	$274.30	$446.80

If the rate of inflation was to increase at a rate greater than 2.5 percent per year, that rate was assumed to apply to both revenues and costs. The end result is that the gap, in year of expenditure dollars, would increase in absolute dollar terms since costs exceed revenues, therefore costs increase by an amount greater than revenues at the same inflation rate. The expected gap of $111 billion at the historical inflation rate of 2.5 percent would increase to a gap of $447 billion at an inflation rate of 10 percent per year. Revenue from fixed rate taxes, such as the per gallon rate portion of the Georgia Motor Fuel Tax, had originally been calculated for the year in which they would have been collected and then discounted by 2.5 percent per year for presentation as 2005 dollars in the SWTP Final Report. Thus, the fact that motor fuel tax revenue has actually been increasing at less than the rate of inflation in recent years was accounted for in the SWTP original analysis, but is only partly reflected in this simplified analysis.

4.3 Historical Cost and Revenues Inflation Rates

In Section 3.0, it was assumed that the Consumer Price Index (CPI), as a measure of inflation, and the Bid Price Index (BPI), as applied to costs, would increase at the same rate and that rate would be the historical increase in the CPI over the last 10 years. GDOT requested a sensitivity analysis with separate growth forecasts based on the inflation rates for different time periods: over the last twenty years; over the last ten years; and over the last two years. Based on the historical rates shown in Figure 4.1, the additional growth rates were found to be those shown in Table 4.2. As also shown in Table 4.2, while the calculated growth rates were all very stable, showing both a high statistical correlation (R-

Square close to 1.0) and a low error of estimate (Variance close to 0%), the growth in the CPI has been more stable than the growth of the BPI.

Table 4.2 Historical CPI and BPI Growth in Percent per Year

Summary	CPI	Variance (+/-)	R-Squared	BPI	R-Squared	Variance (+/-)
Last 2 Years	3.0%	0.2%	0.995	2.2%	0.948	0.5%
Last 10 Years	2.5%	0.0%	0.997	3.0%	0.945	0.2%
Last 20 Years	3.1%	0.1%	0.984	2.5%	0.944	0.1%

The CPI forecast growth rates were applied to the revenues in 2005 dollars and the BPI forecast growth rates were applied to the costs in 2005 dollars for the entire 30 years of the SWTP. The resulting forecast of 2005 to 2035 (cumulative) revenues, costs, and gaps are shown in Table 4.3.

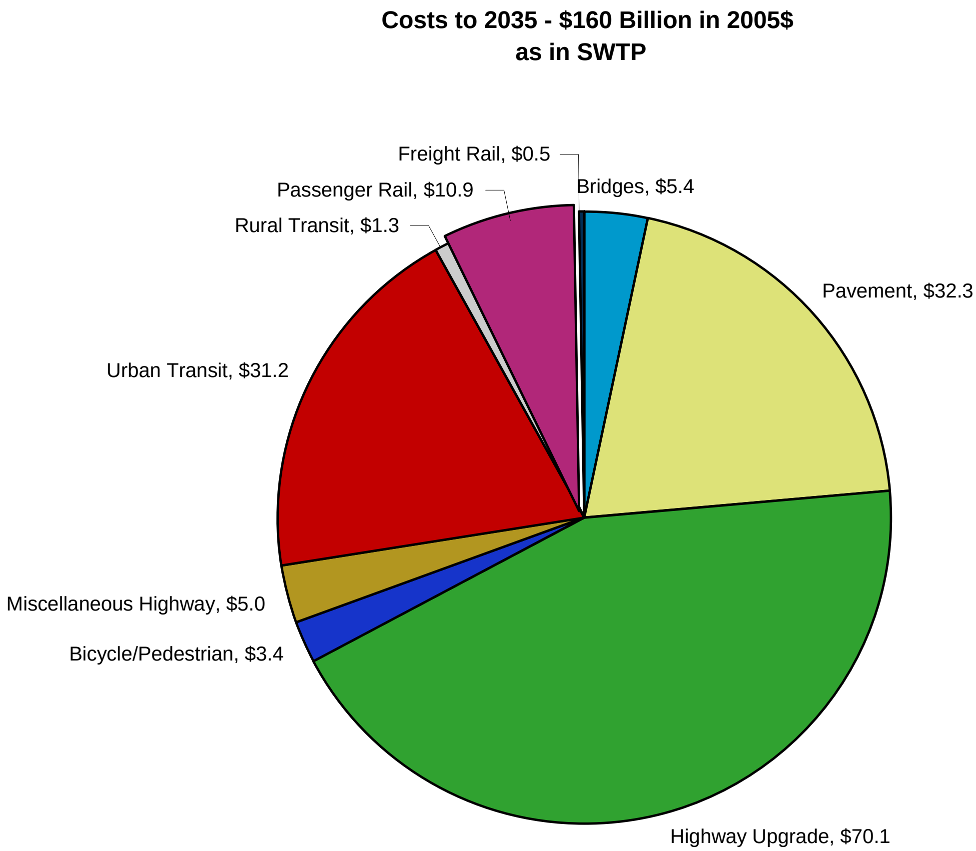
Table 4.3 2035 Costs, Revenues, and Gap for Differential Growth Rates
Billions (YOE$)

	Previous 2 Years	Previous 10 Years	Previous 20 Years
CPI Growth	3.0%	2.5%	3.1%
BPI Growth	2.2%	3.0%	2.5%
Costs	$228.3	$261.5	$240.1
Revenues	$140.6	$129.1	$143.0
Gap	$87.7	$132.4	$97.1

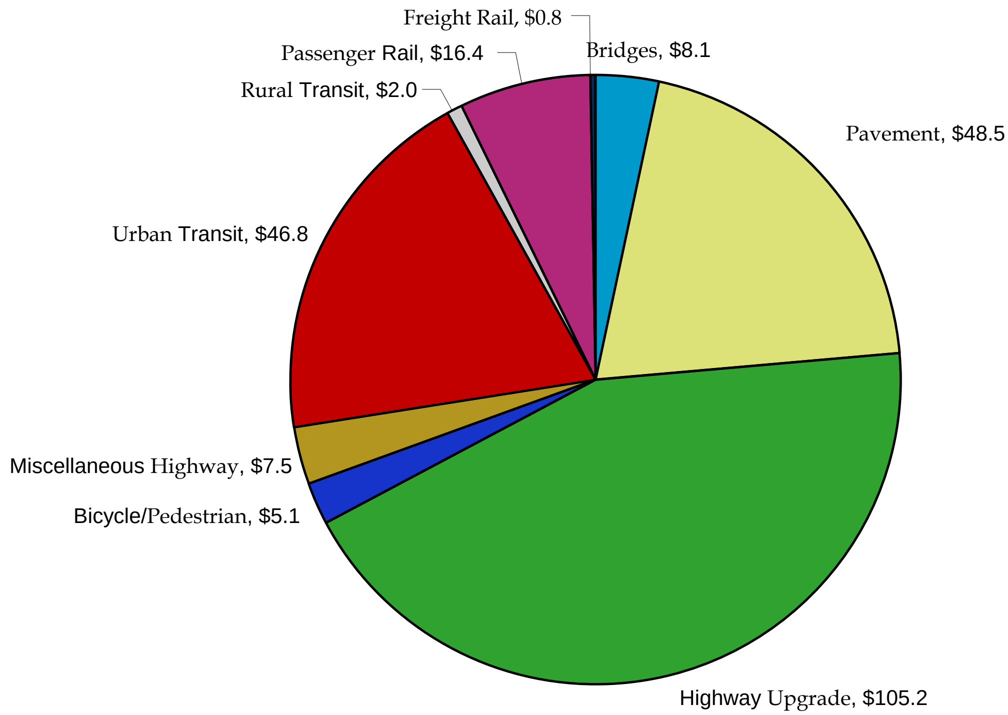
Cost inflation, as measured by the BPI, has been lower than the CPI, which was applied to revenue, for both the twenty year period from 1984 to 2004 and the two year period from 2002 to 2004. It has only been during the ten year period from 1994 to 2004 that the BPI grew at a higher rate than the CPI, and as noted before, this period was an anomaly because it was a period where bid prices were recovering from a period with no increases during the preceding ten years. The forecast gap of $111 billion shown in Section 3.0, in YOE$ where costs and revenues are both assumed to grow by 2.5%, is within the range of the gaps $88 billion to $132 billion produced by these different growth rates.

During the three times periods chosen by GDOT, the BPI has grown at both a lower rate and a higher rate than the CPI. The most reasonable assumption may be to assume that the BPI and CPI will grow at comparable rates during the 30 years of the SWTP. Therefore the Gap between Revenues and Costs presented in Section 3.0 appears to be justified.

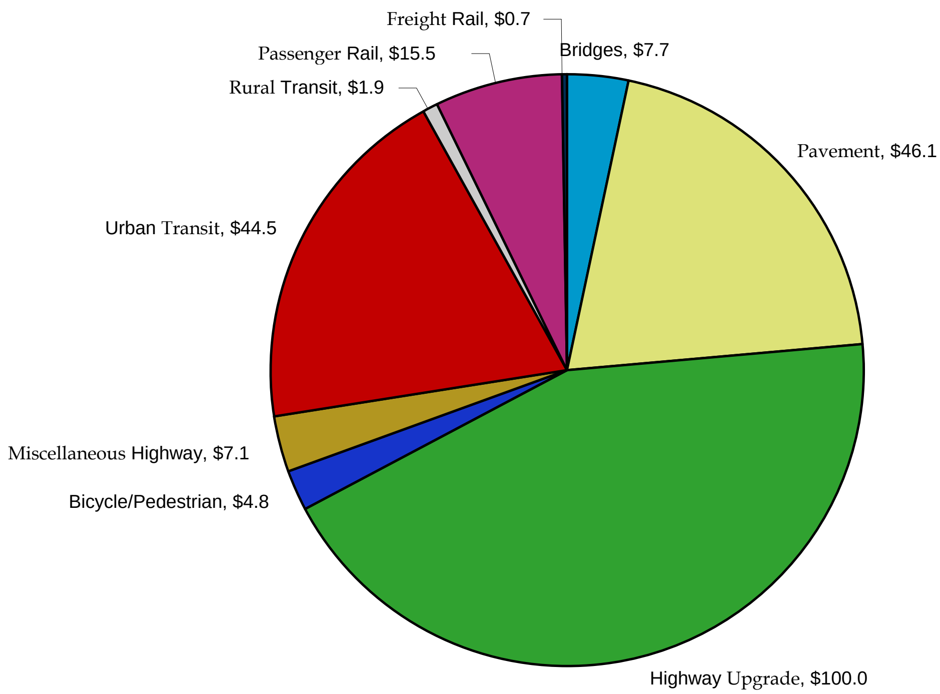
All of the pie charts of costs presented in the following pages have essentially the same shape. Only the values for the different cost categories and the total costs change.


Costs to 2035 - $160 Billion in 2005$
as in SWTP
Freight Rail, $0.5
Passenger Rail, $10.9
Rural Transit, $1.3
Bridges, $5.4
Pavement, $32.3
Urban Transit, $31.2
Miscellaneous Highway, $5.0
Bicycle/Pedestrian, $3.4
Highway Upgrade, $70.1

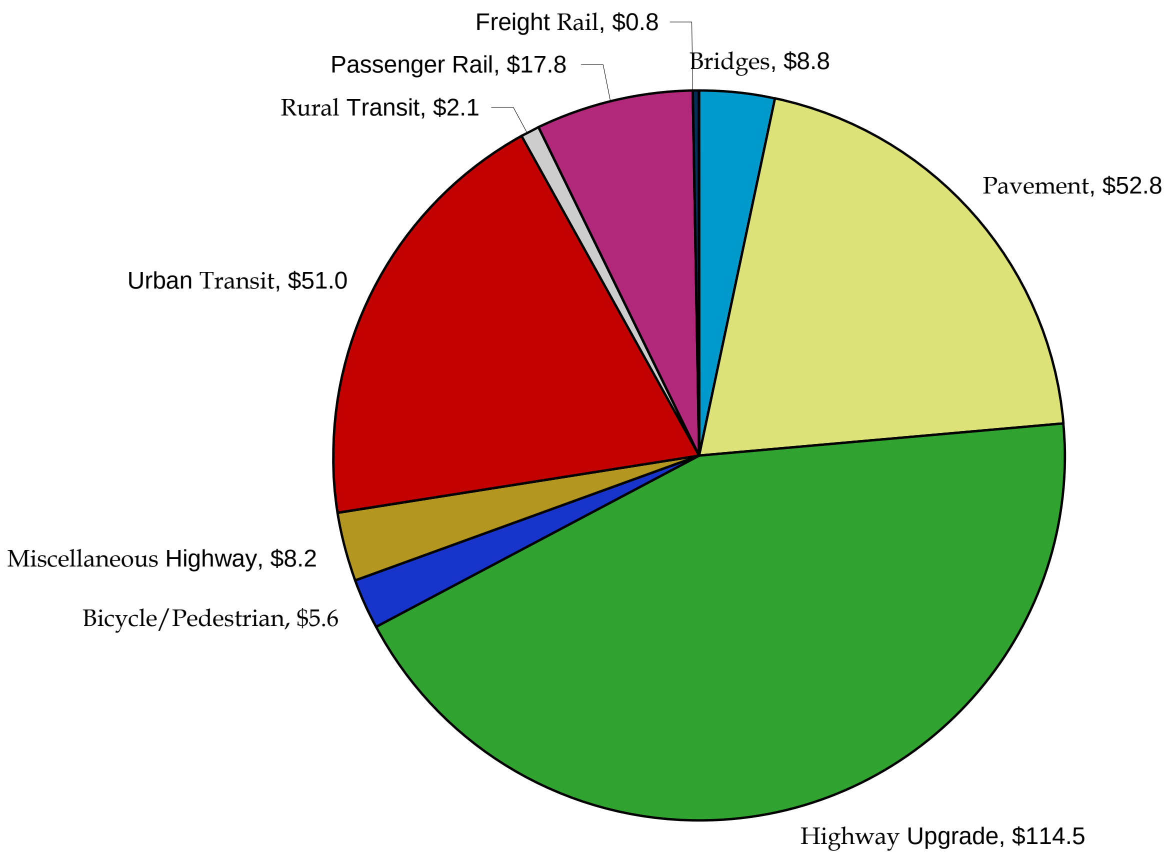
Costs to 2035 - $240 Billion in YOE$
With 10 Year CPI Growth of 2.5% per year, as shown in Section 3



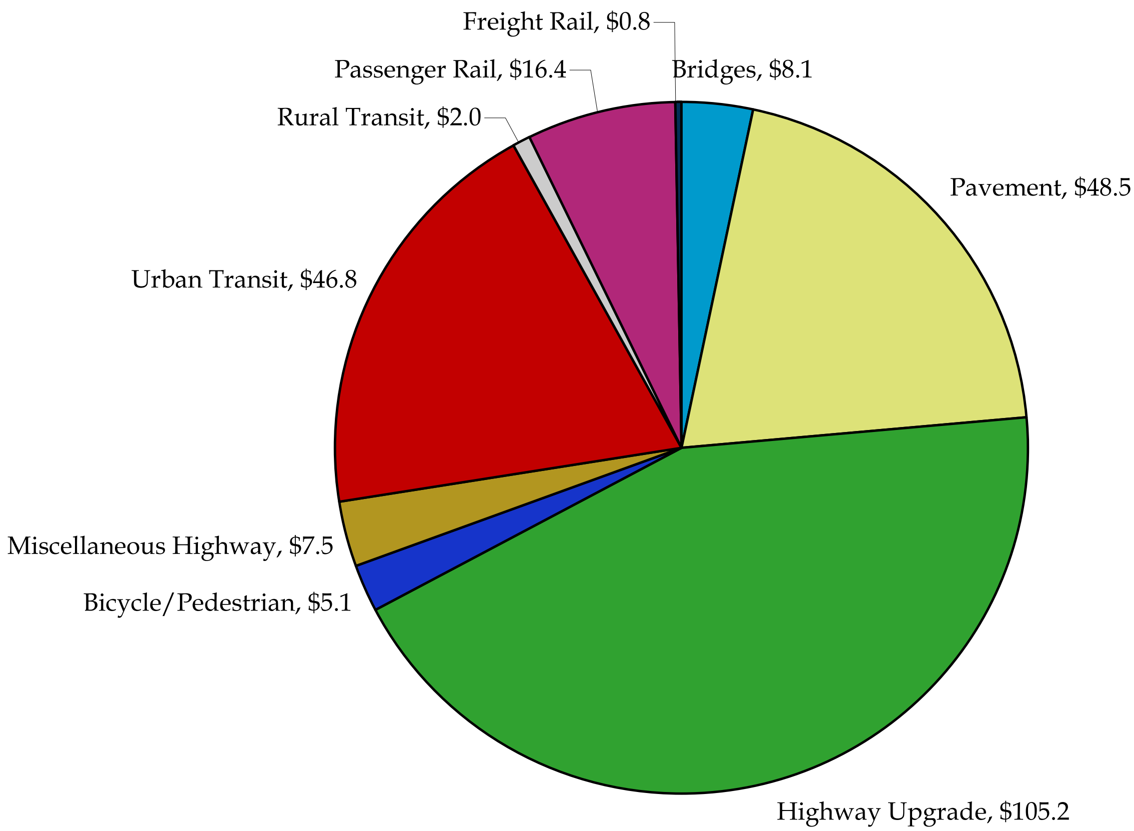
Costs to 2035 - $228 Billion in YOE$
With 2 Year BPI Growth of 2.2% per Year



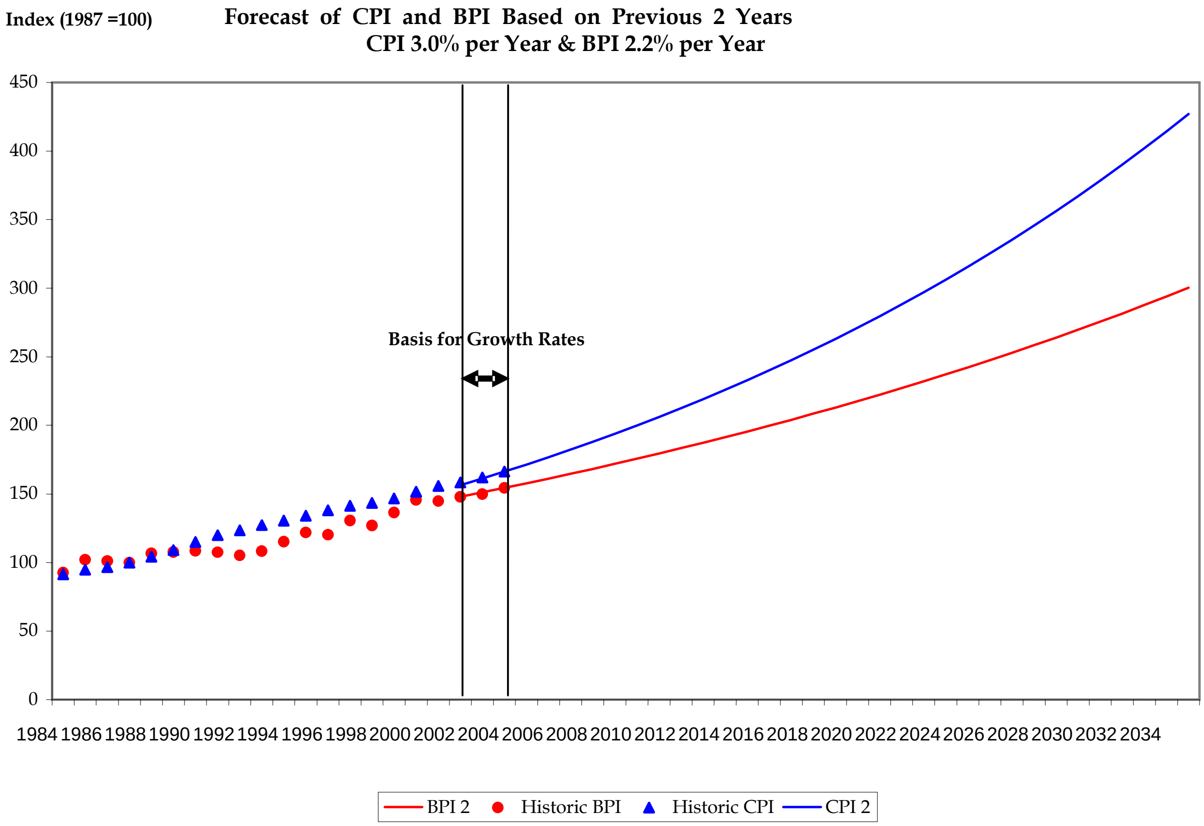
Costs to 2035 - $261 Billion in YOE$
With 10 Year BPI Growth of 3.0% per Year

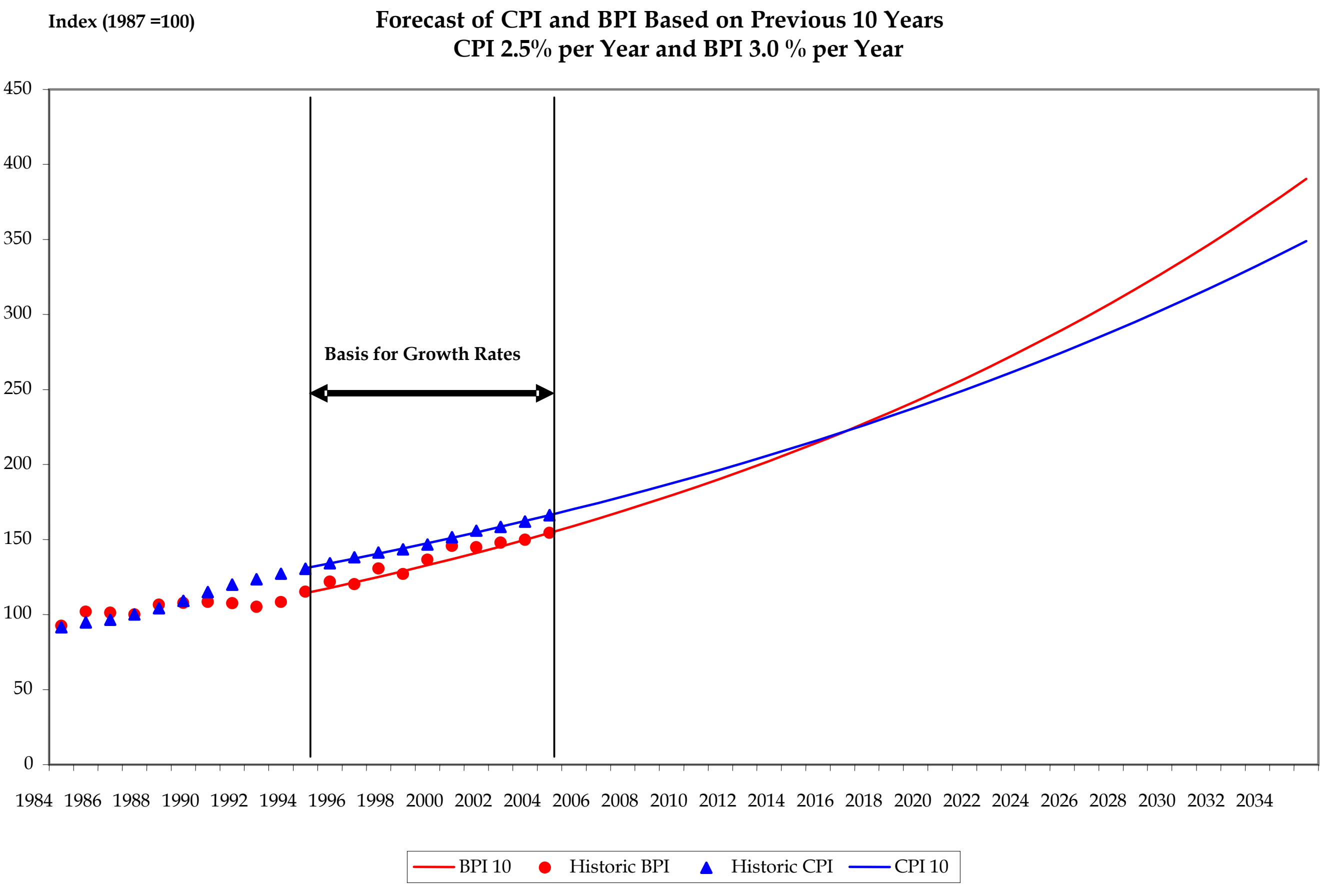


Costs to 2035 - $240 Billion in YOE$
With 20 Year BPI Growth of 2.5% per Year



These graphs of the BPI and CPI forecasts are offered only for illustration. They are a graphical illustration of the information used in the text.


Index (1987 =100)
Forecast of CPI and BPI Based on Previous 2 Years
CPI 3.0% per Year & BPI 2.2% per Year
Basis for Growth Rates
450
400
350
300
250
200
150
100
50
0
1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034
BPI 2
Historic BPI
Historic CPI
CPI 2


Index (1987 =100)
Forecast of CPI and BPI Based on Previous 10 Years
CPI 2.5% per Year and BPI 3.0 % per Year
Basis for Growth Rates
450
400
350
300
250
200
150
100
50
0
1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034
BPI 10
Historic BPI
Historic CPI
CPI 10

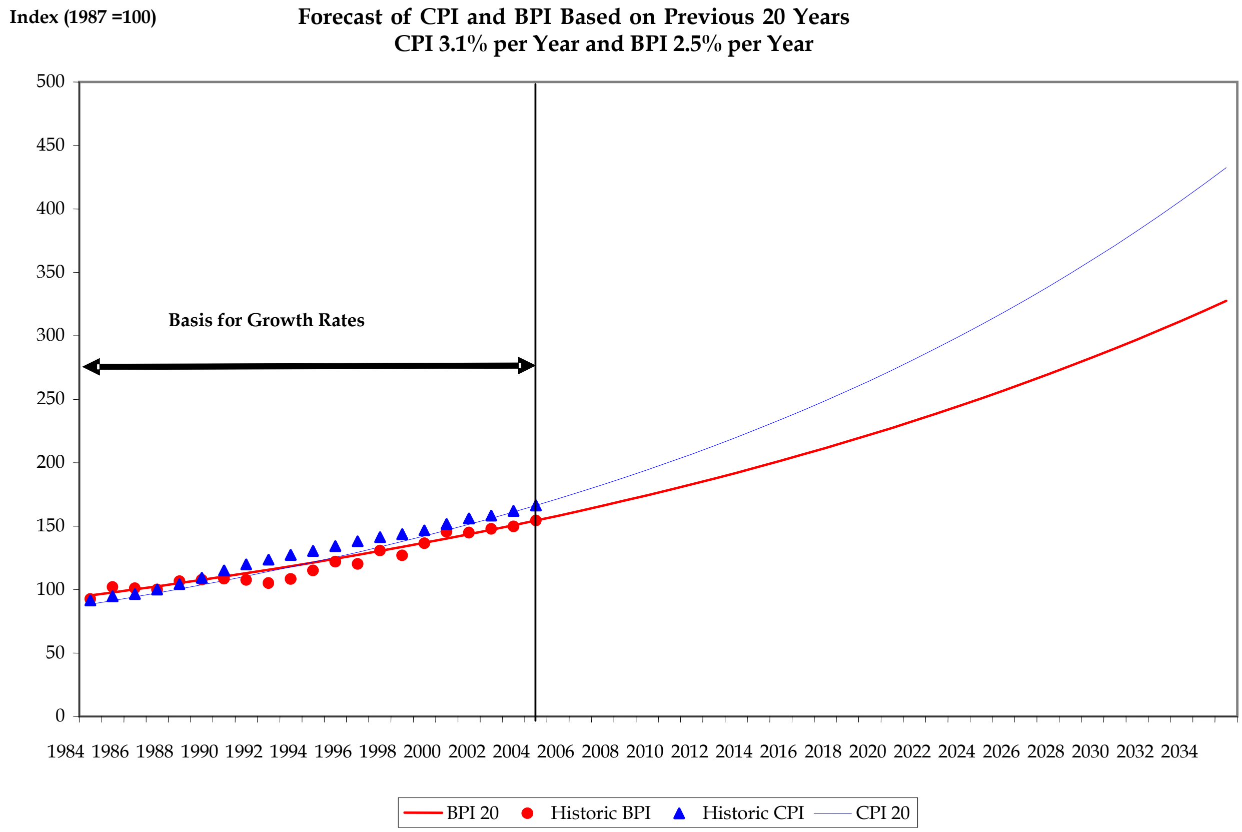


Table A.1 Revenues, Costs, and Gaps for Various Average Inflation Rates

2006-2035 in Billions (YOE$)

Annual Growth in Costs	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	7.5%	10.0%	20.0%	30.0%
Annual Growth in Revenue	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Costs	$240.15	$261.51	$285.14	$311.28	$340.23	$372.29	$593.19	$965.63	$7,568.77	$60,565.73
Revenues	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10	$129.10
Gap	$111.05	$132.41	$156.04	$182.18	$211.13	$243.19	$464.09	$836.54	$7,439.67	$60,436.63

*Table A.1 assumes revenue will stay constant at $129.10 billion, which is based on an annual rate of inflation of 2.5%. Costs are inflated at varying annual rates ranging from 2.5% to 30%.

Appendix E

Resource Agency Consultation Process

GOALS

The Georgia Department of Transportation has prepared this process on Resource Agency Consultation. Its primary function is to provide guidance to Metropolitan Planning Organizations (MPOs) on gathering information and consulting with affected agencies, with the aim of building environmentally and socially responsible plan/programs.

MEETING SAFETEA-LU REQUIREMENTS

Recently, a new federal transportation bill known as the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or "SAFETEA-LU" was approved by Congress and signed by President Bush on August 10, 2005. Section 6001[G] of this law will require the states to consult "as appropriate" with "State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation" as well as economic development and planned growth, in the development of transportation plans and transportation programs. The law further requires that this consultation process be developed and documented no later than June 30, 2007. Background information on this and other federal requirements may be found at the GDOT website: http://www.dot.state.ga.us/dot/plan-prog/planning/index.shtml

WHAT IS CONSULTATION?

The consultation method, as defined in SAFETEA-LU, shall involve, as appropriate, comparison of transportation plans and transportation improvement programs with available plans, maps, and inventories from resource agencies.

WHY CONSULT?

The MPOs are increasingly being called upon by both governments and the public to address the environmental and social challenges of project development. Consultation plays a critical role in raising awareness of a transportation plan or transportation program's potential impacts in order to maximize benefits and reduce negative consequences. Furthermore, consulting and collaborating with other agencies makes good business sense. Consultation has the potential to reduce risk, from delays and negative environmental impacts.

A range of procedures, policies, and suggestions have been developed by the Department to support and implement the new consultation process. In August 2006, the Department undertook an extensive exercise to more clearly articulate its environmental and social review requirements at the planning stages, in turn, to provide the MPOs with improved guidance. A summary of the workshop is located in Appendix A. By working with the guidance provided in this process, MPOs will be able to meet the SAFETEA-LU new consultation requirements. The process also takes into account the fact that some preliminary environmental, social analysis and consultation is already complete. Suggestions are therefore provided on how MPOs may adapt and build upon prior work in order to meet the new consultation requirements. More specifically, this process provides suggestions on a required format and sequence to be followed in consultation, but the specific arrangements for engaging with relevant agencies and gathering information are left up to the MPOs. GDOT staff has carefully reviewed the available plans, maps, and inventories, from several resource agencies, to assist the MPOs in implementing the consultation requirements systematically and in good faith. The Department recognizes, however, that the substantial differences among transportation plans and transportation improvements programs may mandate different approaches to fulfilling the consultation requirements.

The main aim of the new consultation process is to make a preliminary identification of the environmental and social impacts that may be caused by transportation plans and transportation improvement programs, and who and what they may affect.

AGENCY CONSULTATION

OBJECTIVE:

Determine which resource will be directly or indirectly affected and identify the appropriate state or local agency with jurisdiction over the affected resource. It is important for the MPOs to be comprehensive in identifying and prioritizing all possible affected agencies. Those identified will then need to be consulted, as appropriate.

TASKS AND GUIDANCE:

The following tasks and guidance will help achieve the above objective.

TASK 1: IDENTIFY AFFECTED AGENCIES

Special effort may need to be made to identify affected agencies. State and local agencies that may be directly or indirectly affected, either positively or negatively, by the project may include:

- Land Use Management (State & Local)
- Natural Resources (State & Local)
- Environmental Protection (State & Local)
- Conservation (State & Local)
- Historic Preservation (State & Local)
- Economic Development and Planned Growth (State & Local)
- Freight Movements (State & Local)
- Airport Operations (Local)

TASK 2: GATHER INFORMATION:

During the development of transportation plans and transportation improvement programs the MPOs shall compare available plans, maps, and inventories from state and local resource agencies. Some basic research will need to be undertaken by the MPOs during transportation plans and transportation improvement program development. The research should cover:

- An initial identification of the resources and responsible agencies likely to be affected by the transportation plan or transportation improvement program (See Task 1, Agency Identification.)
- A review of available information (plans, maps, and inventories') derived from agency's websites.

Useful Websites/Contacts

As stated earlier the Department has taken the lead on the development of the new consultation process to comply with the new requirements of the planning provision of SAFETEA-LU. In an effort to develop the consultation process, the Department identified specific agencies that participated in a workshop which will assist in the development of a standardized consultation process to be utilized by the Department and the MPOs during the development of transportation plans and transportation improvement programs. A list of the websites/contacts, derived from the workshop, is located in Appendix B.

TASK 3: **IDENTIFY THE IMPACT ZONES.**

Many methods are available to help MPOs identify affected resources and responsible agencies. One practical technique is impact zone mapping (IZM). IZM can help identify the full range of potentially impacted resources. By mapping environmental and social impacts, the MPOs can begin to assess different levels of impact for geographically distinct areas and to prioritize the affected agencies.

> ***TECHNIQUE***:
>
> Draw a sketch map of the project, which may give rise to local environmental or social impacts (e.g., the historic sites; protected rivers; protected mountains; canals; sources of air, water, and land pollution). Identify the broad impact zones for each of these components. After identifying and mapping potential projects groups, overlay those projects over the impact zones. Through comparison with relevant agency plans, maps, and inventory, verify which resources are potentially affected by which impacts. This exercise may be performed more efficiently by using aerial photographs and GIS layers, if available.

TASK 4: **DOCUMENTATION.**

Documentation should include acknowledging for the record receipt of comments and incorporating suggestions/comments into the LRTP/TIP. Document the completed consultation *(comparing transportation plans and transportation improvement programs to available resource agency's plans, maps, inventories, and planning documents)* in a simple, short, and concise form, perhaps with visualizations and in non-technical language.

Appendix F

Environmental Mitigation Discussion

Potential Planning Level Environmental Impacts & Mitigation Measures

Georgia Department of Transportation
Office of Planning

Environmental Mitigation

The new federal transportation bill, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or “SAFETEA-LU”, was signed by President Bush on August 10, 2005 and includes several new planning requirements. It instructs State DOTs and MPOs to include in their long range transportation plans (LRTP) and transportation improvement programs (TIP) ***“a discussion of the environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan. The discussion shall be developed in consultation with federal, state and tribal land management, wildlife and regulatory agencies."*** The State DOTs and MPOs may establish reasonable timeframes for performing this consultation *(Sect. 450.322(f)7).*

In order to meet these requirements, it is essential to know how Federal regulations actually define mitigation:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Source: 40 CFR 1508.20

An ordered approach to mitigation, known as "sequencing", involves understanding the affected environment and assessing transportation effects throughout project development. Effective mitigation starts at the beginning of the NEPA process, not at the end. Mitigation must be included as an integral part of the alternatives development and analysis process.

SEQUENCING:“AVOID --> MINIMIZE --> REPAIR/RESTORE --> REDUCE OVER TIME --> COMPENSATE “

FHWA's mitigation policy states: “Measures necessary to mitigate adverse impacts will be incorporated into the action and are eligible for Federal funding when the Administration determines that:

- The impacts for which mitigation is proposed actually result from the Administration action; and
- The proposed mitigation represents a reasonable public expenditure after considering the impacts of the action and the benefits of the proposed mitigation measures. In making this determination, the Administration will consider, among other factors, the extent to which the proposed measures would assist in complying with a Federal statute, Executive Order, or Administration regulation or policy.

Source: 23 CFR 771.105(d)

Common Terms & Acronyms

Common Terms and Acronyms

Area of Potential Effect (APE) - The area in which effects may occur to environmental resources as a result of a proposed project.

Carbon Monoxide (CO) - A colorless, odorless, tasteless, poisonous gas that impedes oxygenation of blood; it is produced by incomplete burning of carbon-based fuels, including gasoline, oil, and wood.

Environmental Justice (EJ) – Executive Order (EO) 12898, signed in 1994 that requires the fair treatment and meaningful involvement of all people regardless of race, color, or economic status with respect to the development, implementation and enforcement of Federal environmental laws, regulations and policies. Fair treatment means that no group of people shall bear a disproportionately high share of the negative environmental impacts that result from a particular project or program and shall share in the benefits derived from such projects and programs.

Environmental Mitigation Activities- Strategies, policies, programs, actions, and activities that, over time, will serve to avoid, minimize, rectify, reduce, or compensate for (by replacing or providing substitute resources) the impacts to or disruption of elements of the human and natural environment associated with the implementation of a long-range statewide transportation plan or metropolitan transportation plan. The human and natural environment includes, for example, neighborhoods and communities, homes and businesses, cultural resources, parks and recreation areas, waters of the U.S., forested and other natural areas, agricultural areas, endangered and threatened species, and the ambient air. The environmental mitigation strategies and activities are intended to be regional in scope, even though the mitigation may address potential project-level impacts. The environmental mitigation strategies and activities must be developed in consultation with Federal, State, and Tribal wildlife, land management, and regulatory agencies during the statewide and metropolitan transportation planning processes and be reflected in all adopted transportation plans.

Lead - a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Long-Range Statewide Transportation Plan (also known as Statewide Transportation Plan) The official, statewide, multimodal, transportation plan covering a period of no less than 20 years developed through the statewide transportation planning process.

Mitigation Bank-a site where wetlands, streams and/or other aquatic resources or natural habitats are restored, created, enhanced, or in exceptional circumstances, preserved, expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources. For purposes of the Clean Water Act, Section 404 (33 U.S.C. 1344), use of a mitigation bank can only be authorized when impacts are unavoidable.

Metropolitan Planning Organization (MPO) means the forum for cooperative transportation decision-making for the metropolitan planning area pursuant to 23 U.S.C. 134 and 49 U.S.C. 5303.

National Register of Historic Places (NR or NRHP) - A program administered by the National Park Service (NPS); for the purpose of Section 106 of the National Historic Preservation Act

(NHPA), properties currently listed in or determined eligible for listing in the NR are considered to be historic.

Natural Habitat- a complex of natural, primarily native or indigenous vegetation, not currently subject to cultivation or artificial landscaping, a primary purpose of which is to provide habitat for wildlife, either terrestrial or aquatic. For purposes of this part, habitat has the same meaning as natural habitat. This definition excludes rights-of-way that are acquired with Federal transportation funds specifically for highway purposes

Nitrogen Oxide (NO_x) – Oxides of Nitrogen; the primary criteria pollutant of diesel trucks and buses and is a primary contributor to exceedances of ground level ozone.

On-site, In-kind Mitigation- Compensatory mitigation which replaces wetlands, streams or natural habitat area or functions lost as a result of a highway project with the same or like wetland, streams, or habitat type and functions adjacent or contiguous to the site of the impact.

Ozone - a gas that occurs both in the Earth's upper atmosphere and at ground level. Ozone can be "good" or "bad" for your health and the environment, depending on its location in the atmosphere

Particulate Matter- also called particle is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small, they can only be detected using an electron microscope.

Section 4(f) (USDOT Act of 1966) (49 USC 303) - Requires that before land from a significant publicly owned park, recreation area, national wildlife or waterfowl refuge, or any significant historic site (regardless of ownership) can be converted to a transportation use it must be demonstrated that there is no prudent or feasible alternative to that use and that the project includes all possible planning to minimize harm.

Section 106 (National Historic Preservation Act of 1966 [NHPA]) - Requires that with all Federal undertakings, consideration be given to the effects and the minimization of harm to historic resources (historic and archaeological) that are listed in or eligible for listing in the National Register of Historic Places (NR).

Sulfur Dioxide-, or SO_2, belongs to the family of sulfur oxide gases (SOx). These gases dissolve easily in water. Sulfur is prevalent in all raw materials, including crude oil, coal, and ore that contains common metals like aluminum, copper, zinc, lead, and iron. SOx gases are formed when fuel containing sulfur, such as coal and oil, is burned, and when gasoline is extracted from oil, or metals are extracted from ore. SO_2 dissolves in water vapor to form acid, and interacts with other gases and particles in the air to form sulfates and other products.

Threatened and Endangered Species (T&E) - Refers to threatened, endangered and/or species of management concern formally listed by the Fish and Wildlife Service (FWS) relative to the Endangered Species Act (ESA). The FWS publishes lists of T&E species by county.

Traffic Noise Impacts- Impacts which occur when the predicted traffic noise levels approach or exceed the noise abatement criteria, or when the predicted traffic noise levels substantially exceed the existing noise levels.

Transportation Control Measures (TCM) – Actions to adjust traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include High Occupancy Vehicle (HOV) lanes, provisions for bicycle facilities, ridesharing, telecommuting, etc. Such actions may be included in the State Implementation Plan (SIP) if needed to demonstrate attainment of the National Ambient Air Quality Standards (NAAQS).

Transportation Facilities - roads, streets, bridges, parking areas, transit vehicles, and other related transportation infrastructure

Transportation Improvement Program (TIP) - A short-term list of funded projects covering at least three years, the current year plus the next two years in the urbanized areas of the State. It is financially constrained, conforming to the State Implementation Plan (SIP) in air quality non-attainment areas and updated at least every two years. The TIP includes the list of priority project elements (preliminary engineering [PE], right-of-way [RW or ROW], and construction) to be carried out in each program year. Projects included in the TIP must be consistent with the Transportation Plan adopted by the Metropolitan Planning Organization (MPO). The Governor approves each TIP.

Volatile Organic Compounds (VOCs)- are emitted as gases from a wide array of solids or liquids and are a primary contributor to exceedances of ground-level ozone.

Potential Planning Level Environmental Impacts & Mitigation Measures

Potential Planning Level Environmental Impacts and Mitigation Measures

As a result of the SAFETEA-LU legislation and relevant Federal guidance, the Department has developed this document to help identify potential strategies or efforts which it has used and continues to use, are used elsewhere, and/or could begin to be used to mitigate possible impacts as it related to these issues; this list is not exhaustive:

I. Air Quality
II. Archaeological sites
III. Community Impacts
IV. Environmental Justice Communities
V. Farmland
VI. Fragmented Animal Habitats
VII. Historic Sites
VIII. Light Impacts
IX. Noise Impacts
X. Park Impacts
XI. Streams
XII. Threatened & Endangered Species
XIII. Viewshed Impacts
XIV. Wetlands

For the purposes of this document, an **environmental impact** can be considered to be the direct and/or indirect physical changes that are caused or influenced by a proposed transportation project. Impacts may be considered to have a beneficial impact; less-than-significant impact; less-than-significant impact with the incorporation of mitigation measures; or significant & unavoidable impact.

Environmental Mitigation Activities are defined in SAFETEA-LU as strategies, policies, programs, actions, and activities that, over time, will serve to avoid, minimize, rectify, reduce, or compensate for (by replacing or providing substitute resources) the impacts to or disruption of elements of the human and natural environment associated with the implementation of a long-range statewide transportation plan or metropolitan transportation plan. The human and natural environment includes, for example, neighborhoods and communities, homes and businesses, cultural resources, parks and recreation areas, waters of the US, forested and other natural areas, agricultural areas, endangered and threatened species, and the ambient air. The environmental mitigation strategies and activities are intended to be regional in scope, even though the mitigation may address potential project-level impacts. The environmental mitigation strategies and activities must be developed in consultation with Federal, State, and Tribal wildlife, land management, and regulatory agencies during the statewide and metropolitan transportation planning processes and be reflected in all adopted transportation plans.

I. Air Quality Impacts

National ambient air quality standards (NAAQS) have been established for several major pollutants referred to as "criteria" pollutants. The NAAQS are two-tiered: primary—to protect public health; and secondary—to prevent degradation to the environment (e.g., impairing visibility, damaging vegetation and property). The six criteria pollutants are:

- Carbon monoxide (CO)
- Particulate Matter
- Nitrogen dioxide (NO_2)
- Sulfur dioxide (SO_2)
- Ozone
- Lead (Pb)

Vehicle exhaust is a primary source of project-related air pollution. Pollutants include NOX, CO, fine particulate, VOCs and other hydrocarbons, and SO_2.

Ozone is a pollutant formed through a complex series of temperature-dependent photochemical reactions involving precursor pollutants such as NOX and VOCs, which are emitted as vehicle exhaust. In addition to ozone formation, exhaust gases (NOX, VOCs and other hydrocarbons, and SO_2) released into the atmosphere can be converted to fine particulate matter through similar (and related) chemical and photochemical reactions. Fossil-fuel combustion (resulting from motor vehicles and industry) is the major source of gases in secondary particle formation.

Potential Mitigation Measures

- Adopt air quality element/general plan air quality policies/specific plan policies
- Adopt Local Air Quality Mitigation Fee Program
- Fund TCM program: transit, bicycle, pedestrian, traffic flow improvements, transportation system management, rideshare, telecommuting, video-conferencing, etc.
- Adopt air quality enhancing design guidelines/standards
- Designate pedestrian/transit oriented development areas on general plan/specific plan/ planned development land use maps
- Energy efficiency incentive programs
- Local alternative fuels programs
- Coordinate location of land uses to separate transportation related emmissions generators and sensitive receptors
- Conforming TIP and RTP (in non-attainment and maintenance areas)

--Potential mitigation activities near impacted areas.

II. Archaeological Impacts

Identify "Area of Potential Effects" (APE) which is usually limited to the footprint of the project including all existing and required rights-of-way and easements. This is applicable to areas such as former Indian Lands and for sites that are eligible or listed in the National Register of Historic Places.

Potential Mitigation Measures:

- Design modifications so that impact on archaeology is avoided
- Full excavation is used as a method of preservation by record
- Develop educational activities to educate public about archaeology and prehistory/history.

--Potential mitigation activities could be implemented near impacted areas.

III. Community Impacts

Topics that fall under the Community Impact heading include: access, mobility, social isolation/splitting of neighborhoods, history of the community, new development impacts, changes in the quality of life, changes in neighborhood identification, changes in property values, separation of the neighborhood from community facilities, displacements, impacts on community centers of activity whether formal or informal, noise, urban renewal, removal of urban blight, joint land use, and disruption of the natural and human environment.

There are multiple ways a proposed project could be considered to have an impact on a community. For example, a multi-lane roadway in a neighborhood with many residents and pedestrian traffic may cause safety concerns for residents within the area.

POTENTIAL MITIGATION MEASURES:

- Sidewalks
- Reconnect a bisected community
- Bike Lanes
- Recreation areas
- Traffic calming measures
- Pedestrian areas
- Maintain or enhance community services
- Oral history project

--Potential mitigation activities could be implemented near impacted areas.

IV. ENVIRONMENTAL JUSTICE IMPACTS

The affected population could include low-income households, persons/households without automobiles, minorities, elderly, young, and mobility-impaired individuals.

POTENTIAL MITIGATION MEASURES:

- Residential and Commercial Relocation
- Efforts during project development to identify and engage Environmental Justice populations
- Involve community in articulating project need/project development and way to improve community

--Potential mitigation activities could be implemented near impacted areas.

V. FARMLAND IMPACTS

Preservation of prime agricultural land is an important state and national goal and many of the soils in the State of Georgia are well suited in agricultural production. However, soil alone does not guarantee the success of an agricultural enterprise. The high cost of land, the high cost of water and energy, fragmented ownership patterns, and market conditions limit the potential return on investment. These economic factors are a disincentive to continued farming in the State of Georgia.

As a result of a substantial decrease in the amount of open farmland, Congress passed the Farmland Protection Policy Act (PL 97-98; 7 U.S.C. 4201 et seq.). The purpose of the Act is to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses by federal programs/actions. The Act further requires that federal programs/actions be administered in a manner that will be compatible with state and local government and private programs and policies to protect farmland. The Act specifies three categories of farmlands:

> Prime farmland—land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion (Source: 7 U.S.C. 4201[c][1][A]).
>
> Unique farmland—land other than prime farmland that is used for the production of specific high-value food and fiber crops such as citrus, tree nuts, olives, cranberries, fruits, and vegetables (Source: 7 U.S.C. 4201[c][1][B]).
>
> Additional farmland of statewide or local importance—land identified by state or local agencies for agricultural use, but not of national significance (Source: 7 U.S.C. 4201[c][1][C]).

POTENTIAL MITIGATION MEASURES:

- Farmland mitigation programs are somewhat similar in concept to wetlands mitigation. They involve protecting farmland by providing equivalent farm acreage elsewhere when agricultural land is converted to other uses, or paying a fee when farmland is converted to other uses.

- Permanently protect one acre of farmland for every acre of agricultural land they convert to other uses.

- Place an agricultural conservation easement on farmland in another part of the city or pay a fee to satisfy mitigation.

- Agricultural mitigation may be satisfied by the payment of a fee based upon a two to one replacement for a farmland conservation easement or farmland deed restriction

--Potential mitigation activities could be implemented near impacted areas.

VI. FRAGMENTED ANIMAL HABITAT

Habitat Fragmentation is the splitting of natural habitats and ecosystems into smaller and more isolated patches. Habitat fragmentation is mainly the result of different forms of land use change. The construction and use of transport infrastructure is one of the major agents causing this change as well as creating barriers between habitat fragments.

POTENTIAL MITIGATION MEASURES

Landscape connectivity is vital in order to permit exchanges between populations. Wildlife corridors need to be rehabilitated when avoidance is impractical. Mitigation measures are to be integrated in the project as to restore at best biological connectivity. Measures permitting to reduce the barrier effect include:

- Overpasses with vegetation reflecting the neighboring habitat
- Underpasses, such as culverts and viaducts to separate animals from the roadway
- Fencing to direct wildlife away from roadway
- Design measures to minimize potential fragments of animal habitats

--Potential mitigation activities could be implemented near impacted areas.

VII. HISTORICAL IMPACTS

A survey for historic (50 years of age or older) resources is conducted within the area of potential affect to identify all individual properties, districts, and multiple property areas that currently are listed in or eligible for listing in the National Register of Historic Places. This applicable to former Indian lands/Traditional Cultural Properties.

POTENTIAL MITIGATION MEASURES:

- Relocation of a historic property may be utilized to avoid its acquisition or minimize impacts

- Design modifications to the project to avoid or complement the property

- Landscaping to reduce visual impacts

- Photo documentation

- Historic archival recording, possibly including photos, plans, historic documentation, etc., to preserve historic resource information to the public.

--Potential mitigation activities could be implemented near impacted areas.

VIII. Light Impacts

Adverse effects of light and glare generally are attributable either to a substantial increase in ambient light levels at locations near the light source or to the visual impact of a new light source in a previously unlighted area as viewed from locations distant from the light source.

POTENTIAL MITIGATION MEASURES:

- Use low-level lighting, the potential for glare attributable to a bright lighting system would be reduced.
- Avoiding the use of floodlighting
- Direct the light downward, with no visible source of light above 90 degrees
- Providing dusk-to-dawn lighting only
- Communities could adopt “light ordinances” (particular coastal communities)
- Consider impacts to light sensitive populations and/or areas (including wildlife)

--Potential mitigation activities could be implemented near impacted areas.

IX. Noise Impacts

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility is subjective and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.” The environmental impact of noise is a function of the sensitivity of the land use where noise is heard. In general, land use sensitivity to noise is a function of human annoyance and community reaction rather than health and safety considerations. Noise can also interfere with nonresidential uses such as schools, libraries, churches, and hospitals.

POTENTIAL MITIGATION MEASURES

Noise mitigation is a set of strategies to reduce unwanted environmental sound. The main topics of noise mitigation (alternatively known as **noise abatement**) are: transportation noise control, architectural design, and occupational noise control.

- Depressed Roads
- Buildings as Noise Barriers
- Tunnels
- Vegetation as Noise Barriers
- Constructing noise barriers/sound walls
- Consider impacts to noise sensitive populations and/or areas (including wildlife)

--Potential mitigation activities could be implemented near impacted areas.

X. Park Impacts

There are basically two types of impacts that can affect parklands. Direct impacts are those that will occur from acquisition of park property or the location of a transportation system element on park property. Indirect impacts are those which arise from some feature or operation of a transportation system element. Examples of indirect impacts are noise or vibration, or changes in the visual environment, or changes in access. Where indirect impacts occur, an evaluation must be made as to whether the impact is of sufficient magnitude to have a substantial negative effect on a park, park function or park characteristic.

POTENTIAL MITIGATION MEASURES:

- Construct additional bicycle/pedestrian pathways
- Dedicate land and/or
- Pay park dedication fees to ensure the funding for the acquisition and development of improved parkland.
- Replace improved function

--Potential mitigation activities could be implemented near impacted areas.

XI. Stream Impacts

Any transportation project which encroaches on a stream requires a section 404 permit and possibly coordination in accordance with Fish and Wildlife Coordination Act and should consider best practices for stormwater management. If project activities encroach in the buffer (25' for warm water and 50' for cold water stream) a stream buffer variance would be required.

POTENTIAL MITIGATION MEASURES

- "Standard Operating Procedures for Compensatory Mitigation" (US Army Corps of Engineers);
- Purchase stream credit in State owned or commercial banks-cost depended up area of State;
- Stream restoration;
- Planting of vegetative buffer zones;
- Strict erosion and sedimentation control measures;
- Design features to avoid impacts (such as bridges and bottomless culverts)

--Potential mitigation activities could be implemented near impacted areas.

XII. THREATENED & ENDANGERED SPECIES IMPACTS

Utilizing existing environmental data (aerial photographs and various maps including topographic, vegetation, National Wetland Inventory, geological and soils maps), a determination will be made as to the presence of potential suitable habitat within the Survey Corridor. This research will provide the information required to determine the likelihood of locating a particular species within the project corridor and, if so, where and at what time of the year it would most likely occur.

POTENTIAL MITIGATION MEASURES

Special mitigation provisions are based on species impacted. Mitigation measures may take many forms, such as:

- Preservation (via acquisition or conservation easement) of existing habitat;
- Enhancement or restoration of degraded or a former habitat;
- Creation of new habitats;
- Modification of design;
- Establishment of buffer areas around existing habitats;
- Modifications of land use practices, and
- Restrictions on access.

--Potential mitigation activities could be implemented near impacted areas.

XIII. VIEWSHED IMPACTS

Viewshed is defined as the geographic area as viewed from a scenic resource, which includes the proposed activity. The viewshed may include the total visible activity area from a single observer position or the total visible activity area from multiple observers' positions.

POTENTIAL MITIGATION MEASURES:

- Vegetation and Landscaping
- Screening,
- Buffers
- Earthen berms
- Camouflage
- Lighting

--Potential mitigation activities could be implemented near impacted areas.

XIV. WETLAND IMPACTS

Wetlands can be defined as lands where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the surrounding environment. Other common names for wetlands are bogs, ponds, swamps, and marshes.

POTENTIAL MITIGATION MEASURES:

Any unavoidable impacts that result from project development must be fully compensated for through a wetland mitigation plan. Compensation is where wetland mitigation banking plays a role. Mitigation banking is an approved and accepted method for compensating for unavoidable impacts. Banks are designed to create, restore, and/or enhance large, ecologically important wetland tracts in advance of permitted impacts. Also consider vegetative buffer zones & erosion/sedimentation control measures.

Mitigation may be achieved through the restoration, creation, or enhancement of wetlands, usually on-site or at a selected off-site location. Regulations require a minimum compensation ratio of one to one, or one unit of wetland mitigation for each unit of impact. The regulators may require higher ratios based on the type of mitigation proposed and its perceived likelihood of success.

- **Establishment (Creation):** The development of a wetland or other aquatic resource through manipulation of the physical, chemical or biological characteristics where a wetland did not previously exist. Successful creation results in a net gain in wetland acres.

- **Restoration:** Re-establishment or rehabilitation of a wetland or other aquatic resource with the goal of returning natural or historic functions and characteristics to a former or degraded wetland. Restoration may result in a gain in wetland function and/or wetland acres.

- **Enhancement:** Activities conducted within existing wetlands that heighten, intensify, or improve one or more wetland functions. Enhancement is often undertaken for a specific purpose such as to improve water quality, flood water retention or wildlife habitat. Enhancement results in a change in wetland function(s), but does not result in a gain in wetland acres.

- **Protection/Maintenance (Preservation):** The protection of ecologically important wetlands or other aquatic resources into perpetuity through the implementation of appropriate legal and physical mechanisms (i.e. conservation easements, title transfers). Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure proper protection.

--Potential mitigation activities could be implemented near impacted areas.

Appendix G

Comparison of SWTP to Available; Maps, Plans, Inventories

It is important to note that Georgia's Statewide Transportation Plan (SWTP) is a policy document and does not identify individual projects. However, other plans prepared within the Department do identify individual projects and these plans "feed" into and form the basis of the 2005-2035 Statewide Transportation Plan. One such plan feeding into the SWTP is the GDOT-Office of Planning's Interstate System Plan. The Interstate System Plan was both a policy discussion and project identification exercise focusing on the future needs of Georgia's Interstate highway system. The Interstate System Plan included a section which focused on identifying natural and man-made resources and economic development activities along the Interstates in Georgia. The following is the documentation of this comparison:

Economic Development, Land Use, and Environmental Resources

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Executive Summary

This analysis provides the Georgia Department of Transportation (DOT), local jurisdictions, and other stakeholders with information and tools on key resources that could affect the need for interstate improvements and the ability to implement different types of improvements. By providing this information during early stages of ISP development, subsequent planning activities to identify potential improvements can be undertaken with information related to potential resource constraints. The improvements can therefore be identified and scaled so as to be sensitive to these land use and environmental needs, while also being grouped into project "packages" that control potential impacts and maintain independent utility and project purpose and need. This level of activity during the planning process may help subsequent project development activities, including environmental analysis, proceed in a more streamlined and strategic fashion.

Attempting to put the existing interstate system in the context of its current and planned future surroundings, the analysis accounts for political jurisdictional boundaries, potential non-attainment boundaries, existing and planned future land uses, other significant transportation facilities (seaports, airports, intermodal facilities), natural resources (water resources, protected species, wildlife management areas, parklands, wetlands), cultural resources and other environmental constraints (floodplains, hazardous waste sites, existing development). This document identifies critical areas along the interstate system where the proximity of any of these attributes could potentially impact a facility upgrade or expansion decision.

The analysis was conducted by dividing the interstate system into nine different corridors:

■ Northeast Georgia

Interstate 985 in Hall County, and Interstate 85 from Jackson County to the South Carolina State Line

Northeast Georgia is one of the smaller corridors within the interstate system, comprising 100 centerline miles, 346 lane miles and 18 interchanges. Most of this corridor is blanketed by wetlands and parkland resources. As Hall County faces the possibility of becoming a non-attainment area under PM 2.5 and eight-hour ozone standards, nearly 90 percent of Interstate 985's span within this corridor could be affected by the designation. Under existing land use, residential and employment-related development is adjacent to nearly the full stretch of Interstate 985, while development along Interstate 85 primarily exists only along the southern half of its span. Land use plans suggest that intense residential, commercial and industrial land uses will be developed along Interstate 85 in future years. Currently, the corridor contains an accessibility deficiency in a section of Interstate 985, near Gainesville.

■ East Georgia

Interstate 520 and Interstate 20 between Newton County and the South Caroline State Line

East Georgia is the third largest corridor within the interstate system in terms of centerline mileage, lane mileage and number of intersections. Water resources have a significant presence in this corridor. Concerns of cultural resources and wildlife management areas are mainly concentrated in Walton and Richmond Counties. More than half of interstate sections through Richmond County are within proximity of hazardous sites. Newton, Walton and Richmond Counties could potentially become non-attainment areas in future years, which would impact more than 25 percent of Interstate 20 and all of Interstate 520. Employment land uses near the interstate are quite common in the western half of the corridor, as well as near Augusta along both Interstate 20 and 520. Local land use plans suggest a slightly more intensive development picture near the interstate corridor for future years. There are no existing accessibility concerns in this corridor, though future land use plans suggest there could be accessibility concerns in the eastern portion of Interstate 520 in future years.

■ Central Georgia

Interstate 475 and Interstate 75 between Spalding and Bibb Counties

Though the Central Georgia Corridor is among the shortest corridors within this study, it contains the most number of interchanges per centerline mile, averaging approximately one interchange for every four centerline miles. Similar to most other corridors, wetlands cover significant area within this corridor. Parklands and cultural resources are found adjacent to sections of Interstate 75 in Lamar and Butts Counties. Hazardous sites are also found near the interstate in portions of Lamar and Butts Counties. The predominant category of protected species in this corridor is flowering trees and plants. With the possibility of Spalding and Bibb Counties becoming non-attainment areas, over 75 percent of mileage along Interstate 475 and over 40 percent of mileage along Interstate 75 could be affected by the designation. Employment land uses are more prevalent than residential land uses along this corridor. Local land use plans suggest that future adjacent development will be predominantly residential and industrial. Currently, there are no interstate accessibility deficiencies along this corridor.

■ Macon to Savannah

Interstates 16 and 516

The Macon to Savannah Corridor represents the largest corridor in this study in terms of centerline and lane miles. Wetlands, floodplains and hydrologic units are prevalent in this area, particularly through sections in the Coastal Georgia Region. Cultural resources are present in Bibb, Laurens and Treutlen Counties. Parklands are also present in these same three counties as well as in Twiggs County. Hazardous sites are adjacent to sections of Interstate 516 through Savannah. A variety of protected species are found in this corridor, with the predominant protected species category being flowering trees and plants. As Bibb and Chatham Counties stand as candidate non-attainment areas, their possible classification could affect nearly one-third of the interstate system in this corridor. With isolated pockets of existing development adjacent to the interstate, there are no current interstate accessibility deficiencies within this corridor. Future land use plans, however, suggest that there will be significant travel demand increases for eight interchanges.

■ Coastal

Interstate 95

The Coastal Georgia Corridor is the fourth largest corridor in this study in terms of centerline miles. Wetlands and other hydrologic features exist within proximity of the interstate throughout the length of the corridor. Between Brunswick and Savannah, stretches of the interstate are near cultural resources and a variety of parklands. This corridor has the broadest array and greatest extent of protected species of the nine corridors analyzed in this study. Should Chatham and Glynn Counties become classified as non-attainment areas under the PM 2.5 standard, over one-third of the interstate system in this corridor could be impacted. Residential and employment land uses are intermixed in pockets of development along the interstate. Current interstate accessibility deficiencies exist between Brunswick and Savannah. Future land use plans suggest intense residential, commercial and industrial development near the interstate. As a result, nine interchanges are expected to experience significant travel demand increases.

■ South Georgia

Interstate 75 between the southern portion of Bibb County and the Florida State Line

The South Georgia Corridor is the second largest corridor in terms of centerline and lane miles, and contains the greatest number of interchanges among all the studied corridors. Wetlands and hydrologic features are found adjacent to the interstate almost continuously through the corridor. Hazardous sites are found in various locations along the interstate, including north of Perry, near Tifton and in areas between Tifton and Valdosa. Most sections of this corridor have some form of protected species within proximity, flowering plants and trees tending to be the most common category in each region. Residential and employment land uses are intermixed in pockets of development along the interstate. Current interstate accessibility concerns exist in Cook County, between Tifton and Valdosta. Future local land use plans suggest that significant adjacent development is planned to occur in a variety of uses, potentially putting significant travel demand on as many as eight interchanges.

■ West Central Georgia

Interstate 185 and Interstate 85 between Meriwether County and the Alabama State Line.

The West Central Georgia Corridor contains in total 115 centerline miles and 646 lane miles of interstate. As with many other corridors, wetlands and other hydrologic features blanket the West Central Georgia Corridor. Small sections of Interstate 185 contain cultural and parklands resources through Harris County. Hazardous sites are adjacent to the interstate at locations near LaGrange, Columbus and the Georgia/Alabama state line. A variety of protected species are adjacent to more than half of the length of interstate in this corridor. Muscogee County is a candidate non-attainment area under the PM 2.5 standard. If Muscogee becomes a non-attainment area, it could affect more than one-third of the length of Interstate 185 in this corridor. Residential land use is the most prevalent adjacent land use with most development situated in Troup and Muscogee Counties. Existing accessibility concerns are located along Interstate 85 in Troup County. Planned future development could significantly increase travel demand at three interchanges in this corridor.

West Georgia

Interstate 20 between the Alabama State Line and Carroll County

West Georgia is the smallest corridor in this study, containing 48 centerline miles and five interchanges. Wetlands and other hydrologic features exist along most of this corridor. The only protected species found in this corridor is fish, located in Haralson County. Coosa Valley could potentially be classified as a non-attainment area by the eight-hour Ozone standard, which could impact more than half the length of this corridor. Existing development along the interstate is predominantly residential and exists along the majority of its length, though primarily in Carroll County. Local land use plans indicate that a diversity of land uses is planned along Interstate 20. Three interchanges could experience significant travel demand increases should development occur to the extent envisioned by local land use plans.

Northwest Georgia

Interstate 24, Interstate 59, and Interstate 75 between the Tennessee State Line and Bartow County

Northwest Georgia represents the fifth largest corridor in terms of centerline miles. As in most other corridors, wetlands and other hydrologic features are prevalent in this corridor, but predominantly along Interstate 75. Sections near Calhoun along Interstate 75 contain parklands and cultural resources. Adjacent hazardous sites exist along all branches of interstate in Whitfield, Bartow and Dade Counties. A variety of protected species are found in this corridor, with the principal category being flowering trees and plants. Should Bartow County be classified as a non-attainment area under the eight-hour Ozone standard, the designation would affect the southern one-third portion of Interstate 75. Interstates 24 and 59 predominantly have residential adjacent development while Interstate 75 has mostly employment adjacent land uses concentrated in Whitfield County. According to local land use plans, residential and commercial development is planned to intensify in future years along with industrial uses. Eight interchanges could expect to experience marked increases in travel demand should adjacent development occur as indicated by local land use plans.

1.0 Introduction

Technical Memorandum #2 presents the results from Task 2 (*Evaluation of Existing and Proposed Land Use Plans Adjacent to, and in the Vicinity of, the Interstate System*) of the Georgia Interstate System Plan (ISP). Task 2 involved the analysis of systemwide development, land use, and environmental issues for Georgia's interstate system.

This analysis provides the Georgia Department of Transportation (DOT), local jurisdictions, and other stakeholders with information and tools on key resources that could affect the need for interstate improvements and the ability to implement different types of improvements. By providing this information during early stages of ISP development, subsequent planning activities to identify potential improvements can be undertaken with information related to potential resource constraints. The improvements can therefore be identified and scaled so as to be sensitive to these land use and environmental needs, while also being grouped into project "packages" that control potential impacts and maintain independent utility and project purpose and need. This level of activity during the planning process may help subsequent project development activities, including environmental analysis, proceed in a more streamlined and strategic fashion.

The activities in Task 2 were structured in two primary tracks. The first track involved identifying potential sources of electronic information of environmental and land use resources, and then synthesizing this information into a system of planning tools that could be used in this project and in GDOT's subsequent planning activities. The second track involved applying this system of tools in order to characterize the land uses and environmental resources near the interstate system. This characterization was used to:

- Identify current and future activity centers that rely on access to the interstate system or generate trips that are strongly oriented to travel on the interstate system;
- Identify locations that are expected to be major engines of future economic growth in the State, particularly outside of the metropolitan Atlanta area;
- Identify locations that may lack access to the interstate system, either currently or in the future;
- Identify current interchanges and interstate access routes that may be subject to increasing demand due to projected economic growth;
- Identify sections of interstate that could be subject to significant increases in demand based on locally generated information concerning development activity, trends, and community development planning in areas adjacent to and near the interstate system; and
- Identify areas adjacent to the interstate system that may present limitations to potential interstate improvement projects due to environmental, demographic, or land use reasons.

This Technical Memorandum provides information on both activity tracks, but the majority of information relates to results from the second track. The remainder of this introduction summarizes efforts from the first activity track including data sources, analysis steps, and an introduction to the system of tools. More detailed information on this analysis plan can be found in the Appendix. Also, further information on development and use of the *System of Tools* will be provided as part of the deliverable for Task 16, *Tools and Software used in the Interstate System Evaluation*.

Section 2.0 of this Technical Memorandum presents information on *activity centers of statewide significance*, which are major clusters of activity that could generate significant traffic and affect the scale of interstate facilities that are needed. Sections 3.0 through 11.0 then report, for each of nine interstate corridors, on the location of key economic, land use and environmental resources in relation to existing interstate facilities. Although many elements of the *System of Tools* will be truly statewide in nature, the nine corridors summarized in Sections 3.0 through 11.0 are outside of the metropolitan Atlanta region.[1]

■ 1.1 Analysis Approach and Data Sources

The basic process for developing and applying the *System of Tools* included the following sequence of activities:

- Assembling currently available land use and environmental data from a variety of electronic and hardcopy sources.
- Integrating and normalizing the data as layers in a geographic information system (GIS). This process included compiling metadata, reprojecting GIS layers so all the data could be viewed in one coordinate system, creating spatial layers from tabular data, and organizing the data into a database schema.
- Synthesizing the various GIS layers, databases, and other information sources into different "Georgia ISP GIS layers." These final GIS layers are the primary land use and environmental input to the *System of Tools*.
- Using the "Georgia ISP GIS layers" to identify key locations of economic growth, interstate facilities that could be affected by this growth, and sections of the interstate system that may have key environmental or land use resources in proximity to the right-of-way.

Existing data, tools, and methods were heavily relied upon in this task. This reliance on existing information provides continuity and consistency with current GDOT planning efforts and efficiently employs resources to undertake evaluation. The use of existing data and tools provides some assurance that the results will be familiar and understood by GDOT's stakeholders. The following agencies were the primary sources of these existing data:

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[1] For purposes of this Technical Memorandum, the metropolitan Atlanta region is defined as the current 13-county non-attainment area under the Federal one-hour Ozone standard.

- **Georgia Department of Transportation –** Location of airports and seaports; and boundaries of existing and potential future non-attainment area.
- **Georgia Department of Natural Resources –** General location of protected species; location of landfills and hazardous waste sites.
- **Georgia Department of Community Affairs –** Existing and future land use.
- **Georgia Department of Industry, Trade and Tourism –** Existing manufacturing sites.
- **Georgia GIS Clearinghouse –** Aerial photography, cultural resources, water resources, and parklands.
- **U.S. Census Bureau –** Existing population.
- **Bureau of Transportation Statistics –** Location of intermodal and freight terminals.
- **Private Data Sources –** Employment and population; location of industrial sites.

More detailed information on these data sources and the sequence of technical activities can be found in the Appendix.

1.2 Analysis Products

Task 2 has produced two principal products:

1. A series of integrated GIS layers (i.e., the *System of Tools*) for analyzing statewide economic development patterns, environmental resources, and local land use plans as part of ongoing or routine transportation planning activities.
2. A preliminary analysis of economic development patterns, environmental resources, and local land use plans in relation to the interstate system, and a series of maps and tables to summarize these results.

The *System of Tools* includes GIS layers for current and future land use and demographics, major economic and transportation activity centers, cultural resources, natural resources, and other environmental topics. This *System of Tools* will allow GDOT to continue the work undertaken in this evaluation of the interstate system, or to include the analysis in studies of other modal systems or subregions. As noted earlier, the deliverable for Task 16 will provide more complete information on the *System of Tools* including the procedures, methodologies, and systems for linking existing databases and applying them in a consistent manner to support the required analyses. This system will be easily applicable by GDOT to revise the analyses in the future based on changing circumstances and assumptions.

The preliminary analysis addressed both statewide and corridor-specific issues. The majority of the analysis was limited to the interstate system outside of the existing 13-county Atlanta non-attainment area. However, an initial analysis of activity centers of statewide significance, discussed in Section 2.0, includes major intermodal facilities within the Atlanta area so that consideration of future statewide interstate demand is informed with the location and magnitude of these key facilities.

The primary output from the preliminary analysis was focused on nine different interstate corridors outside of the Atlanta area. Analysis and reporting by corridors allowed for detailed presentation of results by Regional Development Center (RDC), GDOT District, and county within each corridor. A boundary map for these different jurisdictions and administrative areas is shown in Figure 1.1. Although a GIS layer were also developed for Congressional districts, data summaries were not prepared for Congressional Districts at this time; these summaries are available using the System of Tools for current Congressional districts (see Figure 1.2).

The nine different corridors, which are depicted in Figure 1.3, were established based on geographic proximity and similar interstate numbering. The nine corridors, which are discussed in Sections 3.0 through 9.0, are:[2]

- **Northeast Georgia –** Interstate 985 in Hall County, and Interstate 85 from Jackson County to the South Carolina state line;
- **East Georgia –** Interstate 520 and Interstate 20 between Newton County and the South Caroline state line;
- **Central Georgia –** Interstate 475 and Interstate 75 between Spalding and Bibb Counties;
- **Macon to Savannah –** Interstates 16 and 516;
- **Coastal –** Interstate 95;
- **South Georgia –** Interstate 75 between the southern portion of Bibb County and the Florida state line;
- **West Central Georgia –** Interstate 185 and Interstate 85 between Meriwether County and the Alabama state line;
- **West Georgia –** Interstate 20 between the Alabama state line and Carroll County; and
- **Northwest Georgia –** Interstate 24, Interstate 59, and Interstate 75 between the Tennessee state line and Bartow County.

Maps and tables for each corridor present findings from the preliminary analysis.

[2] Interstates 285 and 575 are completely within the existing 13-county Atlanta non-attainment area, and were therefore not included in this preliminary analysis. Other sections of Interstates 20, 75, and 85 within the existing 13-county Atlanta non-attainment area were also not included in this preliminary analysis and summary by corridor.

Figure 1.1 Jurisdictional Boundaries

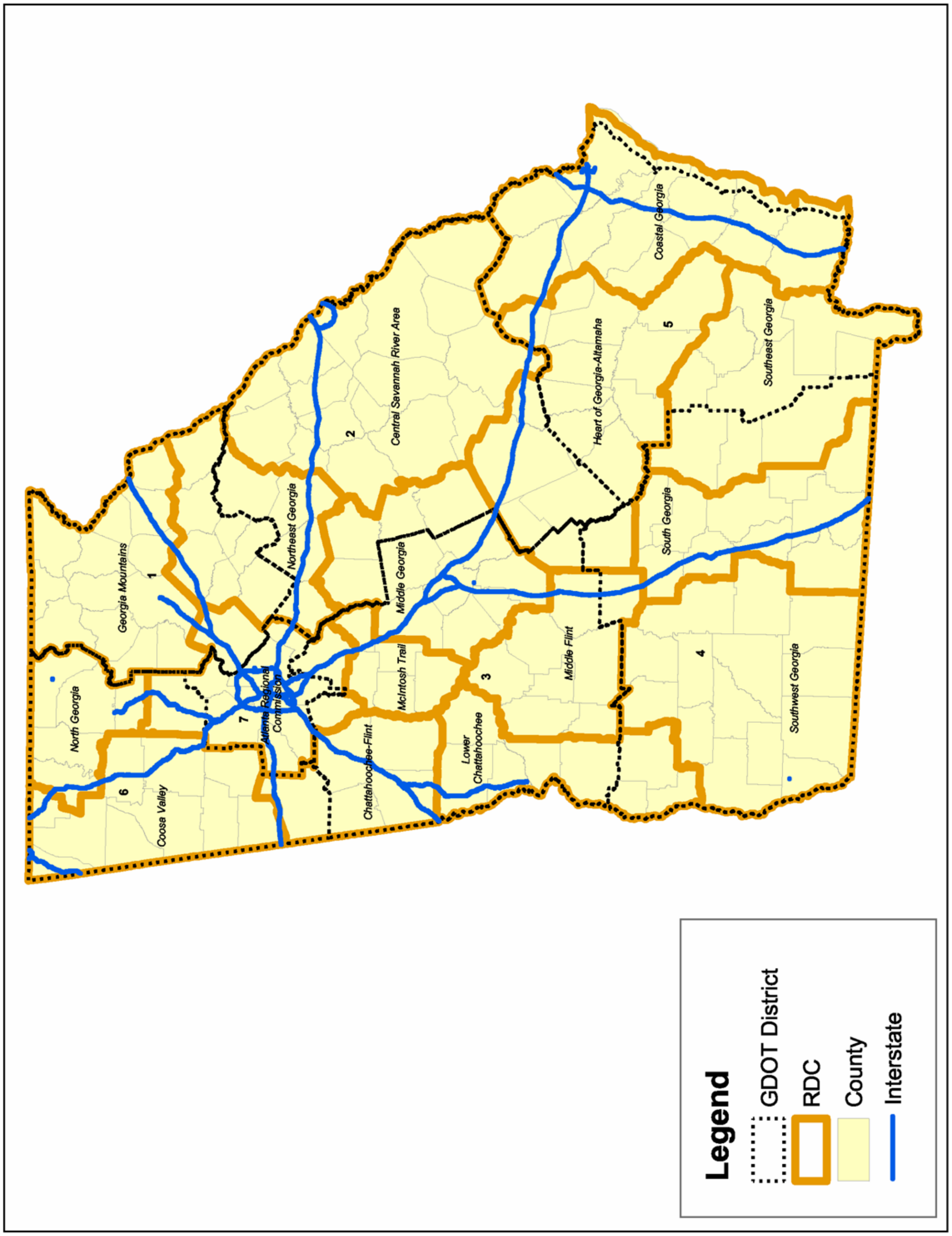


Figure 1.2 Congressional District Boundaries

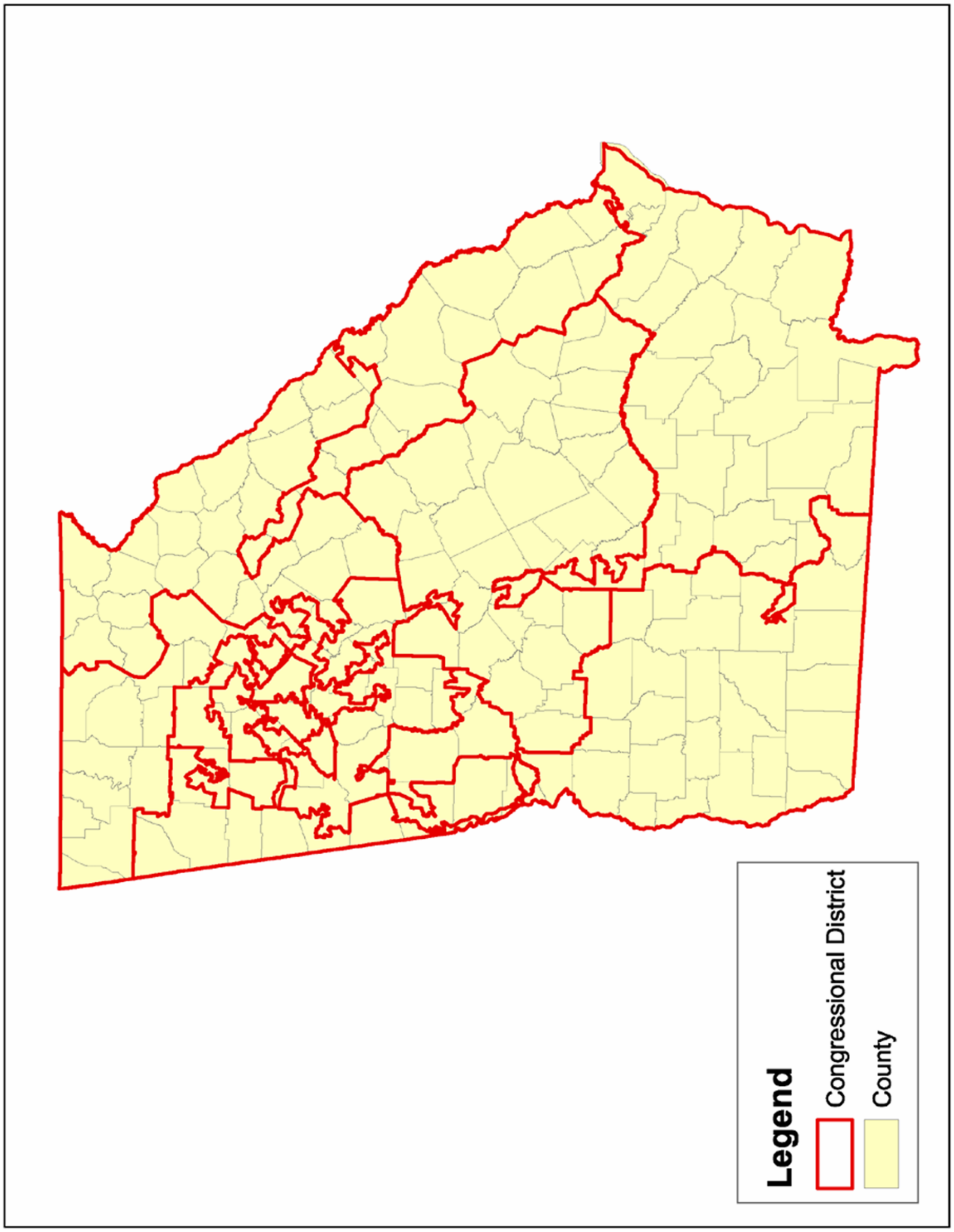
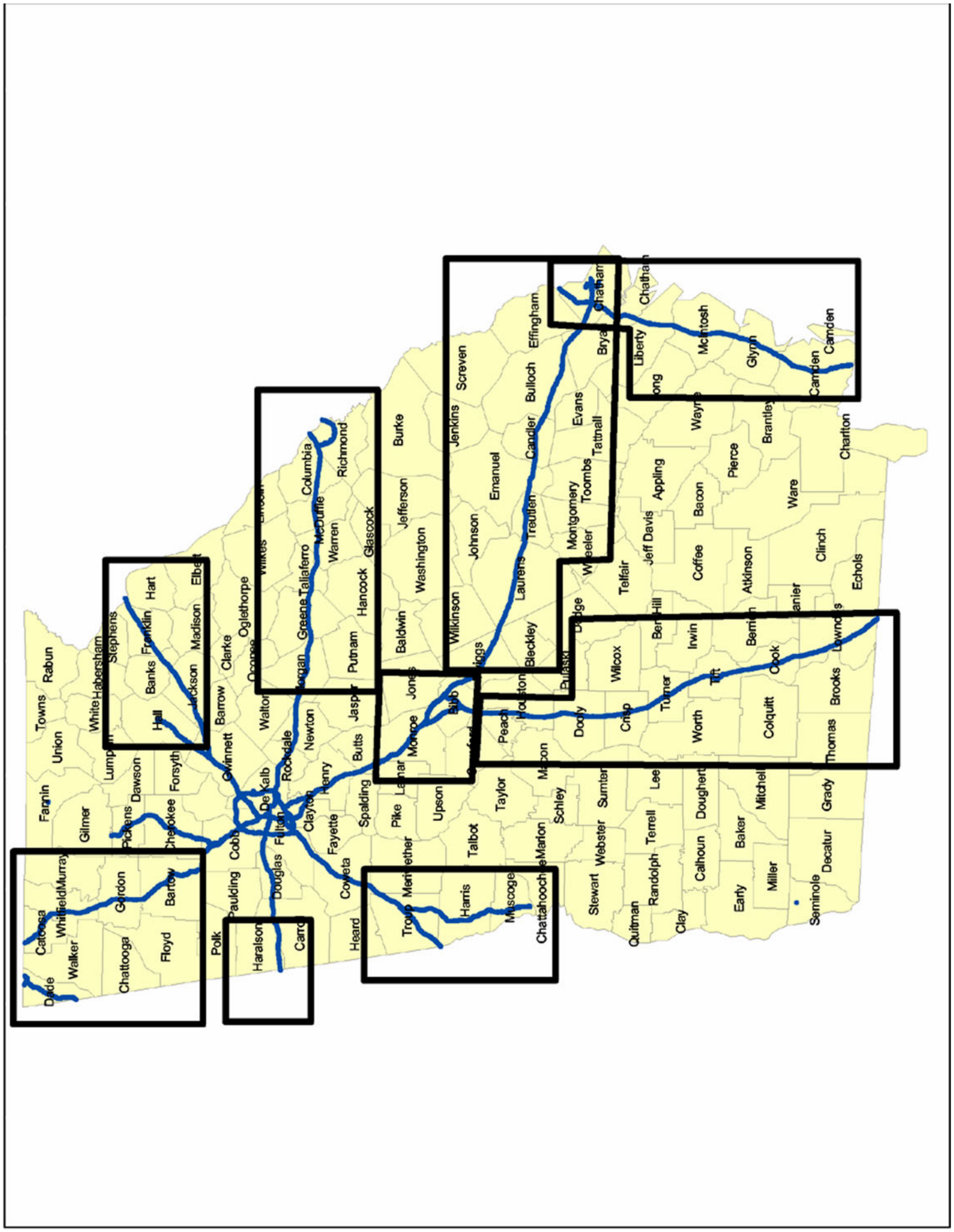


Figure 1.3 General Corridor Limits within Interstate System Plan



2.0 Activity Centers of Statewide Significance

The identification of significant activity centers across the State draws a broad picture of major generators of freight and passenger travel in Georgia. The nature of an activity center tells a lot about the likely characteristics of most trips going to that particular location. For instance, intermodal terminals are likely to attract freight traffic, parks tend to attract recreational traffic, and office parks will attract work commute traffic. The union of these activity center locations and the interstate system is a helpful preliminary step toward better understanding where there is potential need for system upgrade or expansion.

For the purposes of this study, the identified activity centers are locations that are likely to generate significant interstate-oriented traffic. This constitutes interregional traffic as well as out of state traffic. Upon identifying these activity centers with respect to the interstate system, this information can then be used to conduct detailed interstate accessibility analyses as well as to determine locations along the interstate where there is heavy-truck activity. Note that the focus of this study is on interstate travel outside of the Atlanta metropolitan region, which itself is a significant activity center. To achieve completeness of understanding statewide issues, however, certain activities within Atlanta are still documented, though the emphasis remains on statewide activity beyond the Atlanta metro area.

There are six classifications of "activity centers of statewide significance":

1. **Economic Centers –** Areas outside of the Metropolitan Atlanta area that combine significant employment concentration with large contiguous areas of commercial or industrial land uses. These centers would be expected to have on the order of 1,000 jobs or more.

2. **Airports –** Commercial airports and general aviation airports with a "Tier 1" or "Tier 2" designation in the Georgia Statewide Airport Plan. (These general aviation airports are intended to serve as regional aviation hubs for economic development and freight movement.)

3. **Intermodal Terminals –** Identified by the National Transportation Atlas Database.

4. **State Parks –** All state parks operated by the Georgia Department of Natural Resources.

5. **Military Bases –** Includes military facilities, outside of the Metropolitan Atlanta are, from all service branches as identified by the Bureau of Transportation Statistics.

6. **Seaports –** Includes the Atlantic Coast ports in Savannah and Brunswick, as identified by the Bureau of Transportation Statistics.

2.1 Current Conditions

The existing activity centers of statewide significance beyond the Metropolitan Atlanta region are exhibited in Figures 2.1 and 2.2 for northern and southern Georgia, respectively.

As seen in both figures, the activity centers are dispersed throughout the State with a significant number located away from the interstate corridors.

Most of Georgia's economic centers are fairly well connected by the interstate system with several clusters of economic activity generally located adjacent to the Interstate. A handful of economic centers, particularly in the northwest region of the State appear to function beyond proximity to the Interstate, likely relying on smaller highway facilities with greater local accessibility. Georgia's major airports are evenly distributed across the State, noting a handful that are strategically located along the interstate system, as in the case of southern portions of the I-75 corridor (See Figure 2.2). Military bases, located by their center points, can be fairly large in size. Though their center points may not appear directly adjacent to the Interstate, most major military bases are within proximity to the Interstate as their functions heavily rely on adequate truck accessibility. While most state parks are located away from the interstate system, the parks tend to have direct connections to the interstate system through access routes. Both seaport and intermodal terminal functions are intrinsically related to the interstate system and, with the exception of a few intermodal facilities located in the southwest part of the State, most of these facilities are situated very near the interstate system.

Figure 2.3 exhibits major transportation terminals and military bases in the Atlanta metro region. As mentioned before, Atlanta itself is a significant activity center, which undoubtedly influences travel along the interstate system. Note that these Atlanta area facilities rely on their nearness to the interstate and reinforce the importance of accounting for the metropolitan region when evaluating the interstate system as a whole.

2.2 Future Conditions

For future conditions, it is assumed that all of the existing locations identified in Figures 2.1 and 2.2 will continue their roles as "Activity Centers of Statewide Significance." The analysis of future conditions also identified new economic centers as suggested within locally developed land use plans. These new centers might represent significant expansions to existing economic centers or entirely new development. Figures 2.4 and 2.5 exhibit the locations of these new economic centers in northern and southern Georgia, respectively; the existing activity centers are not indicated on these figures. Though local land use plans reveal that several new economic centers are likely to develop along the interstate system, such as along I-75 north of the metropolitan Atlanta region (Figure 2.4) and along I-95 between Savannah and Brunswick (Figure 2.5), the bulk of new economic activity is being planned by local jurisdictions to develop along the GRIP system in the northern part of the

State. A high concentration of industrial and commercial land use is planned in locations along U.S. 441 and U.S. 129, near the Interstate junction of I-75 and I-16 (Figure 2.4). This pattern of planned land use suggests that I-75, I-16 and I-20 will be critical in serving the interchange of activities between the metropolitan Atlanta region and the surrounding new activity centers in future years.

Figure 2.1 Existing Activity Centers of Statewide Significance
North Georgia

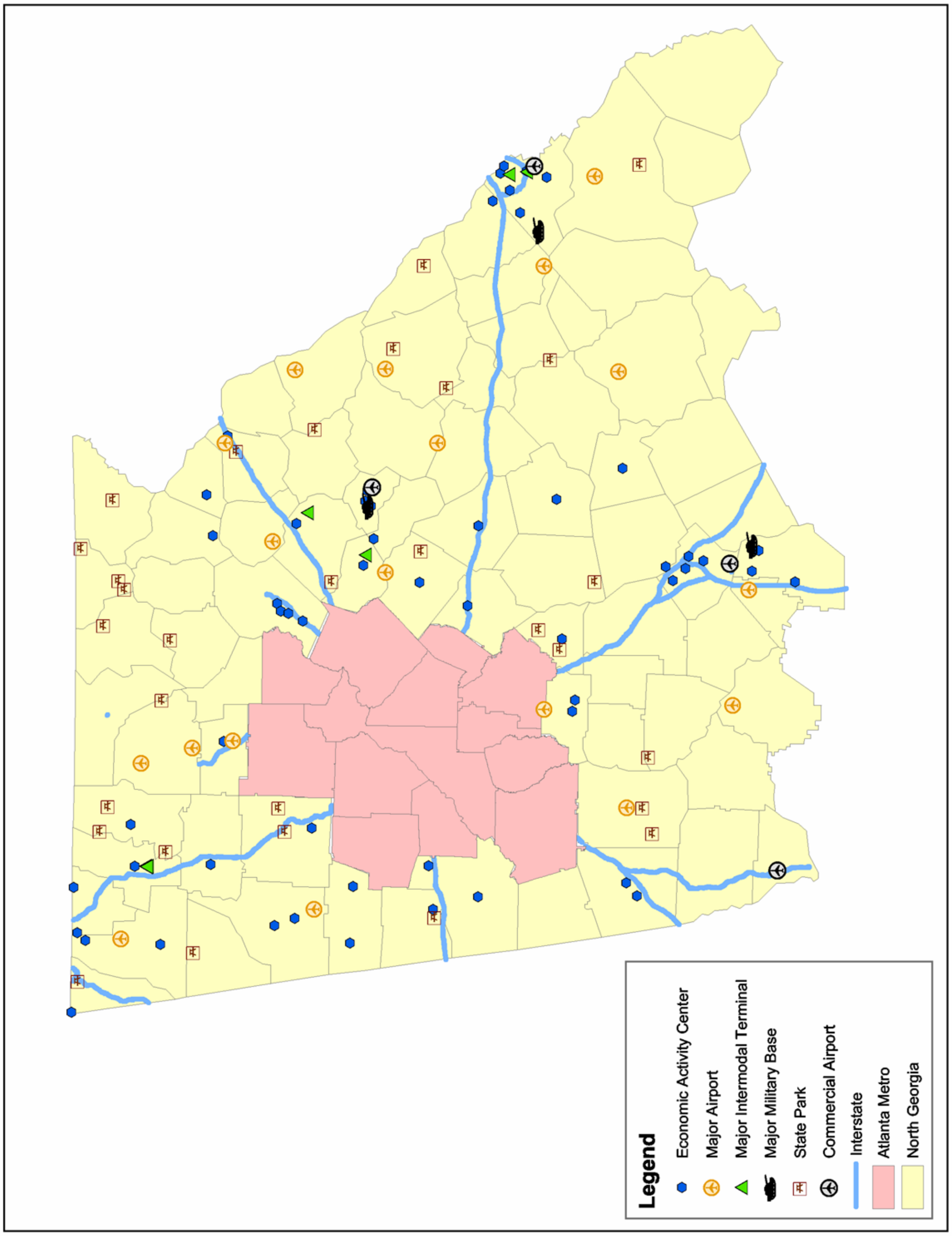


Figure 2.2 Existing Activity Centers of Statewide Significance
South Georgia

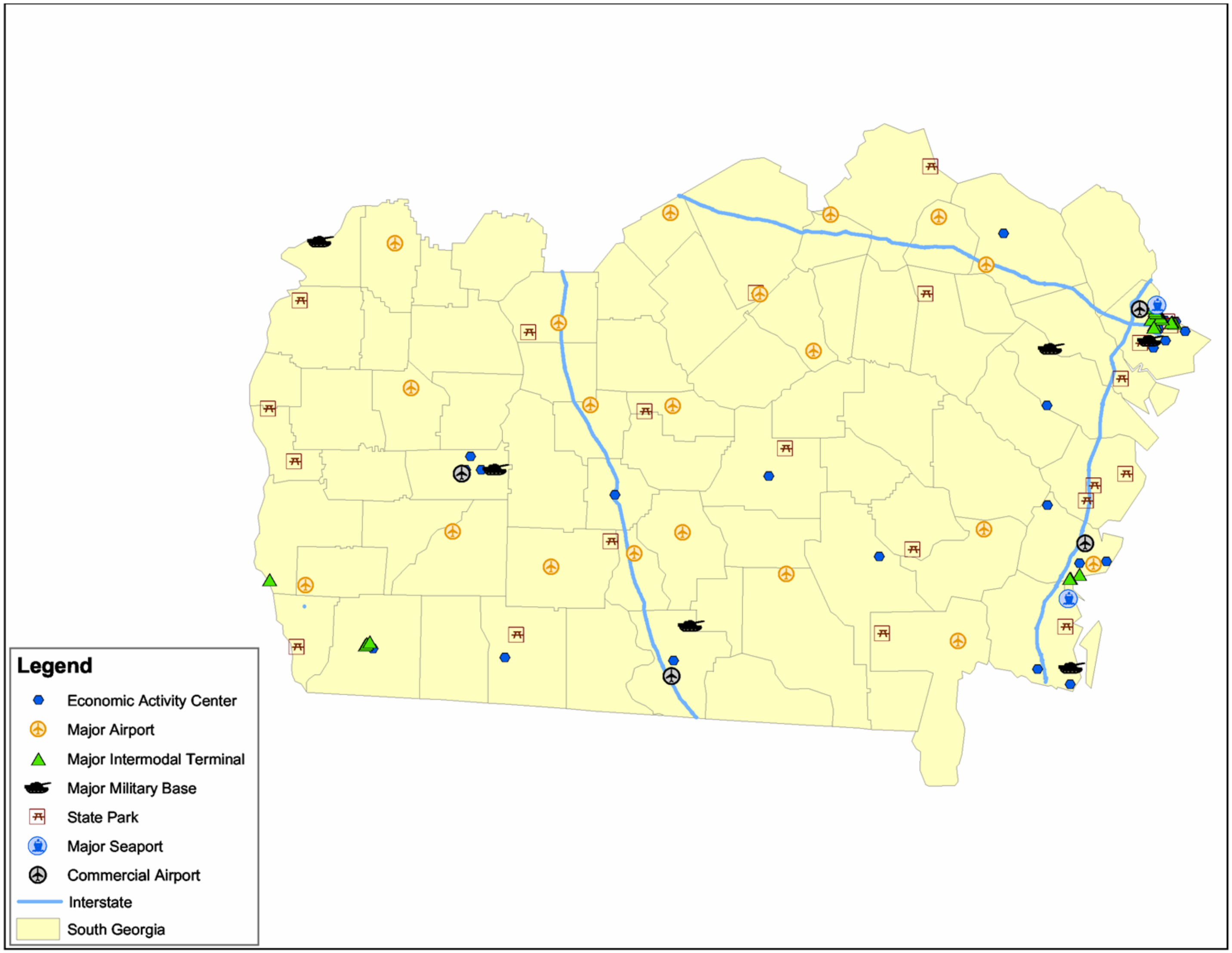


Figure 2.3 Major Airports, Military Bases, Freight Terminals, and Rail Lines in Metro Atlanta

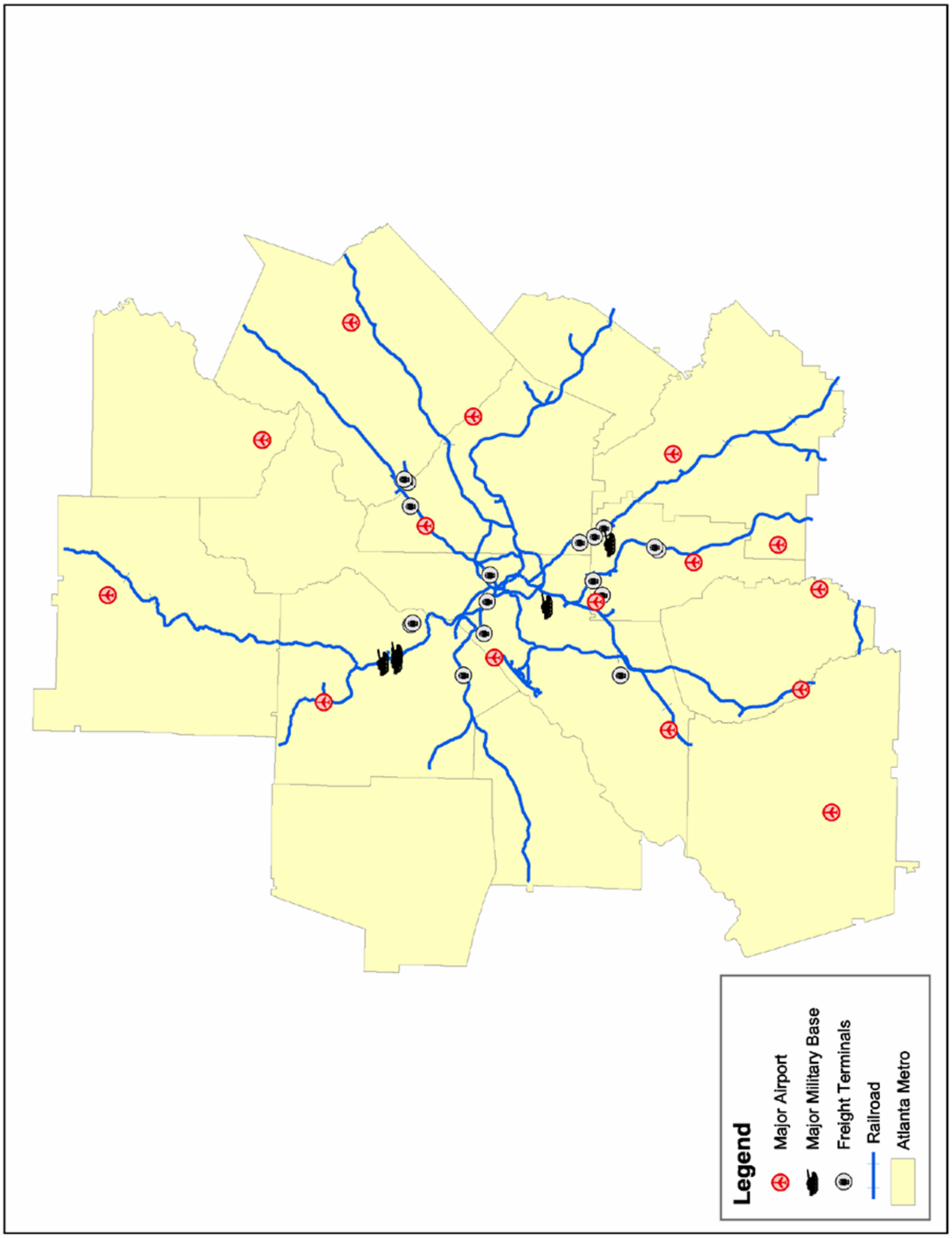


Figure 2.4 Potential Future Activity Centers of Statewide Significance
North Georgia

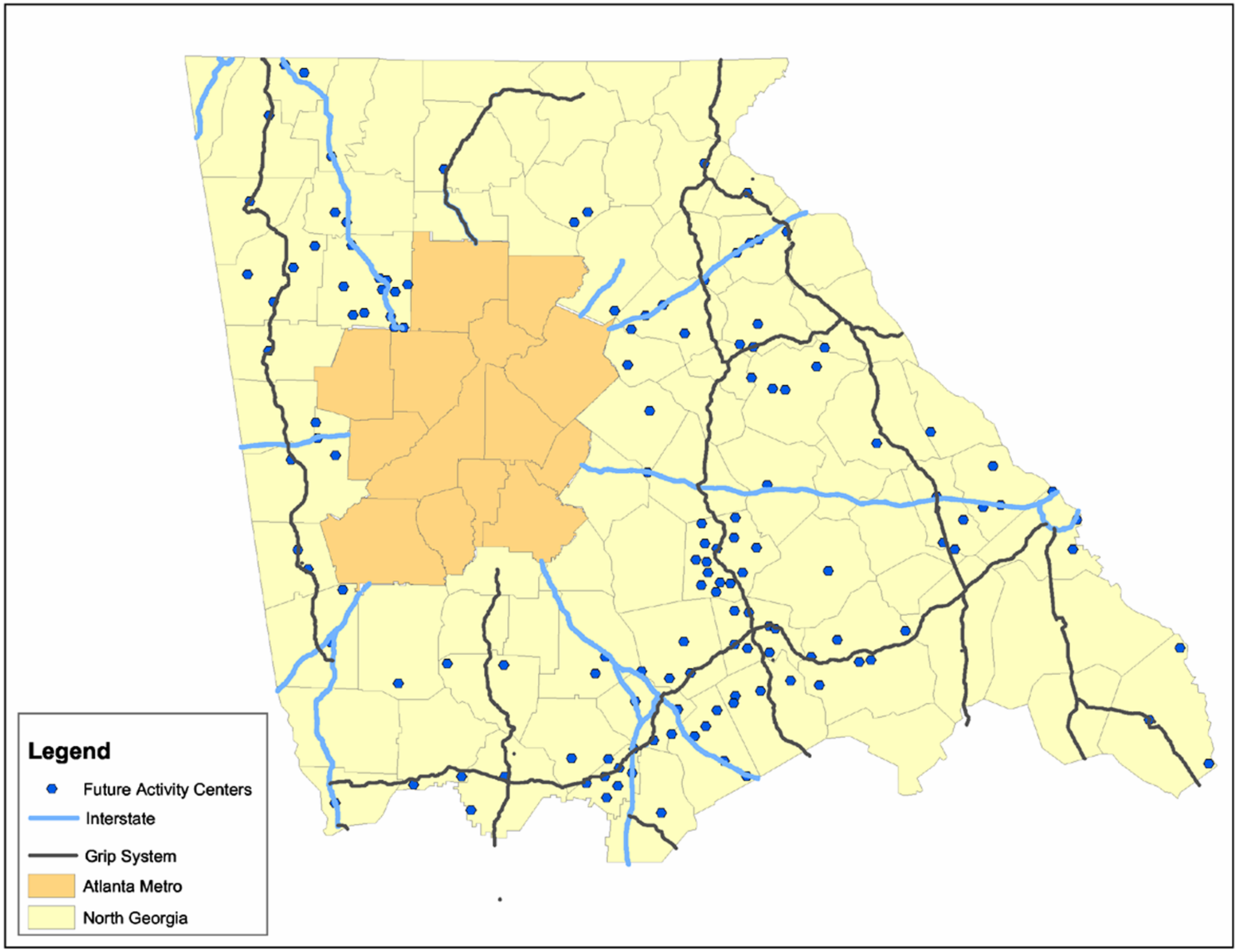
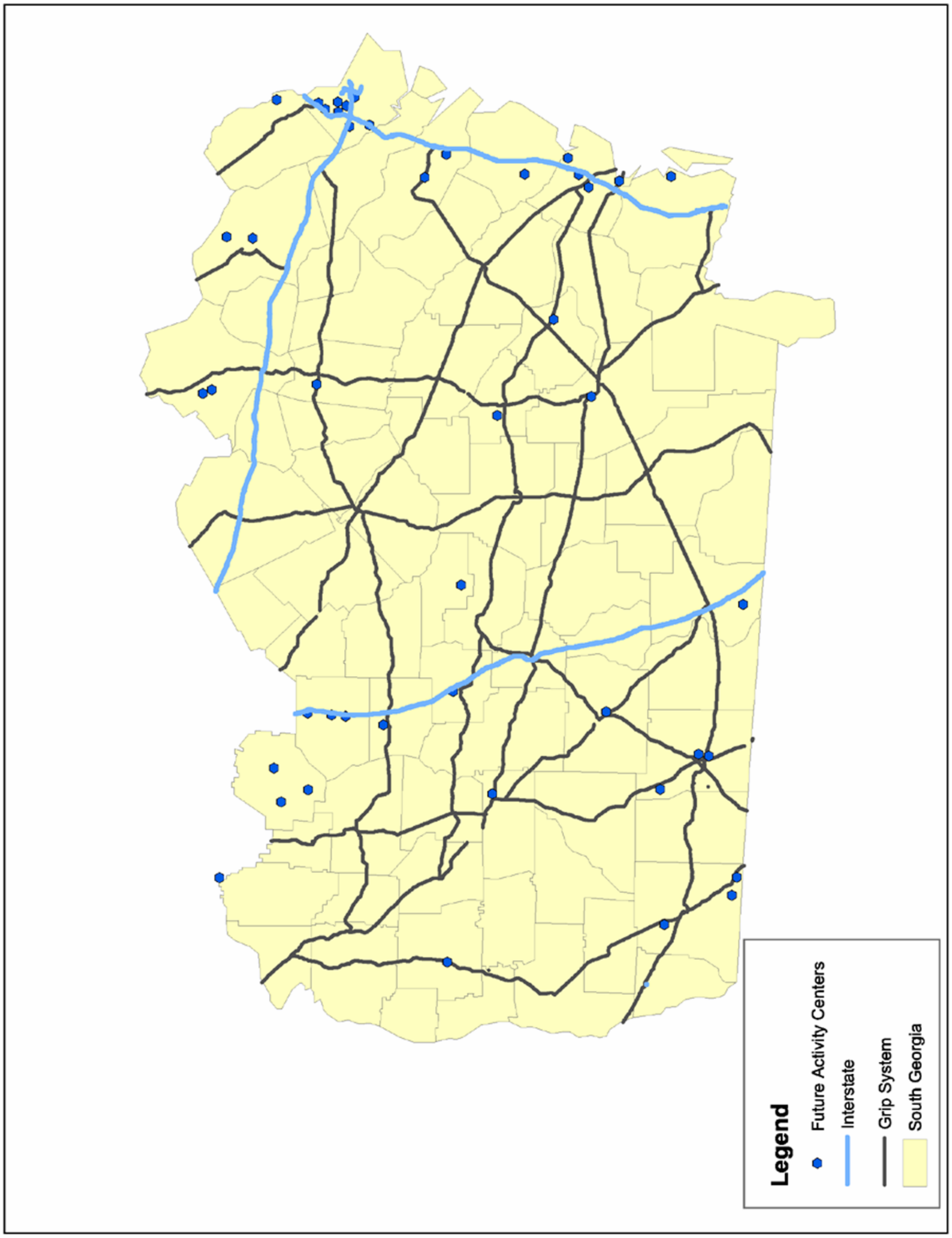


Figure 2.5 Potential Future Activity Centers of Statewide Significance
South Georgia



3.0 Northeast Georgia Corridor

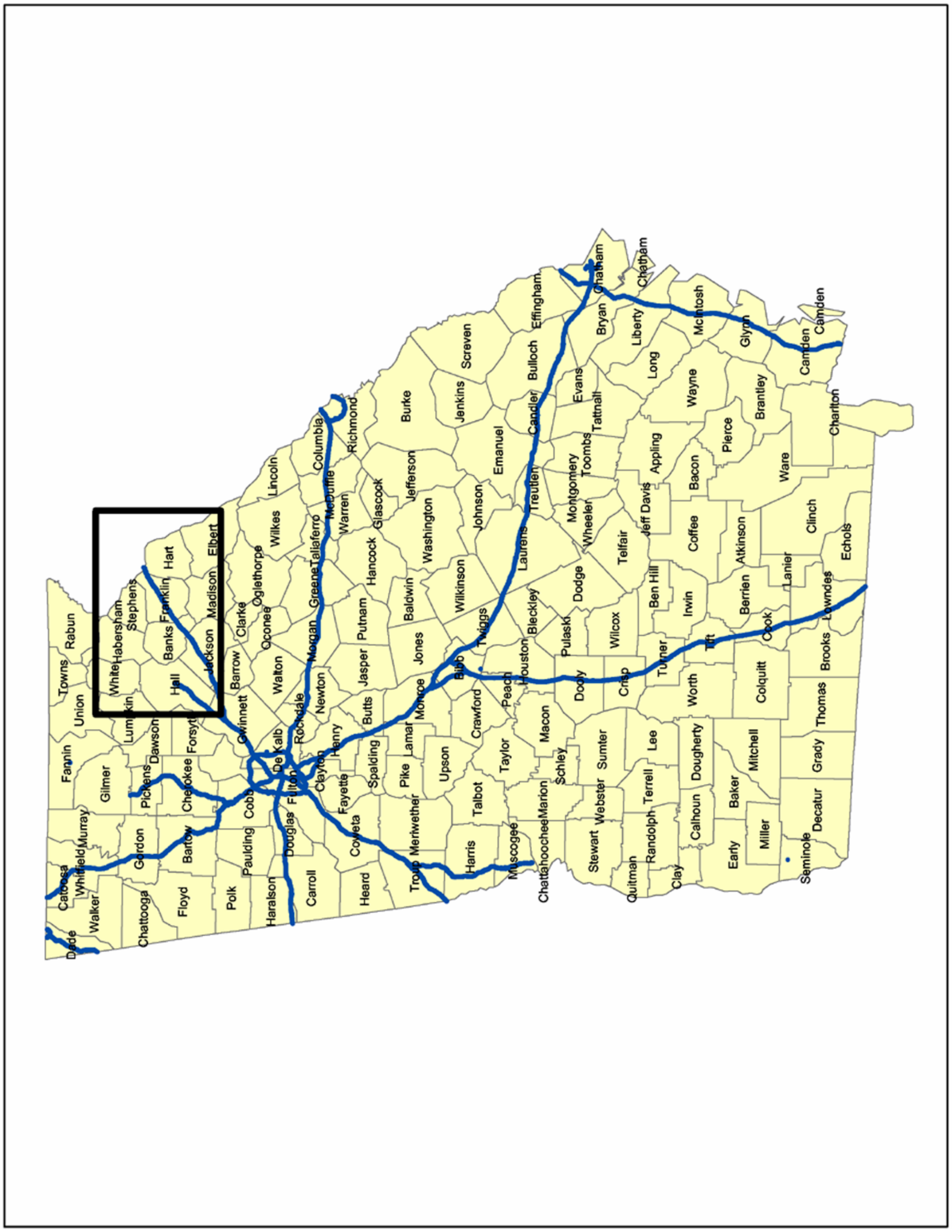
As exhibited in Figure 3.1, the Northeast Georgia corridor, includes Interstates 85 and 985 generally between Atlanta and the Georgia/South Carolina state border. Interstate 85 passes through Barrow, Jackson, Banks, Franklin, and Hart Counties. Leaving Atlanta, Interstate 985 branches off from Interstate 85, going into Hall County. Major communities in the corridor include Gainesville, Commerce, and Lavonia. The corridor is also divided between the Northeast Georgia and Georgia Mountains RDCs. Georgia DOT District 1 provides local oversight for this corridor.

Summary characteristics of Interstates 85 and 985 within this corridor are provided in Table 3.1. Amon the smaller corridors in this study, the Northeast Georgia Corridor contains a total of 100 centerline miles, 77 of which span Interstate 85 and 23 of which span Interstate 985. Interstate 85 contains 12 interchanges, which translates to approximately 6.4 centerline miles per interchange. Interstate 985 contains six interchanges rendering approximately 3.8 centerline miles per interchange. The number of interstate mileage and interchanges along Interstate 85 are similar between the Northeast Georgia and Georgia Mountains RDCs. Franklin and Jackson Counties, containing similar spans of interstate, contain the most centerline mileage, lane mileage, and number of interchanges within this corridor.

Table 3.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
85				77	266	12
	Northeast Georgia			34	119	5
		Barrow	1	5	17	1
		Jackson	1	28	102	4
	Georgia Mountains			44	147	7
		Banks	1	10	33	2
		Franklin	1	30	104	4
		Hart	1	3	10	1
985				23	80	6
	Georgia Mountains			23	80	6
		Hall	1	23	80	6

Figure 3.1 General Corridor Limits



■ 3.1 Environmental Resources

Figure 3.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance continuously through the corridor. Hydrologic units (i.e., streams, rivers, lakes, etc.) are common throughout the length of the corridor, except for in sections of Barrow County. Floodplains tend to be present in the southern portion of the corridor, all along Interstate 985 and mainly along the Barrow and Jackson County sections of Interstate 85. Table 3.2 presents a more detailed breakout of these water resources by county.

Table 3.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
85				100%	N/A	47%
	Northeast Georgia			100%	87%	23%
		Barrow	1	100%	100%	0%
		Jackson	1	100%	85%	27%
	Georgia Mountains			100%	N/A	65%
		Banks	1	100%	25%	64%
		Franklin	1	100%	20%	62%
		Hart	1	100%	*	100%
985				100%	100%	93%
	Georgia Mountains			100%	100%	93%
		Hall	1	100%	100%	93%

Notes: * Indicates that data are not available for this county.
N/A indicates that corridor-wide value cannot be estimated due to lack of data in one or more counties.

While no portion of Interstate 85 appears to have any parklands or cultural resources within one mile of its centerline, Figure 3.3 illustrates that nearly the entire stretch of Interstate 985 contains critical areas for parklands resources. As seen in Table 3.3, significant portions of Interstate 985 come within one mile to Wildlife Management Areas. It also indicates that a small section of Interstate 985 contains critical areas for cultural resources. Though not visible in Figure 3.3, these cultural resources are located in the northern span of the Interstate. The light shaded line in Figure 3.4 illustrates that hazardous sites (e.g., landfills or waste sites) are again only adjacent to Interstate 985, near the GA-60 and U.S. Highway 129 interchanges in Hall County.

Figure 3.2 Water Resources

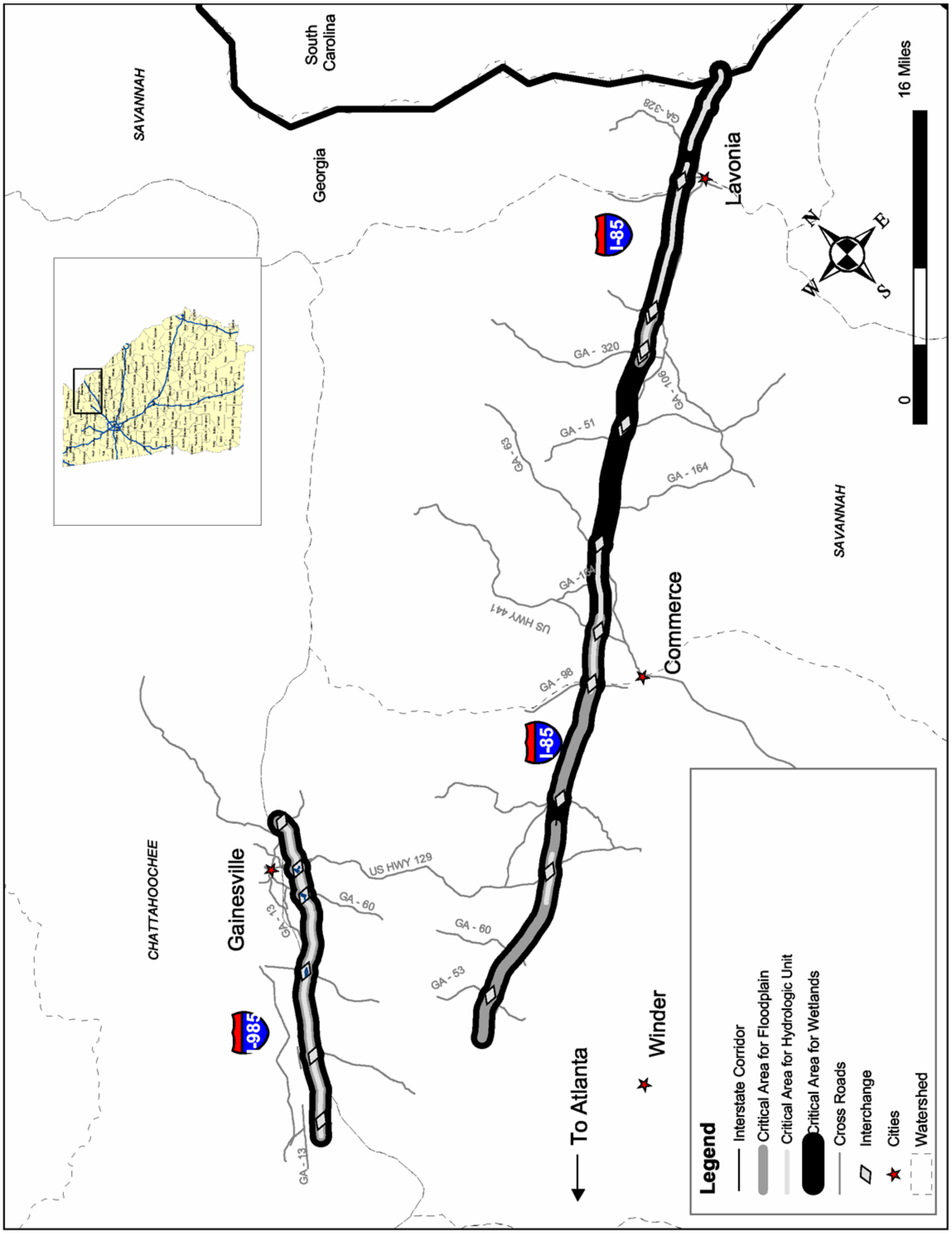


Figure 3.3 Parklands and Cultural Resources

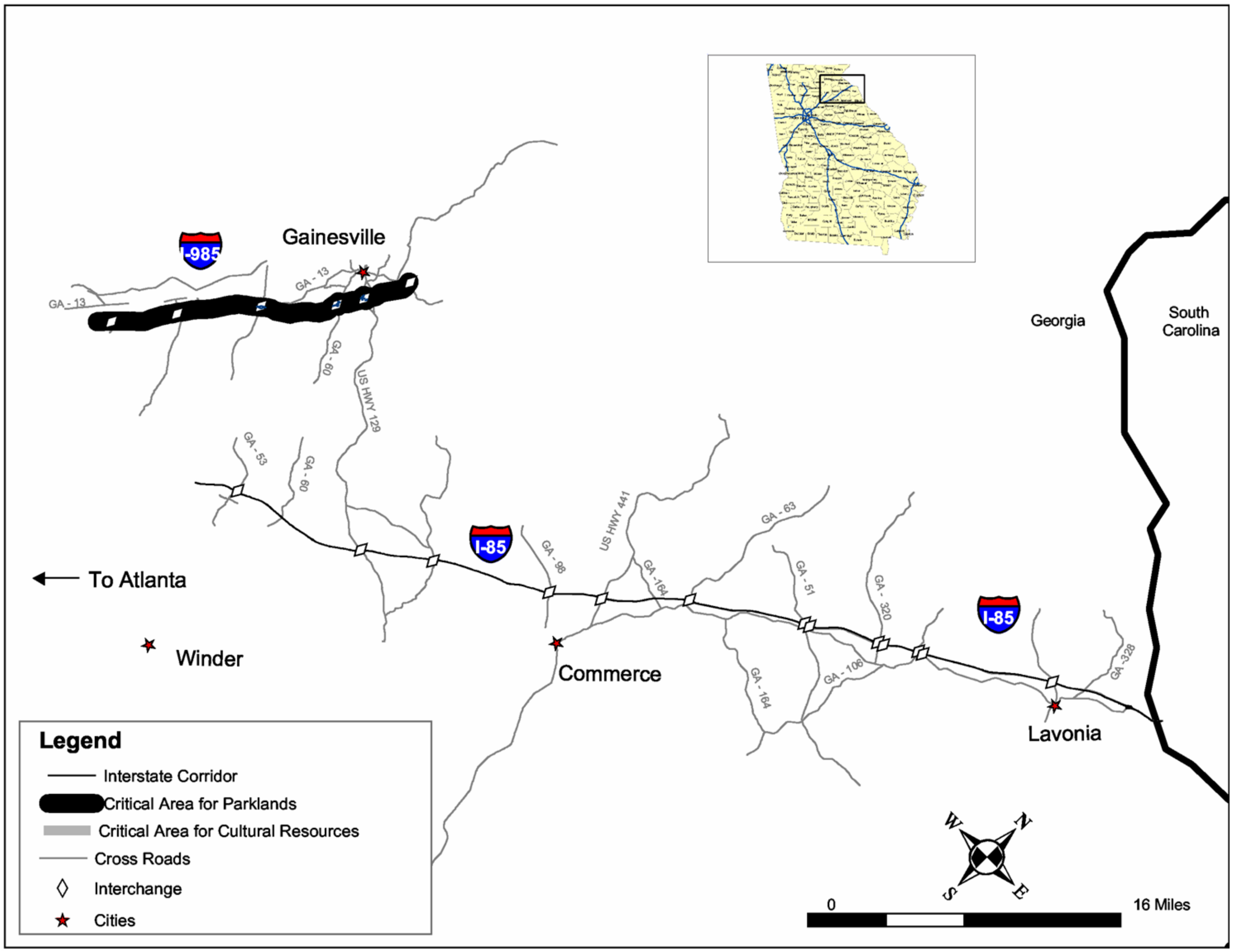


Figure 3.4 Other Environmental Resources

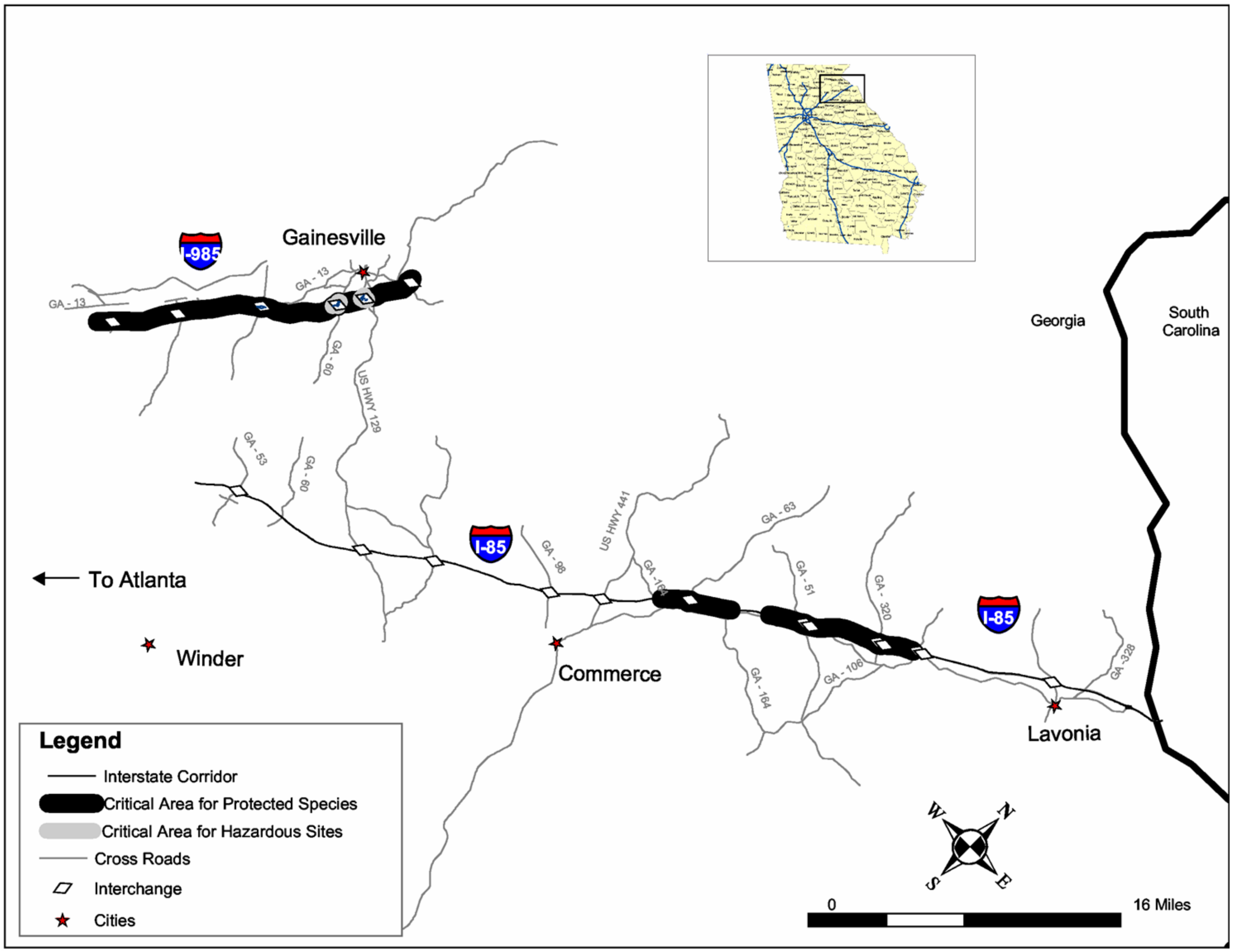


Table 3.3 Percent of Centerline Miles with Other Nearby Environment Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
85				0%	0%	0%	0%	0%	0%
	Northeast Georgia			0%	0%	0%	0%	0%	0%
		Barrow	1	0%	0%	0%	0%	0%	0%
		Jackson	1	0%	0%	0%	0%	0%	0%
	Georgia Mountains			0%	0%	0%	0%	0%	0%
		Banks	1	0%	0%	0%	0%	0%	0%
		Franklin	1	0%	0%	0%	0%	0%	0%
		Hart	1	0%	0%	0%	0%	0%	0%
985				4%	8%	88%	0%	0%	0%
	Georgia Mountains			4%	8%	88%	0%	0%	0%
		Hall	1	4%	8%	88%	0%	0%	0%

Figure 3.4 also illustrates that most sections of Interstate 985 and some sections of Interstate 85 have some form of protected species within one mile of the centerline. Table 3.4 indicates that flowering plants and trees, grasses, orchids and lilies tend to be the most common category of protected species found along Interstates 985 and 85. Sections of Interstate 85 are also near areas of protected fish in Barrow and Franklin Counties.

Figure 3.5 and Table 3.5 indicate that Hall County could potentially be classified as a non-attainment area under small particles (i.e., PM 2.5) and eight-hour Ozone standards at some point in the future. As seen in Table 3.3, this could potentially affect nearly 90 percent of the length of Interstate 985. Barrow County's potential classification as a non-attainment area would impact the southern tail end of Interstate 85, almost 10 percent of its span.

Table 3.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
85				0%	7%	10%	3%	0%	0%	25%	0%	0%	0%	0%	0%
	Northeast Georgia			0%	6%	0%	6%	0%	0%	17%	0%	0%	0%	0%	0%
		Barrow	1	0%	6%	0%	6%	0%	0%	100%	0%	0%	0%	0%	0%
		Jackson	1	0%	6%	0%	6%	0%	0%	2%	0%	0%	0%	0%	0%
	Georgia Mountains			0%	8%	17%	0%	0%	0%	31%	0%	0%	0%	0%	0%
		Banks	1	0%	0%	58%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Franklin	1	0%	12%	5%	0%	0%	0%	45%	0%	0%	0%	0%	0%
		Hart	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
985				0%	88%	83%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Georgia Mountains			0%	88%	83%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Hall	1	0%	88%	83%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Figure 3.5 Air Quality

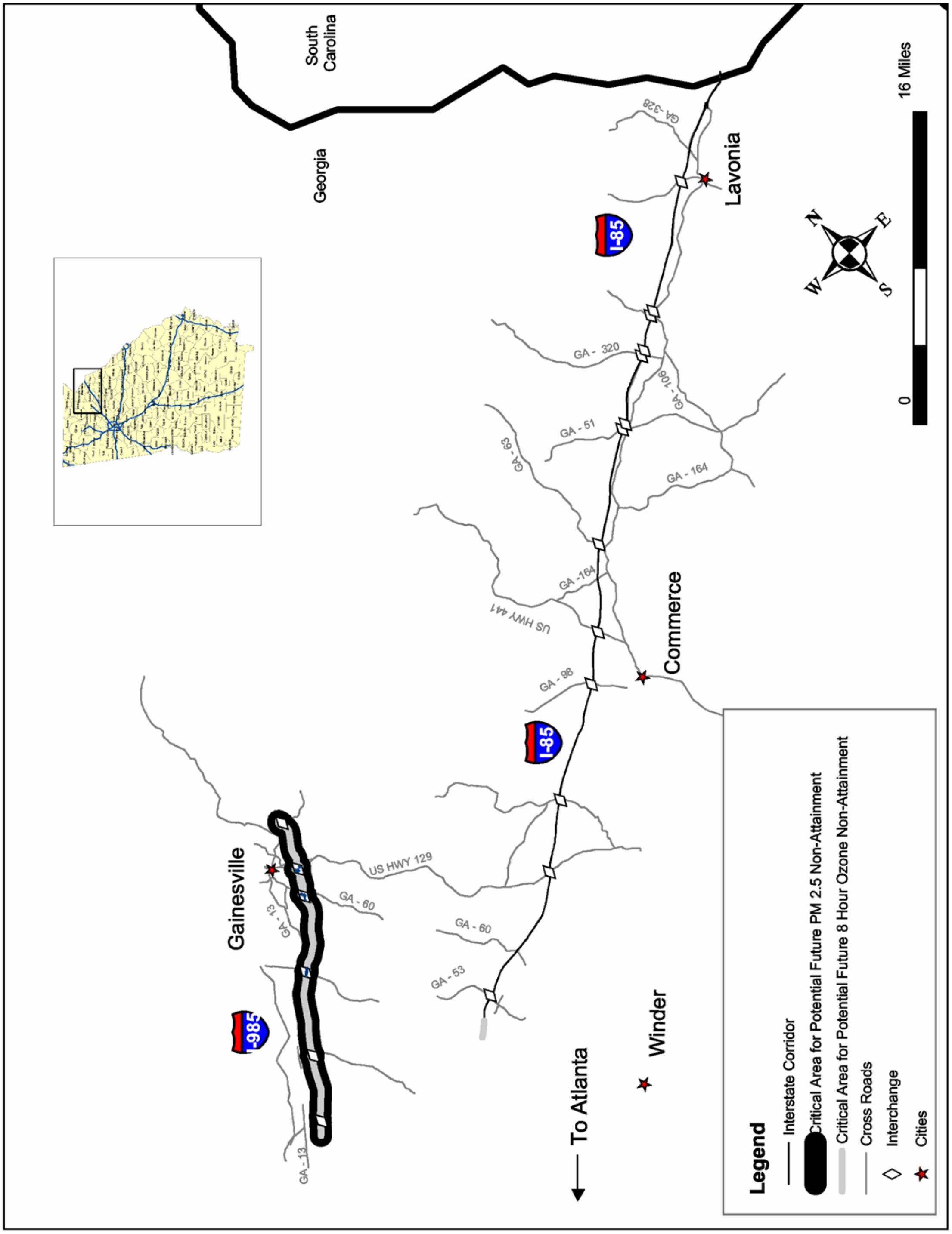


Table 3.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
85				0%	7%	0%
	Northeast Georgia			0%	16%	0%
		Barrow	1	0%	100%	0%
		Jackson	1	0%	0%	0%
	Georgia Mountains			0%	0%	0%
		Banks	1	0%	0%	0%
		Franklin	1	0%	0%	0%
		Hart	1	0%	0%	0%
985				0%	100%	100%
	Georgia Mountains			0%	100%	100%
		Hall	1	0%	100%	100%

3.2 Land Use and Development

Existing residential and employment land uses are situated along nearly the full stretch of Interstate 985 while development along Interstate 85 primarily exists along the southern half of its span. Figure 3.6 illustrates that most of the development along Interstate 85 is employment land uses, which is continuous through the southern half and concentrated around interchanges in the northern half. Residential land uses along Interstate 85 appear to occur at the tail ends of the interstate, near the GA-60 and GA-328 interchanges. The data in Table 3.6 show that development along Interstate 85 is predominantly commercial and TCU land uses, while Interstate 985 has a fairly good mix of all land uses.

Figure 3.6 Existing Land Use

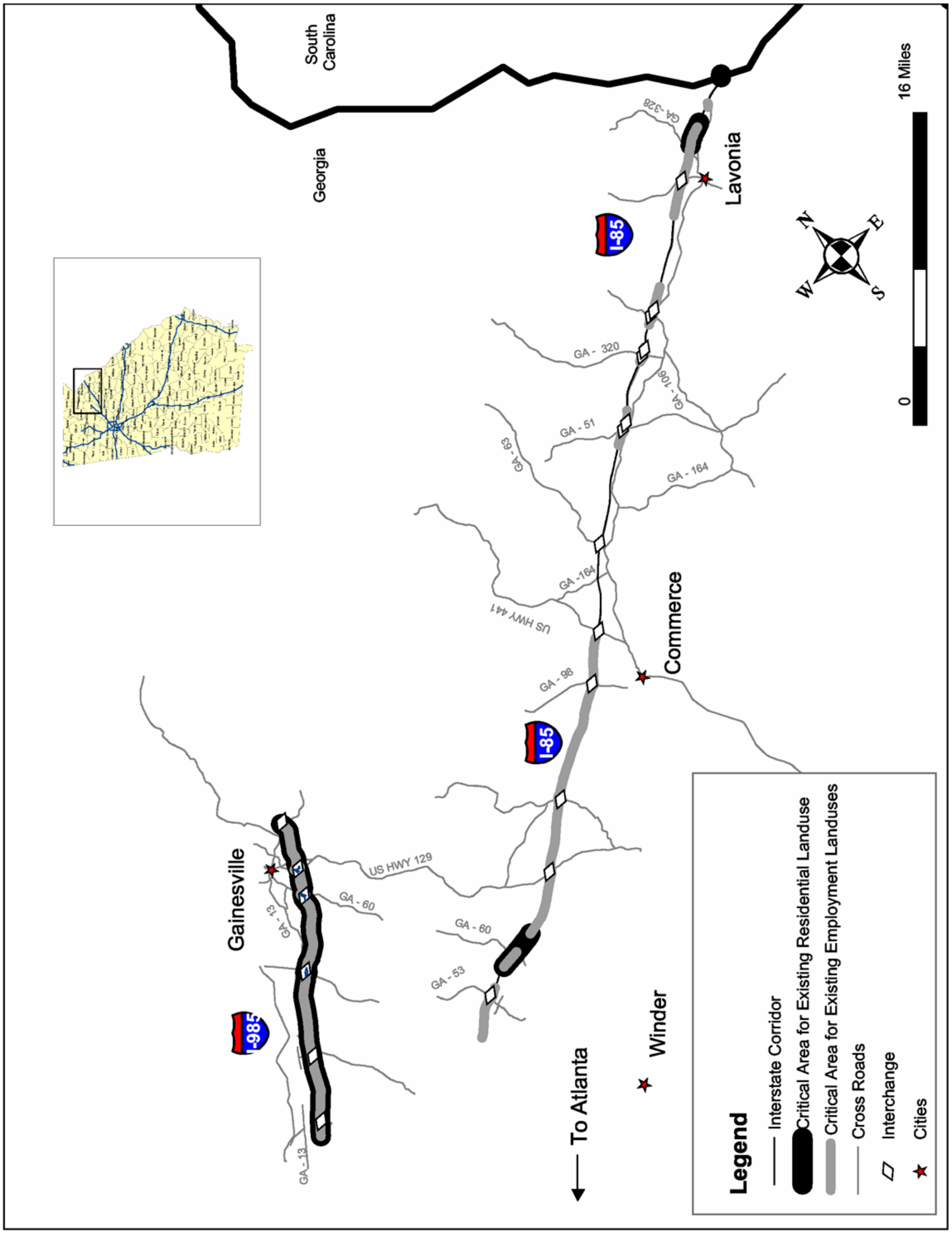


Table 3.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
85				5%	18%	9%	36%	0%	0%
	Northeast Georgia			8%	9%	1%	81%	0%	0%
		Barrow	1	0%	11%	0%	70%	0%	0%
		Jackson	1	9%	9%	1%	84%	0%	0%
	Georgia Mountains			3%	25%	16%	1%	0%	0%
		Banks	1	0%	0%	0%	2%	0%	0%
		Franklin	1	5%	35%	23%	1%	0%	0%
		Hart	1	0%	7%	0%	0%	0%	0%
985				83%	81%	87%	79%	80%	79%
	Georgia Mountains			83%	81%	87%	79%	80%	79%
		Hall	1	83%	81%	87%	79%	80%	79%

Local land use plans suggest significant development to occur along Interstate 85. Figure 3.7 illustrates that under current land use plans, employment and residential land uses are projected to be within one-half mile of the interstate centerline at most locations throughout the corridor. The data in Table 3.7 show that residential, commercial and industrial land uses will experience the greatest surge in development along Interstate 85.

Figure 3.7 Future Land Use

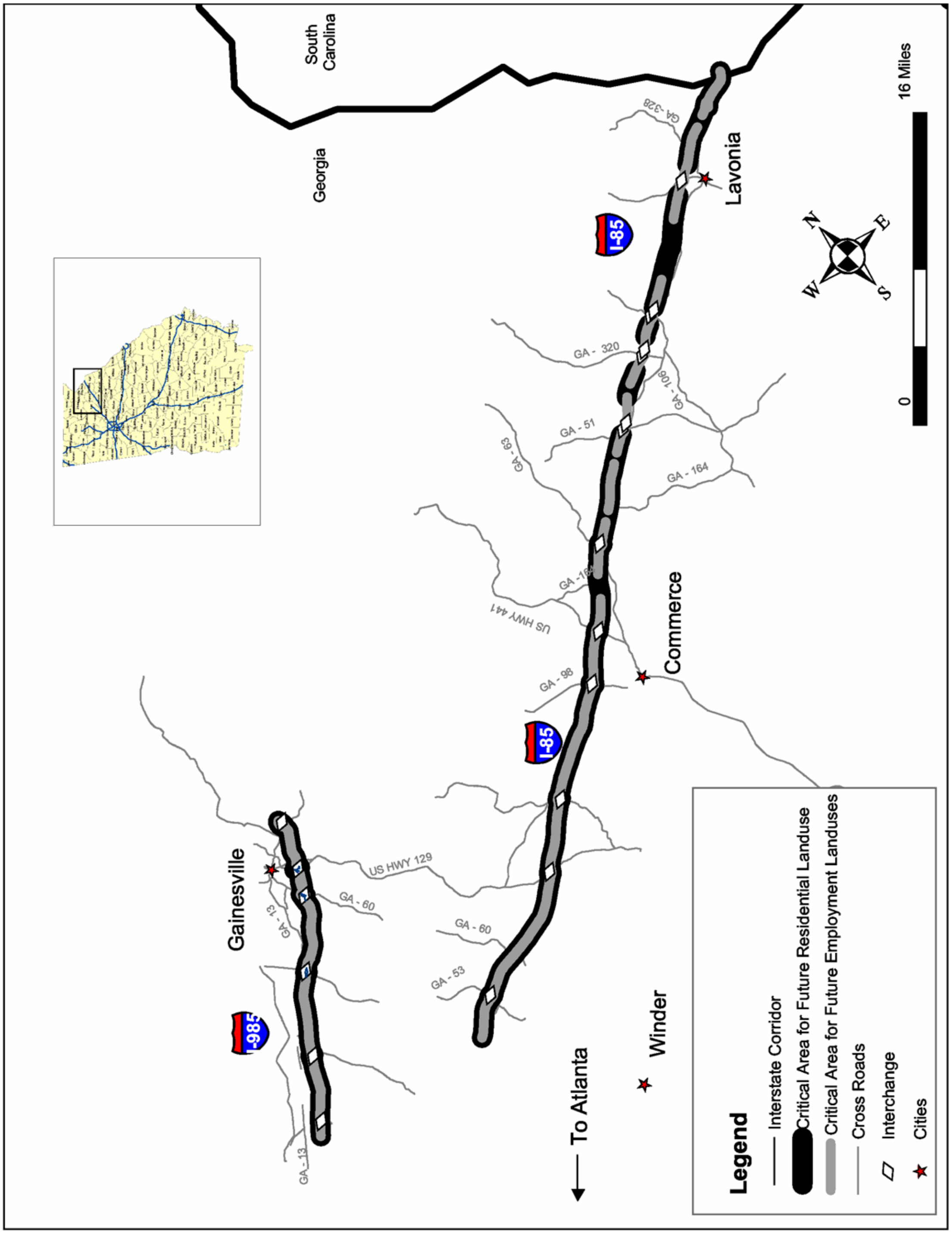


Table 3.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns

Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
85				82%	72%	62%	54%	12%	0%
	Northeast Georgia			100%	83%	79%	100%	0%	0%
		Barrow	1	100%	95%	87%	100%	0%	0%
		Jackson	1	100%	80%	77%	100%	0%	0%
	Georgia Mountains			69%	63%	49%	18%	21%	0%
		Banks	1	95%	75%	36%	18%	7%	0%
		Franklin	1	56%	59%	59%	17%	24%	0%
		Hart	1	100%	59%	0%	31%	38%	0%
985				100%	0%	79%	83%	81%	0%
	Georgia Mountains			100%	0%	79%	83%	81%	0%
		Hall	1	100%	0%	79%	83%	81%	0%

3.3 Interstate Access

The information in Figure 3.8 and Table 3.6 indicate that a significant portion of Interstate 985, between the GA-53 and GA-60 interchanges, has an existing accessibility concern. This accessibility designation indicates that an *existing activity center of statewide significance* is located in this area, and may not have ready access to an existing interchange.

While Figure 3.9 and Table 3.7 show that there are no similar accessibility concerns for the *future activity centers of statewide significance,* there are eight interchanges along Interstate 85 that could be subject to significant travel demand increases in the future should there be development to the extent envisioned in the local land use plans.

Figure 3.10 illustrates interchanges that are likely to experience high levels of truck traffic due to proximity of existing and potential future activity centers that are industrial, inter-modal, military or aviation in nature. Three of the six interchanges along Interstate 985 and four of the 12 interchanges along Interstate 85 may experience heavy-truck traffic.

Figure 3.8 Existing Accessibility Needs

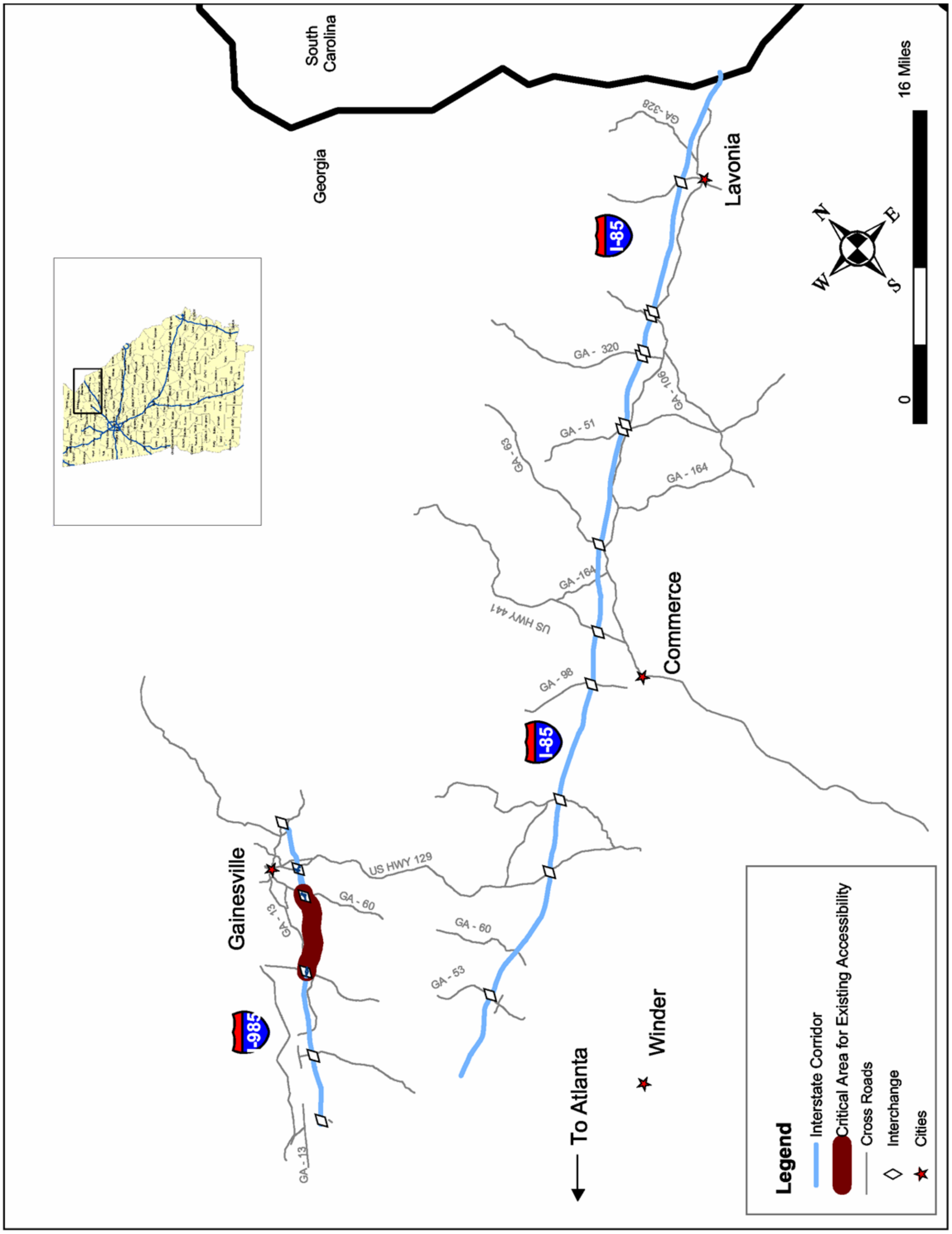


Figure 3.9 Future Accessibility Needs

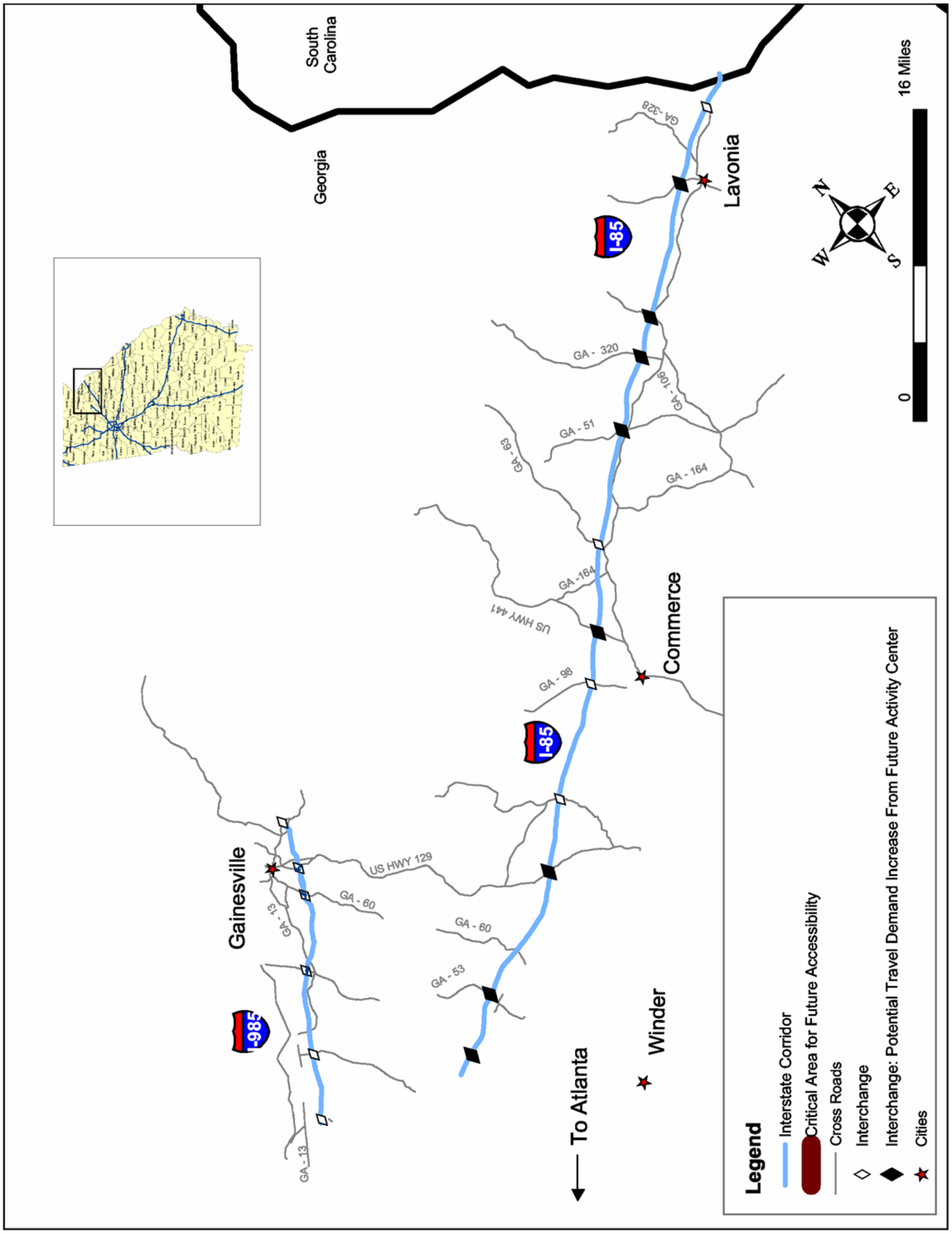
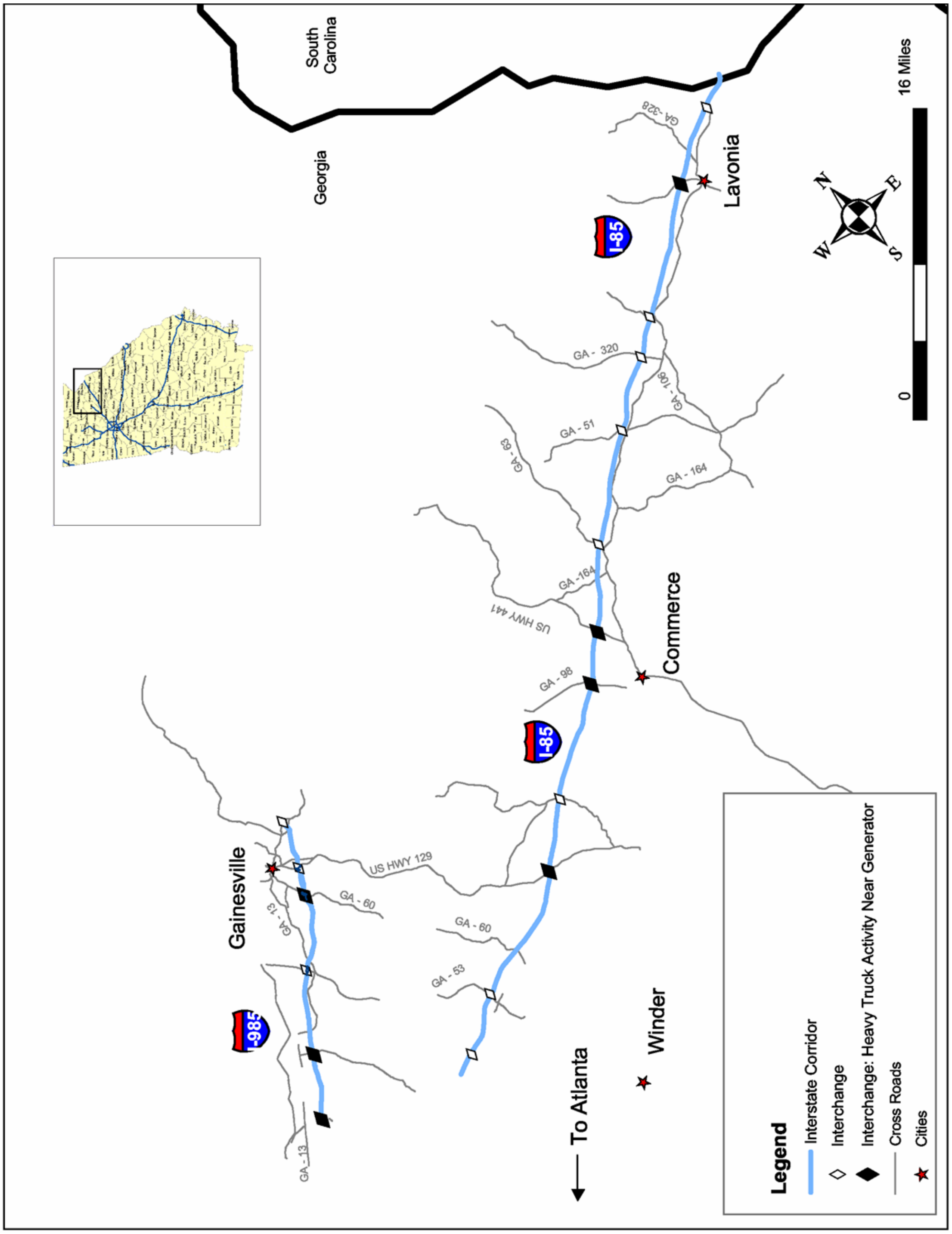


Figure 3.10 Key Access Points for Heavy-Truck Traffic



4.0 East Georgia Corridor

The East Georgia corridor, which is depicted in Figure 4.1, encompasses Interstate 20 generally from the eastern edge of the Atlanta region to the Georgia/South Carolina state line. The corridor also includes Interstate 520, which circumscribes the western and southern ends of Augusta in Richmond County. The Interstate 20 portion of this corridor passes through Newton, Morgan, Greene, Taliafero, Warren, McDuffie, Columbia, and Richmond Counties. Major communities in or near the corridor include Covington, Madison, Greensboro, Thomson and Augusta. The corridor is also divided between the Northeast Georgia and the Central Savannah River Area RDCs. Georgia DOT Districts 1 and 2 provide local oversight and a variety of support activity for portions of the corridor.

A summary of the characteristics of Interstates 20 and 520 within this corridor is provided in Table 4.1. The corridor includes 175 centerline miles of Interstate 20 and 27 centerline miles of Interstate 520. There are also 25 interchanges along Interstate 20 and seven along Interstate 520. These totals represent the third largest mileage and number of interchanges of the nine corridors investigated in this study. Interstate 20 is fairly evenly split between both RDCs, while Interstate 520 falls completely within the Central Savannah River Area RDC. Nearly all of the interstate mileage and interchanges fall within GDOT District 2. Morgan County has the most centerline and lane mileage, while Newton County has the greatest number of interchanges.

Figure 4.1 General Corridor Limits

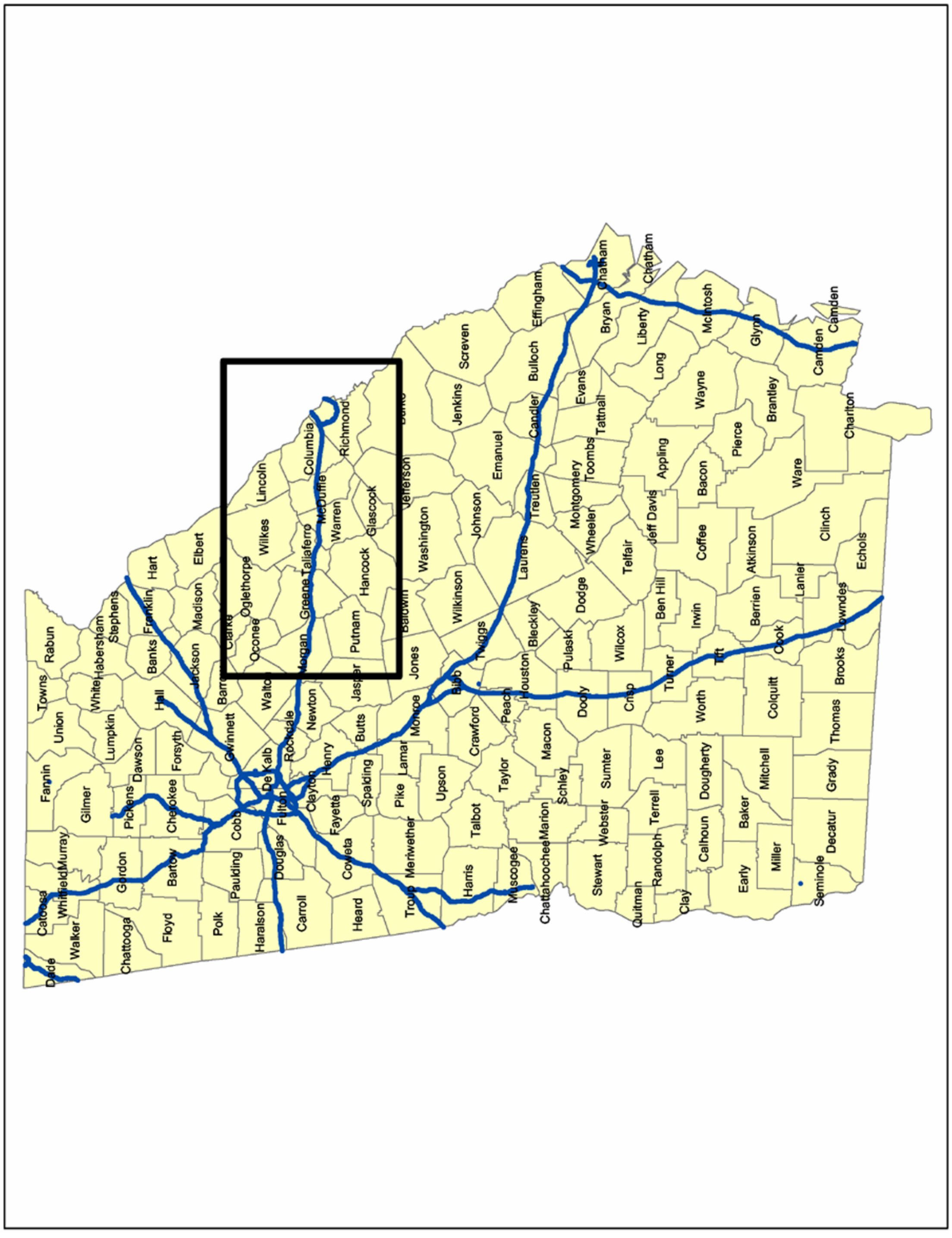


Table 4.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
20				175	632	25
	Northeast Georgia			88	331	13
		Newton	2	27	119	6
		Walton	1	4	11	1
		Morgan	2	34	119	4
		Greene	2	23	82	2
	Central Savannah River Area			87	301	12
		Taliaferro	2	13	49	1
		Warren	2	20	68	3
		McDuffie	2	16	58	2
		Columbia	2	22	79	3
		Richmond	2	15	47	3
520				27	78	7
	Central Savannah River Area			27	78	7
		Richmond	2	27	78	7

4.1 Environmental Resources

Figure 4.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance almost continuously through the corridor. Hydrologic features (i.e., streams, rivers, lakes, etc.) are also quite common throughout the length of the corridor, while floodplains tend to be most prevalent near the interstate at both the west and east ends of the corridor. Table 4.2 presents a more detailed breakout of these water resources by county. In Walton and Richmond Counties, all segments of Interstate 20 through have wetlands and floodplains within the one-mile buffer, and over 90 percent of the segments have other hydrologic features within the buffer. Floodplains are least prevalent through Morgan, Green and Warren Counties.

Figure 4.2 Water Resources

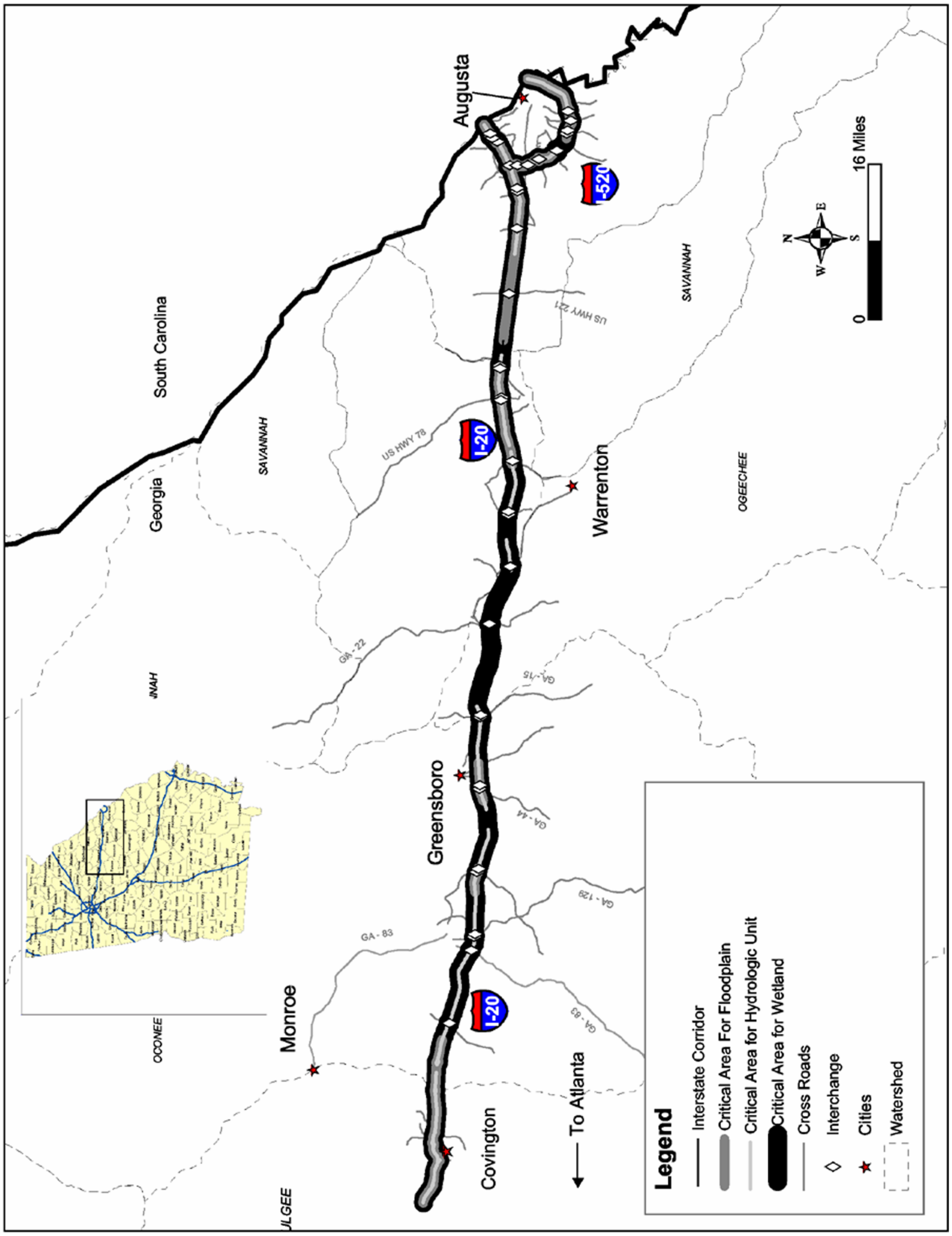


Table 4.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
20				100%	N/A	74%
	Northeast Georgia			100%	N/A	87%
		Newton	2	100%	99%	97%
		Walton	1	100%	100%	93%
		Morgan	2	100%	17%	98%
		Greene	2	100%	29%	56%
	Central Savannah River Area			100%	N/A	62%
		Taliaferro	2	100%	*	0%
		Warren	2	100%	15%	77%
		McDuffie	2	100%	71%	85%
		Columbia	2	100%	100%	46%
		Richmond	2	100%	100%	94%
520				100%	82%	75%
	Central Savannah River Area			100%	82%	75%
		Richmond	2	100%	82%	75%

Note: * Indicates that data are not available for this county.
N/A indicates that corridor-wide value cannot be estimated due to lack of data in one or more counties.

Figure 4.3 and Table 4.3 illustrate that parklands and cultural resources are present within one mile of the interstate centerline in Walton County and Richmond County (Interstate 520). In both counties, the parkland is a wildlife management area. The light shaded line in Figure 4.4 illustrates that hazardous sites (e.g., landfills or waste sites) are adjacent to the corridors at locations near Covington and Warrenton, and at multiple locations near Augusta along both Interstate 20 and 520. The data in Table 4.3 indicate that over one-half of the Interstate 20 corridor through Richmond County has hazardous sites in proximity to the interstate.

Figure 4.3 Parklands and Cultural Resources

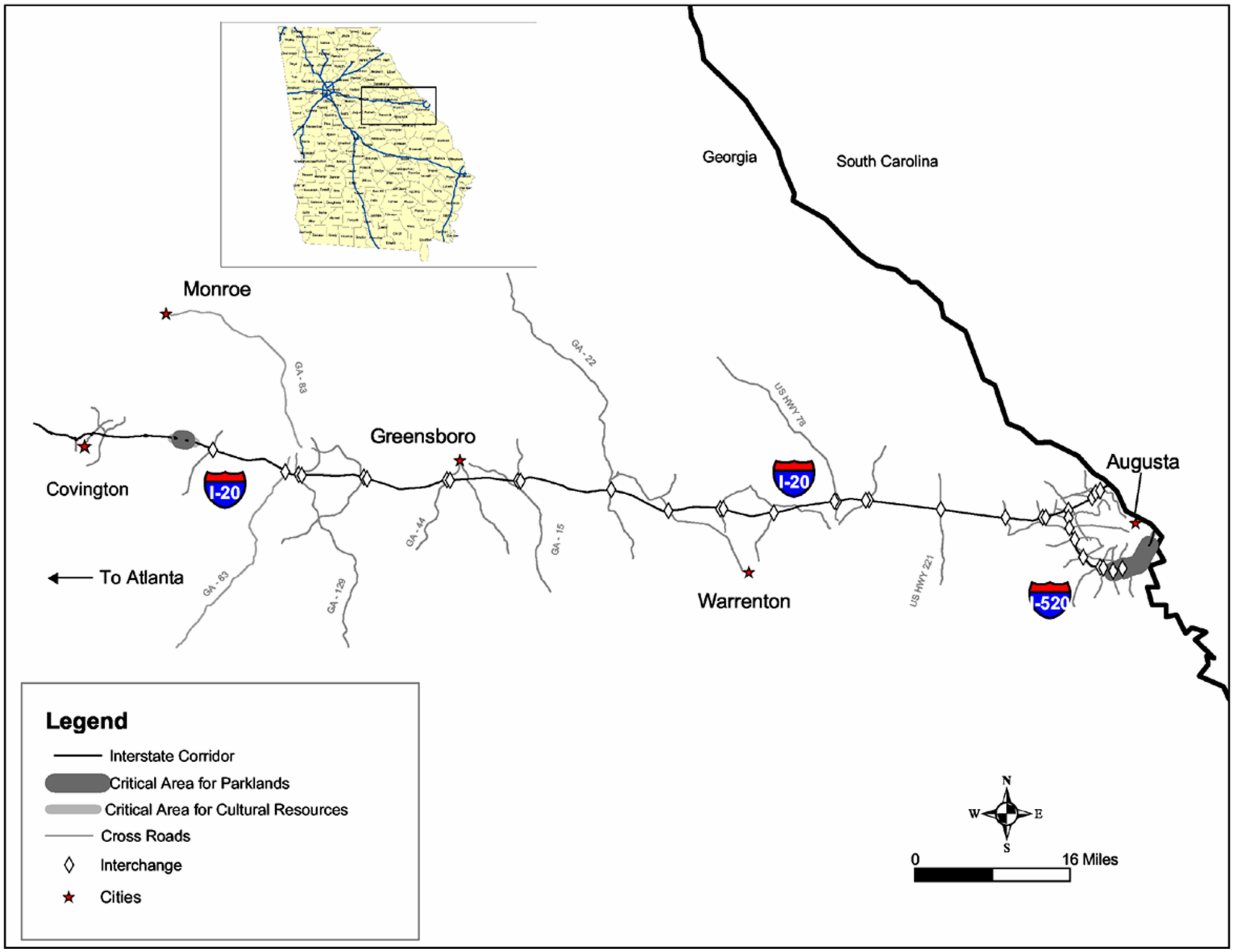


Figure 4.4 Other Environmental Resources

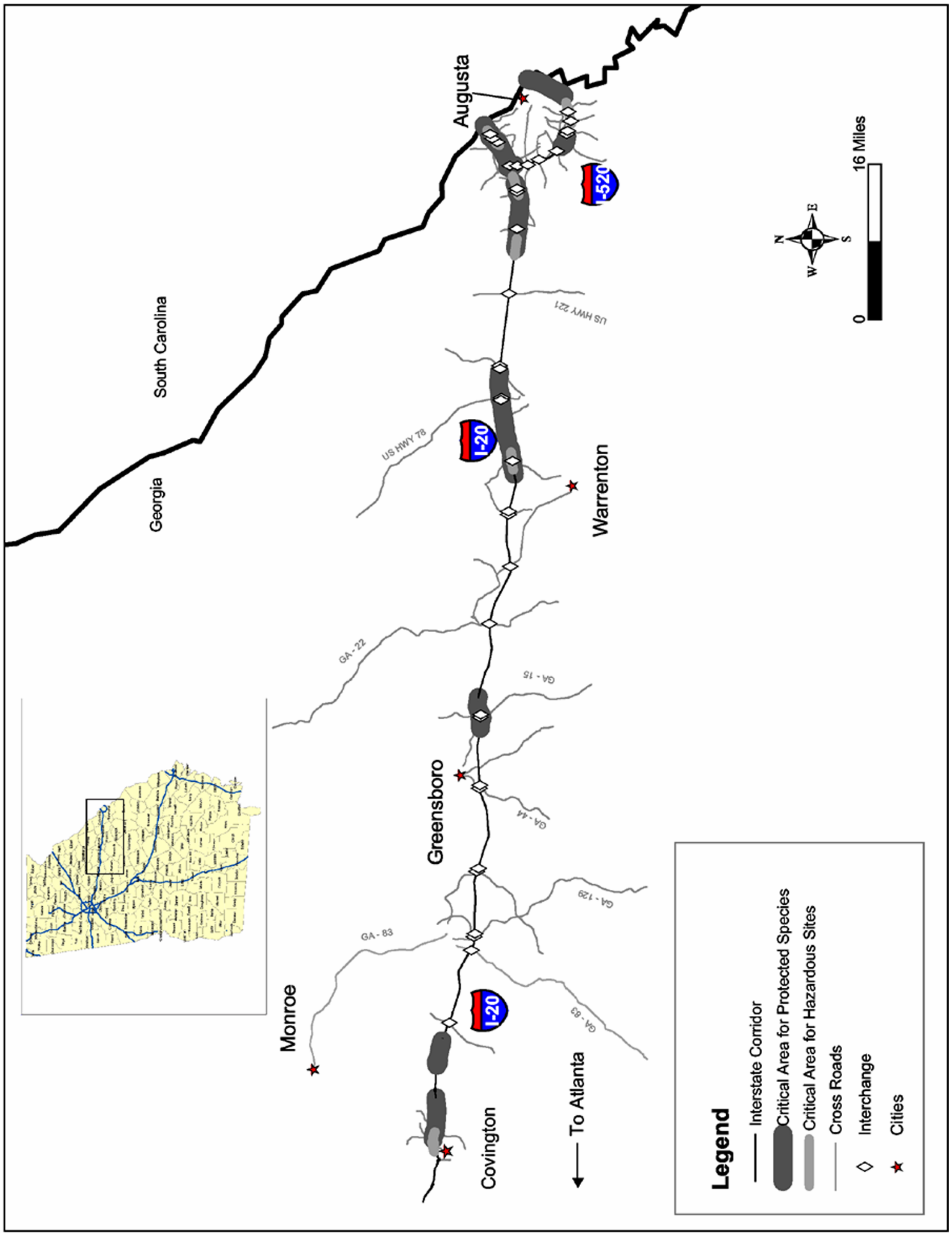


Table 4.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
20				2%	11%	0%	0%	0%	0%
	Northeast Georgia			4%	5%	1%	0%	0%	0%
		Newton	2	0%	15%	0%	0%	0%	0%
		Walton	1	62%	0%	17%	0%	0%	0%
		Morgan	2	2%	0%	0%	0%	0%	0%
		Greene	2	0%	0%	0%	0%	0%	0%
	Central Savannah River Area			0%	17%	0%	0%	0%	0%
		Taliaferro	2	0%	0%	0%	0%	0%	0%
		Warren	2	0%	17%	0%	0%	0%	0%
		McDuffie	2	0%	0%	0%	0%	0%	0%
		Columbia	2	0%	17%	0%	0%	0%	0%
		Richmond	2	0%	51%	0%	0%	0%	0%
520				7%	16%	25%	0%	0%	0%
	Central Savannah River Area			7%	16%	25%	0%	0%	0%
		Richmond	2	7%	16%	25%	0%	0%	0%

Figure 4.4 also illustrates that protected species may be found within one mile of the centerline in areas near Covington, Greensboro, Warrenton and Augusta. Table 4.4 indicates that various types of plants (flowering plants and trees, and grasses, orchids and lilies) tend to be the most common category of protected species along Interstate 20, while mollusks and flowering plants and trees are the protected species found along Interstate 520.

Figure 4.5 and Table 4.5 indicate that Newton, Walton and Richmond Counties could potentially be designated as a non-attainment areas for Ozone under the eight-hour standard at some point in the future, while Richmond County may also be designated as non-attainment under the small particle (PM 2.5) standard. The eight-hour Ozone standard could end up affecting over one-fourth of Interstate 20, and all of Interstate 520.

Table 4.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
20				0%	36%	9%	6%	2%	0%	0%	4%	0%	0%	0%	0%
	Northeast Georgia			0%	17%	13%	7%	4%	0%	0%	0%	0%	0%	0%	0%
		Newton	2	0%	14%	19%	0%	14%	0%	0%	0%	0%	0%	0%	0%
		Walton	1	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Morgan	2	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Greene	2	0%	28%	28%	28%	0%	0%	0%	0%	0%	0%	0%	0%
	Central Savannah River Area			0%	54%	4%	4%	0%	0%	0%	7%	0%	0%	0%	0%
		Taliaferro	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Warren	2	0%	38%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		McDuffie	2	0%	69%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Columbia	2	0%	61%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%
		Richmond	2	0%	97%	23%	0%	0%	0%	0%	42%	0%	0%	0%	0%
520				0%	20%	0%	0%	0%	0%	0%	16%	0%	0%	0%	0%
	Central Savannah River Area			0%	20%	0%	0%	0%	0%	0%	16%	0%	0%	0%	0%
		Richmond	2	0%	20%	0%	0%	0%	0%	0%	16%	0%	0%	0%	0%

Figure 4.5 Air Quality

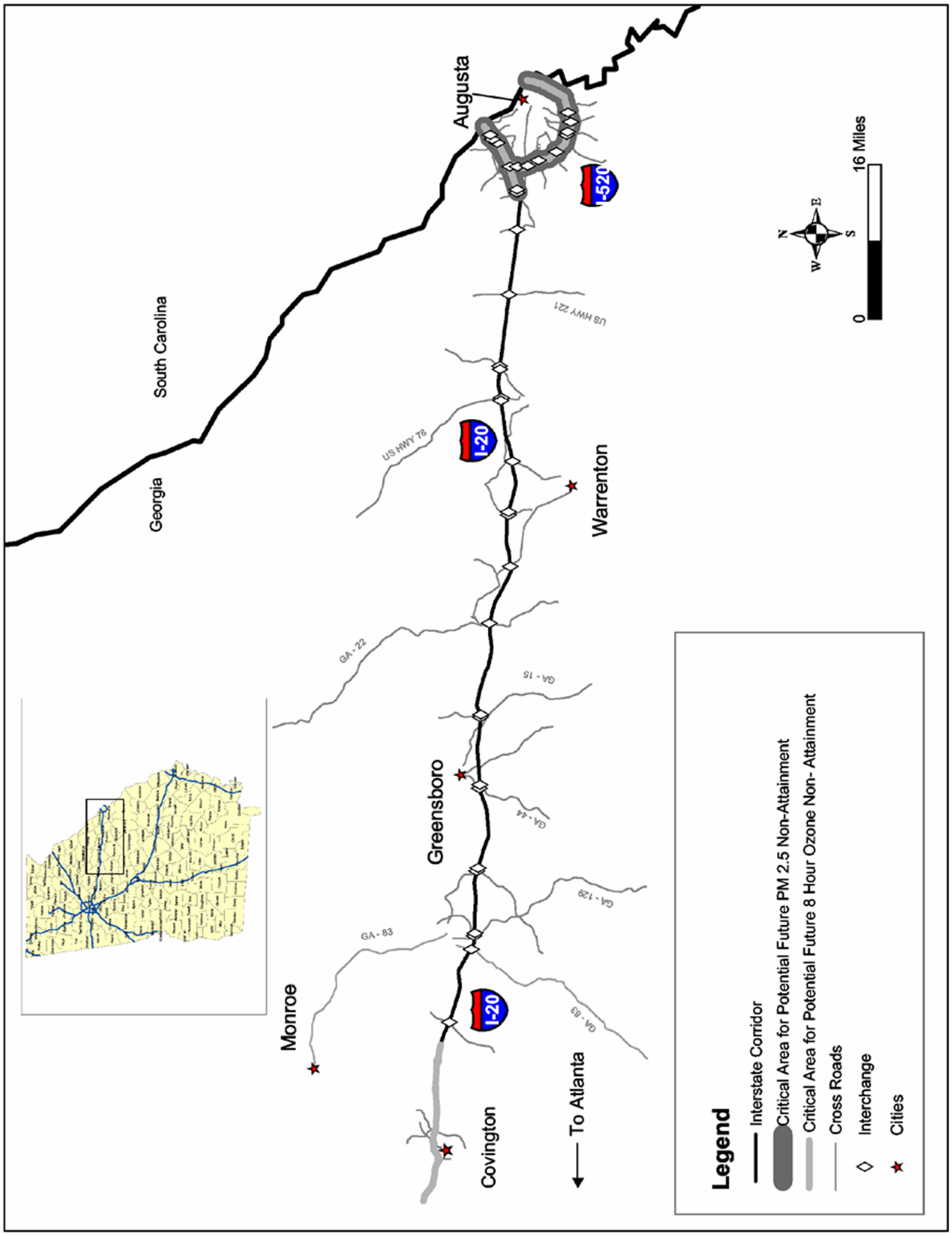


Table 4.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
20				0%	26%	9%
	Northeast Georgia			0%	35%	0%
		Newton	2	0%	100%	0%
		Walton	1	0%	100%	0%
		Morgan	2	0%	0%	0%
		Greene	2	0%	0%	0%
	Central Savannah River Area			0%	17%	17%
		Taliaferro	2	0%	0%	0%
		Warren	2	0%	0%	0%
		McDuffie	2	0%	0%	0%
		Columbia	2	0%	0%	0%
		Richmond	2	0%	100%	100%
520				0%	100%	100%
	Central Savannah River Area			0%	100%	100%
		Richmond	2	0%	100%	100%

4.2 Land Use and Development

Figure 4.6 illustrates that existing residential development near the interstate tends to be clustered in pockets in Newton, Morgan and Richmond Counties. However, the figure also indicates that employment land uses near the interstate are quite common in the western half of the corridor, as well as near Augusta along both Interstate 20 and 520. The data in Table 4.6 show that commercial land uses are the most prevalent employment-related land use in the portion of the corridor through the Central Savannah River Area RDC. The TCU land use is most common through the Northeast Georgia RDC portion of the corridor.

Figure 4.6 Existing Land Use

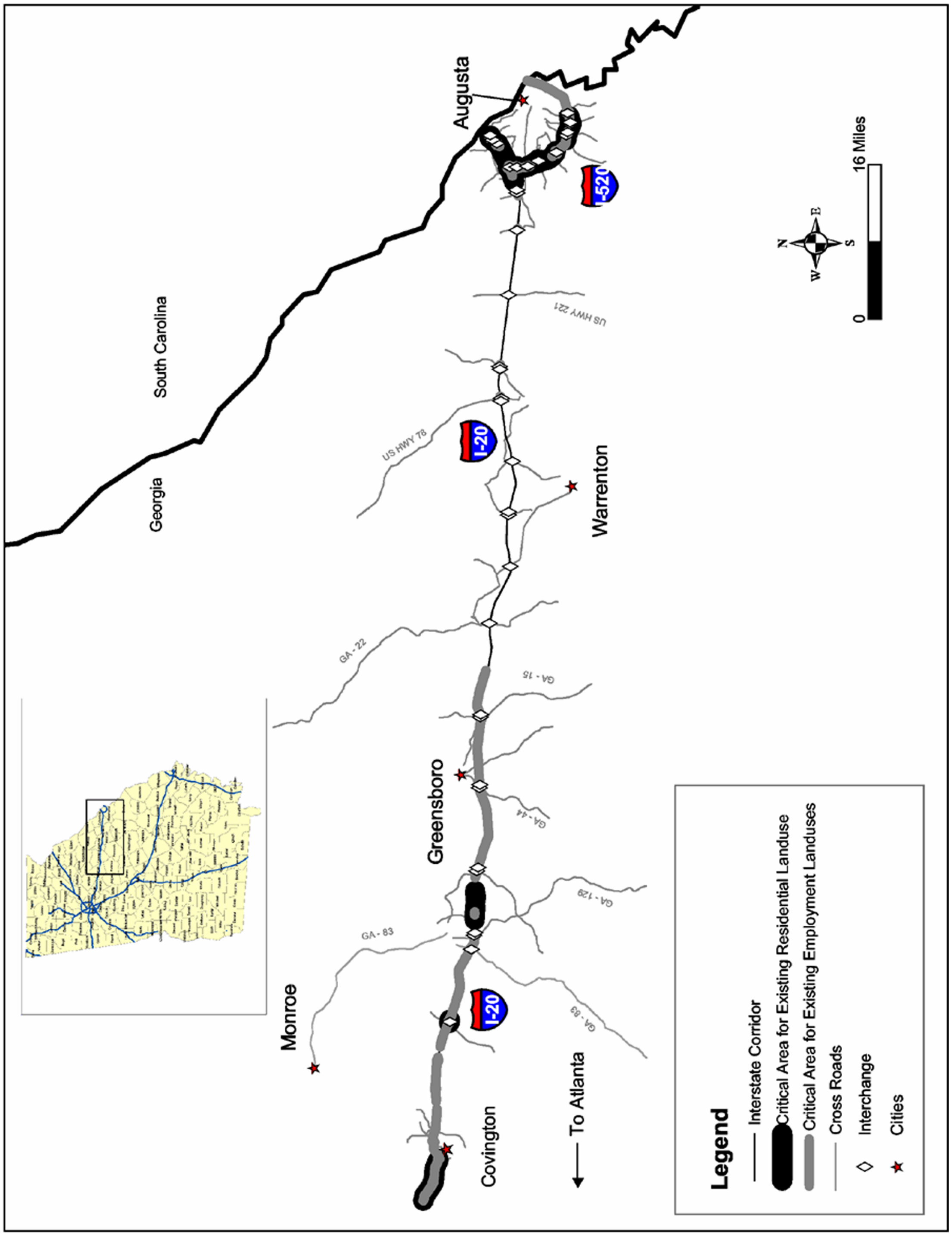


Table 4.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
20				11%	10%	3%	42%	4%	0%
	Northeast Georgia			14%	12%	2%	83%	8%	0%
		Newton	2	33%	38%	6%	80%	24%	0%
		Walton	1	0%	0%	0%	55%	0%	0%
		Morgan	2	9%	0%	0%	79%	0%	0%
		Greene	2	0%	0%	0%	98%	0%	0%
	Central Savannah River Area			8%	7%	4%	0%	0%	0%
		Taliaferro	2	0%	0%	0%	0%	0%	0%
		Warren	2	0%	0%	0%	0%	0%	0%
		McDuffie	2	0%	7%	0%	0%	0%	0%
		Columbia	2	0%	3%	0%	0%	0%	0%
		Richmond	2	49%	31%	25%	0%	0%	0%
520				46%	62%	1%	0%	4%	0%
	Central Savannah River Area			46%	62%	1%	0%	4%	0%
		Richmond	2	46%	62%	1%	0%	4%	0%

Local land use plans suggest a slightly more intensive development picture near the interstate corridor for future years. Figure 4.7 illustrates that under current land use plans, employment and residential land uses are projected to be within one-half mile of the interstate centerline at most locations throughout the corridor except in the stretch roughly between Greensboro and Warrenton. The data in Table 4.7 show that commercial and TCU land uses will have almost equal prevalence in the corridor. Furthermore, industrial land uses are also projected to be common in Newton, Walton, Warren and Richmond Counties.

Figure 4.7 Future Land Use

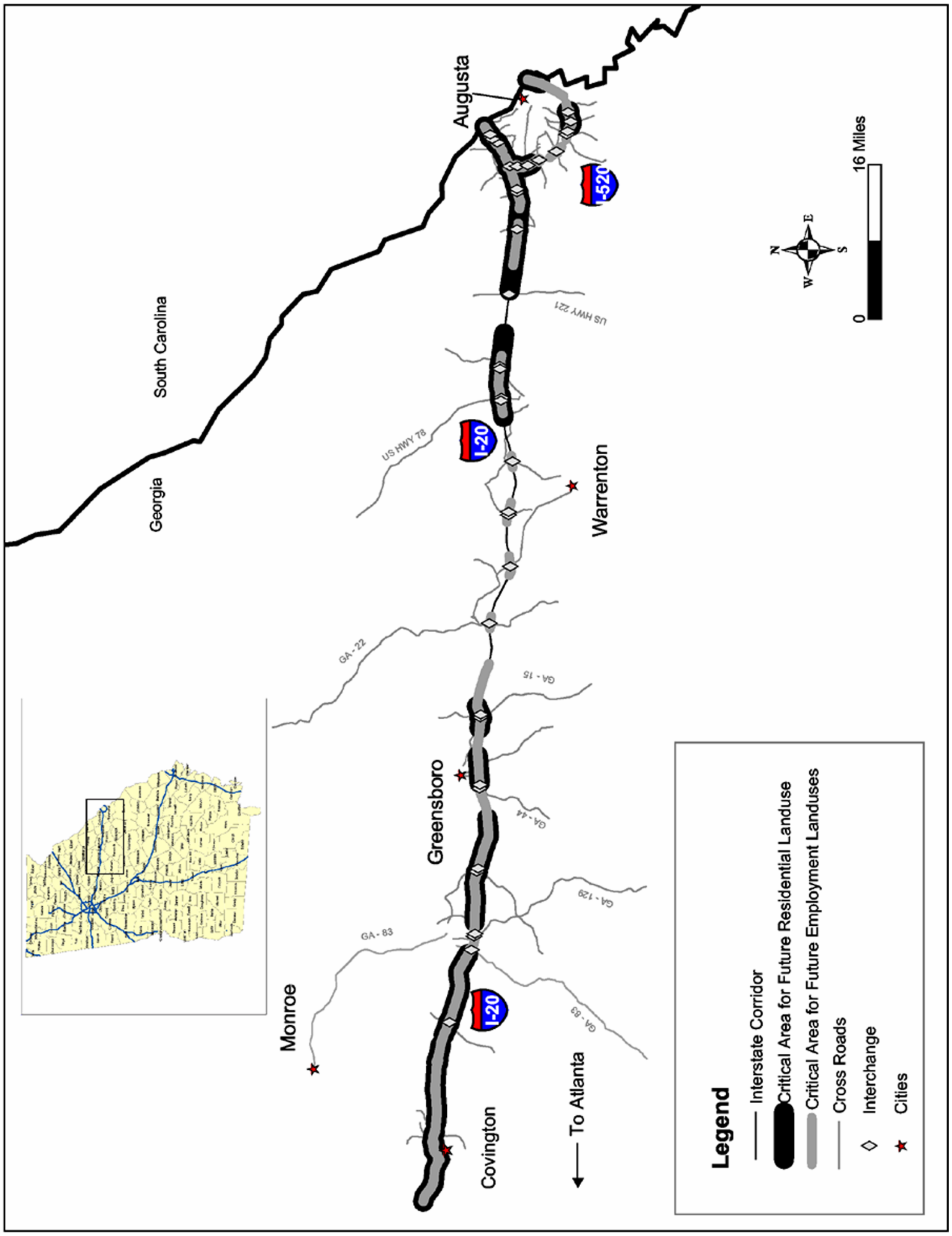


Table 4.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
20				59%	48%	32%	50%	0%	0%
	Northeast Georgia			70%	53%	36%	98%	0%	0%
		Newton	2	94%	61%	69%	93%	0%	0%
		Walton	1	100%	0%	100%	100%	0%	0%
		Morgan	2	71%	52%	17%	100%	0%	0%
		Greene	2	36%	55%	17%	100%	0%	0%
	Central Savannah River Area			48%	42%	28%	1%	0%	0%
		Taliaferro	2	0%	23%	0%	6%	0%	0%
		Warren	2	0%	13%	52%	0%	0%	0%
		McDuffie	2	68%	60%	0%	0%	0%	0%
		Columbia	2	71%	37%	24%	0%	0%	0%
		Richmond	2	99%	88%	61%	0%	0%	0%
520				36%	53%	37%	0%	0%	23%
	Central Savannah River Area			36%	53%	37%	0%	0%	23%
		Richmond	2	36%	53%	37%	0%	0%	23%

4.3 Interstate Access

The information in Figure 4.8 and Table 4.6 indicate that no segment of this corridor has an existing accessibility concern, meaning that any *existing activity center of statewide significance* in or near this corridor tends to be situated near an existing interchange. This accessibility condition does not change in the future along Interstate 20. However, as indicated in Figure 4.9 and Table 4.7, the eastern portion of Interstate 520 could have such an accessibility concern in the future. Also, there are six interchanges, dispersed all along Interstate 20, that could be subject to significant travel demand increases if future activity centers are developed to the extent envisioned in the local land use plans.

Figure 4.10 illustrates interchanges that are likely to experience high levels of existing truck traffic due to proximity of existing activity centers that are industrial, intermodal, military or aviation in nature. A total of five interchanges along Interstate 20 and two along Interstate 520 may be experiencing heavy-truck traffic, with four of these interchanges located near Augusta, and the remainder between Covington and Greensboro.

Figure 4.8 Existing Accessibility Needs

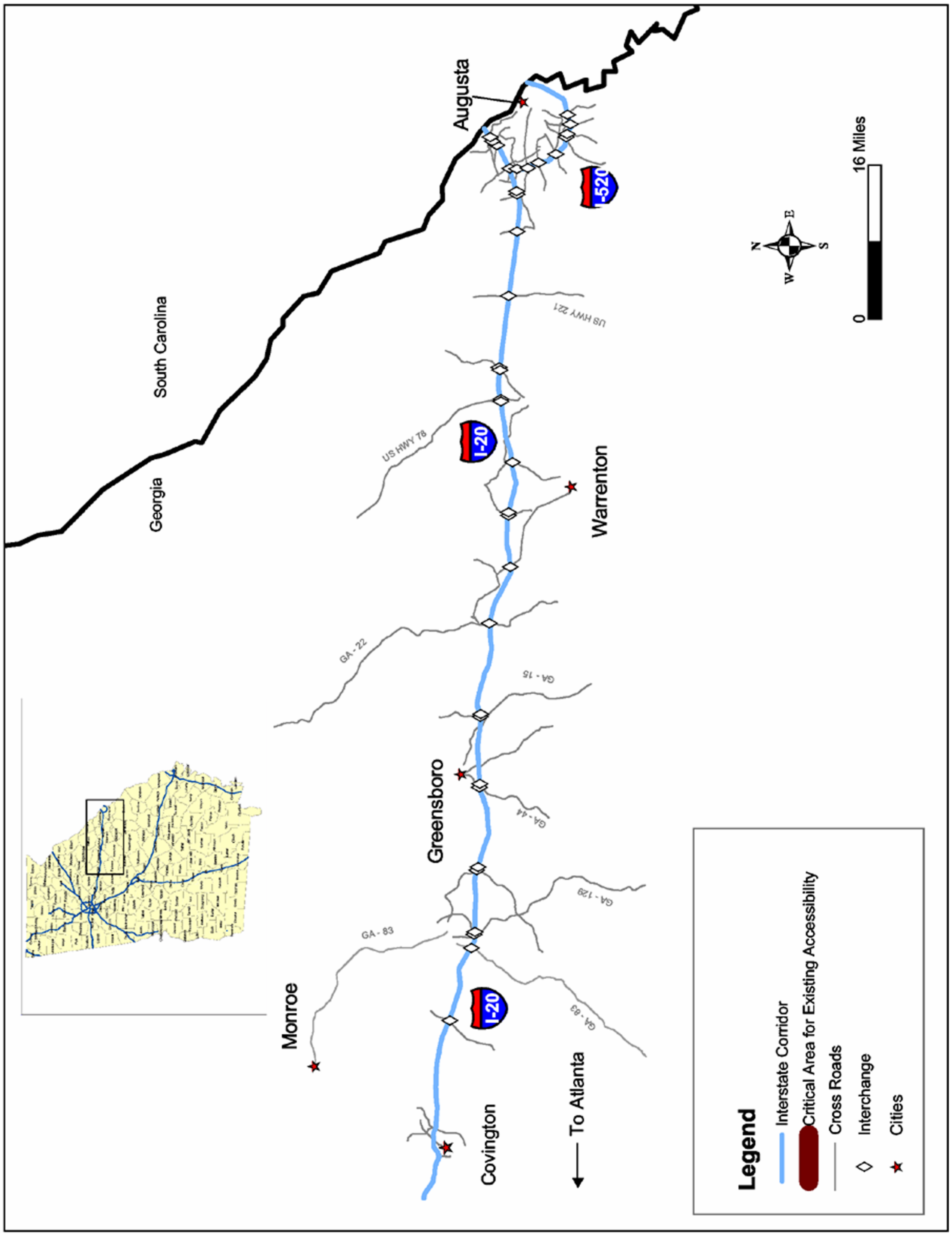


Figure 4.9 Future Accessibility Needs

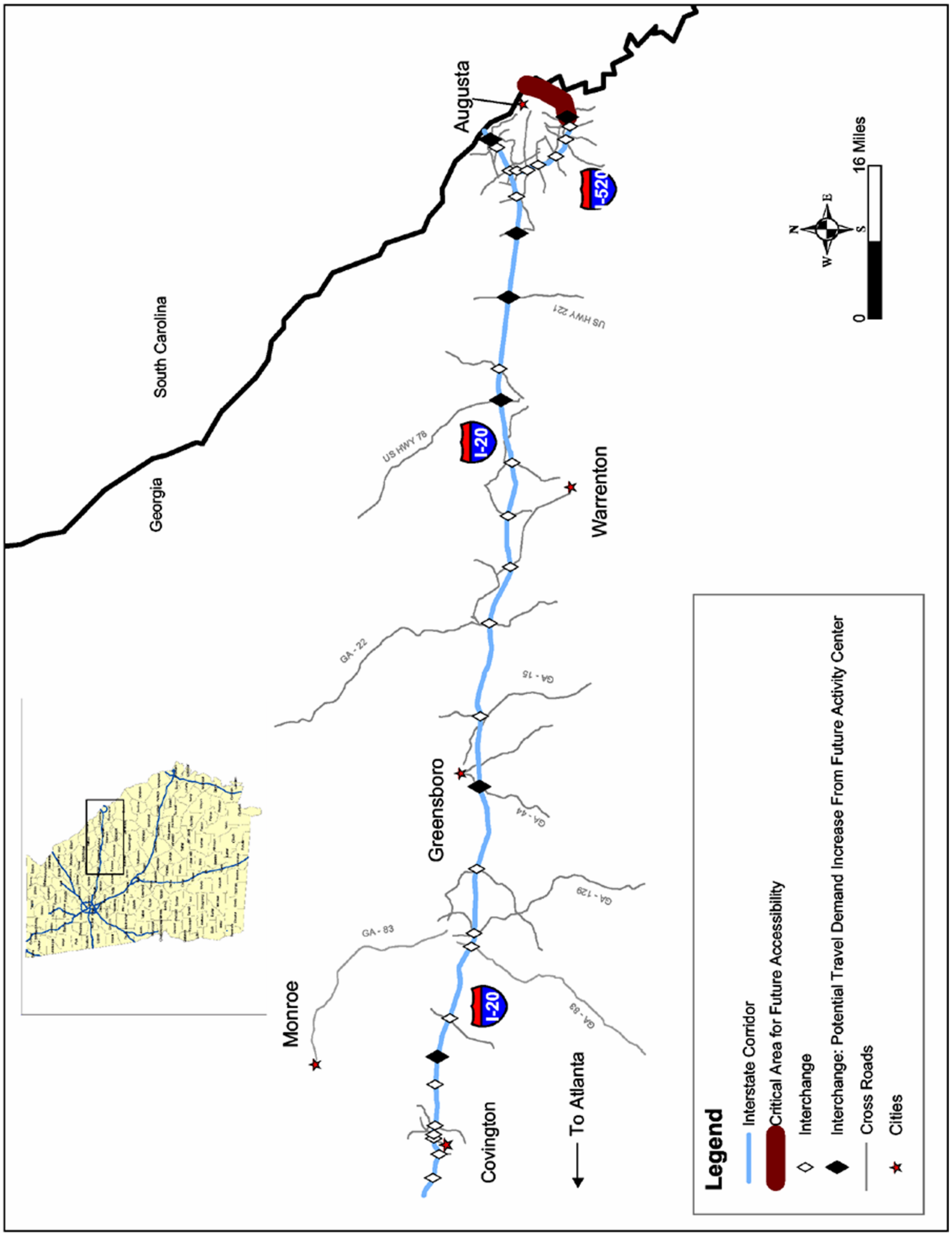
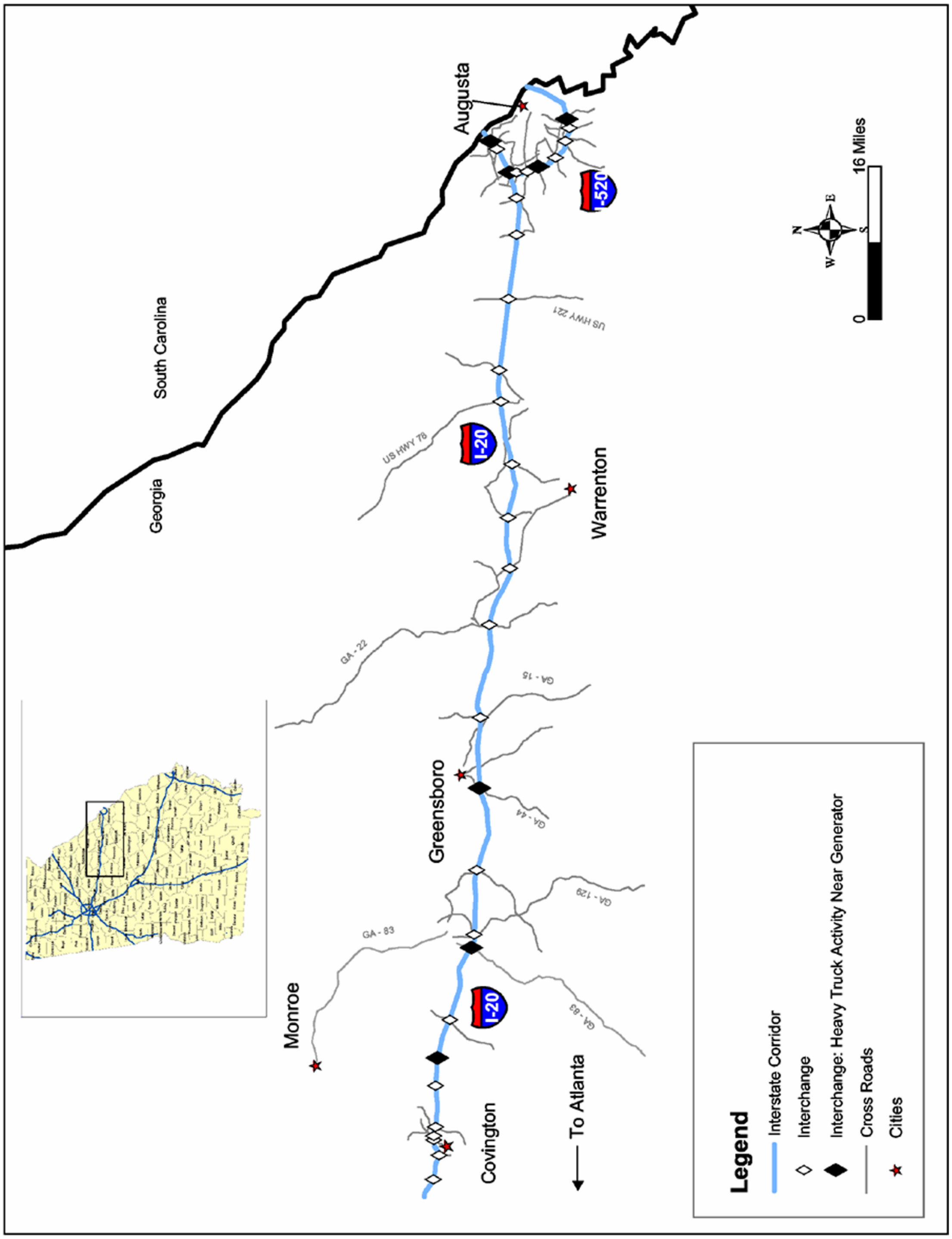


Figure 4.10 Key Access Points for Heavy-Truck Traffic



5.0 Central Georgia Corridor

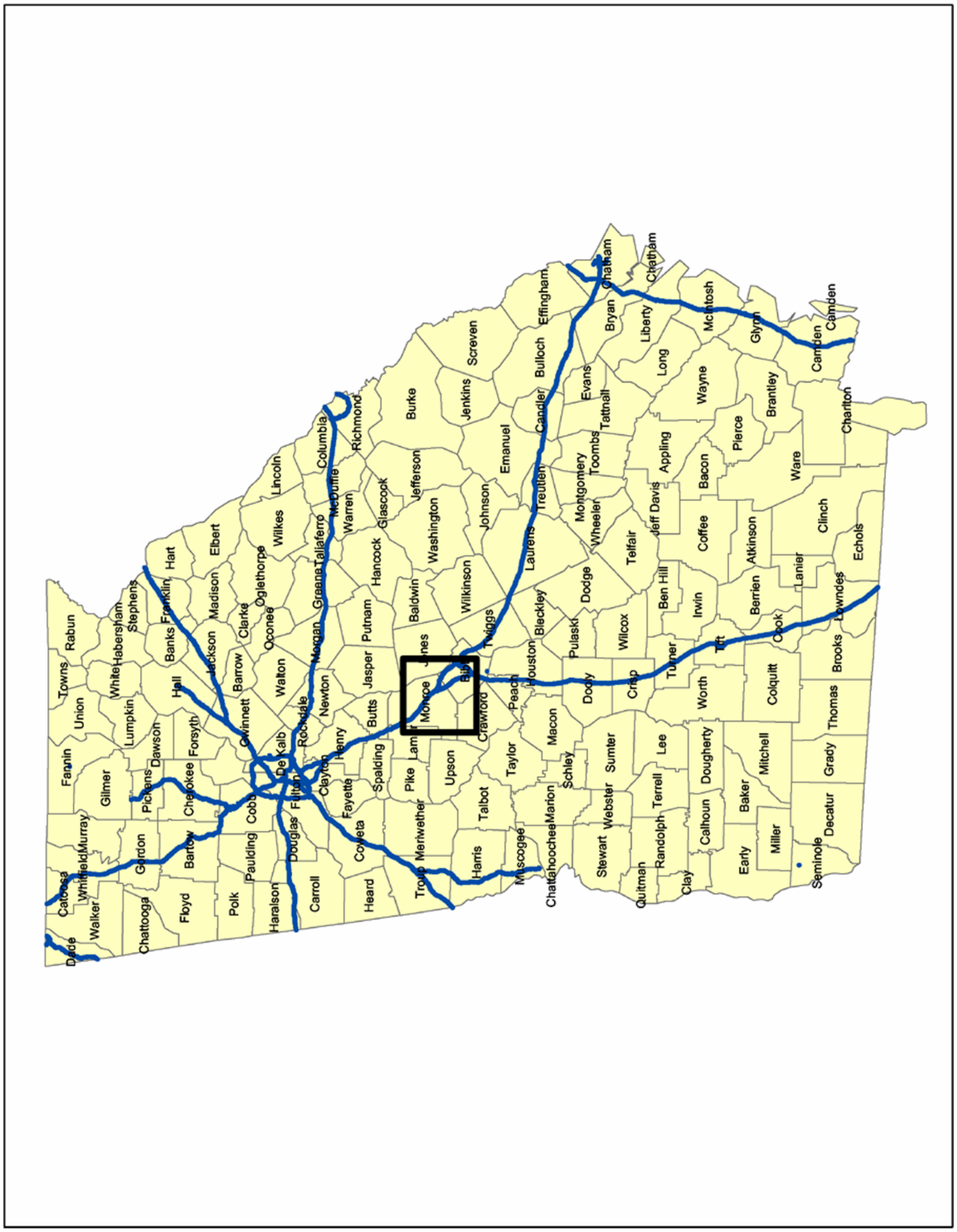
The Central Georgia corridor, which is depicted in Figure 5.1, encompasses Interstate 75 from just south of the Atlanta area to Macon, as well as all of Interstate 475. Counties along this interstate corridor include Spalding, Butts, Lamar, Monroe, and Bibb. Major communities in or near the corridor include Jackson, Griffin, Forsyth, and Macon. The corridor is divided between the McIntosh Trail and Middle Georgia RDCs, while Georgia DOT District 3 provides local oversight and a variety of support activity for this corridor.

A summary of the characteristics of Interstates 75 and 475 within this corridor is provided in Table 5.1. Though the Central Georgia Corridor is among the shortest corridors within this study, it contains the most number of interchanges per centerline mile, averaging approximately one interchange for every four centerline miles. The corridor includes 78 centerline miles of Interstate 75 and 22 centerline miles of Interstate 475. There are 20 interchanges along Interstate 75 and four along Interstate 475. Over 80 percent of Interstate 75, and all of Interstate 475, is located in the Middle Georgia RDC. Monroe County has the most centerline and lane mileage on Interstate 75, while Bibb County has the most mileage on Interstate 475 and the greatest number of interchanges on both interstates.

Table 5.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
75				78	376	20
	McIntosh Trail			12	64	3
		Spalding	3	2	10	0
		Butts	3	7	35	2
		Lamar	3	4	19	1
	Middle Georgia			66	312	17
		Monroe	3	34	180	7
		Bibb	3	32	133	10
475				22	73	4
	Middle Georgia			22	73	4
		Monroe	3	5	18	1
		Bibb	3	16	55	3

Figure 5.1 General Corridor Limits



5.1 Environmental Resources

Figure 5.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance almost continuously through the corridor along both Interstates 75 and 475. Hydrologic features (i.e., streams, rivers, lakes, etc.) also almost completely blanket this corridor, with only small stretches north of Forsyth and through Bibb County not having hydrologic features within the buffer distance. Floodplains are also common near the interstate, but more so in the southern half of the corridor. Table 5.2 presents a more detailed breakout of these water resources by county. Spalding County is the only one to have all three types of water resources located within the buffer distance along all interstate segments.

Table 5.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
75				100%	74%	88%
	McIntosh Trail			100%	46%	100%
		Spalding	3	100%	100%	100%
		Butts	3	100%	22%	100%
		Lamar	3	100%	68%	100%
	Middle Georgia			99%	80%	86%
		Monroe	3	100%	74%	86%
		Bibb	3	99%	86%	87%
475				100%	83%	96%
	Middle Georgia			100%	83%	96%
		Monroe	3	100%	58%	100%
		Bibb	3	100%	92%	95%

Figure 5.3 and Table 5.3 illustrate that parklands and cultural resources are present within one mile of the interstate centerline in Butts and Lamar Counties. The parklands are a mix of state parks and wildlife management areas. The light shaded line in Figure 5.4 illustrates that hazardous sites (e.g., landfills or waste sites) are also adjacent to Interstate 75 through portions of Butts and Lamar Counties. The data do not indicate the presence of any hazardous sites near the interstate along Interstate 475 nor in the southern half of Interstate 75 through this corridor.

Figure 5.2 Water Resources

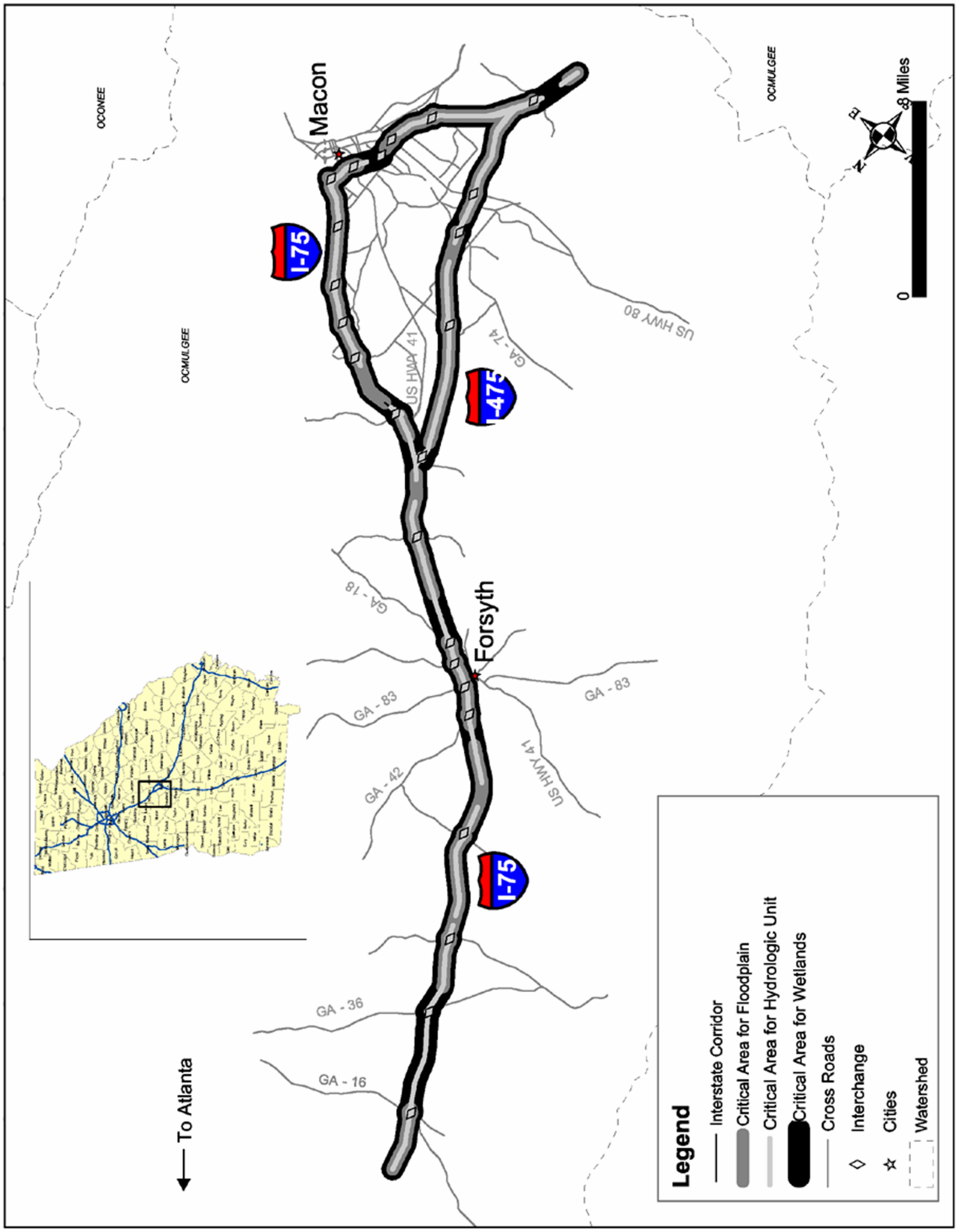


Figure 5.3 Parklands and Cultural Resources

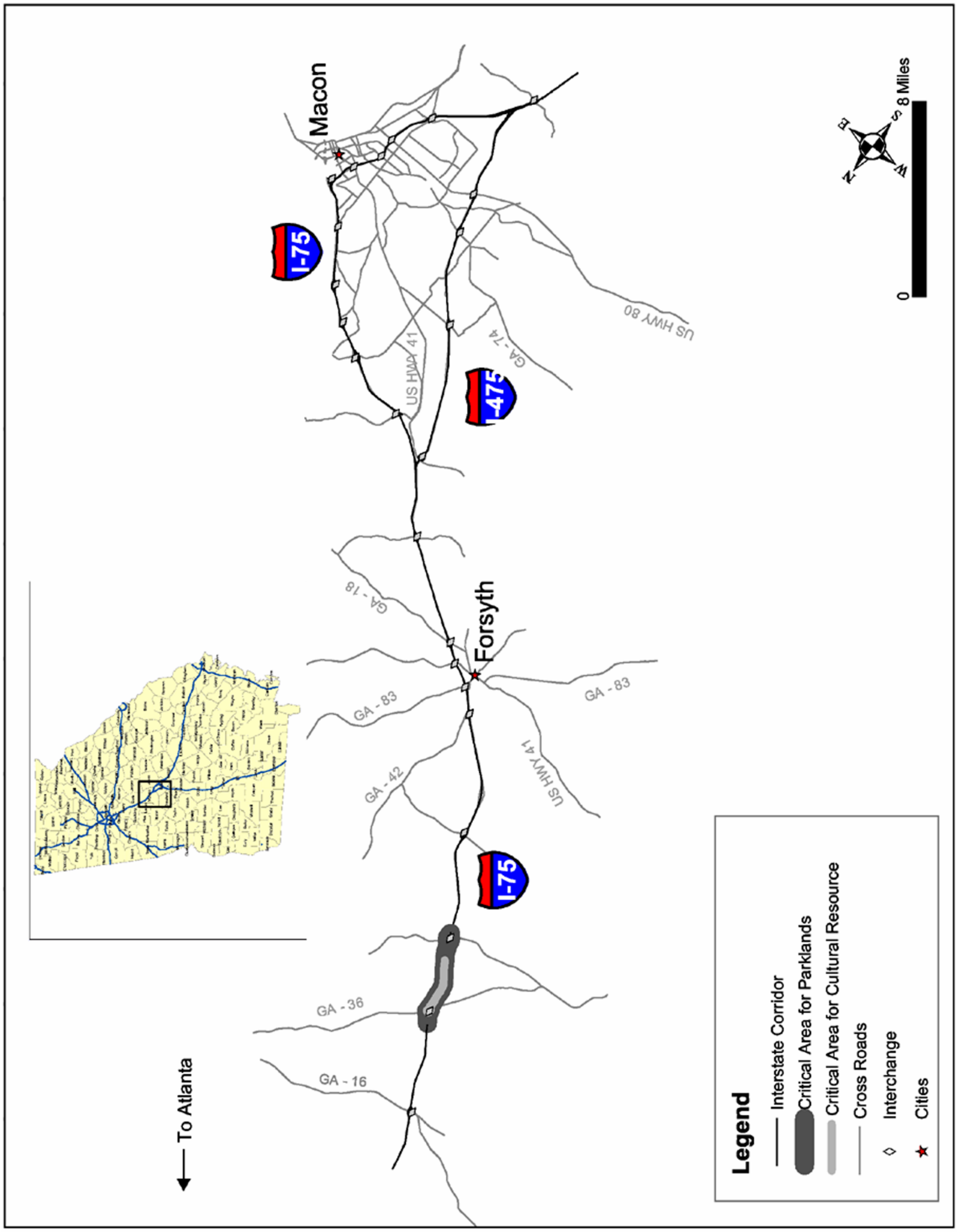


Figure 5.4 Other Environmental Resources

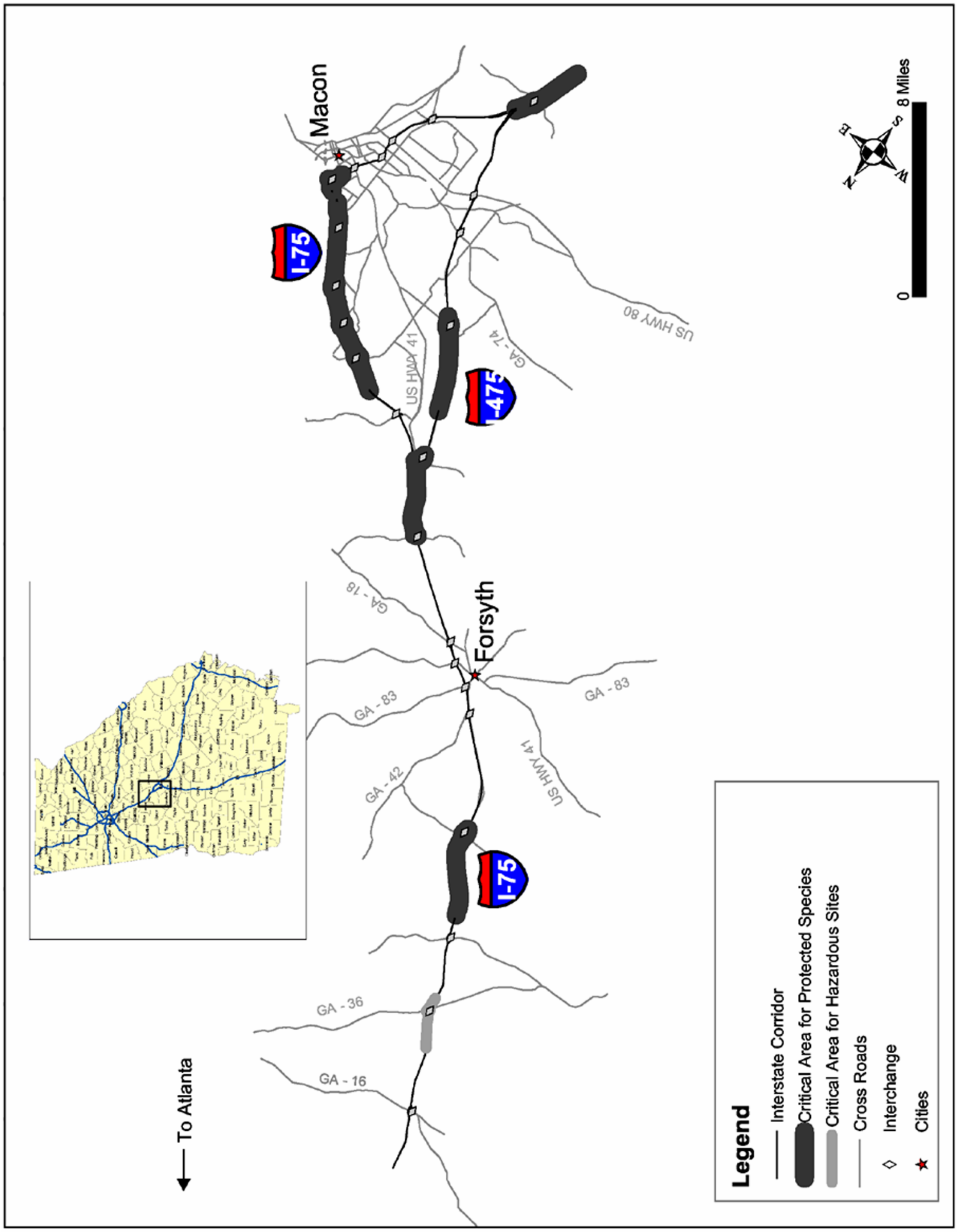


Table 5.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
75				3%	4%	7%	0%	0%	7%
	McIntosh Trail			22%	24%	39%	0%	0%	39%
		Spalding	3	0%	0%	0%	0%	0%	0%
		Butts	3	6%	34%	18%	0%	0%	18%
		Lamar	3	64%	14%	99%	0%	0%	99%
	Middle Georgia			0%	0%	1%	0%	0%	1%
		Monroe	3	0%	0%	1%	0%	0%	1%
		Bibb	3	0%	0%	0%	0%	0%	0%
475				0%	0%	0%	0%	0%	0%
	Middle Georgia			0%	0%	0%	0%	0%	0%
		Monroe	3	0%	0%	0%	0%	0%	0%
		Bibb	3	0%	0%	0%	0%	0%	0%

Figure 5.4 also illustrates that protected species may be found within one mile of the centerline in one stretch north of Forsyth, and in several locations between Forsyth and Macon. Table 5.4 indicates that various flowering plants and trees, fish, and amphibians constitute the protected species along Interstate 75, while the protected species along Interstate 475 tend to be flowering plants and trees, and grasses, orchids and lilies.

Figure 5.5 and Table 5.5 indicate that Spalding and Bibb Counties could potentially be designated as a non-attainment areas for Ozone under the eight-hour standard at some point in the future, while Bibb County may also be designated as non-attainment under the small particle (PM 2.5) standard. These potential future non-attainment designations could end up affecting over three-fourths of the mileage along Interstate 475, and over 40 percent of the mileage along Interstate 75.

Table 5.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
75				0%	29%	0%	0%	6%	0%	8%	0%	0%	0%	0%	0%
	McIntosh Trail			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Spalding	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Butts	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Lamar	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Middle Georgia			0%	35%	0%	0%	7%	0%	9%	0%	0%	0%	0%	0%
		Monroe	3	0%	23%	0%	0%	0%	0%	17%	0%	0%	0%	0%	0%
		Bibb	3	0%	47%	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%
475				0%	35%	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Middle Georgia			0%	35%	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Monroe	3	0%	76%	38%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Bibb	3	0%	21%	26%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Figure 5.5 Air Quality

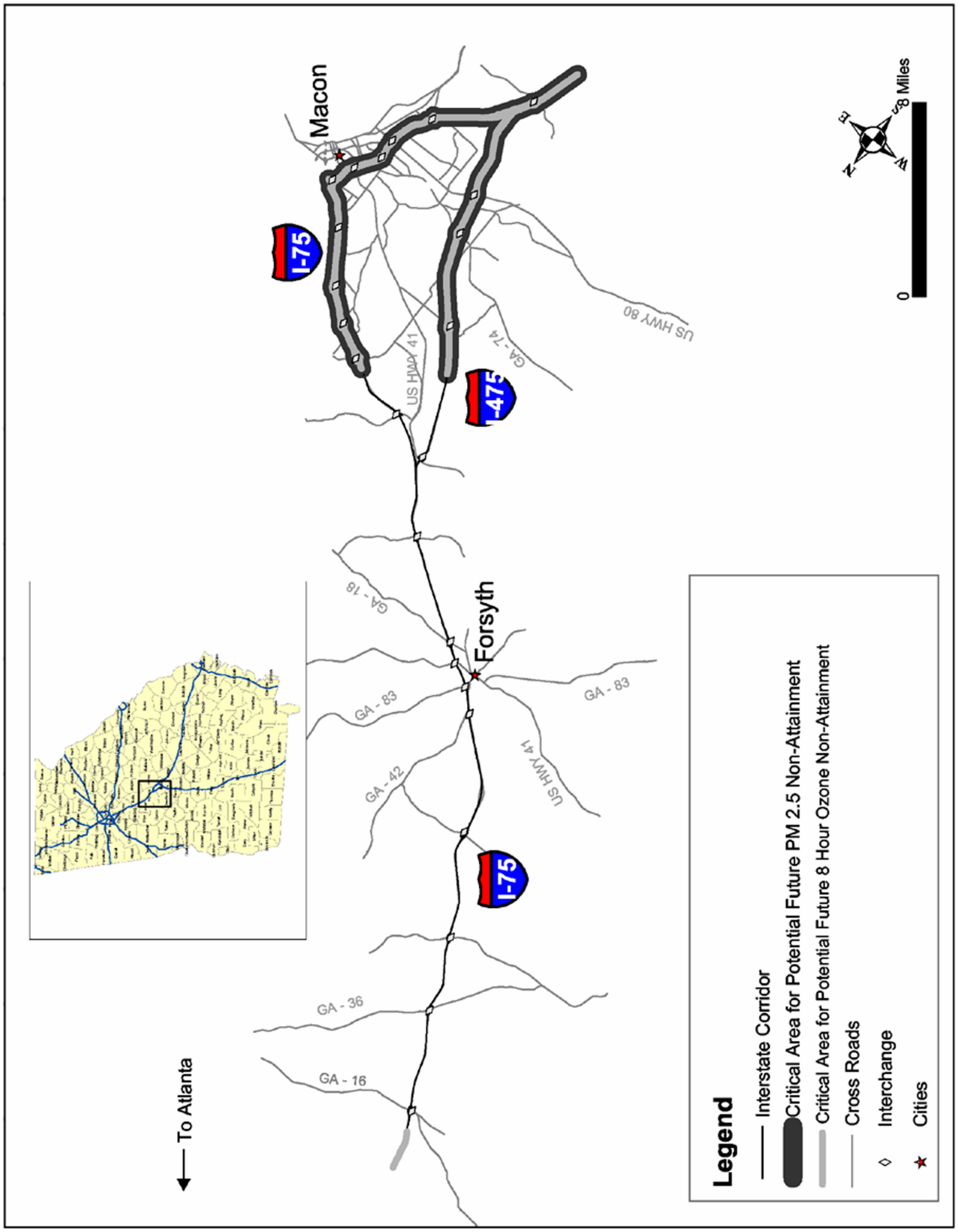


Table 5.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
75				0%	43%	40%
	McIntosh Trail			0%	13%	0%
		Spalding	3	0%	100%	0%
		Butts	3	0%	0%	0%
		Lamar	3	0%	0%	0%
	Middle Georgia			0%	48%	48%
		Monroe	3	0%	0%	0%
		Bibb	3	0%	100%	100%
475				0%	75%	75%
	Middle Georgia			0%	75%	75%
		Monroe	3	0%	0%	0%
		Bibb	3	0%	100%	100%

5.2 Land Use and Development

Figure 5.6 illustrates that existing residential development near both interstates tends to occur in isolated pockets throughout the corridor, with a greater concentration in the southern part of the corridor near Macon. Employment land uses are a bit more common than residential land uses, particularly along the northern half of Interstate 75 and through Macon. Table 5.6 indicates that commercial land uses tend to be most common along both Interstate 75 and 475, although pockets of TCU land uses also occur through Butts and Lamar Counties.

Figure 5.6 Existing Land Use

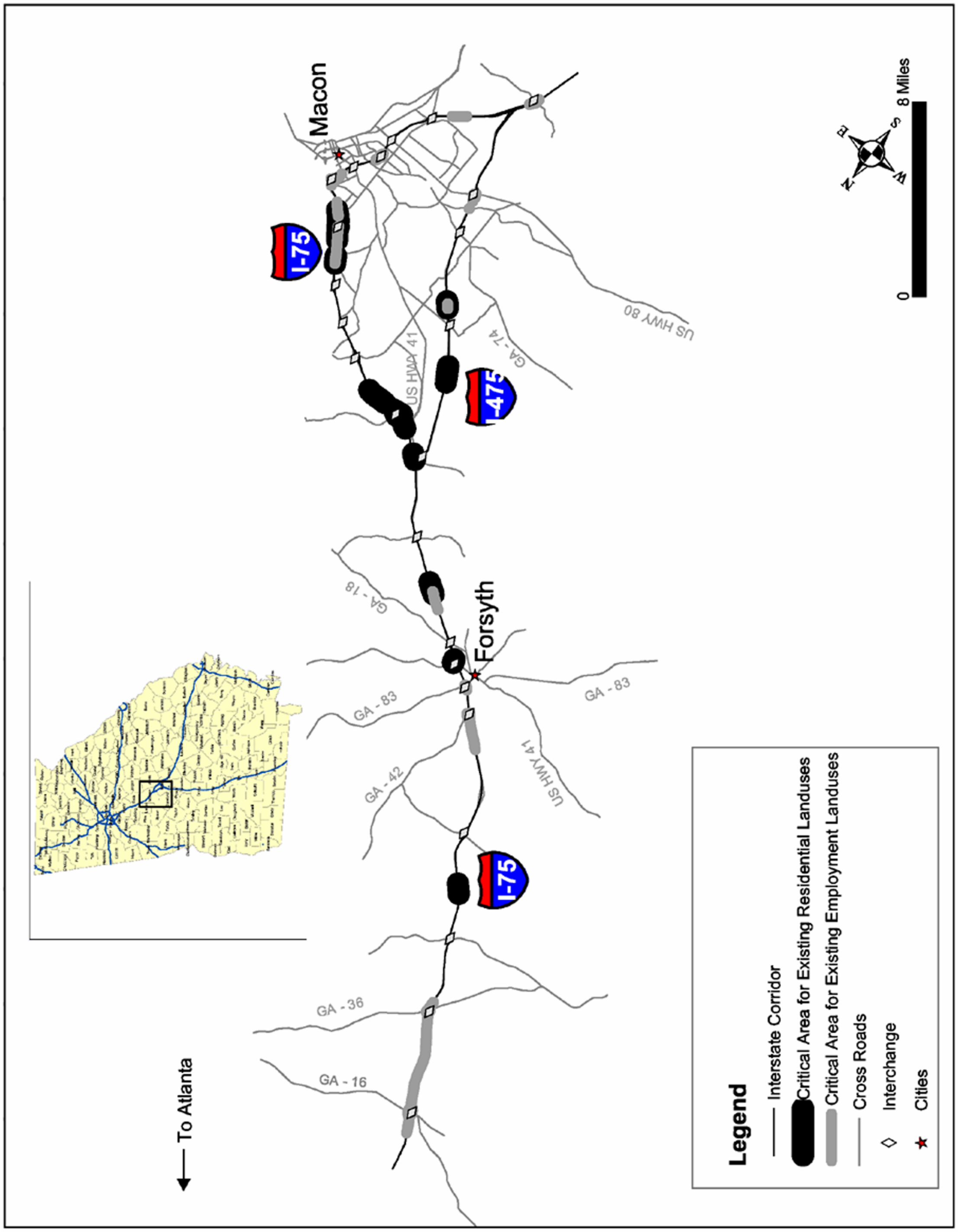


Table 5.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
75				7%	42%	1%	9%	7%	0%
	McIntosh Trail			0%	11%	0%	60%	0%	0%
		Spalding	3	0%	0%	0%	0%	0%	0%
		Butts	3	0%	18%	0%	98%	0%	0%
		Lamar	3	0%	1%	0%	10%	0%	0%
	Middle Georgia			9%	48%	1%	0%	8%	0%
		Monroe	3	12%	36%	3%	0%	5%	0%
		Bibb	3	5%	61%	0%	0%	11%	0%
475				5%	41%	0%	0%	4%	0%
	Middle Georgia			5%	41%	0%	0%	4%	0%
		Monroe	3	9%	24%	0%	0%	0%	0%
		Bibb	3	3%	47%	0%	0%	5%	0%

As in most other corridors, local land use plans suggest a significantly more intensive development picture near the interstate corridor for future years. Figure 5.7 and Table 5.7 illustrate that under current local land use plans, residential land uses are projected to be within one-half mile of the interstate centerline at most locations along both interstates except for a short stretch of Interstate 75 north of Forsyth. Employment land uses are also expected to be more common than currently exists, with commercial and industrial land uses predominating in Monroe and Bibb Counties, and TCU and industrial land uses more common in the remaining counties.

Figure 5.7 Future Land Use

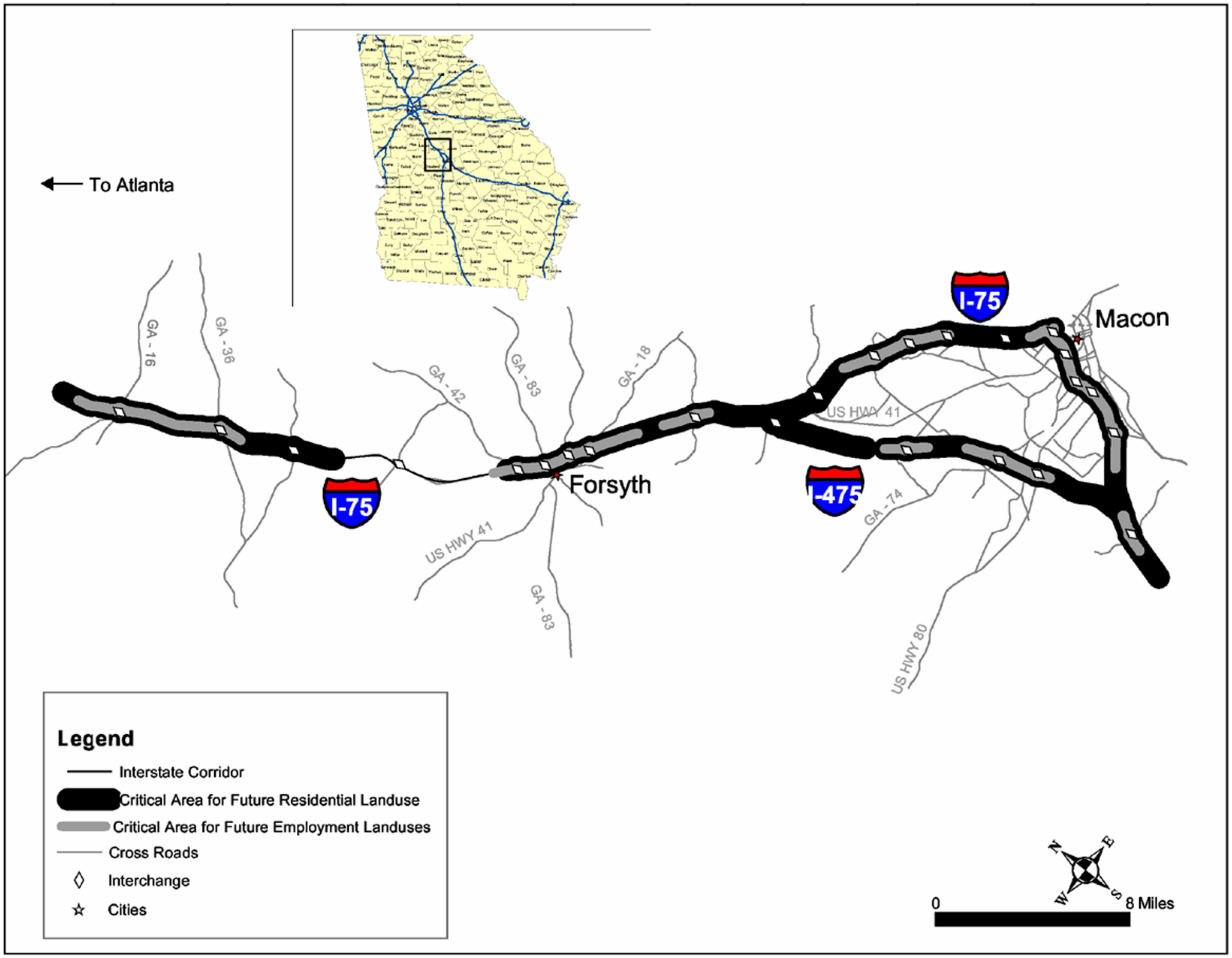


Table 5.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
75				88%	29%	35%	11%	0%	0%
	McIntosh Trail			96%	0%	44%	73%	0%	0%
		Spalding	3	80%	0%	10%	57%	0%	0%
		Butts	3	97%	0%	73%	100%	0%	0%
		Lamar	3	100%	0%	0%	25%	0%	0%
	Middle Georgia			86%	34%	33%	0%	0%	0%
		Monroe	3	74%	19%	36%	0%	0%	0%
		Bibb	3	100%	51%	29%	0%	0%	0%
475				96%	29%	27%	0%	0%	0%
	Middle Georgia			96%	29%	27%	0%	0%	0%
		Monroe	3	100%	0%	0%	0%	0%	0%
		Bibb	3	95%	39%	35%	0%	0%	0%

5.3 Interstate Access

The information in Figure 5.8 and Table 5.6 indicate that no segment of this corridor has an existing accessibility concern, meaning that any *existing activity center of statewide significance* in or near this corridor tends to be situated near an existing interchange. This accessibility condition does not change in the future along either interstate, as shown in Figure 5.9 and Table 5.7. Three interchanges along Interstate 75 and one along Interstate 475 could be subject to significant travel demand increases if future activity centers are developed to the extent envisioned in the local land use plans. Figure 5.10 illustrates that six interchanges are likely to experience high levels of existing truck traffic due to proximity of existing activity centers that are industrial, intermodal, military or aviation in nature. These interchanges include the four that were shown in Figure 5.9 as well as two additional interchanges along Interstate 75 in Macon.

Figure 5.8 Existing Accessibility Needs

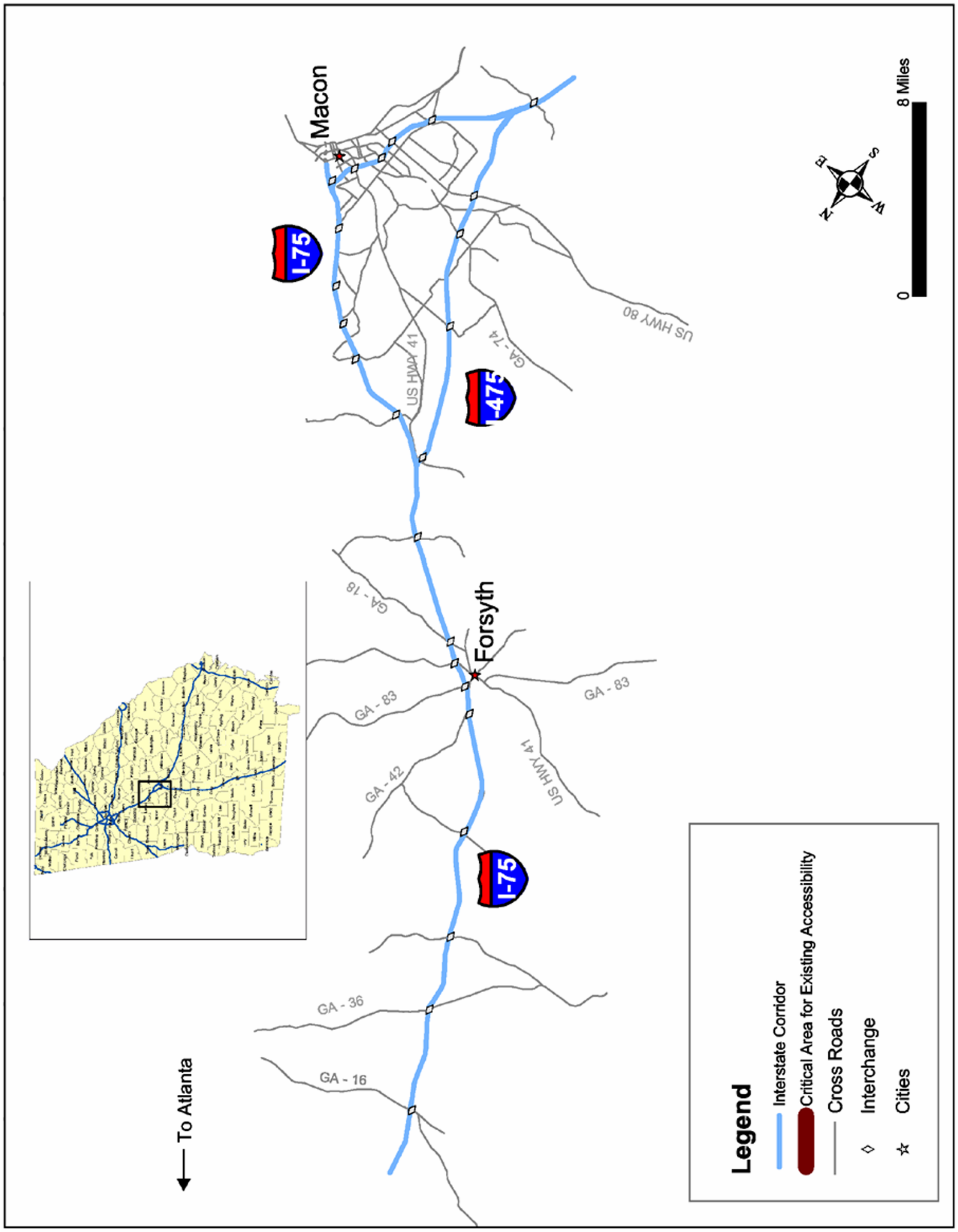


Figure 5.9 Future Accessibility Needs

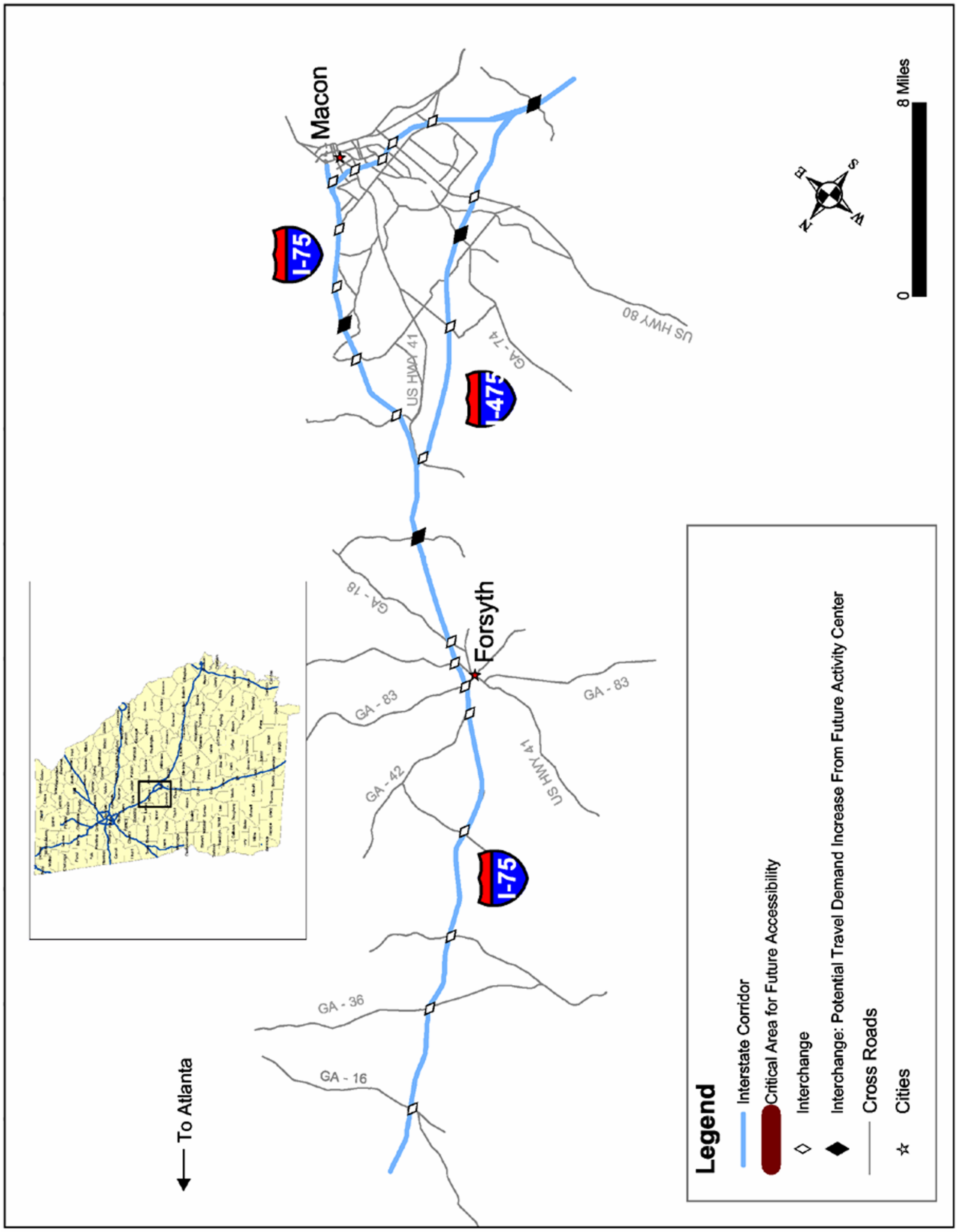
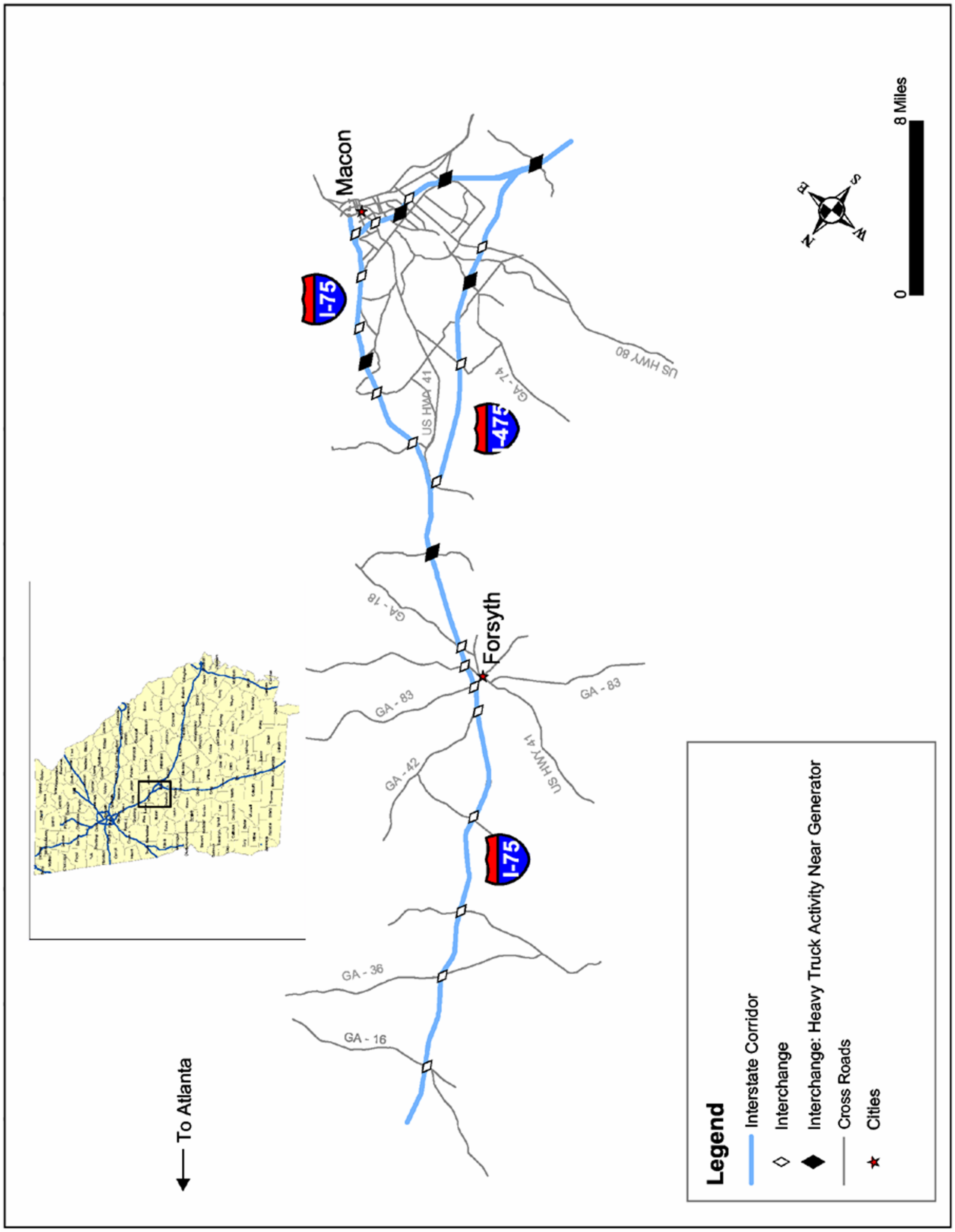


Figure 5.10 Key Access Points for Heavy-Truck Traffic



6.0 Macon to Savannah Corridor

The Macon to Savannah corridor, which is depicted in Figure 6.1, encompasses Interstate 16 between Macon and Savannah, as well as Interstate 516 through Savannah. Counties along this interstate corridor include Bibb, Twiggs, Bleckley, Laurens, Treutlen, Emanuel, Candler, Bulloch, Bryan, Effingham, and Chatham. Major communities in or near the corridor include Macon, Dublin, Statesboro, and Savannah. The corridor is also divided between the Middle Georgia, Heart of Georgia-Altamaha, Central Savannah River Area, and Coastal Georgia RDCs. Georgia DOT Districts 2, 3, and 5 provide local oversight and a variety of support activity for portions of the corridor.

A summary of the characteristics of Interstates 16 and 516 within this corridor is provided in Table 6.1. The corridor includes 243 centerline miles of Interstate 16 and 17 centerline miles of Interstate 516. There are also 32 interchanges along Interstate 16 and three along Interstate 516. These totals represent the largest mileage and second largest number of interchanges of the nine corridors investigated in this study. About three-fourths of Interstate 16 is located in the Heart of Georgia-Altamaha and Coastal Georgia RDCs, while Interstate 516 falls completely within the Coastal Georgia RDC. Over 80 percent of the interstate mileage falls within GDOT Districts 2 and 5. Laurens County has the most centerline and lane mileage, as well as the greatest number of interchanges.

Figure 6.1 General Corridor Limits

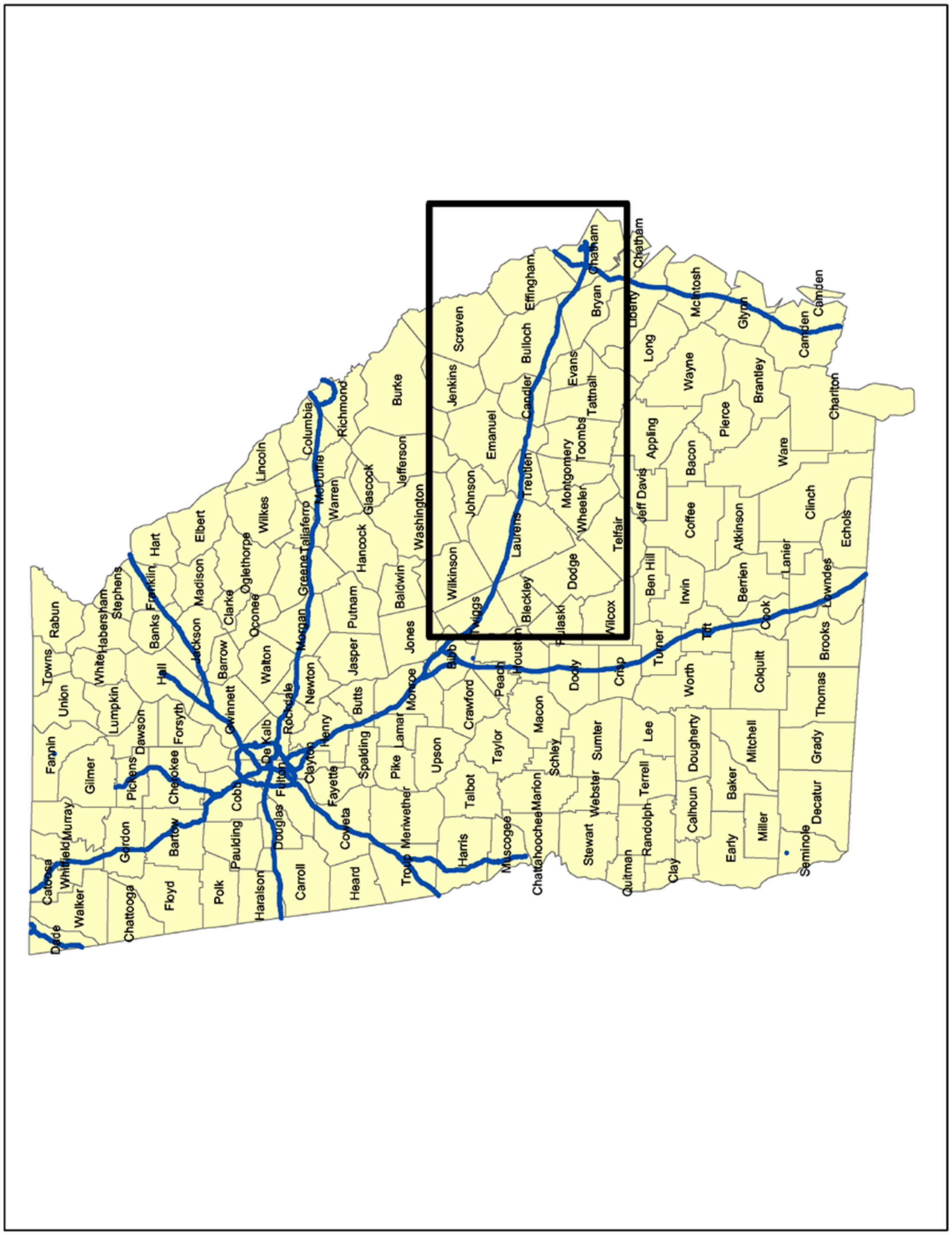


Table 6.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
16				243	858	32
	Middle Georgia			46	160	8
		Bibb	3	14	51	3
		Twiggs	3	32	109	5
	Heart of Georgia-Altamaha			103	360	13
		Bleckley	2	2	6	0
		Laurens	2	46	160	6
		Treutlen	2	26	90	4
		Candler	5	29	104	3
	Central Savannah River Area			15	59	1
		Emanuel	2	15	59	1
	Coastal Georgia			78	279	10
		Bulloch	5	36	127	4
		Bryan	5	11	43	1
		Effingham	5	4	13	1
		Chatham	5	27	95	4
516				17	57	3
	Coastal Georgia			17	57	3
		Chatham	5	17	57	3

6.1 Environmental Resources

Figure 6.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance almost continuously through the corridor, as occurs in most other corridors. Hydrologic features (i.e., streams, rivers, lakes, etc.) also almost completely blanket this corridor, while floodplains tend to be most prevalent near the interstate in the Macon and Dublin area, as well as between Statesboro and Savannah. Table 6.2 presents a more detailed breakout of these water resources by county. Bibb, Bulloch, Bryan, Effingham and Chatham Counties have all three types of water resources located within the buffer distance along all interstate segments.

Figure 6.2 Water Resources

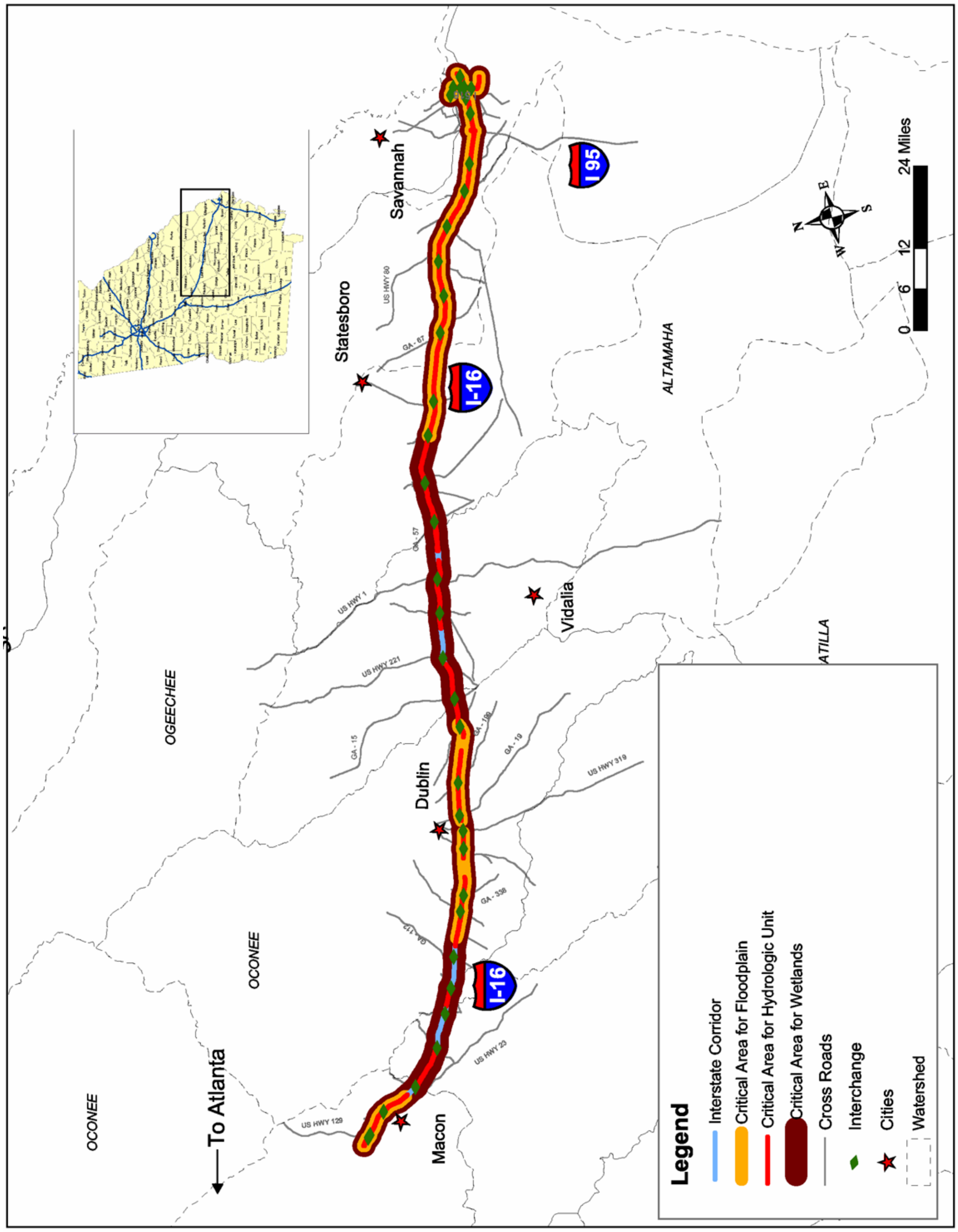


Table 6.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
16				100%	56%	83%
	Middle Georgia			100%	32%	58%
		Bibb	3	100%	100%	100%
		Twiggs	3	100%	2%	39%
	Heart of Georgia-Altamaha			100%	43%	83%
		Bleckley	2	100%	0%	0%
		Laurens	2	100%	86%	84%
		Treutlen	2	100%	9%	71%
		Candler	5	100%	7%	100%
	Central Savannah River Area			100%	0%	78%
		Emanuel	2	100%	0%	78%
	Coastal Georgia			100%	100%	100%
		Bulloch	5	100%	100%	100%
		Bryan	5	100%	100%	100%
		Effingham	5	100%	100%	100%
		Chatham	5	100%	100%	100%
516				100%	100%	100%
	Coastal Georgia			100%	100%	100%
		Chatham	5	100%	100%	100%

Figure 6.3 and Table 6.3 illustrate that parklands and cultural resources are present within one mile of the interstate centerline in various counties. Cultural resources are present in Bibb, Laurens, and Treutlen Counties. Parklands, including either wildlife management areas or wildlife refuges, are present in these same three counties as well as Twiggs County. The light shaded line in Figure 6.4 illustrates that hazardous sites (e.g., landfills or waste sites) are adjacent to the corridors at locations in Macon, east of Dublin, and at multiple locations in the Savannah area along both Interstates 16 and 516. The data in Table 6.3 indicate that all of Interstate 516 through Savannah has hazardous sites in proximity to the interstate.

Figure 6.3 Parklands and Cultural Resources

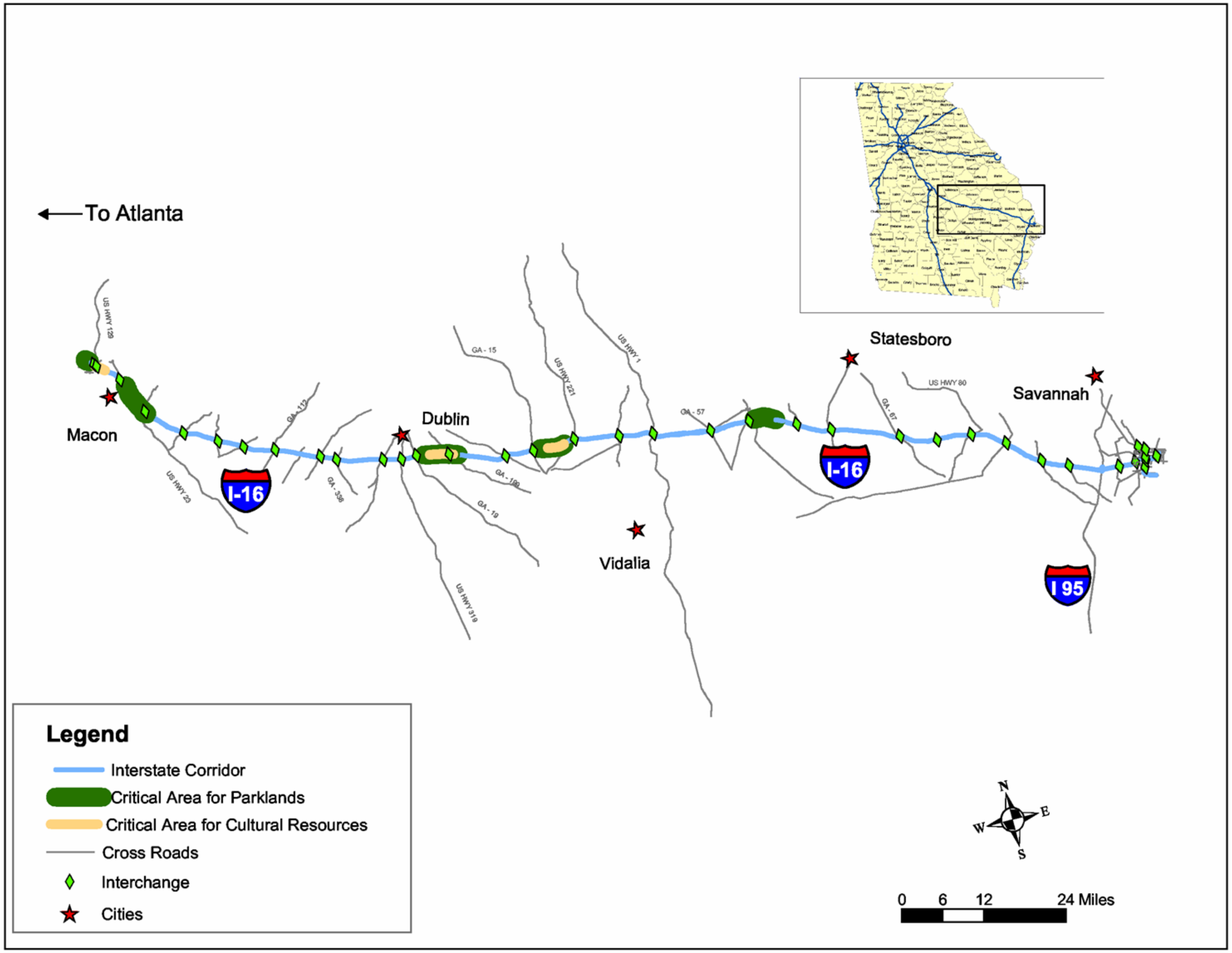


Figure 6.4 Other Environmental Resources

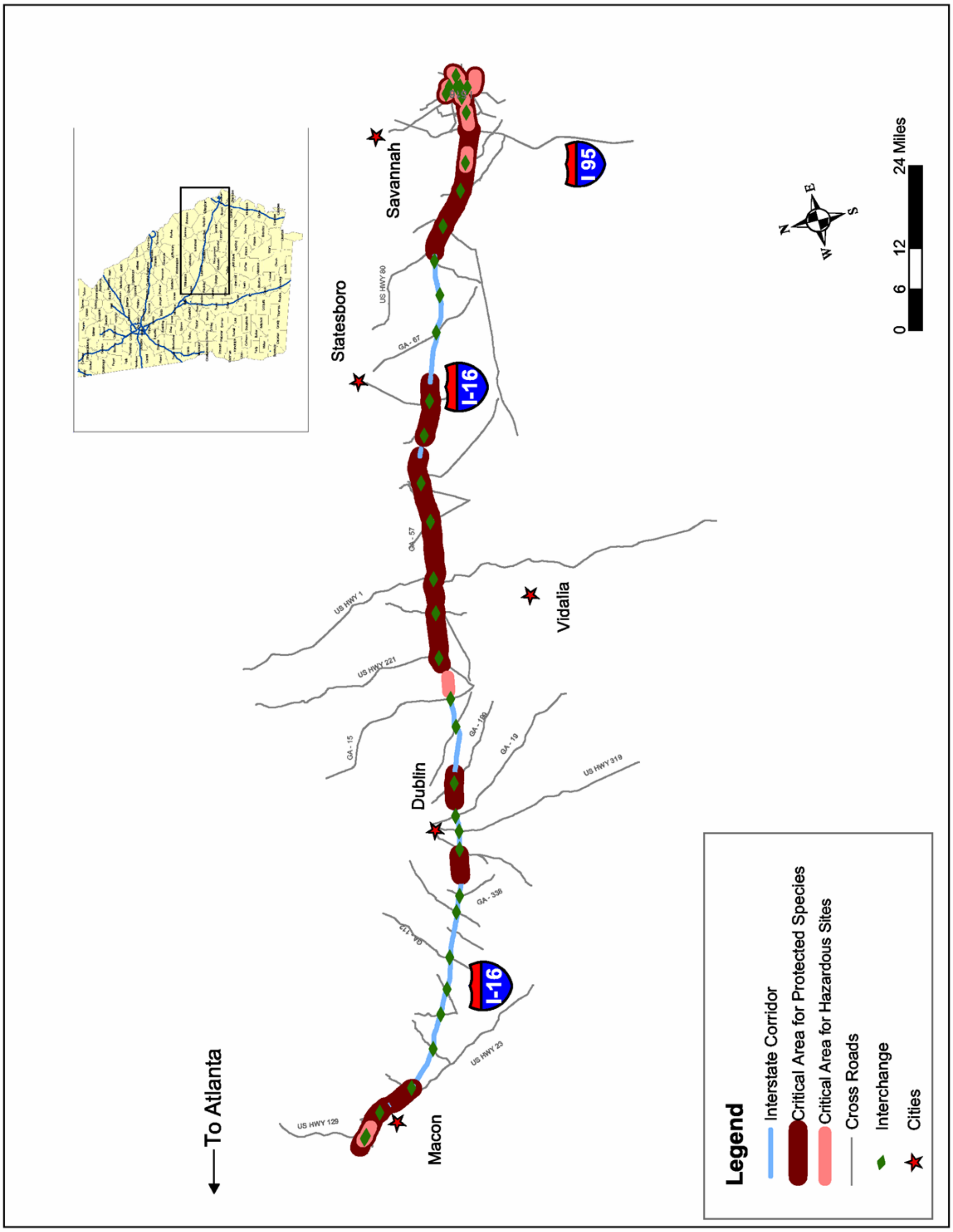


Table 6.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
16				4%	9%	5%	4%	2%	0%
	Middle Georgia			5%	8%	0%	20%	0%	0%
		Bibb	3	16%	26%	0%	30%	0%	0%
		Twiggs	3	0%	0%	0%	15%	0%	0%
	Heart of Georgia-Altamaha			8%	2%	11%	0%	4%	0%
		Bleckley	2	0%	0%	0%	0%	0%	0%
		Laurens	2	11%	0%	15%	0%	0%	0%
		Treutlen	2	11%	10%	16%	0%	0%	0%
		Candler	5	0%	0%	0%	0%	13%	0%
	Central Savannah River Area			0%	0%	0%	0%	0%	0%
		Emanuel	2	0%	0%	0%	0%	0%	0%
	Coastal Georgia			0%	21%	0%	0%	0%	0%
		Bulloch	5	0%	0%	0%	0%	0%	0%
		Bryan	5	0%	0%	0%	0%	0%	0%
		Effingham	5	0%	0%	0%	0%	0%	0%
		Chatham	5	0%	60%	0%	0%	0%	0%
516				0%	100%	0%	0%	0%	0%
	Coastal Georgia			0%	100%	0%	0%	0%	0%
		Chatham	5	0%	100%	0%	0%	0%	0%

Figure 6.4 also illustrates that protected species may be found within one mile of the centerline in most of the eastern half of the corridor, as well as in the Macon and Dublin areas. Table 6.4 indicates that various types of plants (flowering plants and trees, and grasses, orchids and lilies) tend to be the most common category of protected species in the western half of the corridor, while amphibians, fish and reptiles are the most common protected species in the eastern half of the corridor including both Interstates 16 and 516.

Figure 6.5 and Table 6.5 indicate that Bibb and Chatham Counties could potentially be classified as a non-attainment area for small particles (PM 2.5) at some point in the future, while Bibb County may also be designated as non-attainment under the eight-hour Ozone standard. The PM 2.5 designation could end up affecting nearly one-third of the interstate system in this corridor.

Table 6.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
16				0%	39%	23%	0%	14%	4%	8%	0%	21%	2%	4%	0%
	Middle Georgia			0%	27%	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%
		Bibb	3	0%	87%	0%	0%	0%	7%	0%	0%	0%	0%	0%	0%
		Twiggs	3	0%	0%	0%	0%	0%	13%	0%	0%	0%	0%	0%	0%
	Heart of Georgia-Altamaha			0%	39%	21%	0%	0%	0%	6%	1%	13%	4%	0%	0%
		Bleckley	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Laurens	2	0%	24%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
		Treutlen	2	0%	33%	36%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Candler	5	0%	70%	42%	0%	0%	0%	22%	0%	47%	14%	0%	0%
	Central Savannah River Area			0%	72%	52%	0%	0%	0%	40%	0%	77%	0%	0%	0%
		Emanuel	2	0%	72%	52%	0%	0%	0%	40%	0%	77%	0%	0%	0%
	Coastal Georgia			0%	41%	34%	0%	44%	7%	10%	0%	32%	0%	12%	0%
		Bulloch	5	0%	23%	8%	0%	0%	0%	0%	0%	3%	0%	0%	0%
		Bryan	5	0%	0%	52%	0%	81%	24%	0%	0%	100%	0%	0%	0%
		Effingham	5	0%	33%	98%	0%	100%	65%	0%	0%	100%	0%	0%	0%
		Chatham	5	0%	81%	52%	0%	80%	0%	28%	0%	32%	0%	35%	0%
516				0%	0%	0%	0%	100%	12%	83%	0%	12%	0%	81%	0%
	Coastal Georgia			0%	0%	0%	0%	100%	12%	83%	0%	12%	0%	81%	0%
		Chatham	5	0%	0%	0%	0%	100%	12%	83%	0%	12%	0%	81%	0%

Figure 6.5 Air Quality

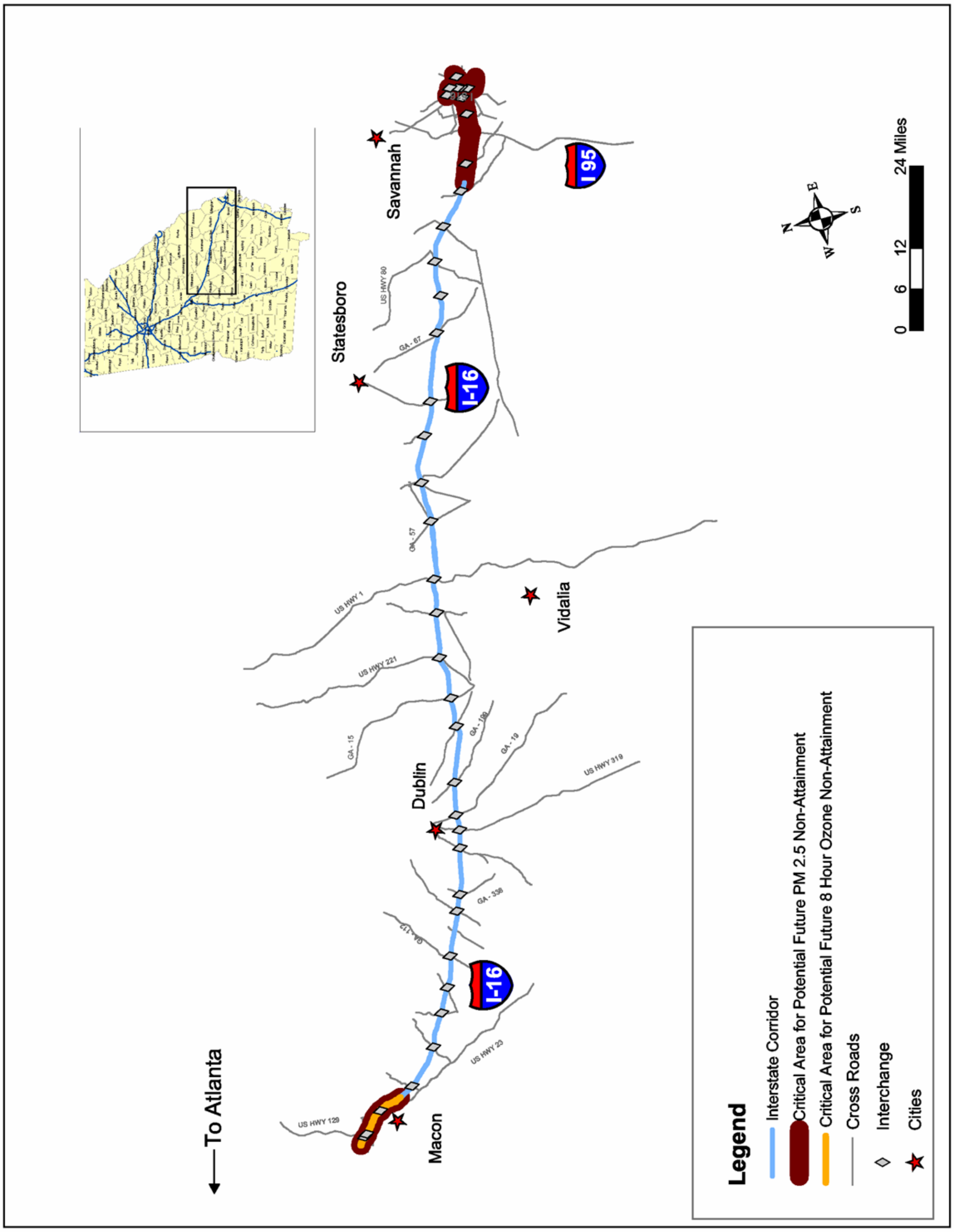


Table 6.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
16				0%	6%	17%
	Middle Georgia			0%	31%	31%
		Bibb	3	0%	100%	100%
		Twiggs	3	0%	0%	0%
	Heart of Georgia-Altamaha			0%	0%	0%
		Bleckley	2	0%	0%	0%
		Laurens	2	0%	0%	0%
		Treutlen	2	0%	0%	0%
		Candler	5	0%	0%	0%
	Central Savannah River Area			0%	0%	0%
		Emanuel	2	0%	0%	0%
	Coastal Georgia			0%	0%	35%
		Bulloch	5	0%	0%	0%
		Bryan	5	0%	0%	0%
		Effingham	5	0%	0%	0%
		Chatham	5	0%	0%	100%
516				0%	0%	100%
	Coastal Georgia			0%	0%	100%
		Chatham	5	0%	0%	100%

6.2 Land Use and Development

Figure 6.6 illustrates that existing residential development near the interstate tends to occur in isolated pockets throughout the corridor, with a greater concentration in the eastern part of the corridor near Savannah. As indicated in Table 6.6, employment land uses are quite common along Interstate 516, commercial and industrial land uses tending to be most common. Pockets of commercial land use also occur along Interstate 16.[1]

[1] While the figure and table suggest that the TCU land use is quite prevalent near Interstate 16 between Dublin and Statesboro, this finding appears to be related to a particular type of land use classification done at the local level. A review of aerial photos does not support a conclusion that TCU-type employment is prevalent in this area.

Figure 6.6 Existing Land Use

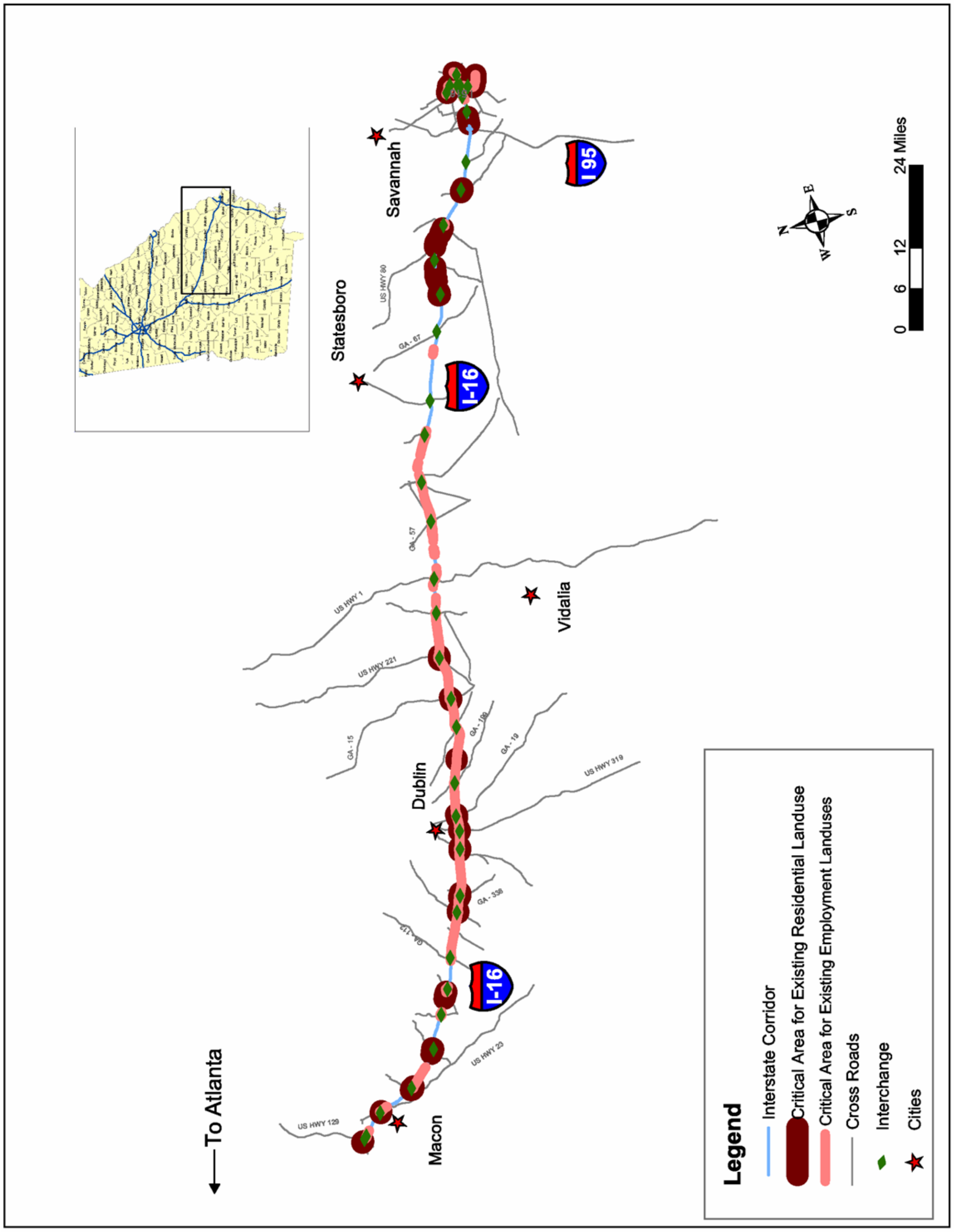


Table 6.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
16				8%	8%	3%	41%	2%	0%
	Middle Georgia			12%	9%	10%	2%	6%	0%
		Bibb	3	5%	4%	4%	0%	19%	0%
		Twiggs	3	14%	11%	13%	3%	0%	0%
	Heart of Georgia-Altamaha			4%	13%	0%	90%	0%	0%
		Bleckley	2	0%	0%	0%	100%	0%	0%
		Laurens	2	6%	19%	0%	95%	0%	0%
		Treutlen	2	5%	7%	0%	90%	0%	0%
		Candler	5	0%	11%	0%	80%	0%	0%
	Central Savannah River Area			0%	0%	0%	39%	0%	0%
		Emanuel	2	0%	0%	0%	39%	0%	0%
	Coastal Georgia			13%	2%	2%	0%	1%	0%
		Bulloch	5	9%	0%	2%	0%	0%	0%
		Bryan	5	20%	3%	0%	0%	0%	0%
		Effingham	5	16%	0%	0%	0%	0%	0%
		Chatham	5	16%	4%	2%	0%	4%	0%
516				71%	72%	61%	0%	14%	0%
	Coastal Georgia			71%	72%	61%	0%	14%	0%
		Chatham	5	71%	72%	61%	0%	14%	0%

Local land use plans suggest a significantly more intensive development picture near the interstate corridor for future years. Figure 6.7 illustrates that under current local land use plans, employment land uses are projected to be within one-half mile of the interstate centerline at most locations throughout the corridor except in parts of Bulloch, Bryan and Effingham Counties. Residential land uses are also expected to be quite common near the interstates. The data in Table 6.7 show that commercial and TCU land uses will have almost equal prevalence in the corridor. Furthermore, industrial land uses are also projected to be common in Bibb, Twiggs and Chatham Counties.

Figure 6.7 Future Land Use

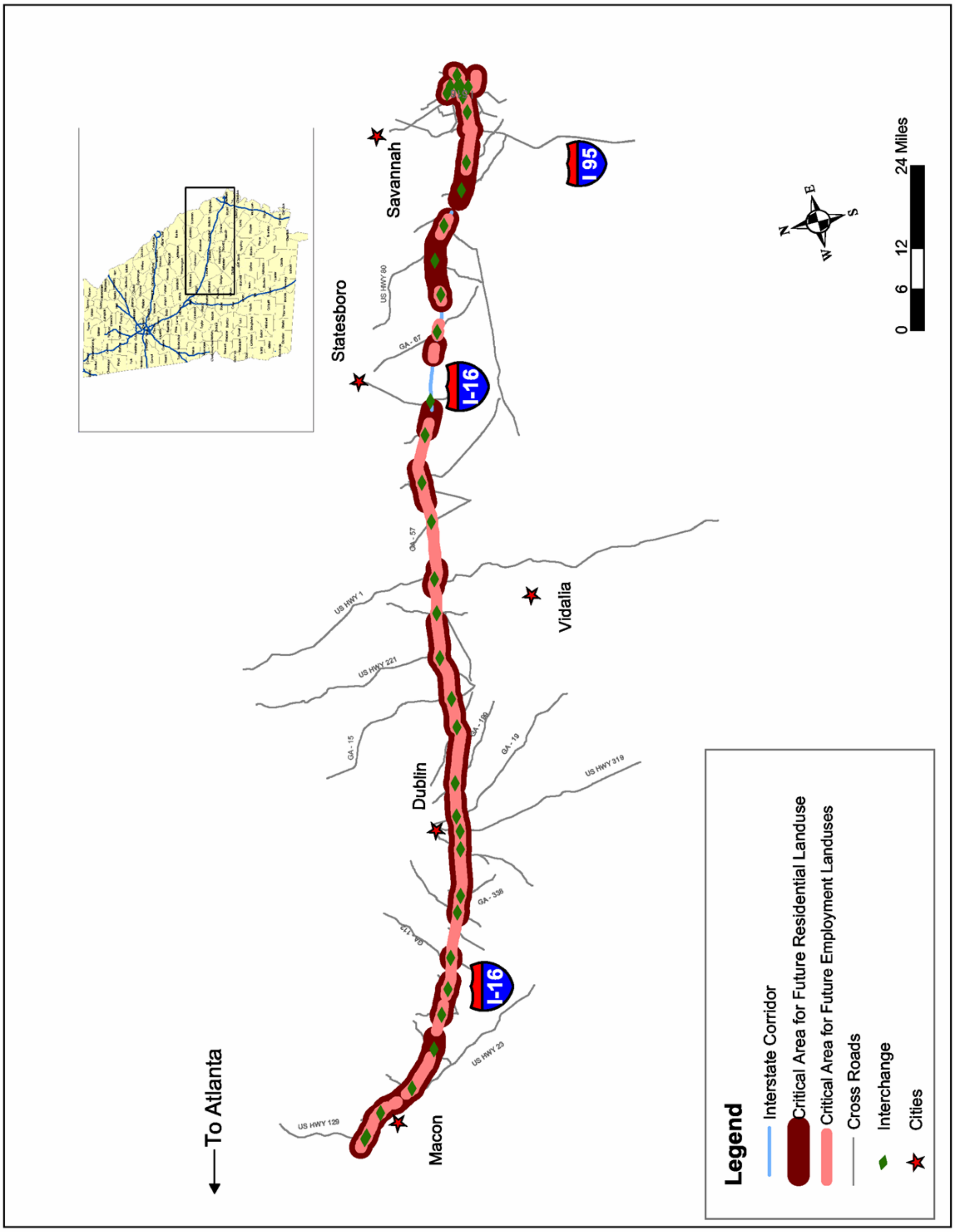


Table 6.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
16				63%	64%	20%	51%	0%	3%
	Middle Georgia			71%	47%	58%	5%	0%	15%
		Bibb	3	71%	43%	59%	0%	0%	0%
		Twiggs	3	71%	49%	58%	7%	0%	22%
	Heart of Georgia-Altamaha			65%	87%	0%	100%	0%	0%
		Bleckley	2	16%	83%	0%	100%	0%	0%
		Laurens	2	82%	88%	0%	100%	0%	0%
		Treutlen	2	81%	81%	0%	100%	0%	0%
		Candler	5	26%	90%	0%	100%	0%	0%
	Central Savannah River Area			28%	82%	0%	100%	0%	0%
		Emanuel	2	28%	82%	0%	100%	0%	0%
	Coastal Georgia			64%	40%	28%	4%	0%	0%
		Bulloch	5	45%	25%	4%	2%	0%	0%
		Bryan	5	67%	37%	0%	0%	0%	0%
		Effingham	5	100%	0%	0%	0%	0%	0%
		Chatham	5	84%	68%	76%	8%	0%	0%
516				100%	94%	100%	75%	0%	0%
	Coastal Georgia			100%	94%	100%	75%	0%	0%
		Chatham	5	100%	94%	100%	75%	0%	0%

6.3 Interstate Access

The information in Figure 6.8 and Table 6.6 indicate that no segment of this corridor has an existing accessibility concern, meaning that any *existing activity center of statewide significance* in or near this corridor tends to be situated near an existing interchange. This accessibility condition does not change in the future along Interstate 516. However, as indicated in Figure 6.9 and Table 6.7, a portion of Interstate 16 through Twiggs County could have such an accessibility concern in the future. Also, there are eight interchanges, along Interstate 16, primarily near Macon and Savannah, that could be subject to significant travel demand increases if future activity centers are developed to the extent envisioned in the local land use plans.

Figure 6.8 Existing Accessibility Needs

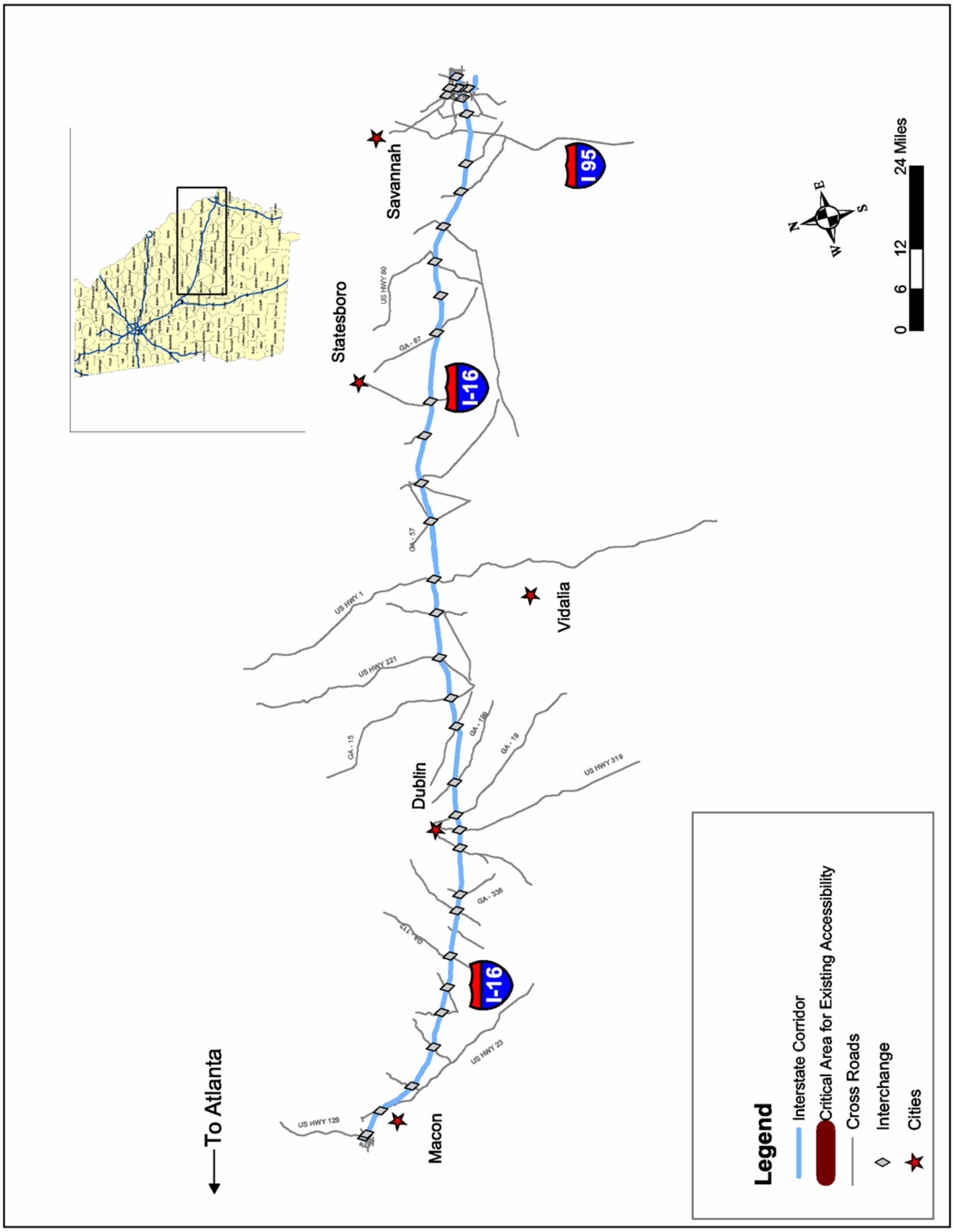


Figure 6.9 Future Accessibility Needs

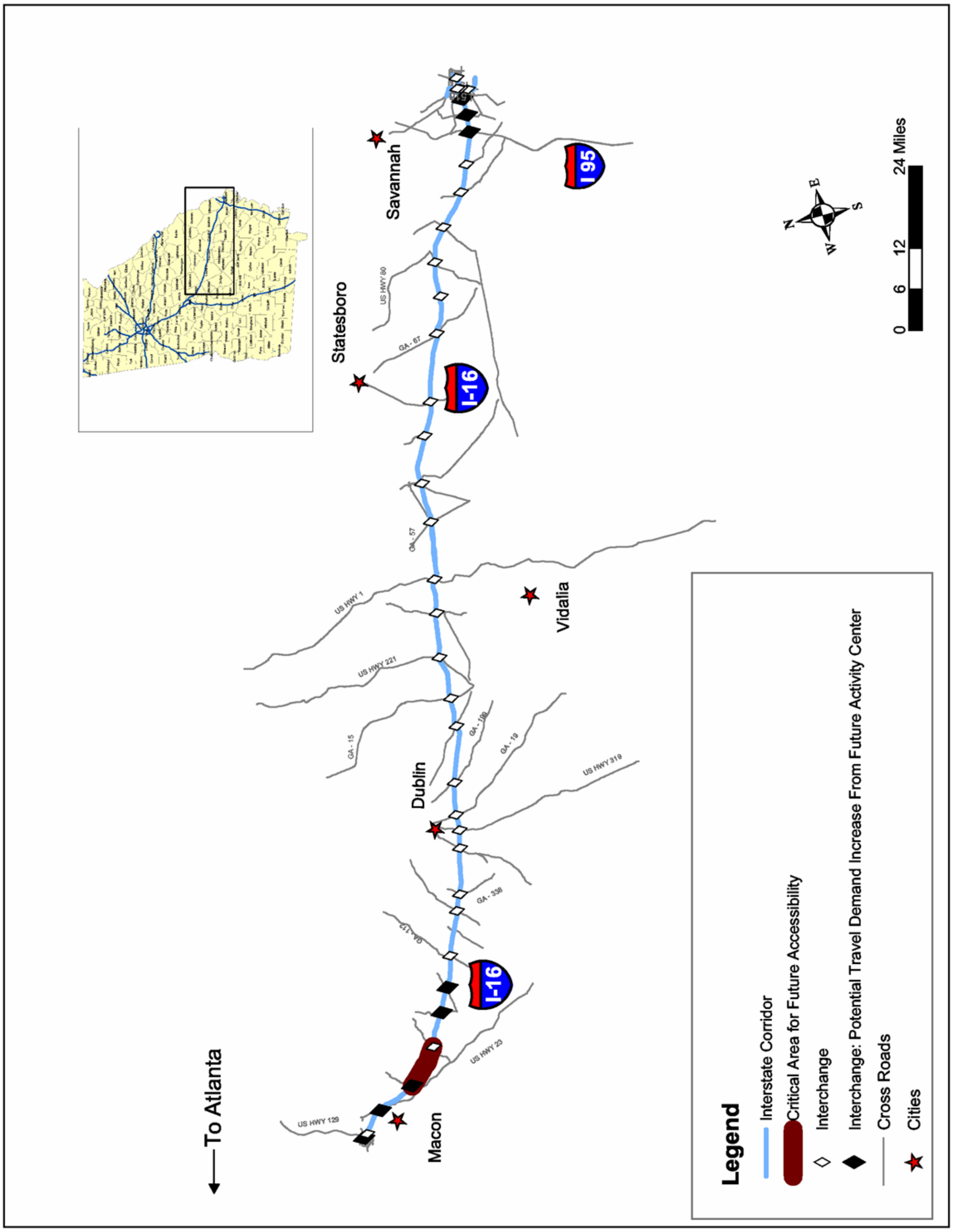
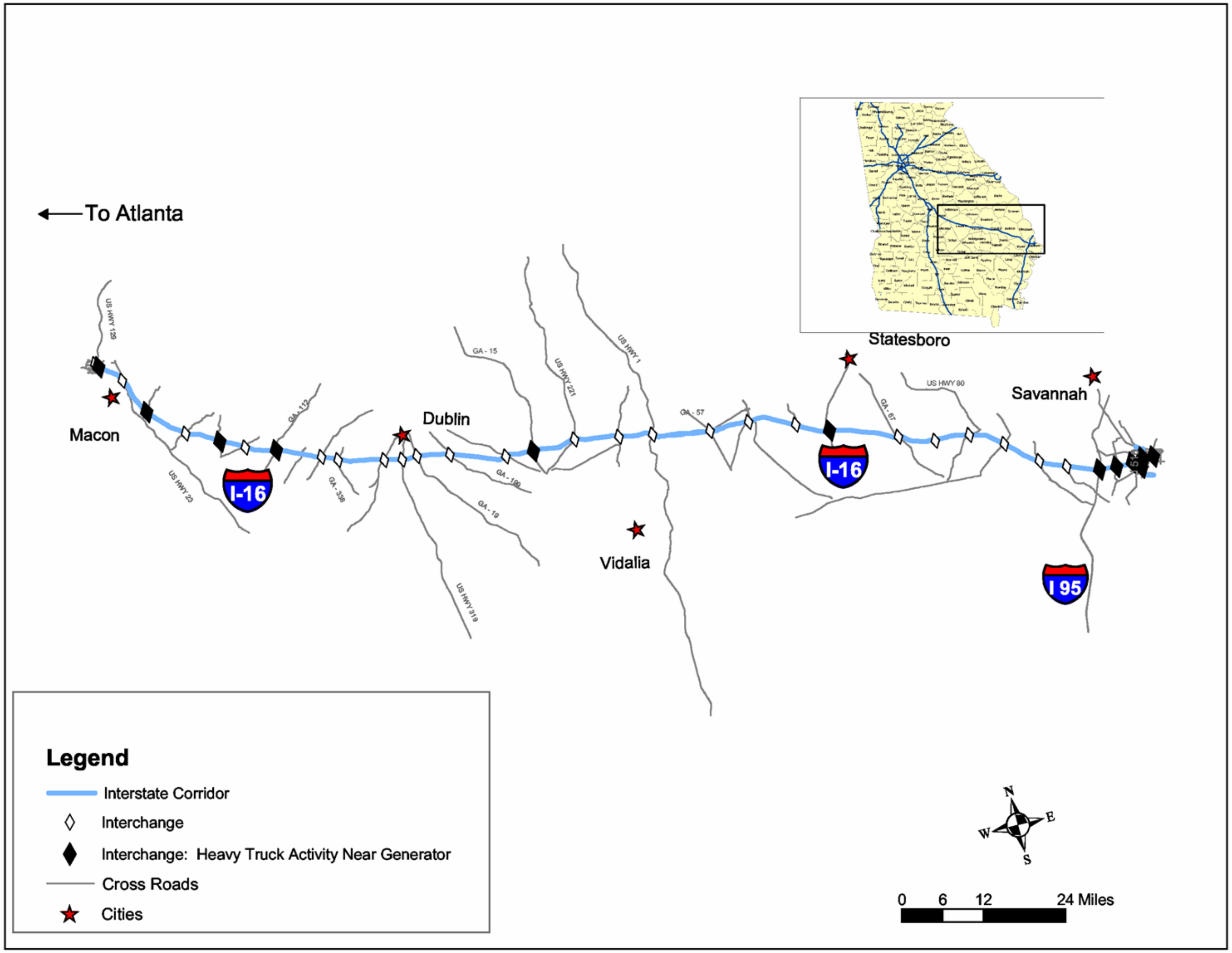


Figure 6.10 illustrates interchanges that are likely to experience high levels of existing truck traffic due to proximity of existing activity centers that are industrial, intermodal, military or aviation in nature. A total of 11 interchanges along Interstate 16 and one along Interstate 516 may be experiencing heavy-truck traffic. While six of these interchanges are located in Savannah, the remainder are dispersed along Interstate 16

Figure 6.10 Key Access Points for Heavy-Truck Traffic



7.0 Coastal Georgia Corridor

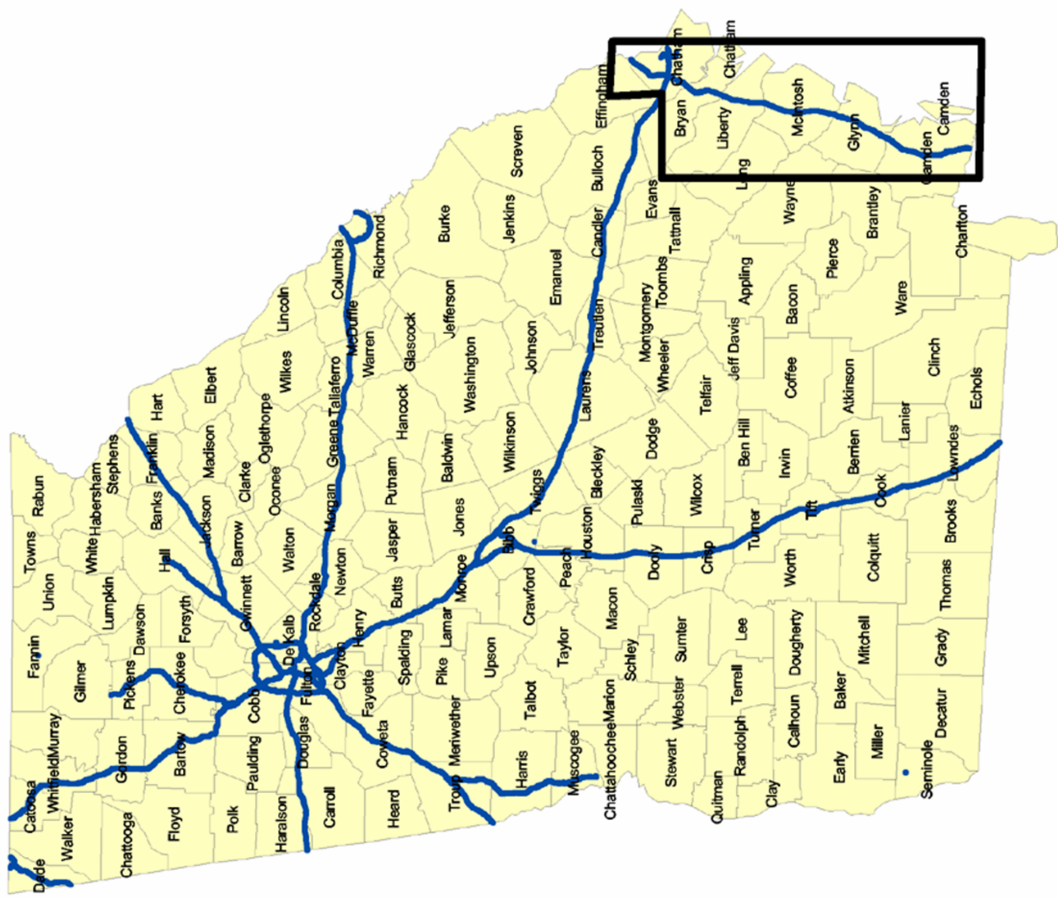
The Coastal Georgia corridor, which is depicted in Figure 7.1, encompasses Interstate 95 generally between Savannah and the Georgia/Florida state line. The corridor passes through Effingham, Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties. Major communities in or near the corridor include Savannah, Brunswick, and St. Mary's. The corridor is located completely within the Coastal Georgia RDC, with Georgia DOT District 5 providing local oversight and a variety of support activity for the corridor.

A summary of the characteristics of Interstate 95 within this corridor is provided in Table 7.1. The corridor spans 145 centerline miles of Interstate 95 and includes 21 interchanges. These totals represent the fourth largest mileage of the nine corridors investigated in this study. Except for Effingham County, the interstate mileage and interchanges tends to be fairly evenly distributed between the counties in the corridor, although Camden County has the greatest centerline mileage and number of interchanges.

Table 7.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
95				145	564	21
	Coastal Georgia			145	564	21
		Effingham	5	1	3	0
		Chatham	5	26	103	5
		Bryan	5	14	48	2
		Liberty	5	16	58	2
		McIntosh	5	28	107	2
		Glynn	5	24	77	4
		Camden	5	36	167	6

Figure 7.1 General Corridor Limits



7.1 Environmental Resources

Figure 7.2 and Table 7.2 identify the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure and table illustrate that wetlands hydrologic features (i.e., streams, rivers, lakes, etc.) exist within this buffer distance throughout the length of the corridor. Except for a very small portion of Camden County, floodplains also exist within this one-mile buffer throughout the length of the corridor.

Table 7.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
95				100%	99%	100%
	Coastal Georgia			100%	99%	100%
		Effingham	5	100%	100%	100%
		Chatham	5	100%	100%	100%
		Bryan	5	100%	100%	100%
		Liberty	5	100%	100%	100%
		McIntosh	5	100%	100%	100%
		Glynn	5	100%	100%	100%
		Camden	5	100%	96%	100%

Figure 7.3 illustrates that cultural resources exist within one mile of the interstate centerline in stretches between Brunswick and Savannah. Parklands, including a mix of wildlife management areas, wildlife refuges and conservation easements, are also present near the interstate in the Savannah area. The light shaded line in Figure 7.4 illustrates that hazardous sites (e.g., landfills or waste sites) are adjacent to the corridors at locations north of Brunswick and south of Savannah. Further detail on these resources is displayed in Table 7.3.

Figure 7.2 Water Resources

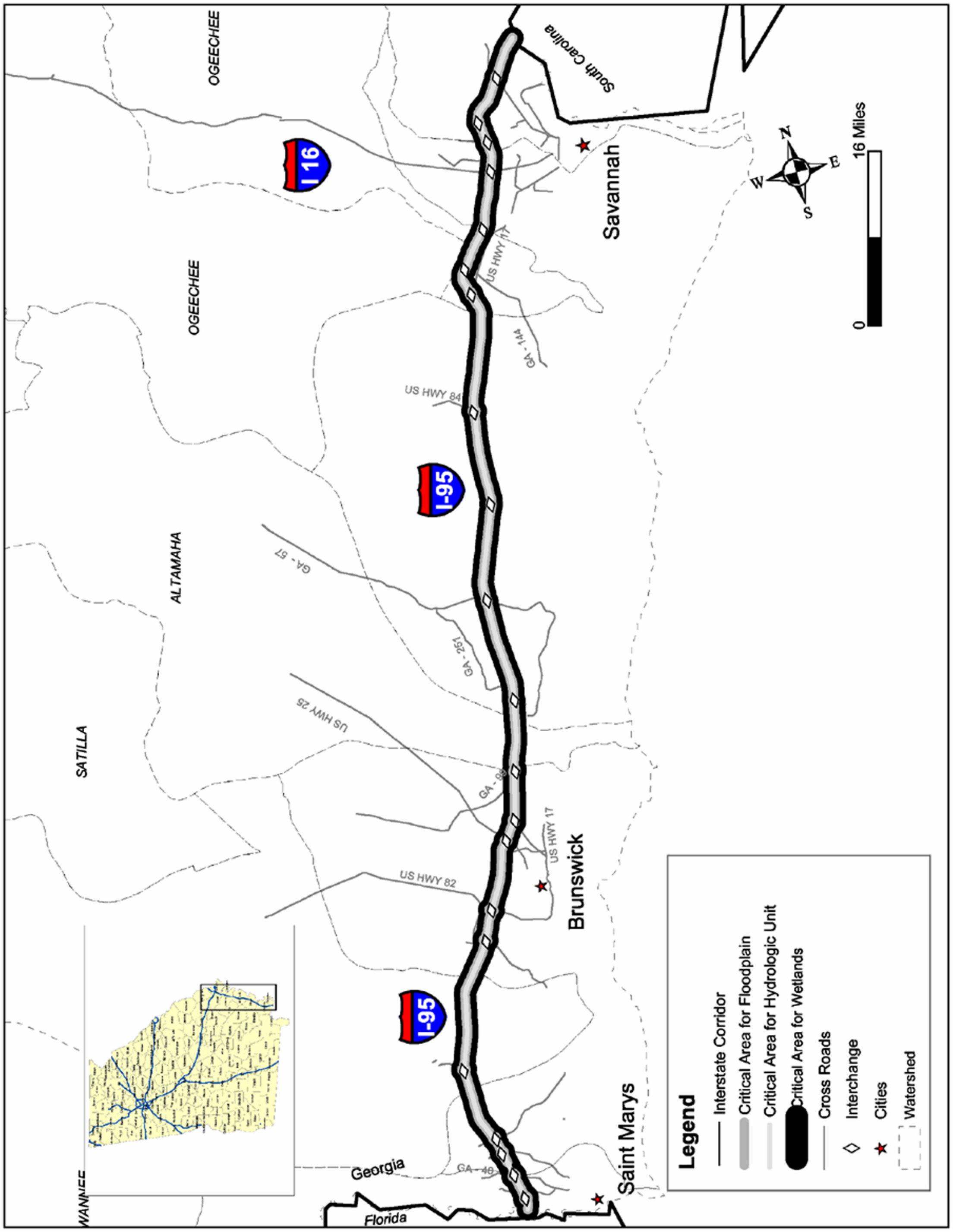


Figure 7.3 Parklands and Cultural Resources

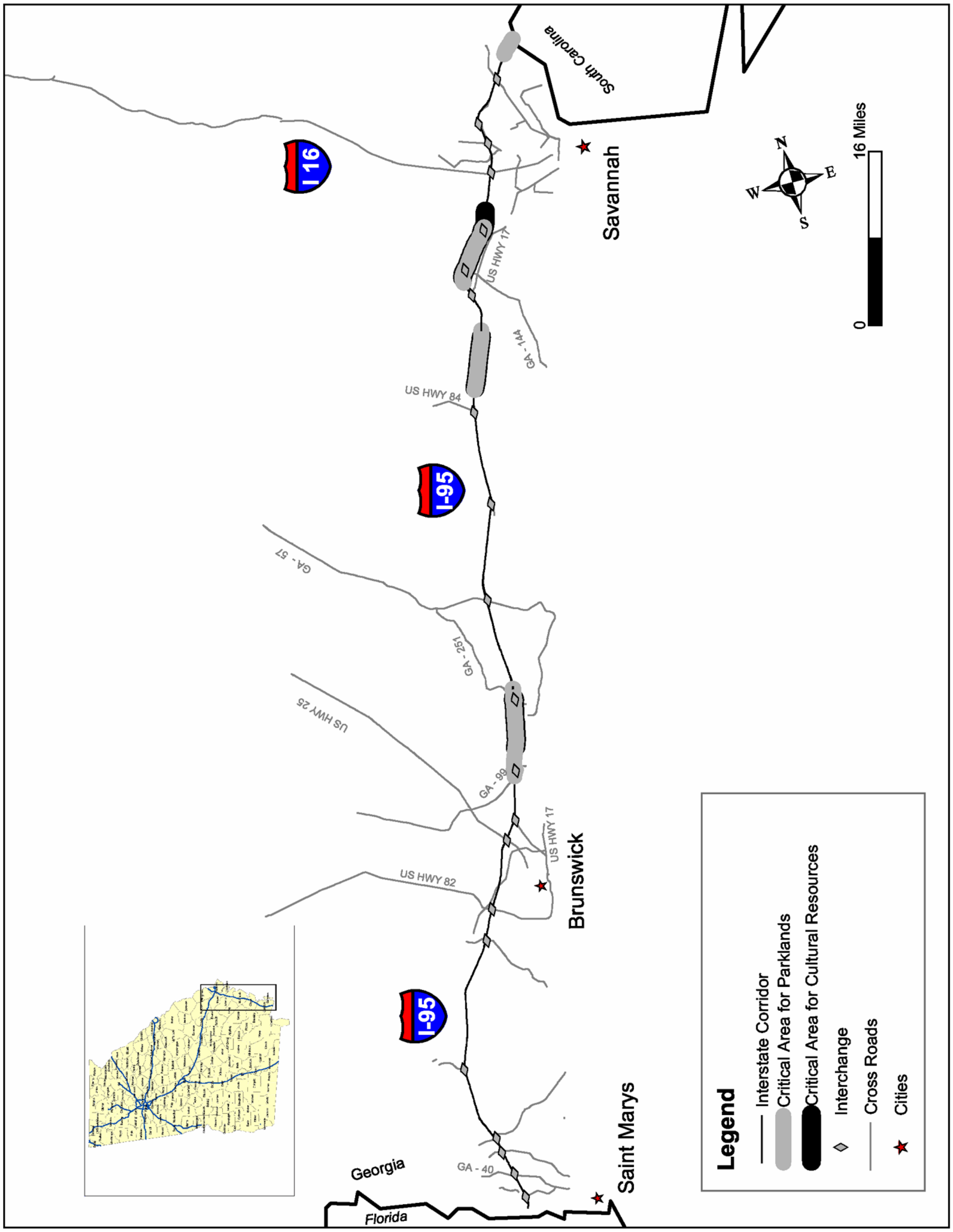


Figure 7.4 Other Environmental Resources

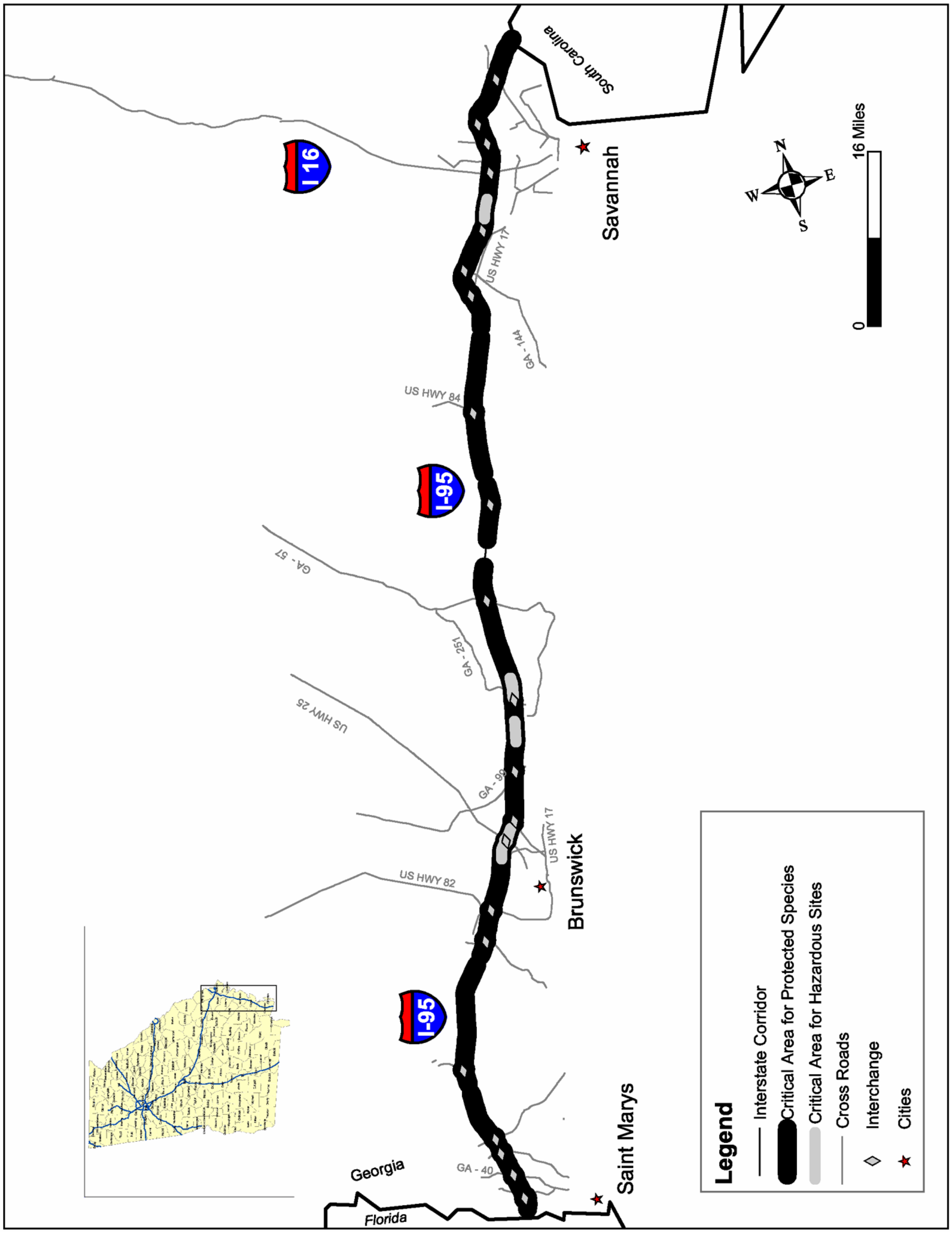


Table 7.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
95				13%	8%	16%	1%	5%	0%
	Coastal Georgia			13%	8%	16%	1%	5%	0%
		Effingham	5	0%	0%	100%	100%	0%	0%
		Chatham	5	16%	7%	4%	3%	12%	0%
		Bryan	5	46%	0%	49%	0%	28%	0%
		Liberty	5	18%	0%	19%	0%	0%	0%
		McIntosh	5	17%	19%	24%	0%	0%	0%
		Glynn	5	1%	20%	19%	0%	0%	0%
		Camden	5	0%	0%	0%	0%	0%	0%

Figure 7.4 also illustrates that nearly all sections of the corridor have some form of protected species within one mile of the centerline. Table 7.4 indicates that a wide array of protected species are found throughout the corridor, with mammals, reptiles, and flowering plants and trees most common. This corridor has the broadest array and greatest extent of protected species of the nine corridors analyzed in this Technical Memorandum.

Figure 7.5 and Table 7.5 indicate that Chatham and Glynn Counties could potentially be classified as a non-attainment area for small particles (i.e., PM 2.5) at some point in the future. Based on current information, it does not appear that any county in this corridor will be designated as non-attainment under the eight-hour Ozone standard. The PM 2.5 designation could end up affecting over one-third of the interstate system in this corridor.

Table 7.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
95				0%	57%	29%	0%	15%	15%	24%	0%	44%	0%	74%	0%
	Coastal Georgia			0%	57%	29%	0%	15%	15%	24%	0%	44%	0%	74%	0%
		Effingham	5	0%	0%	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%
		Chatham	5	0%	54%	66%	0%	71%	0%	39%	0%	27%	0%	26%	0%
		Bryan	5	0%	81%	9%	0%	22%	0%	22%	0%	15%	0%	69%	0%
		Liberty	5	0%	65%	0%	0%	0%	0%	0%	0%	53%	0%	100%	0%
		McIntosh	5	0%	82%	31%	0%	0%	35%	57%	0%	57%	0%	68%	0%
		Glynn	5	0%	100%	28%	0%	0%	35%	17%	0%	68%	0%	100%	0%
		Camden	5	0%	2%	24%	0%	0%	12%	0%	0%	37%	0%	85%	0%

Figure 7.5 Air Quality

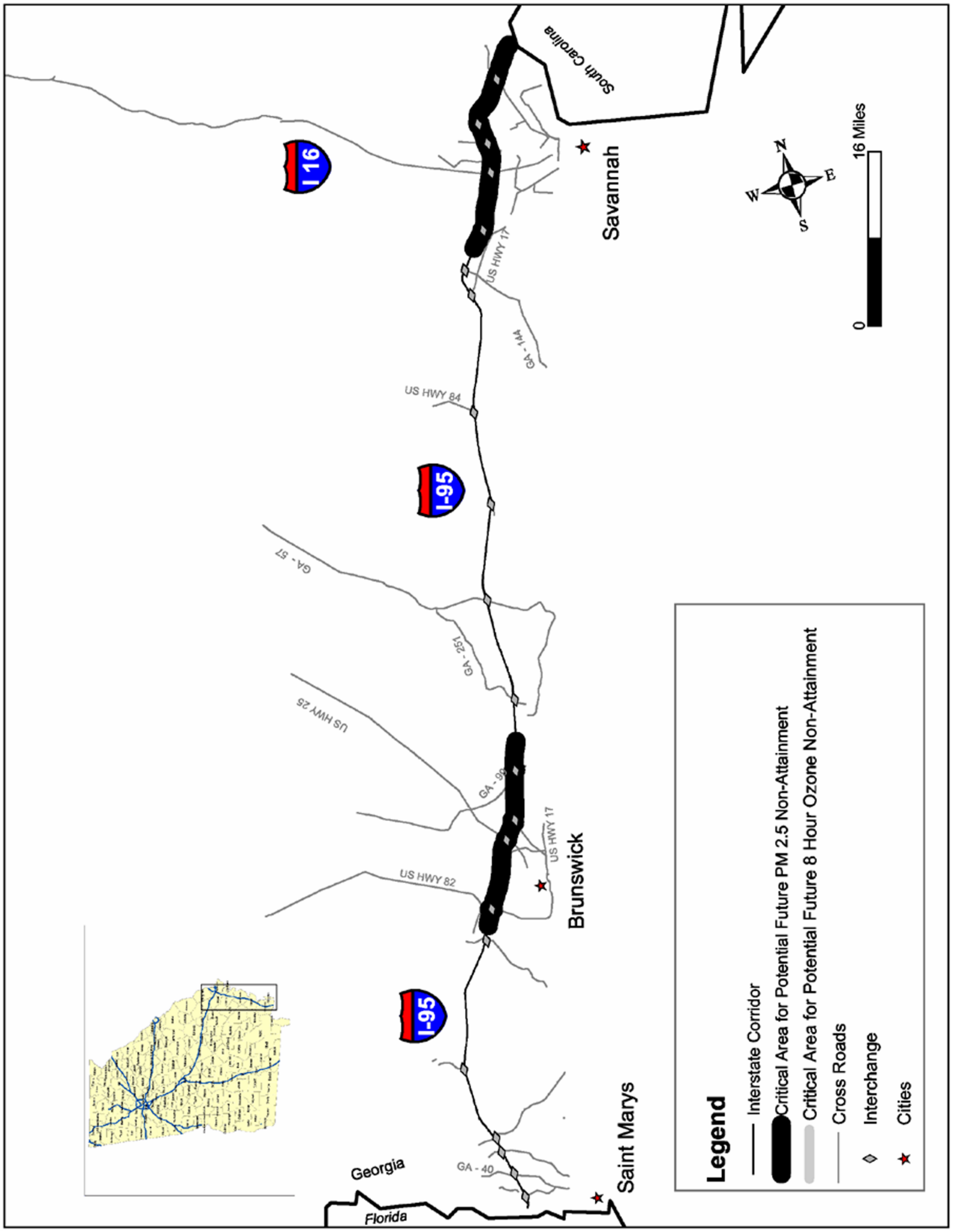


Table 7.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
95				0%	0%	34%
	Coastal Georgia			0%	0%	34%
		Effingham	5	0%	0%	0%
		Chatham	5	0%	0%	100%
		Bryan	5	0%	0%	0%
		Liberty	5	0%	0%	0%
		McIntosh	5	0%	0%	0%
		Glynn	5	0%	0%	100%
		Camden	5	0%	0%	0%

7.2 Land Use and Development

Existing development within one-half mile of the interstate tends to be clustered in small pockets throughout the length of the corridor. Figure 7.6 illustrates that residential and employment land uses are intermixed in many of these pockets of development, although employment land uses are more common in the northern half of the corridor. The data in Table 7.6 show that commercial land uses are the most prevalent employment-related land use throughout the corridor.

Figure 7.6 Existing Land Use

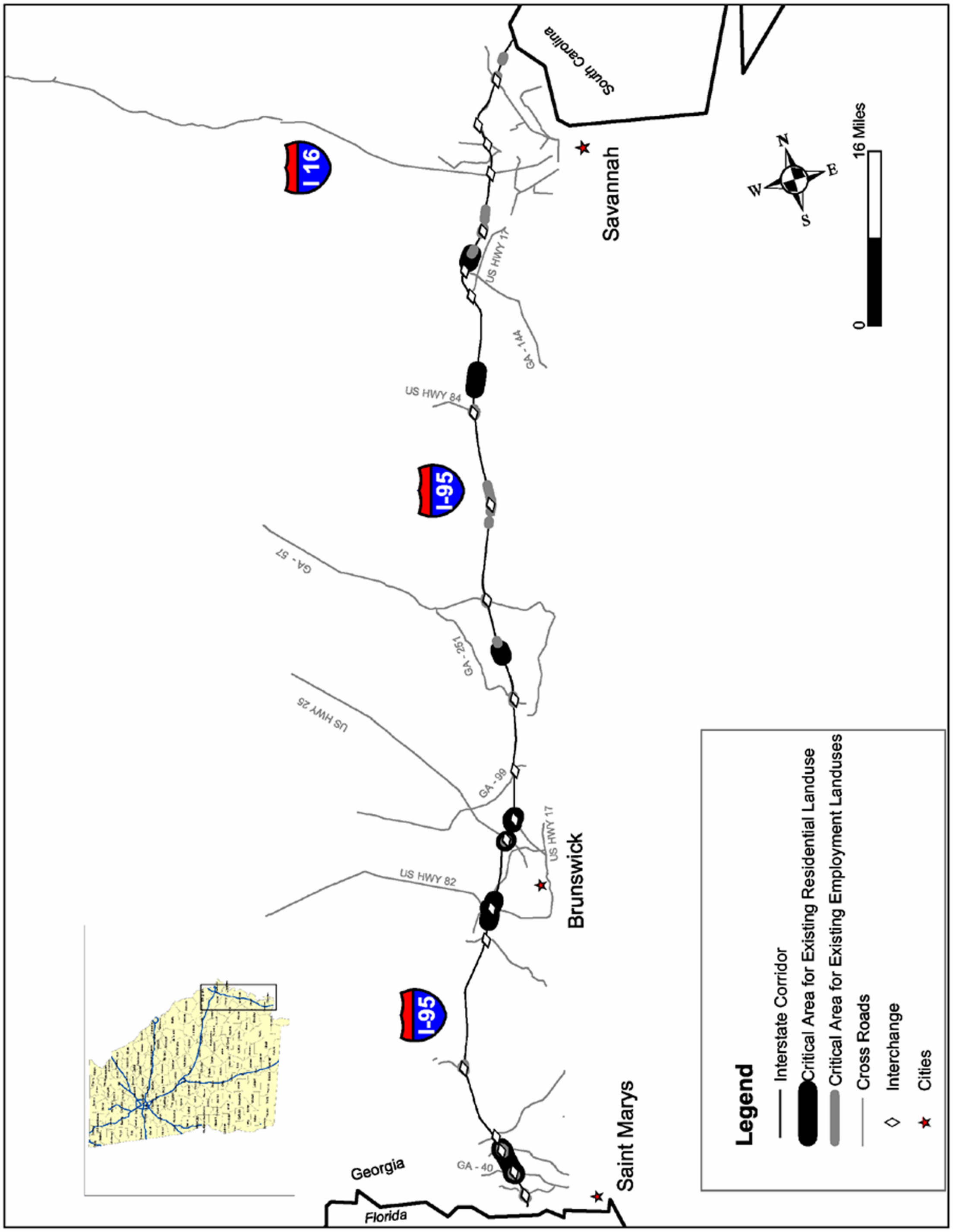


Table 7.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
95				7%	10%	1%	0%	1%	14%
	Coastal Georgia			7%	10%	1%	0%	1%	14%
		Effingham	5	0%	0%	0%	0%	0%	0%
		Chatham	5	0%	8%	4%	0%	2%	0%
		Bryan	5	6%	0%	0%	0%	4%	16%
		Liberty	5	11%	29%	0%	0%	0%	24%
		McIntosh	5	2%	13%	0%	1%	0%	32%
		Glynn	5	11%	1%	0%	0%	0%	20%
		Camden	5	13%	11%	0%	0%	0%	0%

Local land use plans suggest a more intensive development picture near the interstate for future years. Figure 7.7 illustrates that under current land use plans, employment and residential land uses are projected to be within one-half mile of the interstate at all interchanges, as well as between interchanges near the major communities and between Brunswick and Savannah. The data in Table 7.7 show that residential land use becomes the most common identified land use category, and that while commercial land use continues to be the predominant employment land use category, industrial land uses are also projected to be common in Chatham, McIntosh and Camden Counties.

Figure 7.7 Future Land Use

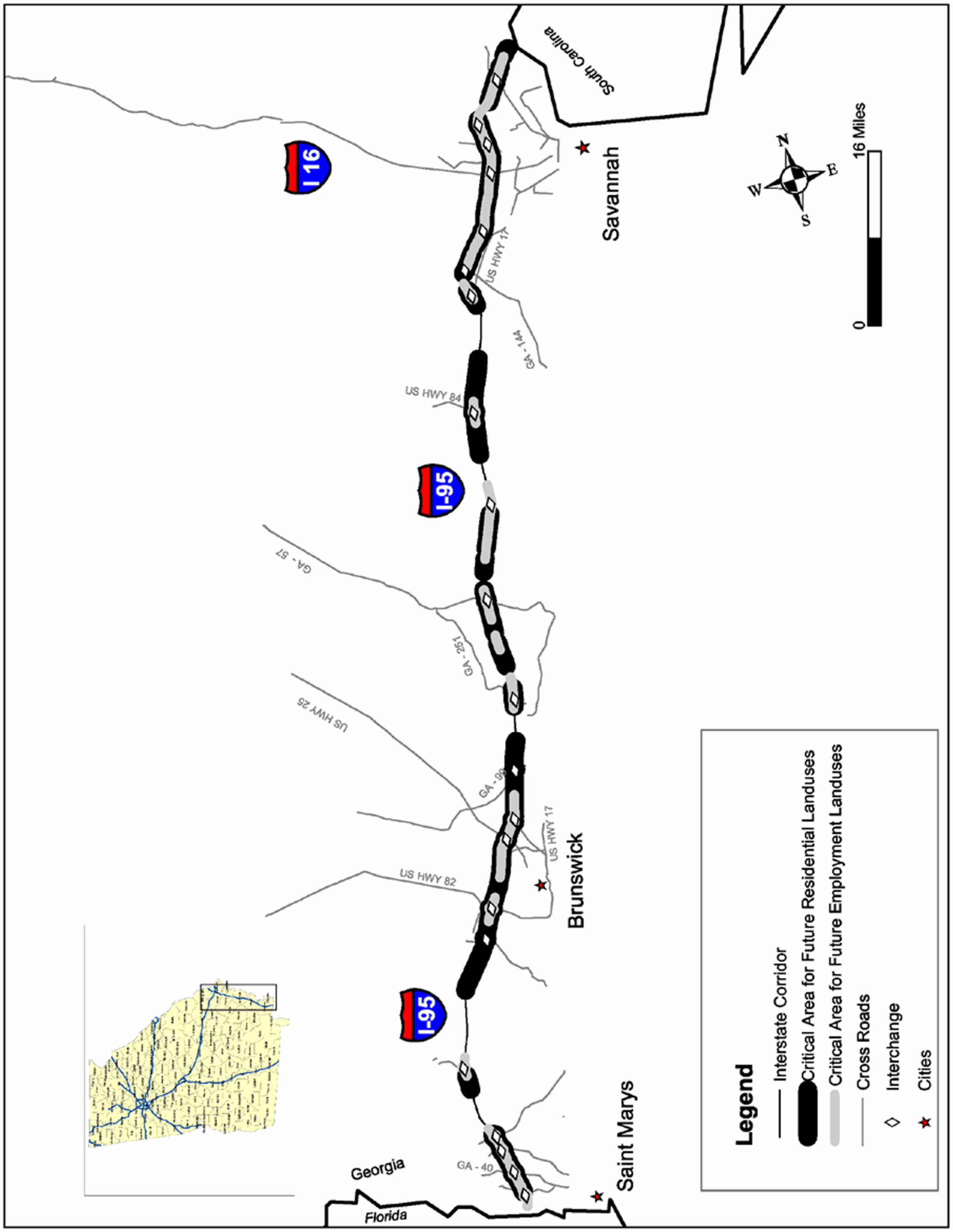


Table 7.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
95				67%	48%	22%	7%	0%	0%
	Coastal Georgia			67%	48%	22%	7%	0%	0%
		Effingham	5	0%	0%	0%	0%	0%	0%
		Chatham	5	86%	64%	78%	0%	0%	0%
		Bryan	5	45%	34%	0%	0%	0%	0%
		Liberty	5	63%	39%	0%	0%	0%	0%
		McIntosh	5	55%	38%	22%	16%	0%	0%
		Glynn	5	100%	64%	1%	21%	0%	0%
		Camden	5	51%	42%	16%	0%	0%	0%

7.3 Interstate Access

The information in Figure 7.8 and Table 7.6 indicate that several stretches of Interstate 95 between Brunswick and Savannah have existing interstate accessibility concerns. This accessibility designation indicates that an *existing activity center of statewide significance* is located in this area, and may not have ready access to an existing interchange.

While Figure 7.9 and Table 7.7 show that there are no similar accessibility concerns for the *future activity center of statewide significance,* there are nonetheless nine interchanges that could be subject to significant travel demand increases if these future activity centers are developed to the extent envisioned in the local land use plans. Seven of these nine interchanges are in the Brunswick and Savannah areas, while the other two are between these two communities.

Figure 7.10 illustrates interchanges that are likely to experience high levels of existing truck traffic due to proximity of existing activity centers that are industrial, intermodal, military or aviation in nature. A total of eight interchanges may experience heavy-truck traffic; these eight interchanges are the same ones that were shown in Figure 7.9 as potentially subject to significant future travel demand increases.

Figure 7.8 Existing Accessibility Needs

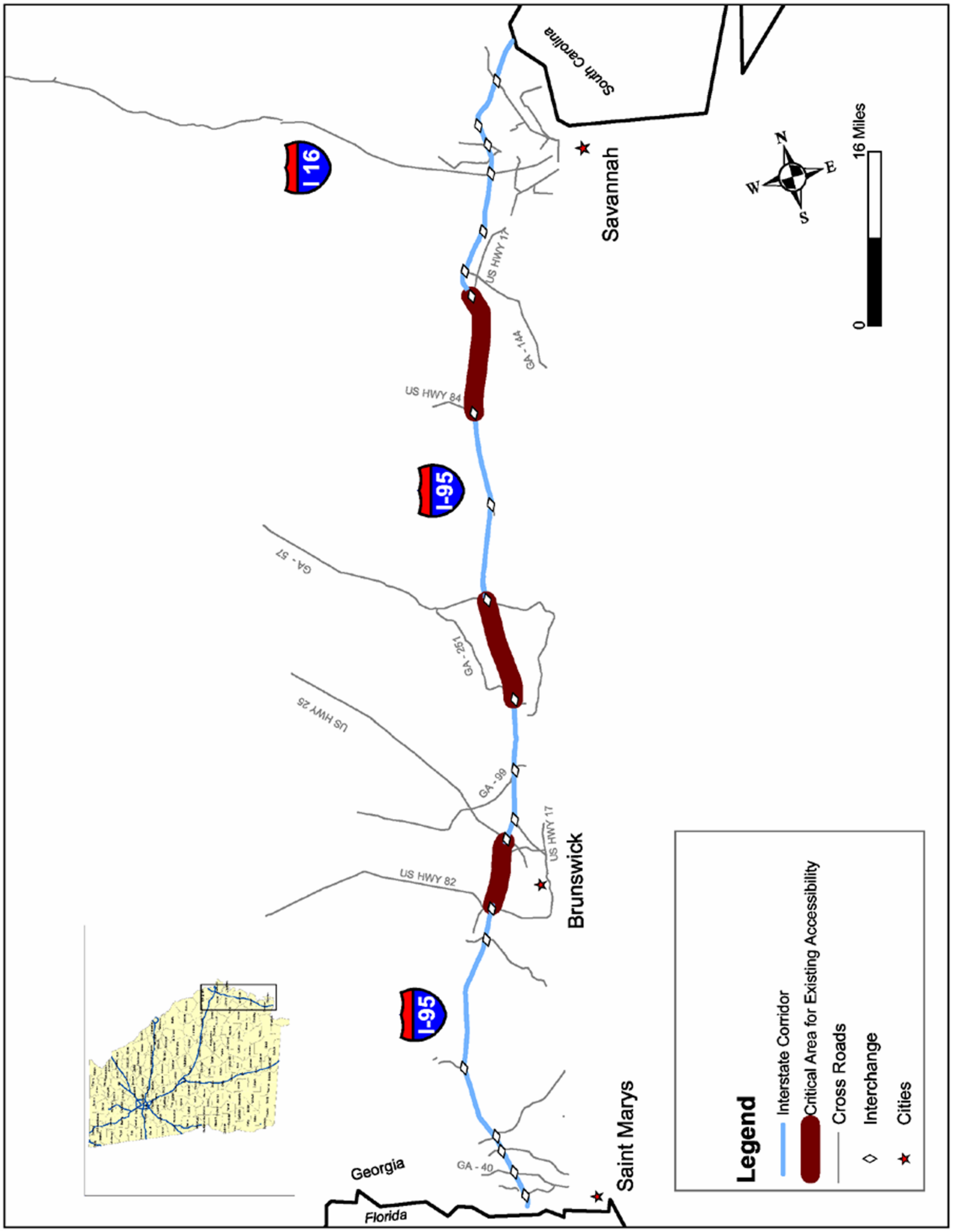


Figure 7.9 Future Accessibility Needs

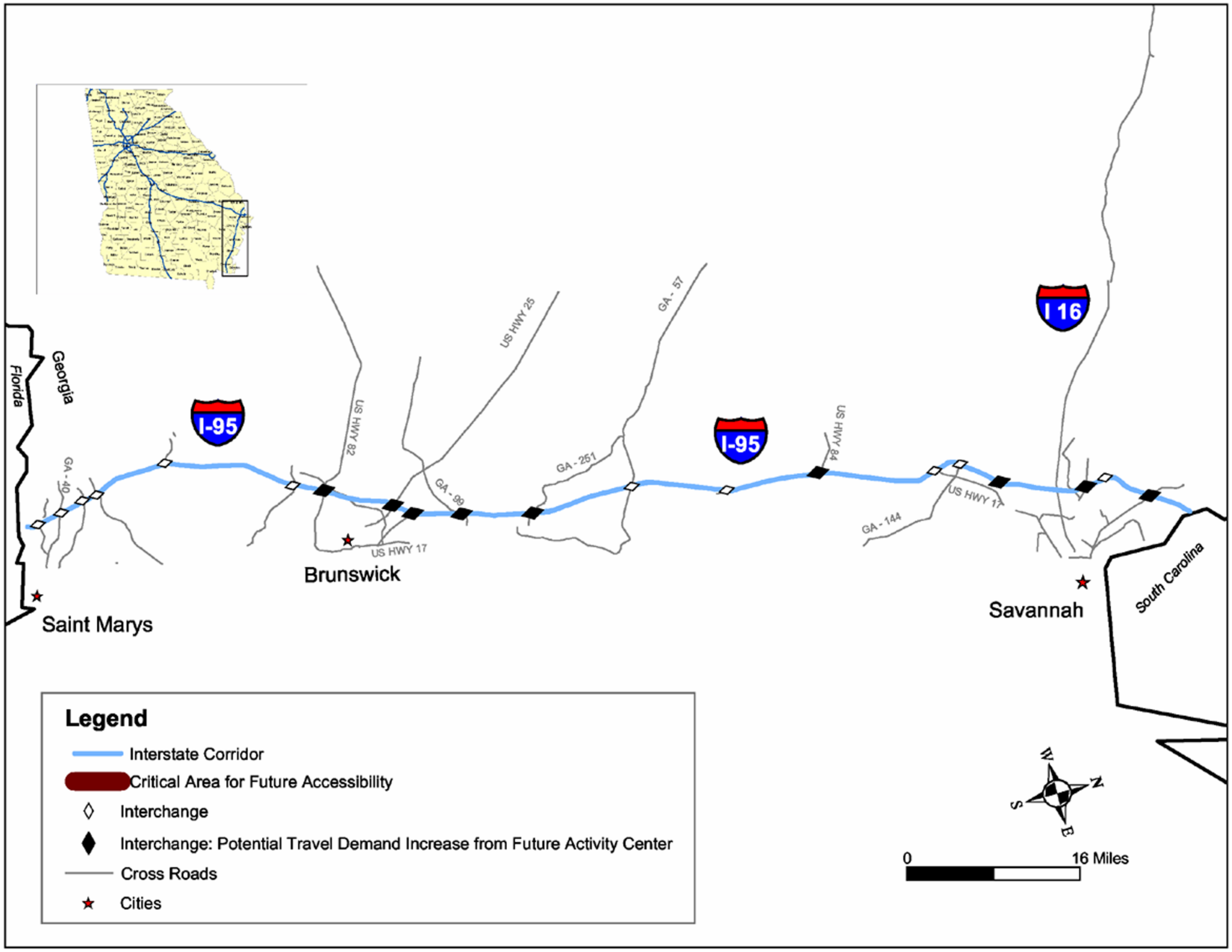
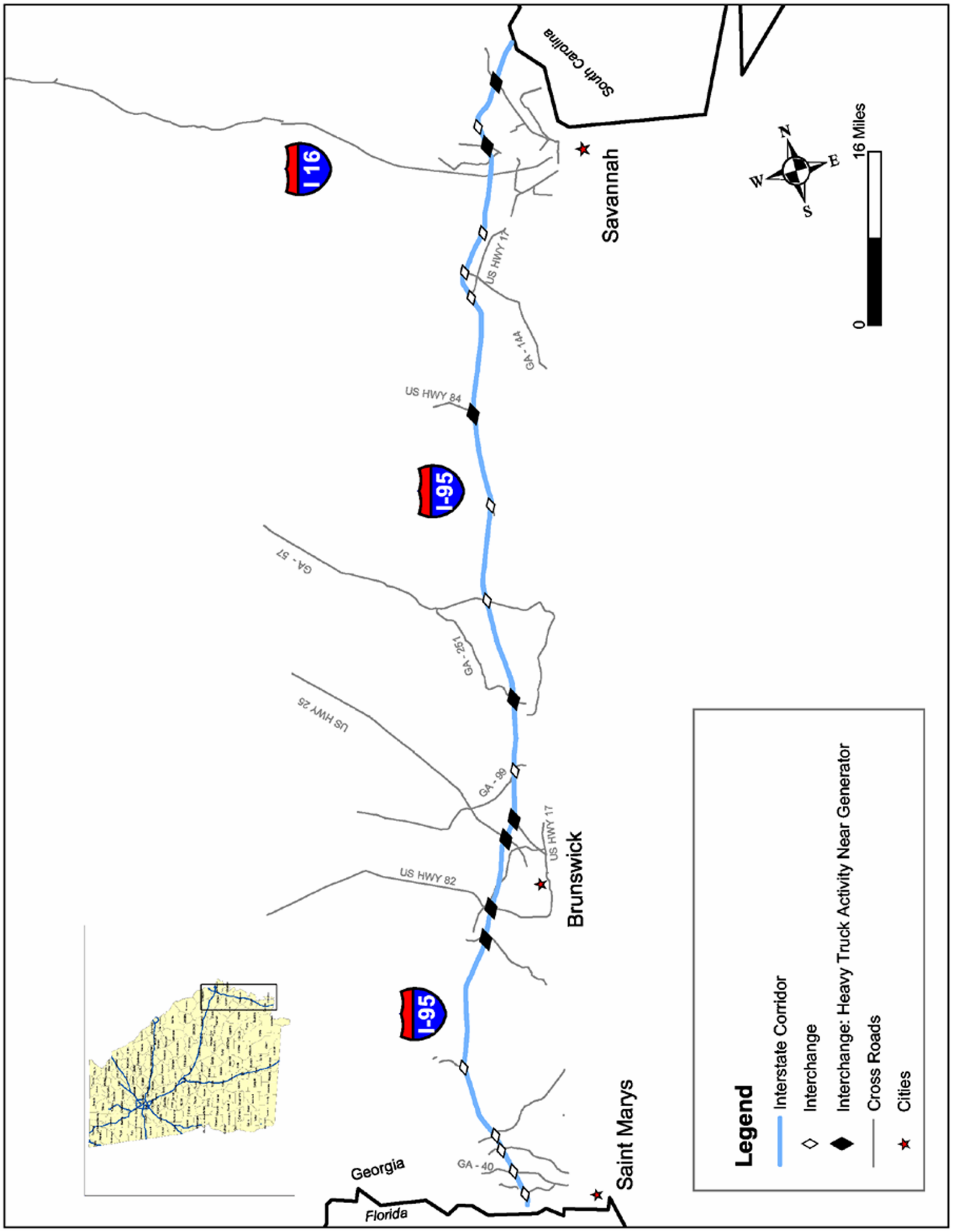


Figure 7.10 Key Access Points for Heavy-Truck Traffic



8.0 South Georgia Corridor

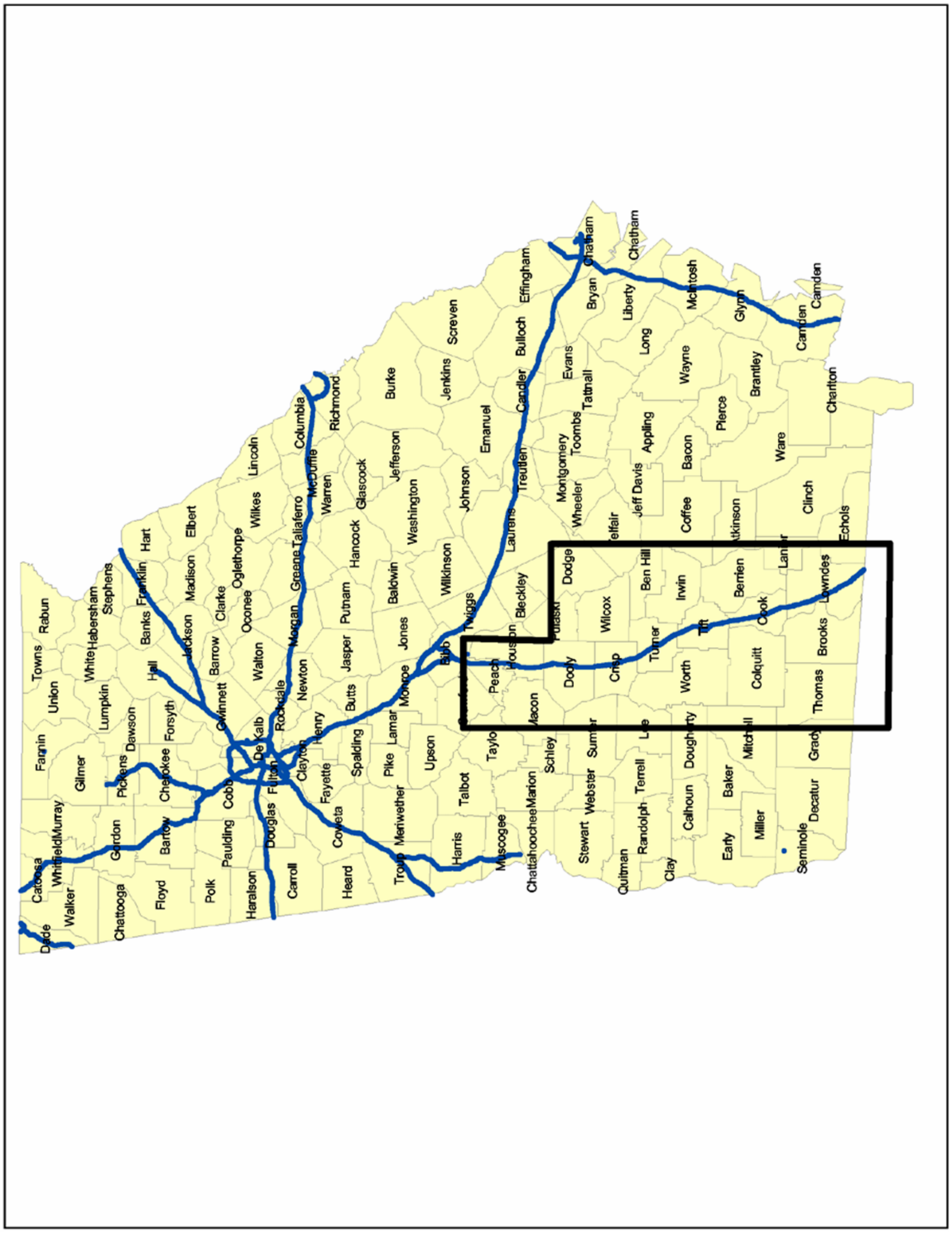
The South Georgia corridor, which is depicted in Figure 8.1, encompasses Interstate 75 generally between Macon and the Georgia/Florida state line. The corridor passes through Bibb, Peach, Houston, Dooly, Crisp, Turner, Tift, Cook, and Lowndes Counties. Major communities in or near the corridor include Macon, Perry, Cordele, Tifton, and Valdosta. The corridor is also divided between the Middle Georgia, Middle Flint, and South Georgia RDCs. Georgia DOT Districts 3 and4 provide local oversight and a variety of support activity for portions of the corridor.

A summary of the characteristics of Interstate 75 within this corridor is provided in Table 8.1. The corridor spans 203 centerline miles of Interstate 75 and includes 47 interchanges. These totals represent the largest number of interchanges and the second largest mileage of the nine corridors investigated in this study. The majority of the interstate mileage and interchanges falls within the South Georgia RDC and GDOT District 4. Lowndes County has the most centerline and lane mileage, while Tift County has the greatest number of interchanges.

Table 8.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
75				203	843	47
	Middle Georgia			36	185	7
		Bibb	3	2	11	0
		Crawford	3	0.2	1	0
		Peach	3	16	83	3
		Houston	3	18	91	4
	Middle Flint			45	185	11
		Dooly	3	24	117	5
		Crisp	4	21	68	6
	South Georgia			123	473	29
		Turner	4	22	75	5
		Tift	4	28	103	11
		Cook	4	26	92	6
		Lowndes	4	46	203	7

Figure 8.1 General Corridor Limits



8.1 Environmental Resources

Figure 8.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance almost continuously through the corridor. Hydrologic features (i.e., streams, rivers, lakes, etc.) are also quite common throughout the length of the corridor, while floodplains tend to be present near the interstate at both the north and south ends of the corridor. Table 8.2 presents a more detailed breakout of these water resources by county. All three categories of water resources are adjacent to the entire interstate corridor in Bibb, Crawford and Cook Counties, while two of the three categories of water resources have similar complete coverage in Houston and Lowndes Counties.

Table 8.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
75				100%	N/A	86%
	Middle Georgia			100%	91%	52%
		Bibb	3	100%	100%	100%
		Crawford	3	100%	100%	100%
		Peach	3	100%	79%	44%
		Houston	3	100%	100%	53%
	Middle Flint			100%	37%	75%
		Dooly	3	100%	48%	69%
		Crisp	4	100%	24%	82%
	South Georgia			100%	N/A	100%
		Turner	4	100%	*	100%
		Tift	4	100%	57%	100%
		Cook	4	100%	100%	100%
		Lowndes	4	100%	79%	100%

Note: * Indicates that data are not available for this county.
N/A indicates that corridor-wide value cannot be estimated due to lack of data in one or more counties.

Figure 8.3 illustrates that no portion of this corridor has parklands or cultural resources within one mile of the interstate centerline. The light shaded line in Figure 8.4 illustrates that hazardous sites (e.g., landfills or waste sites) are adjacent to the corridors at locations north of Perry, near Tifton, and at multiple locations between Tifton and Valdosta. Further detail on these concerns is displayed in Table 8.3.

Figure 8.2 Water Resources

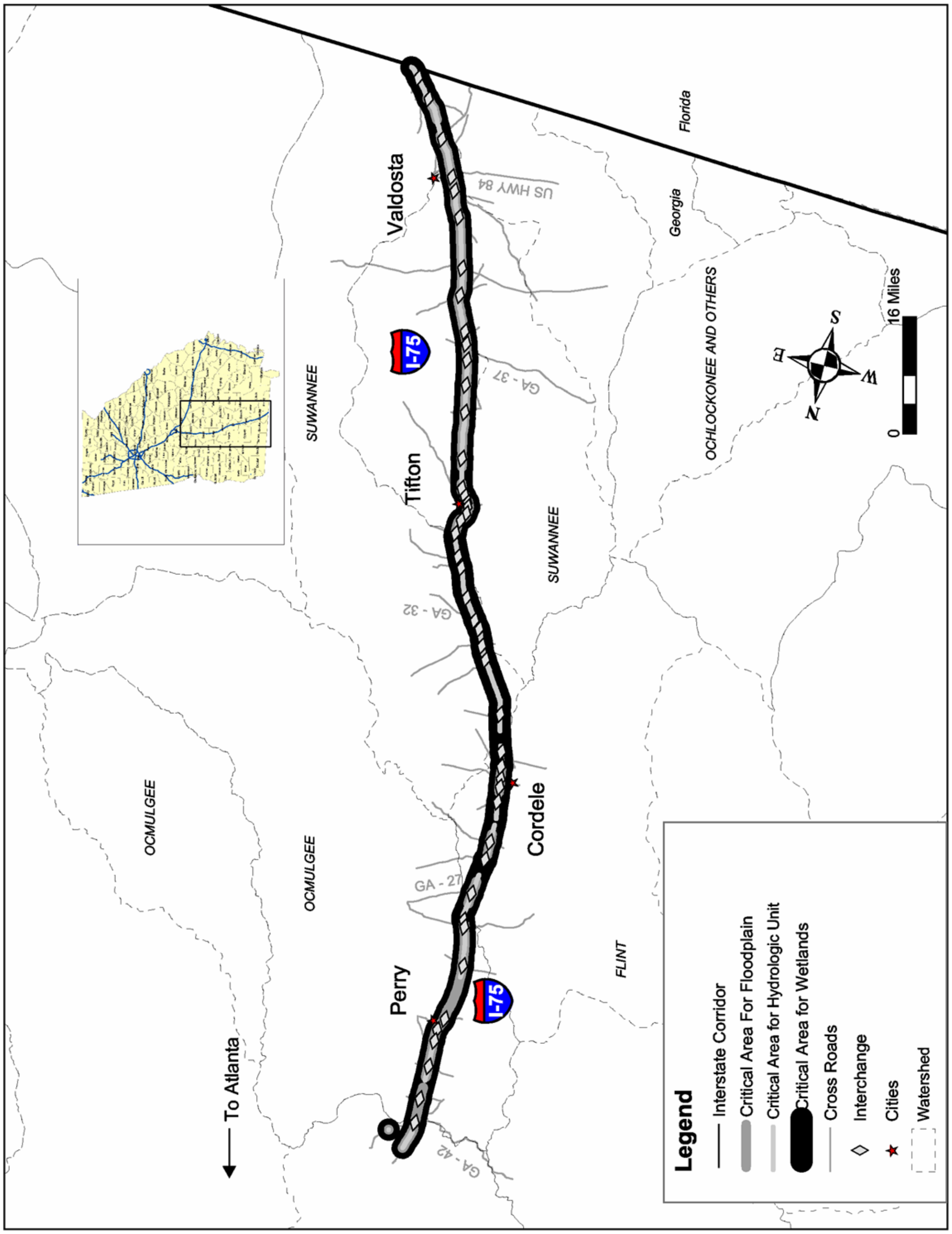


Figure 8.3 Parklands and Cultural Resources

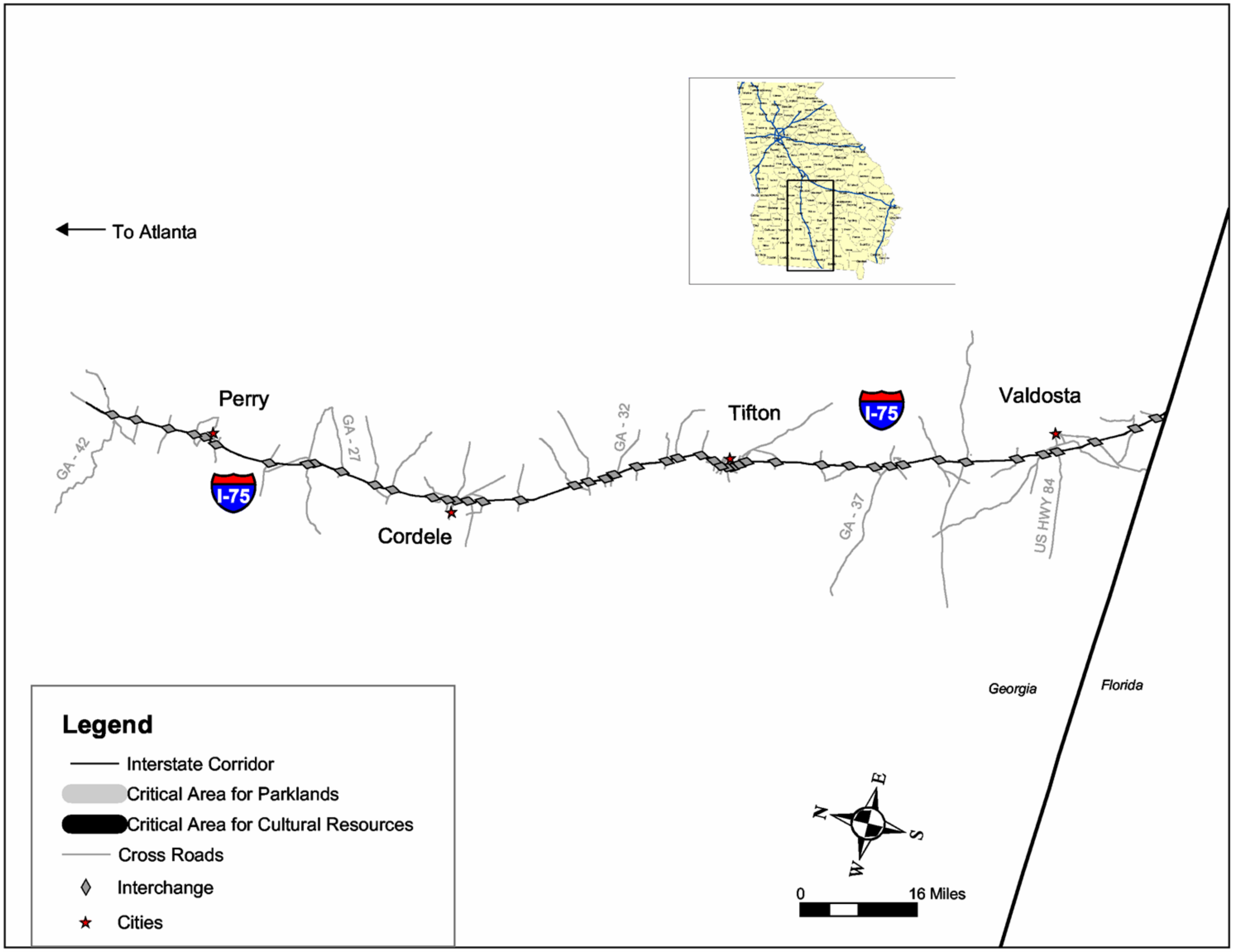


Figure 8.4 Other Environmental Resources

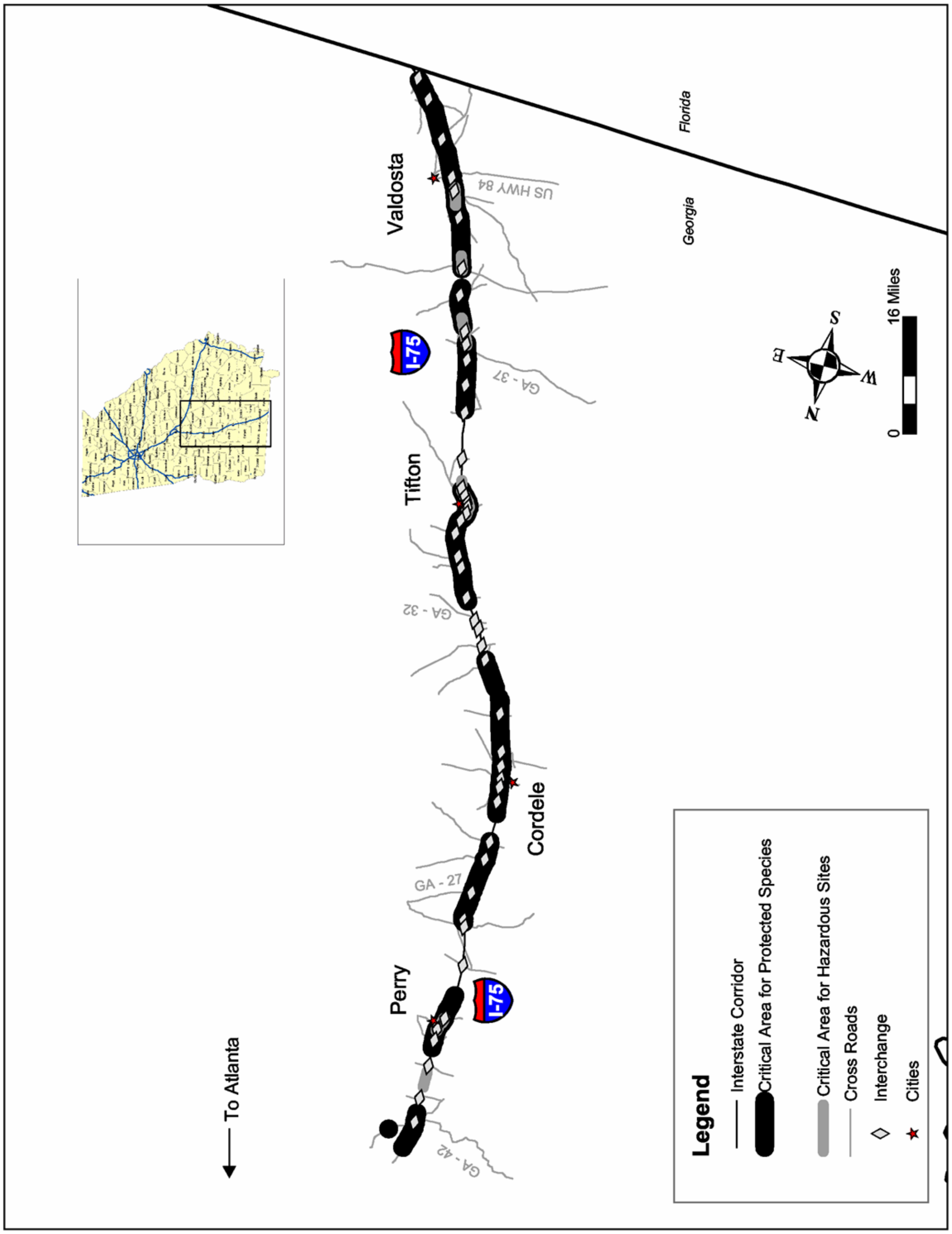


Table 8.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
75				0%	13%	0%	0%	0%	0%
	Middle Georgia			0%	14%	0%	0%	0%	0%
		Bibb	3	0%	0%	0%	0%	0%	0%
		Crawford	3	0%	0%	0%	0%	0%	0%
		Peach	3	0%	14%	0%	0%	0%	0%
		Houston	3	0%	16%	0%	0%	0%	0%
	Middle Flint			0%	0%	0%	0%	0%	0%
		Dooly	3	0%	0%	0%	0%	0%	0%
		Crisp	4	0%	0%	0%	0%	0%	0%
	South Georgia			0%	17%	0%	0%	0%	0%
		Turner	4	0%	0%	0%	0%	0%	0%
		Tift	4	0%	32%	0%	0%	0%	0%
		Cook	4	0%	19%	0%	0%	0%	0%
		Lowndes	4	0%	14%	0%	0%	0%	0%

Figure 8.4 also illustrates that most sections of this corridor have some form of protected species within one mile of the centerline. Table 8.4 indicates that flowering plants and trees tend to be the most common category of protected species found in the corridor, with grasses, orchids and lilies, and reptiles also somewhat common in the Middle Georgia and South Georgia RDC portions of the corridor.

Figure 8.5 and Table 8.5 indicate that Bibb, Houston and Lowndes Counties could potential be classified as a non-attainment area for small particles (i.e., PM 2.5) at some point in the future, while Bibb County may also be designated as non-attainment under the pending eight-hour Ozone standard. The PM 2.5 designation could end up affecting nearly one-third of the interstate system in this corridor.

Table 8.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
75				1%	58%	20%	0%	3%	6%	0%	7%	18%	0%	0%	0%
	Middle Georgia			6%	6%	0%	0%	17%	0%	0%	0%	31%	0%	0%	0%
		Bibb	3	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
		Crawford	3	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
		Peach	3	12%	12%	0%	0%	25%	0%	0%	0%	7%	0%	0%	0%
		Houston	3	0%	0%	0%	0%	0%	0%	0%	0%	56%	0%	0%	0%
	Middle Flint			0%	74%	0%	0%	0%	0%	0%	31%	0%	0%	0%	0%
		Dooly	3	0%	56%	0%	0%	0%	0%	0%	27%	0%	0%	0%	0%
		Crisp	4	0%	94%	0%	0%	0%	0%	0%	35%	0%	0%	0%	0%
	South Georgia			0%	68%	33%	0%	0%	10%	1%	0%	20%	0%	0%	0%
		Turner	4	0%	48%	26%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Tift	4	0%	74%	69%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Cook	4	0%	50%	0%	0%	0%	26%	0%	0%	0%	0%	0%	0%
		Lowndes	4	0%	84%	33%	0%	0%	12%	2%	0%	54%	0%	0%	0%

Figure 8.5 Air Quality

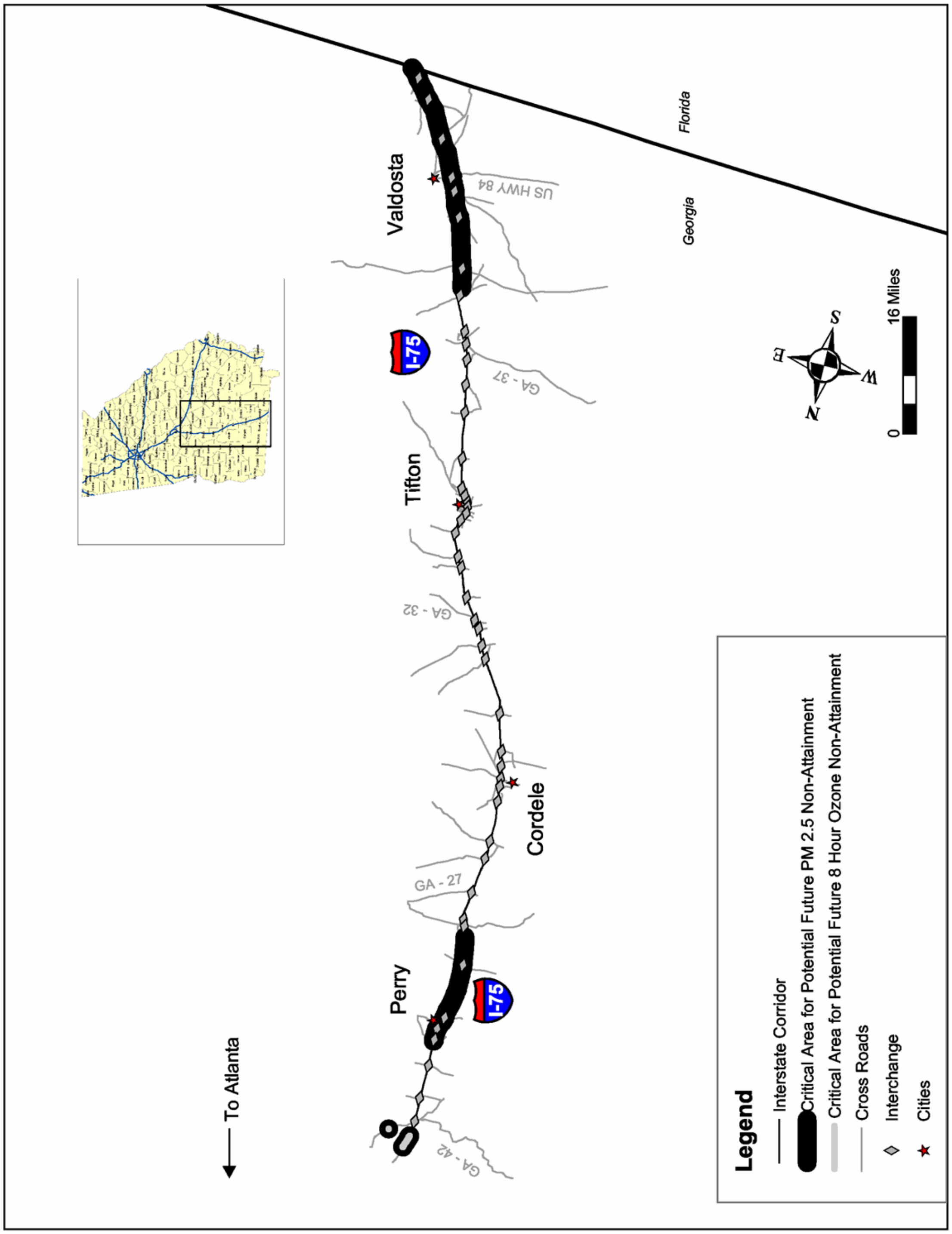


Table 8.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
75				0%	1%	33%
	Middle Georgia			0%	5%	54%
		Bibb	3	0%	100%	100%
		Crawford	3	0%	0%	0%
		Peach	3	0%	0%	0%
		Houston	3	0%	0%	100%
	Middle Flint			0%	0%	0%
		Dooly	3	0%	0%	0%
		Crisp	4	0%	0%	0%
	South Georgia			0%	0%	38%
		Turner	4	0%	0%	0%
		Tift	4	0%	0%	0%
		Cook	4	0%	0%	0%
		Lowndes	4	0%	0%	100%

8.2 Land Use and Development

Existing development tends to be clustered in small pockets in Bibb and Houston County, as well as in areas from north of Tifton to the Valdosta area. Figure 8.6 illustrates that residential and employment land uses tend to be intermixed in all of these pockets of development. The data in Table 8.6 show that commercial land uses are the most prevalent employment-related land use throughout the corridor, although public/institutional land use is also prevalent in Tift County.

Figure 8.6 Existing Land Use

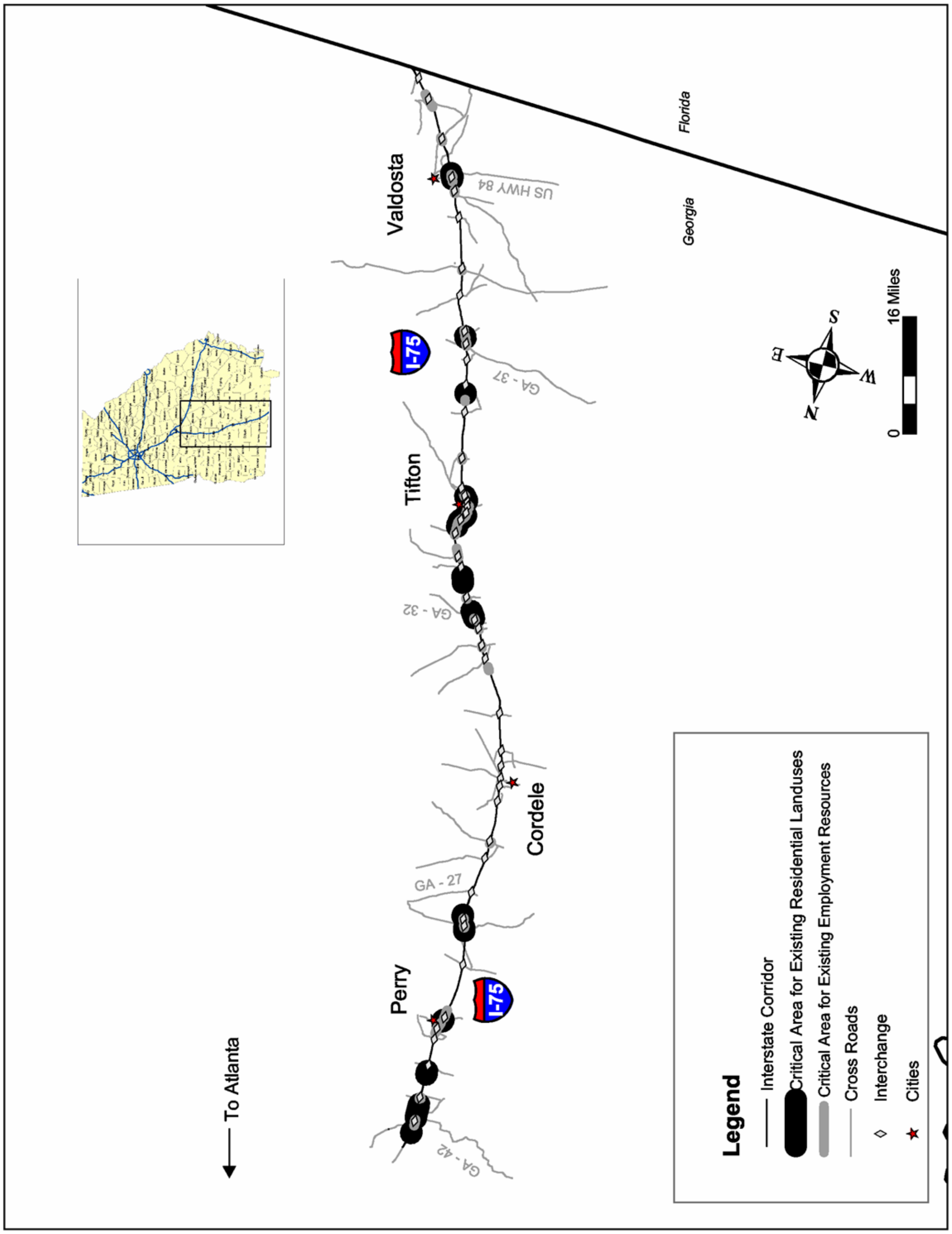


Table 8.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
75				4%	10%	0%	1%	3%	1%
	Middle Georgia			8%	12%	0%	0%	2%	0%
		Bibb	3	0%	0%	0%	0%	0%	0%
		Crawford	3	0%	0%	0%	0%	0%	0%
		Peach	3	16%	12%	0%	0%	0%	0%
		Houston	3	2%	15%	0%	0%	4%	0%
	Middle Flint			1%	4%	0%	1%	0%	0%
		Dooly	3	2%	7%	0%	1%	0%	0%
		Crisp	4	0%	0%	0%	0%	0%	0%
	South Georgia			5%	11%	1%	1%	4%	1%
		Turner	4	6%	1%	2%	3%	0%	0%
		Tift	4	11%	18%	0%	0%	16%	0%
		Cook	4	2%	2%	1%	2%	0%	5%
		Lowndes	4	1%	16%	0%	0%	0%	0%

Local land use plans suggest a much different development picture for future years. Figure 8.7 illustrates that under current land use plans, employment and residential land uses are projected to be within one-half mile of the interstate centerline at most locations throughout the corridor. The data in Table 8.7 show that while commercial land uses continue to be the most common identified land use category, industrial land uses are also projected to be common in the portion of the corridor between Dooly County and Cook County.

Figure 8.7 Future Land Use

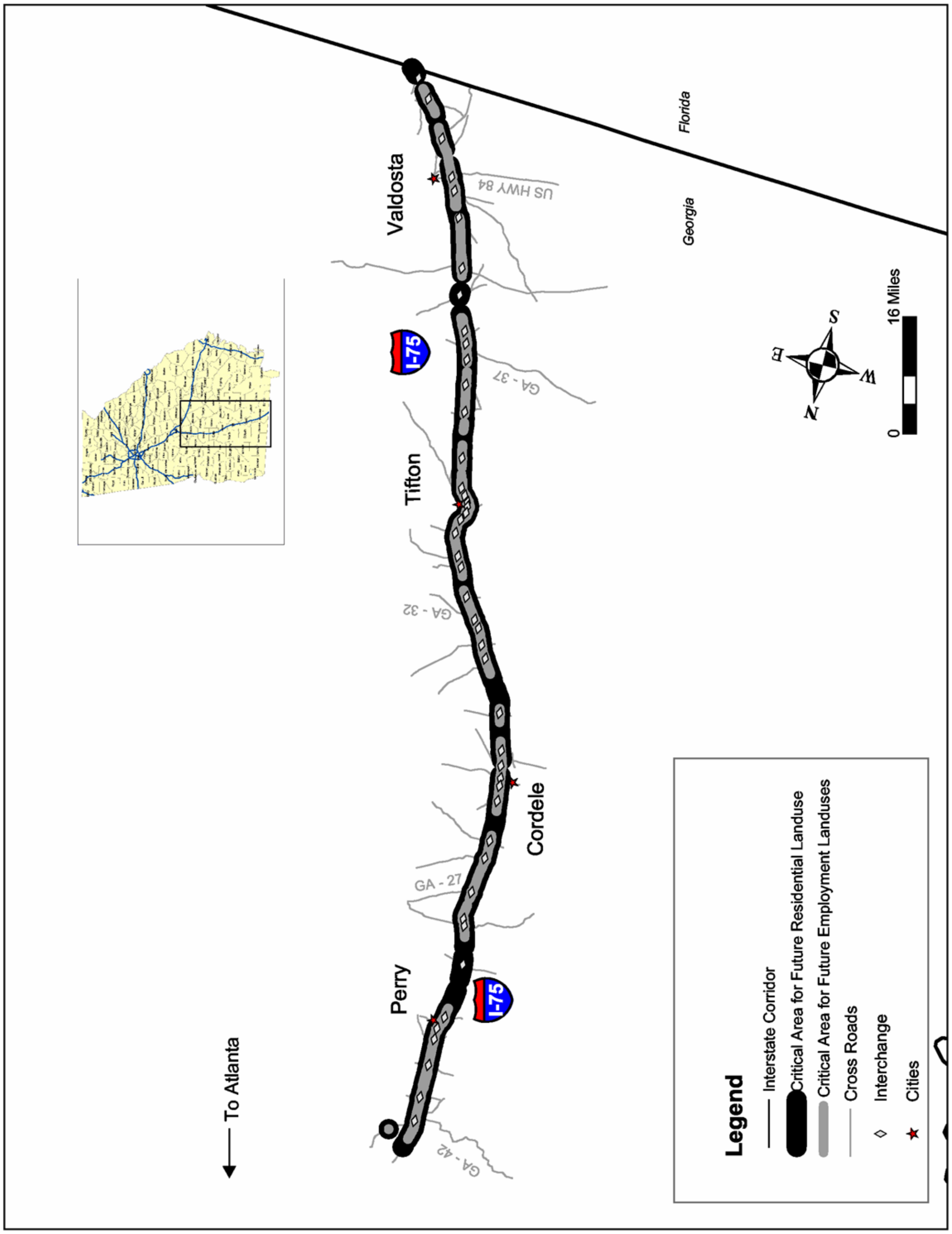


Table 8.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
75				85%	56%	36%	21%	24%	0%
	Middle Georgia			86%	58%	38%	0%	0%	0%
		Bibb	3	47%	13%	9%	0%	0%	0%
		Crawford	3	100%	100%	0%	0%	0%	0%
		Peach	3	96%	92%	58%	0%	0%	0%
		Houston	3	81%	32%	24%	0%	0%	0%
	Middle Flint			91%	59%	47%	15%	0%	0%
		Dooly	3	100%	50%	58%	27%	0%	0%
		Crisp	4	81%	69%	35%	0%	0%	0%
	South Georgia			83%	54%	32%	30%	40%	0%
		Turner	4	93%	52%	50%	36%	35%	0%
		Tift	4	95%	84%	42%	17%	62%	0%
		Cook	4	82%	25%	37%	38%	38%	0%
		Lowndes	4	72%	53%	14%	29%	29%	0%

8.3 Interstate Access

The information in Figure 8.8 and Table 8.6 indicate that a small portion of Interstate 75 in Cook County, between Tifton and Valdosta, has an existing accessibility concern. This accessibility designation indicates that an *existing activity center of statewide significance* is located in this area, and may not have ready access to an existing interchange.

While Figure 8.9 and Table 8.7 show that there are no similar accessibility concerns for the *future activity center of statewide significance,* there are nonetheless eight interchanges that could be subject to significant travel demand increases if these future activity centers are developed to the extent envisioned in the local land use plans. Six of these eight interchanges are located north of Cordele, while the seventh is located between Cordele and Tifton and the eighth in the Valdosta area.

Figure 8.10 illustrates interchanges that are likely to experience high levels of existing truck traffic due to proximity of existing activity centers that are industrial, intermodal, military or aviation in nature. A total of 13 interchanges may experience heavy-truck traffic, with the majority of these interchanges again located north of Cordele.

Figure 8.8 Existing Accessibility Needs

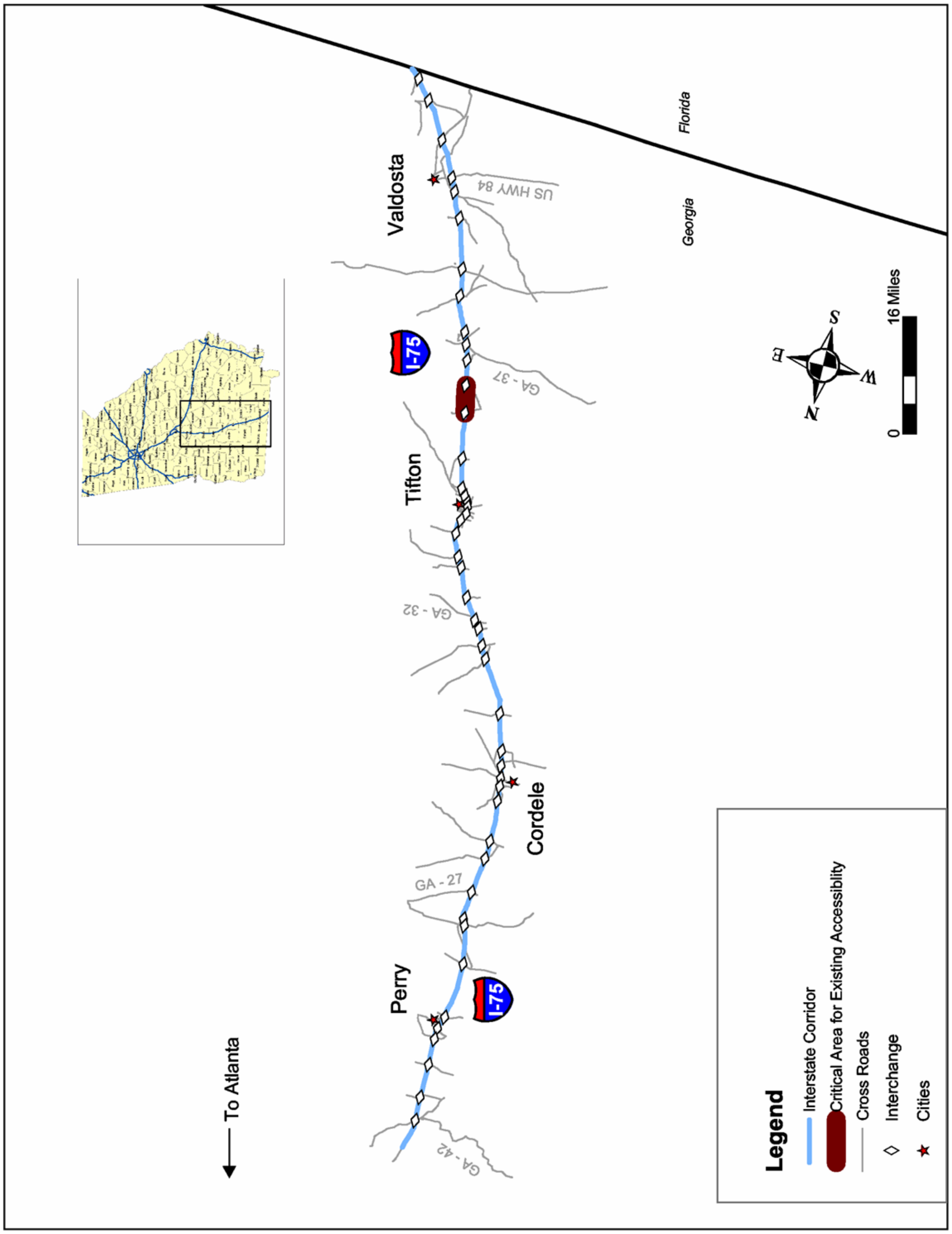


Figure 8.9 Future Accessibility Needs

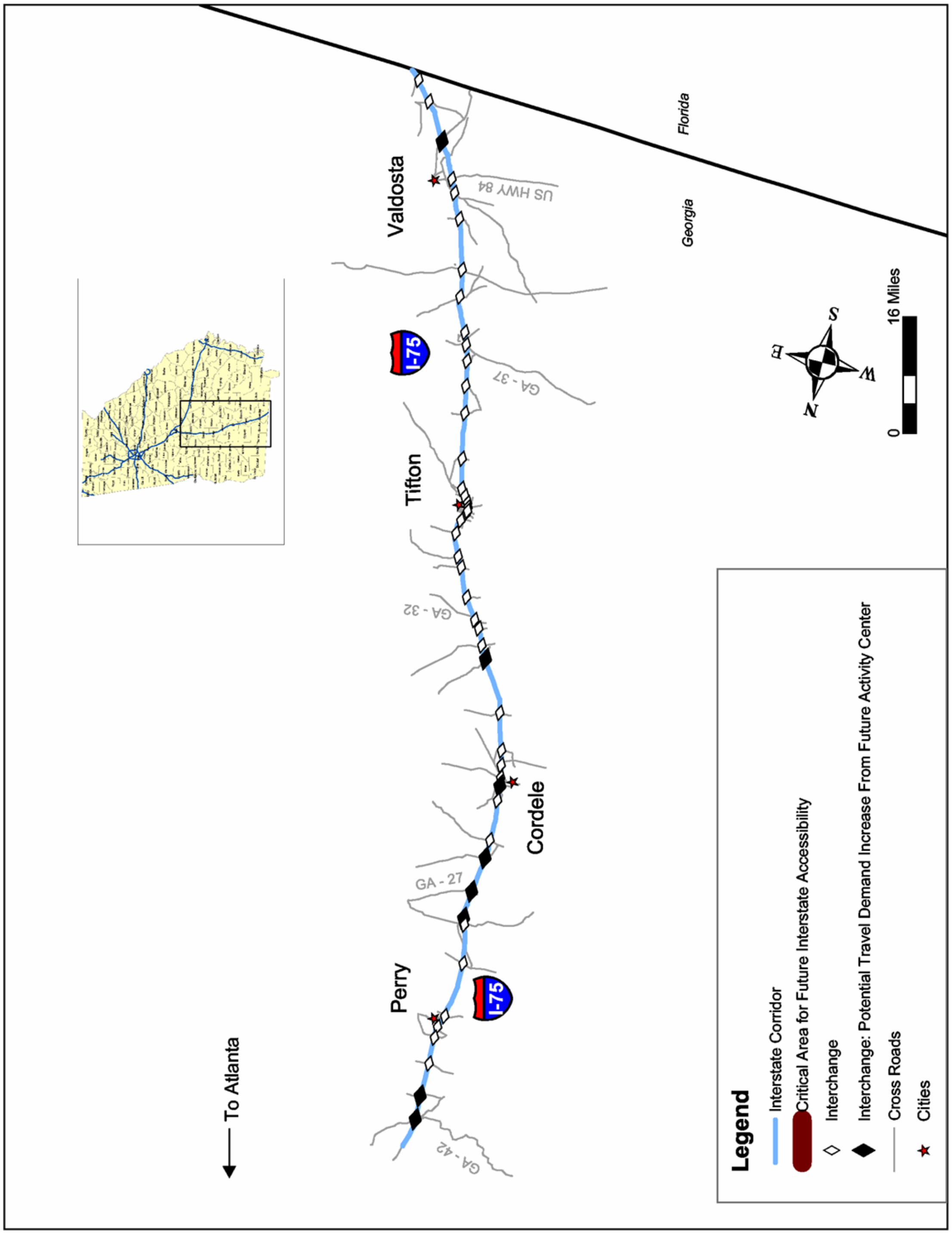
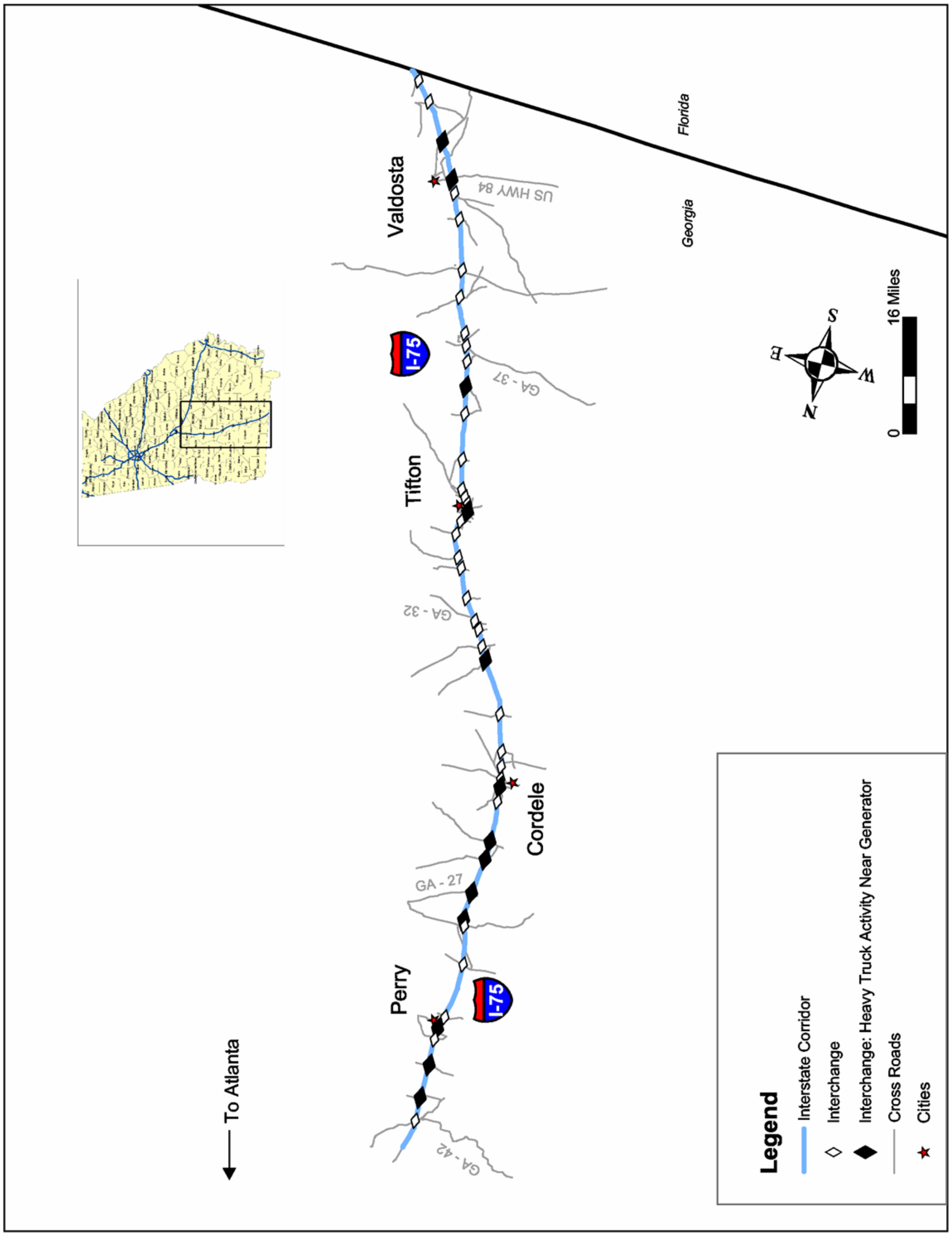


Figure 8.10 Key Access Points for Heavy-Truck Traffic



9.0 West Central Georgia Corridor

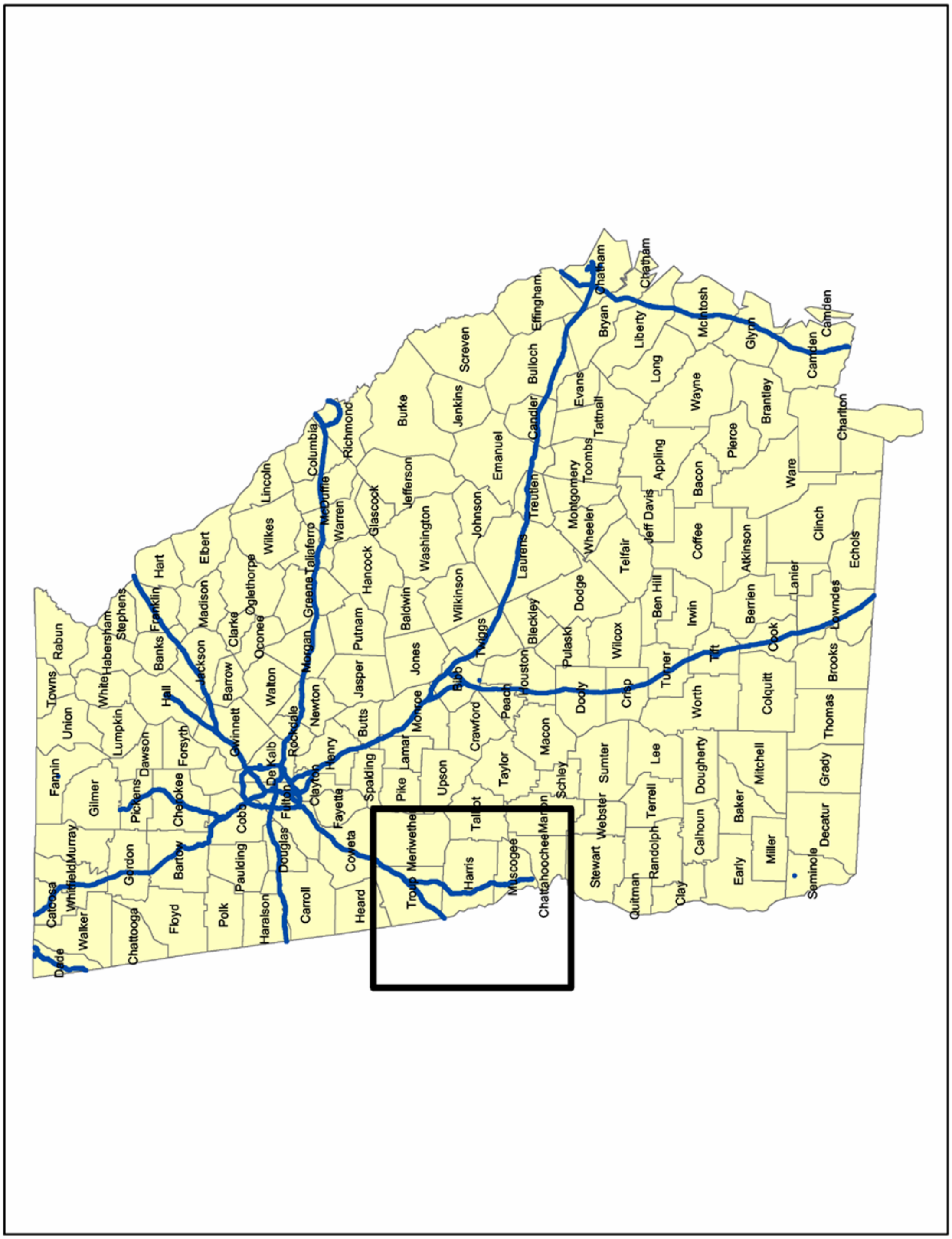
The West Central Georgia corridor, which is depicted in Figure 9.1, encompasses Interstate 85 and Interstate 185 generally between the southern border of Coweta County and the Georgia/Alabama state line. Interstate 85 passes through Meriwether, Troup and Harris Counties. In Troup County, Interstate 185 branches off from Interstate 85 and continues to pass through Harris and Muscogee Counties. Major communities in or near the corridor include LaGrange and Columbus. The corridor is also divided between the Chattahoochee-Flint and Lower Chattahoochee RDCs. Georgia DOT District 3 provides local oversight for the corridor.

Table 9.1 provides a summary of the characteristics of Interstates 85 and 185 within this corridor. The corridor contains in total 115 centerline miles of interstate, 42 miles of which are attributed to Interstate 85 and 73 miles to Interstate 185. This stretch of Interstate 85 contains six interchanges. Interstate 185 contains 15 interchanges. Most of the interchanges are located near Columbus in Muscogee County and LaGrange in Troup County. Among the all counties within the corridor, Troup County contains the most interstate centerline and lane miles.

Table 9.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
85				42	144	6
	Chattahoochee-Flint			40	138	6
		Meriwether	3	0.1	0.3	0
		Troup	3	40	137	6
	Lower Chattahoochee			2	6	0
		Harris	3	2	6	0
185				73	250	15
	Chattahoochee-Flint			19	67	2
		Troup	3	19	67	2
	Lower Chattahoochee			53	183	13
		Harris	3	28	94	5
		Muscogee	3	25	89	8

Figure 9.1 General Corridor Limits



9.1 Environmental Resources

Figure 9.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance continuously through the northern portion of the corridor, i.e., along the entire stretch of Interstate 85. Hydrologic features (i.e., streams, rivers, lakes, etc.) are common throughout the length of the corridor, while floodplains tend to be present in the same areas as the wetlands with critical areas extending even more south along Interstate 185 approaching the U.S. Highway 80 interchange. Table 9.2 presents a more detailed breakout of these water resources by county. All three categories of water resources are adjacent to Interstate 85 in Meriwether and Harris County. All portions of the interstate in Troup County are adjacent to wetlands.

Table 9.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
85				100%	90%	76%
	Chattahoochee-Flint			100%	90%	75%
		Meriwether	3	100%	100%	100%
		Troup	3	100%	90%	75%
	Lower Chattahoochee			100%	100%	100%
		Harris	3	100%	100%	100%
185				44%	N/A	81%
	Chattahoochee-Flint			100%	68%	95%
		Troup	3	100%	68%	95%
	Lower Chattahoochee			24%	N/A	77%
		Harris	3	46%	87%	75%
		Muscogee	3	0%	*	78%

Note: * Indicates that data are not available for this county.
N/A indicates that corridor-wide value cannot be estimated due to lack of data in one or more counties.

Figure 9.3 illustrates that small portions of Interstate 185 contain parkland and cultural resources that are within one mile of the interstate centerline. These critical areas are found between Interstate 185's GA-219 and GA-118 interchanges. As seen in Figure 9.4, hazardous sites (e.g., landfills or waste sites) are adjacent to the interstate at locations near LaGrange, Columbus and the Georgia/Alabama state line. Further detail on these resources is displayed in Table 9.3.

Figure 9.2 Water Resources

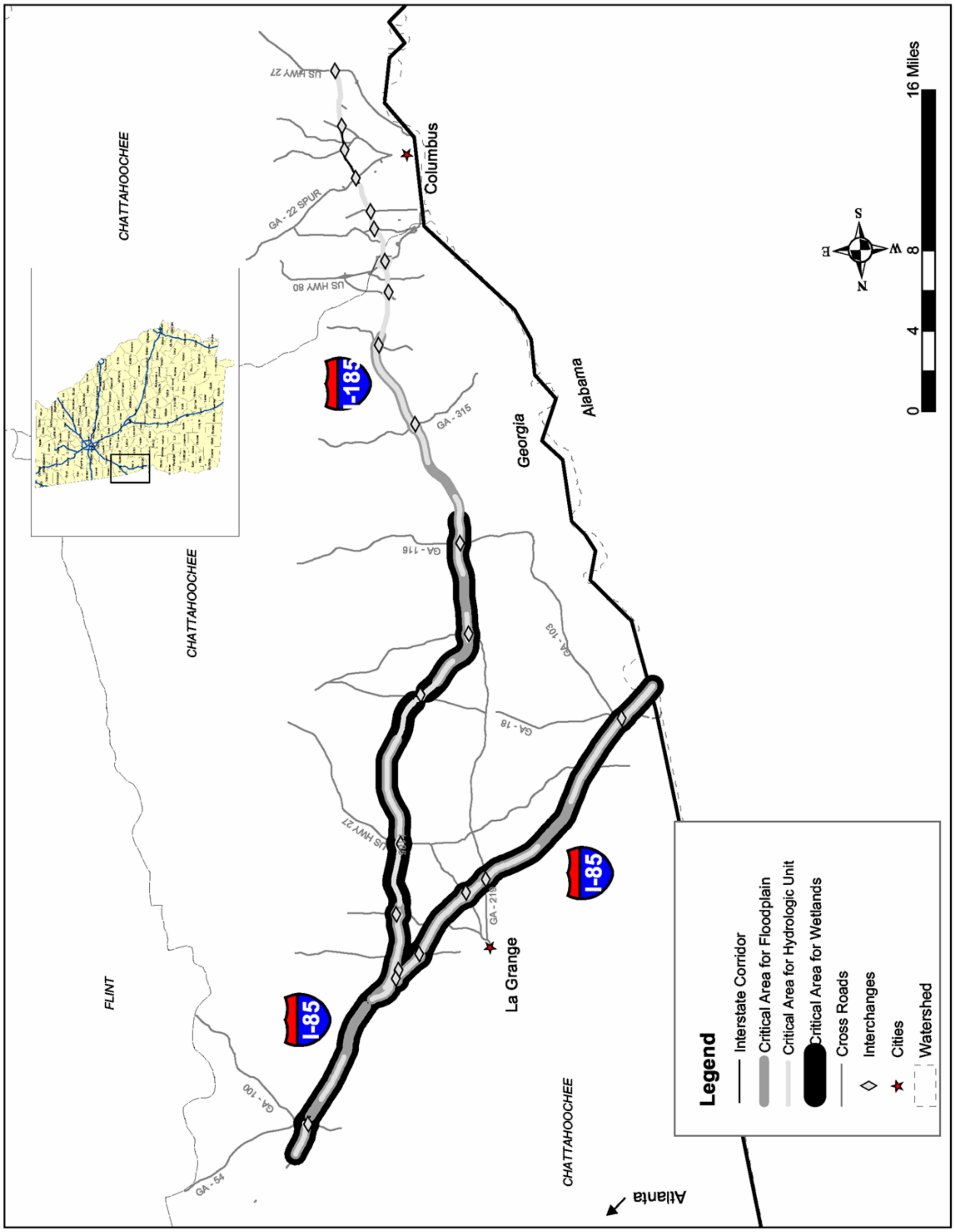


Figure 9.3 Parklands and Cultural Resources

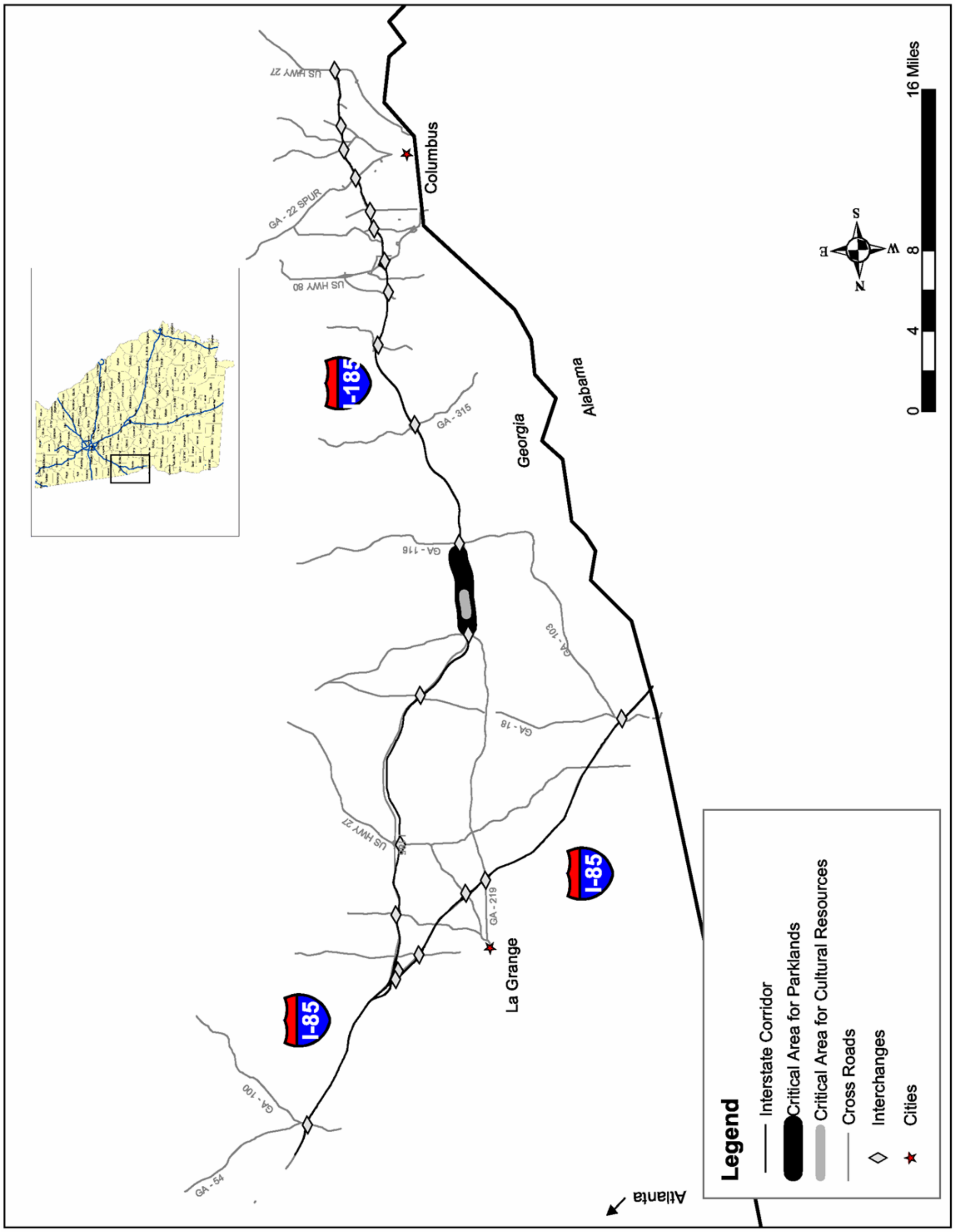


Figure 9.4 Other Environmental Resources

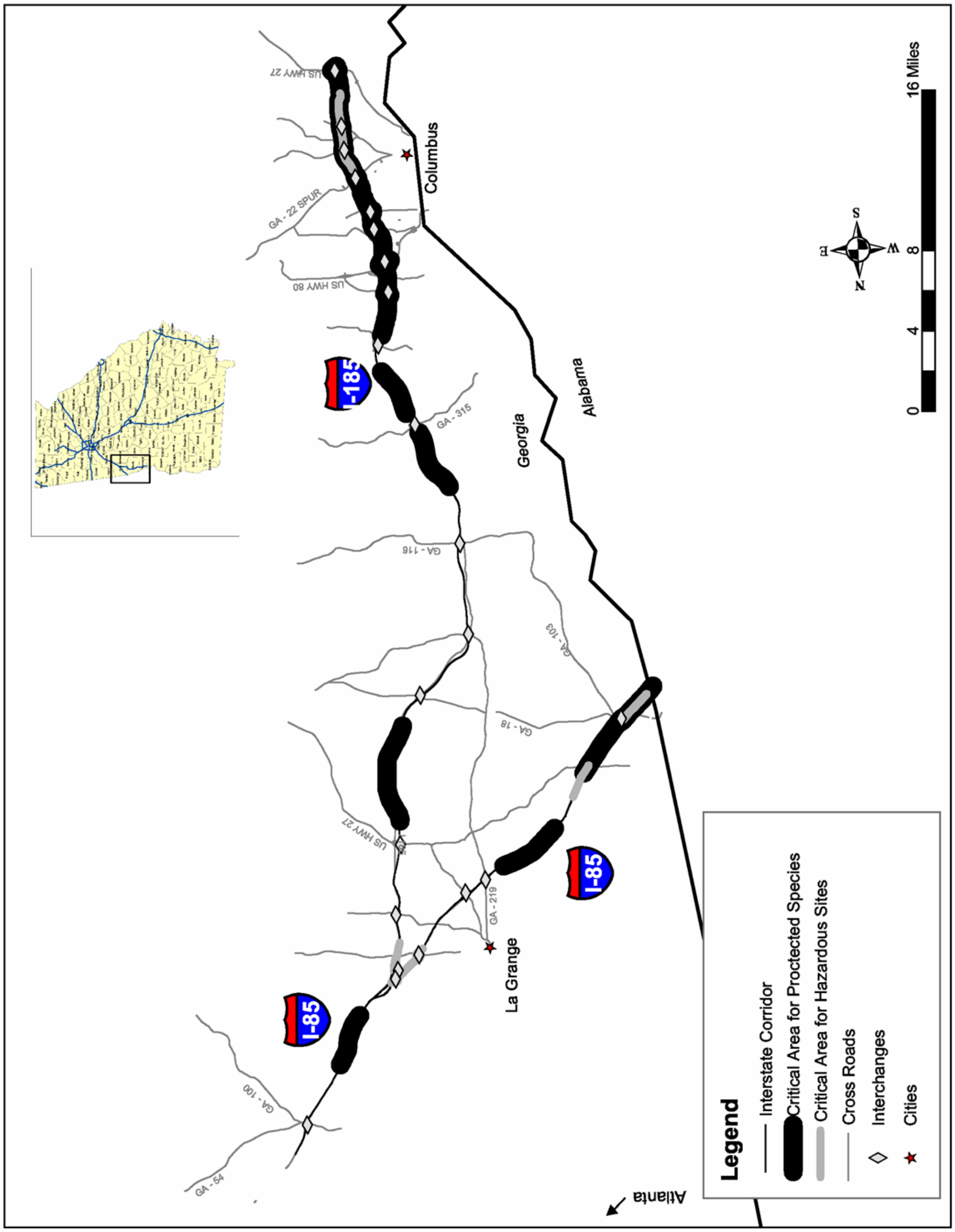


Table 9.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
85				0%	21%	0%	0%	0%	0%
	Chattahoochee-Flint			0%	19%	0%	0%	0%	0%
		Meriwether	3	0%	0%	0%	0%	0%	0%
		Troup	3	0%	19%	0%	0%	0%	0%
	Lower Chattahoochee			0%	80%	0%	0%	0%	0%
		Harris	3	0%	80%	0%	0%	0%	0%
185				1%	12%	0%	0%	5%	0%
	Chattahoochee-Flint			0%	15%	0%	0%	0%	0%
		Troup	3	0%	15%	0%	0%	0%	0%
	Lower Chattahoochee			2%	10%	0%	0%	7%	0%
		Harris	3	4%	0%	0%	0%	13%	0%
		Muscogee	3	0%	22%	0%	0%	0%	0%

Figure 9.4 also illustrates that more than half of this corridor has some form of protected species within one mile of the centerline. Table 9.4 indicates that along Interstate 185, flowering plants and trees, grass, orchids, lilies and mollusks tend to be the most common category of protected species exclusively found in the Lower Chattahoochee region. Along Interstate 85, protected fish and mollusk species are the predominant concern.

According to Figure 9.5 and Table 9.5 concerns about air quality in this corridor are concentrated in Muscogee County, which contains the southern one-third of Interstate 185. Muscogee County is a candidate non-attainment area for small particles (i.e., PM 2.5). This designation could affect nine of the 15 interchanges located along Interstate 185 near Columbus.

Table 9.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
85				0%	0%	11%	0%	0%	0%	20%	17%	0%	0%	0%	0%
	Chattahoochee-Flint			0%	0%	11%	0%	0%	0%	21%	14%	0%	0%	0%	0%
		Meriwether	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Troup	3	0%	0%	11%	0%	0%	0%	21%	14%	0%	0%	0%	0%
	Lower Chattahoochee			0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
		Harris	3	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
185				0%	39%	24%	0%	0%	0%	11%	24%	18%	0%	0%	0%
	Chattahoochee-Flint			0%	0%	0%	0%	0%	0%	41%	0%	0%	0%	0%	0%
		Troup	3	0%	0%	0%	0%	0%	0%	41%	0%	0%	0%	0%	0%
	Lower Chattahoochee			0%	53%	33%	0%	0%	0%	0%	33%	24%	0%	0%	0%
		Harris	3	0%	13%	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%
		Muscogee	3	0%	97%	68%	0%	0%	0%	0%	33%	51%	0%	0%	0%

Figure 9.5 Air Quality

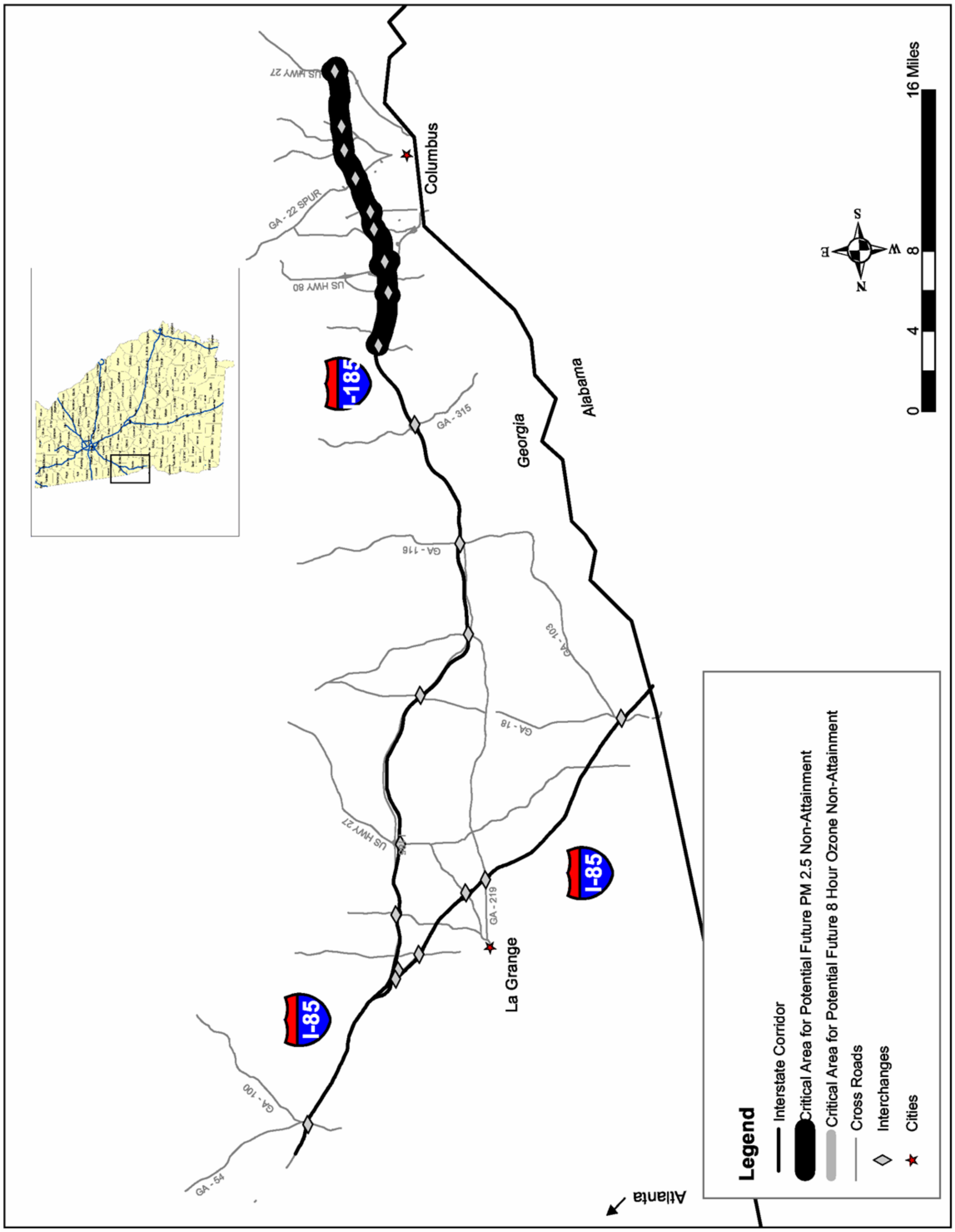


Table 9.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
85				0%	0%	0%
	Chattahoochee-Flint			0%	0%	0%
		Meriwether	3	0%	0%	0%
		Troup	3	0%	0%	0%
	Lower Chattahoochee			0%	0%	0%
		Harris	3	0%	0%	0%
185				0%	0%	35%
	Chattahoochee-Flint			0%	0%	0%
		Troup	3	0%	0%	0%
	Lower Chattahoochee			0%	0%	48%
		Harris	3	0%	0%	0%
		Muscogee	3	0%	0%	100%

9.2 Land Use and Development

Figure 9.6 illustrates that residential and employment land uses tend to be intermixed in pockets of development along both interstates. The data in Table 9.6 indicate that residential land use is the most prevalent land use throughout the corridor and that most development is concentrated in Troup and Muscogee Counties.

Figure 9.6 Existing Land Use

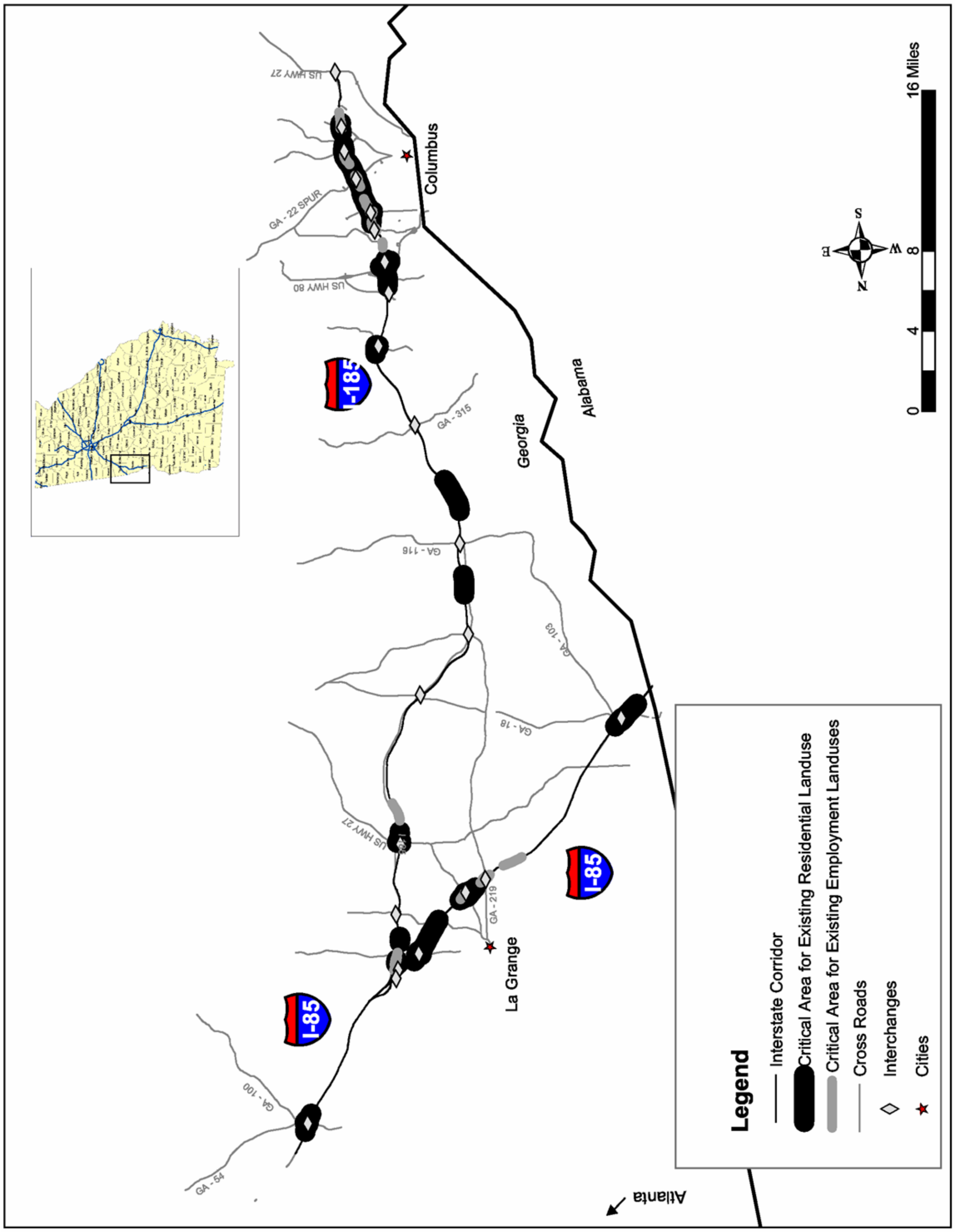


Table 9.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns

Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
85				26%	5%	0%	0%	3%	14%
	Chattahoochee-Flint			26%	5%	0%	0%	3%	14%
		Meriwether	3	0%	0%	0%	0%	0%	0%
		Troup	3	26%	5%	0%	0%	3%	14%
	Lower Chattahoochee			29%	0%	0%	0%	0%	0%
		Harris	3	29%	0%	0%	0%	0%	0%
185				20%	7%	0%	1%	2%	0%
	Chattahoochee-Flint			8%	7%	0%	5%	0%	0%
		Troup	3	8%	7%	0%	5%	0%	0%
	Lower Chattahoochee			25%	6%	0%	0%	2%	0%
		Harris	3	14%	0%	0%	0%	0%	0%
		Muscogee	3	37%	14%	0%	0%	4%	0%

Local land use plans suggest, as illustrated in Figure 9.7, that land along significant stretches of both interstates will be developed within one-half mile of the interstate centerline for residential and employment land uses in future years. The data in Table 9.7 indicate that residential land use is the most common land use category in this corridor, noting that nearly the full stretch of interstate through the Lower Chattahoochee region will be adjacent to future residential land uses. Most of the adjacent future commercial land use is planned to occur in Troup and Muscogee Counties.

Figure 9.7 Future Land Use

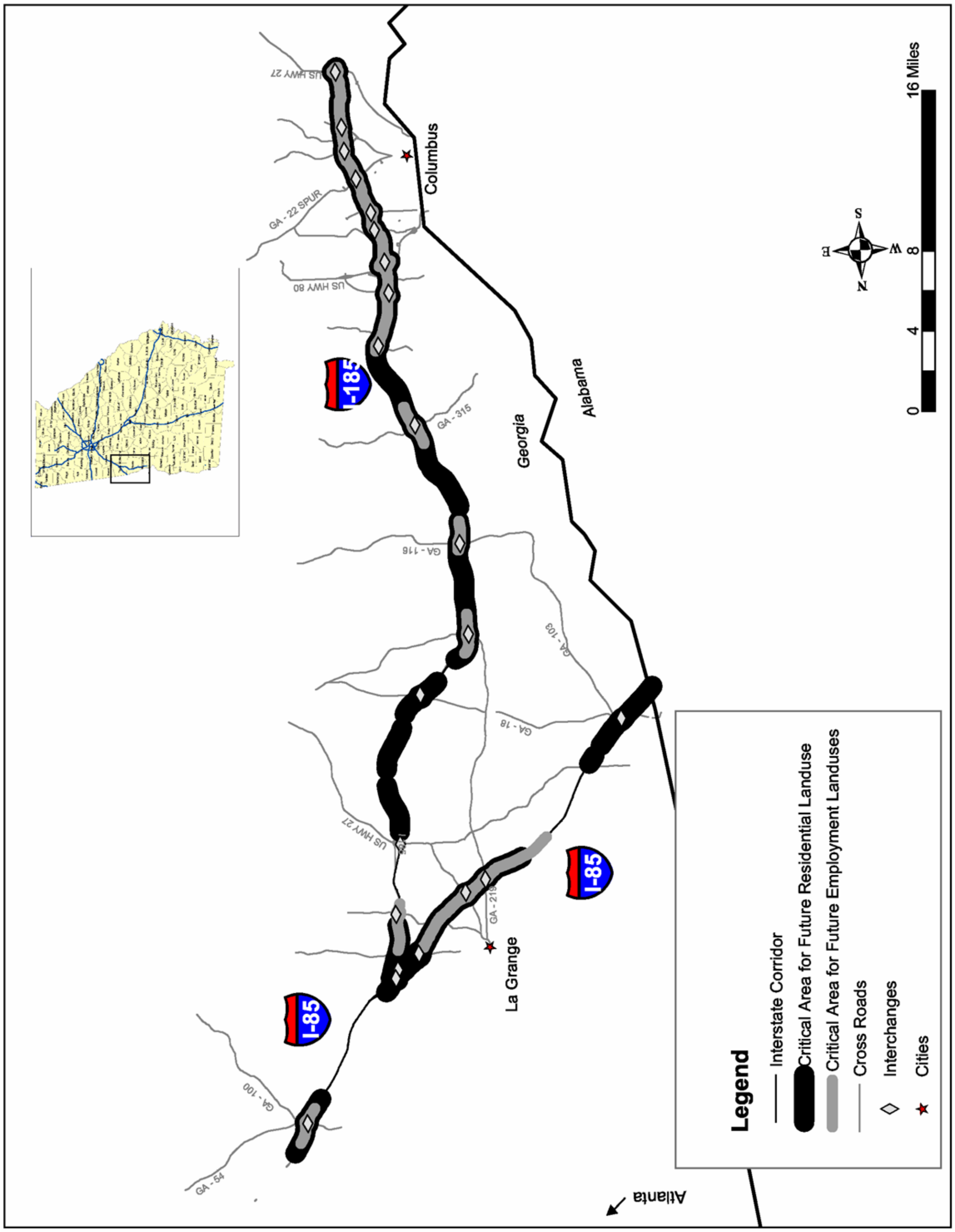


Table 9.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercia l Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
85				62%	38%	7%	0%	0%	0%
	Chattahoochee-Flint			60%	39%	7%	0%	0%	0%
		Meriwether	3	100%	0%	0%	0%	0%	0%
		Troup	3	60%	39%	7%	0%	0%	0%
	Lower Chattahoochee			100%	0%	0%	0%	0%	0%
		Harris	3	100%	0%	0%	0%	0%	0%
185				84%	49%	17%	6%	0%	0%
	Chattahoochee-Flint			55%	19%	0%	0%	0%	0%
		Troup	3	55%	19%	0%	0%	0%	0%
	Lower Chattahoochee			95%	60%	23%	8%	0%	0%
		Harris	3	90%	33%	16%	0%	0%	0%
		Muscogee	3	99%	89%	31%	17%	0%	0%

9.3 Interstate Access

The information in Figure 9.8 and Table 9.6 indicate that Interstate 85 has an existing accessibility concern between its interchanges at GA-219 and GA-103. Between these two interchanges, there is approximately six miles of interstate that lacks an intermediate interchange. This accessibility designation indicates that an *existing activity center of state-wide significance* is located in this area, and may not have ready access to an existing interchange.

Figure 9.9 and Table 9.7 show that there are no similar accessibility concerns for the *future activity centers of statewide significance*. However, there are three interchanges that could be subject to significant travel demand increases if these future activity centers are developed to the extent envisioned in the local land use plans. These interchanges are located at GA-100 and near LaGrange and Columbus.

Figure 9.10 illustrates interchanges that are likely to experience high levels of truck traffic due to proximity of existing and potential future activity centers that are industrial, inter-modal, military or aviation in nature. Seven interchanges may experience heavy-truck traffic, five of which are located around Columbus.

Figure 9.8 Existing Accessibility Needs

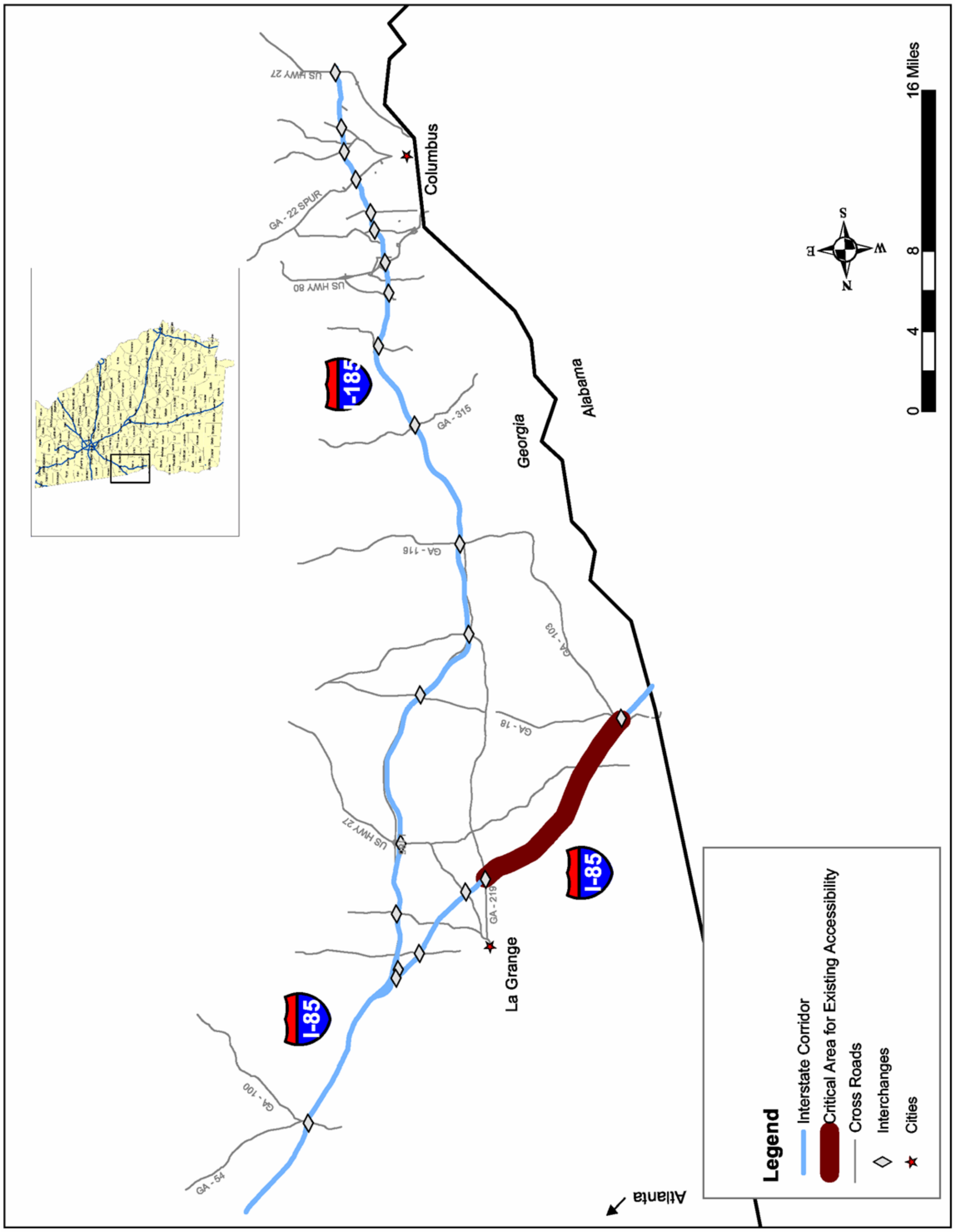


Figure 9.9 Future Accessibility Needs

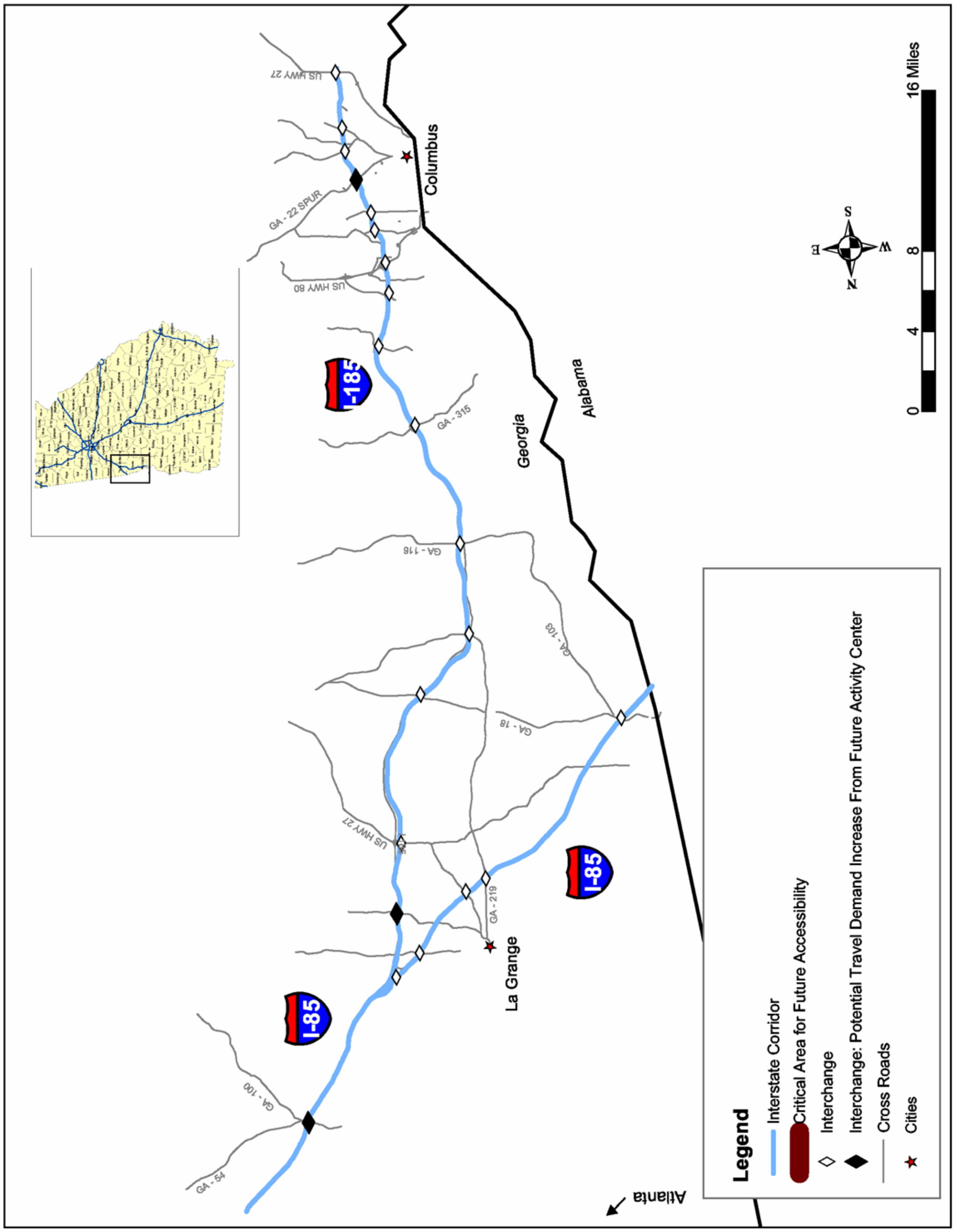
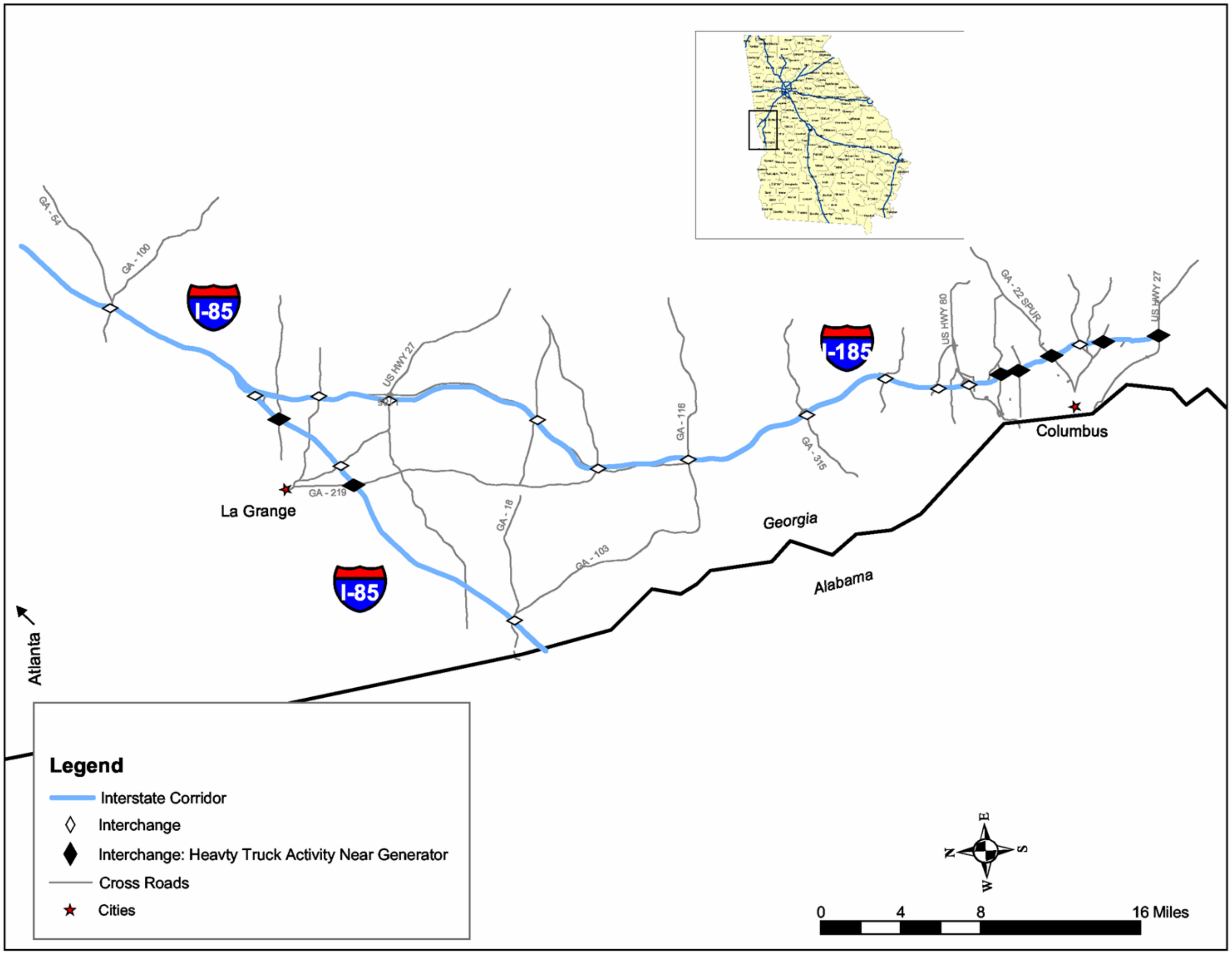


Figure 9.10 Key Access Points for Heavy-Truck Traffic



10.0 West Georgia Corridor

The West Georgia corridor includes Interstate 20 as depicted in Figure 10.1, extending from the Georgia/Alabama state border to just east of Villa Rica. This corridor passes through Haralson and Carroll Counties. The major neighboring communities include Bremen and Villa Rica. The corridor is also divided between the Chattahoochee-Flint and Coosa Valley RDCs. Georgia DOT District 1 provides local oversight for this corridor.

Table 10.1 provides a summary of the characteristics of Interstate 20 within this corridor. The corridor spans 48 centerline miles of Interstate 20 and includes five interchanges. The West Georgia Corridor is the smallest corridor within this study. The interstate mileage and number of interchanges are fairly evenly divided between Chattahoochee-Flint and Coosa Valley RDCs as well as between Haralson and Carroll Counties.

Table 10.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
20				48	174	5
	Chattahoochee-Flint			27	98	3
		Carroll	1	27	98	3
	Coosa Valley			21	77	2
		Haralson	1	21	77	2

10.1 Environmental Resources

Figure 10.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands exist within this buffer distance continuously through the corridor. Hydrologic features (i.e., streams, rivers, lakes, etc.) and floodplains are both continuously present along the corridor leaving Atlanta until approaching GA-100. As seen in Table 10.2, which presents a more detailed breakout of these water resources by county, all three categories of water resources are adjacent to the entire interstate corridor in Carroll County.

Figure 10.1 General Corridor Limits

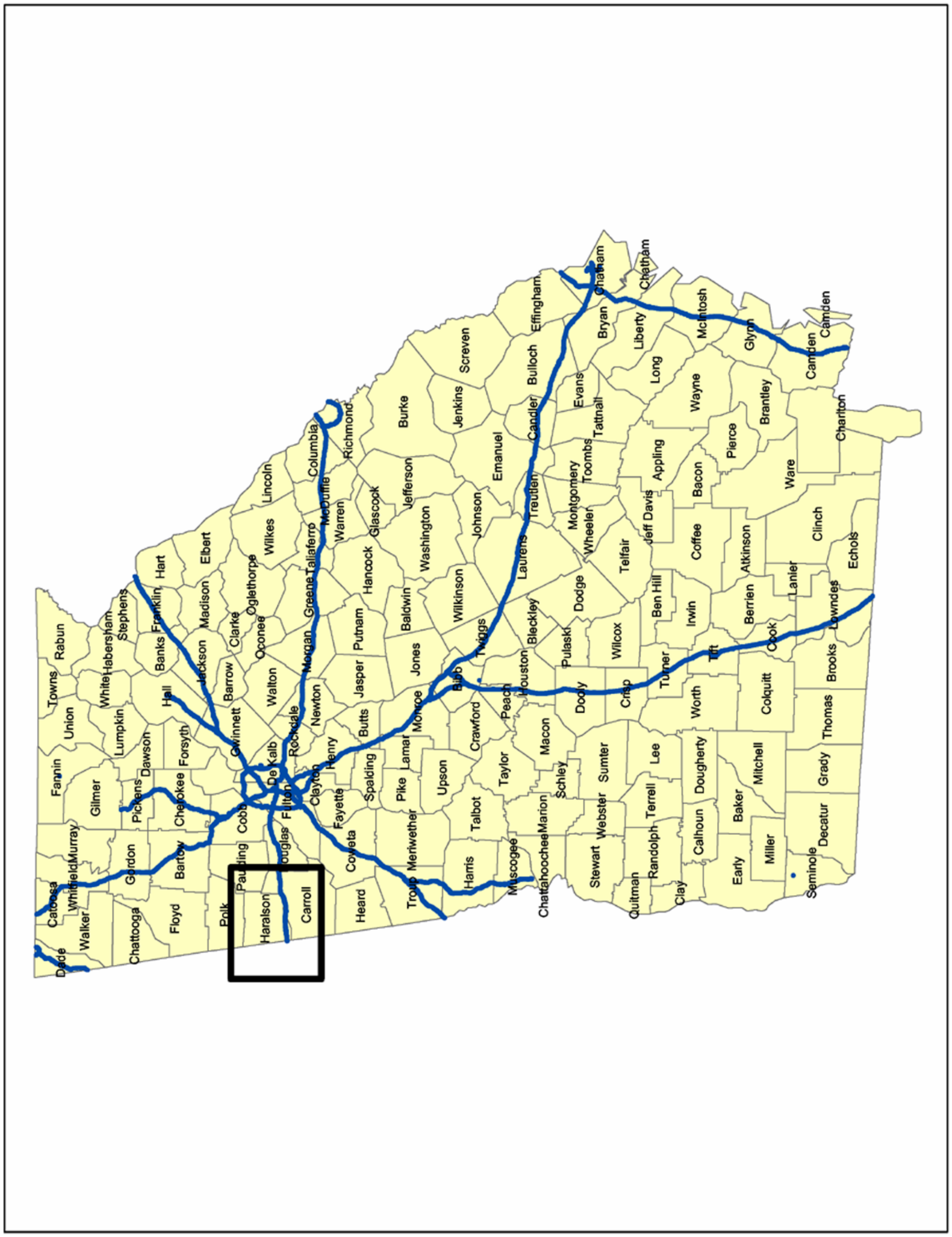


Figure 10.2 Water Resources

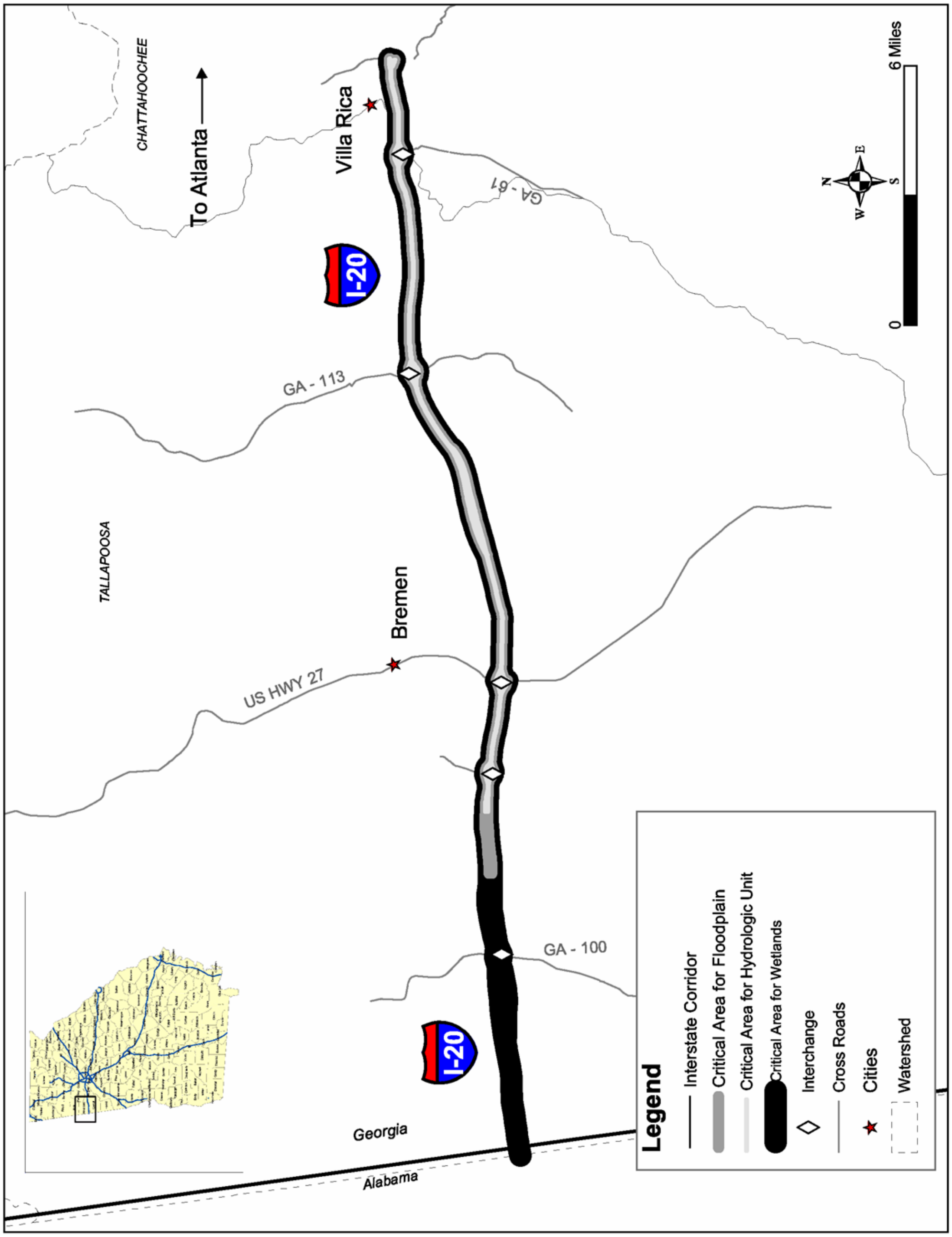


Table 10.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
20				100%	72%	65%
	Chattahoochee-Flint			100%	100%	100%
		Carroll	1	100%	100%	100%
	Coosa Valley			100%	36%	19%
		Haralson	1	100%	36%	19%

Figure 10.3 illustrates that no portion of this corridor has parklands or cultural resources within one mile of the interstate centerline. Figure 10.4 indicates that there are no hazardous sites (e.g., landfills or waste sites) adjacent to the corridor. These details are confirmed in Table 10.3.

Table 10.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
20				0%	0%	0%	0%	0%	0%
	Chattahoochee-Flint			0%	0%	0%	0%	0%	0%
		Carroll	1	0%	0%	0%	0%	0%	0%
	Coosa Valley			0%	0%	0%	0%	0%	0%
		Haralson	1	0%	0%	0%	0%	0%	0%

Figure 10.4 also illustrates that a small section of Interstate 20 is adjacent to areas containing protected fish species within one mile of the centerline. The remaining sections of this corridor appear to have no other known nearby protected species populations.

Figure 10.5 and Table 10.5 indicate that Coosa Valley could potentially be classified as a non-attainment area for at some point in the future for eight-hour Ozone. Should it become a non-attainment area, this designation would impact more than half the length of the corridor.

Table 10.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
20				0%	0%	0%	0%	0%	0%	17%	0%	0%	0%	0%	0%
	Chattahoochee-Flint			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Carroll	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Coosa Valley			0%	0%	0%	0%	0%	0%	39%	0%	0%	0%	0%	0%
		Haralson	1	0%	0%	0%	0%	0%	0%	39%	0%	0%	0%	0%	0%

Figure 10.3 Parklands and Cultural Resources

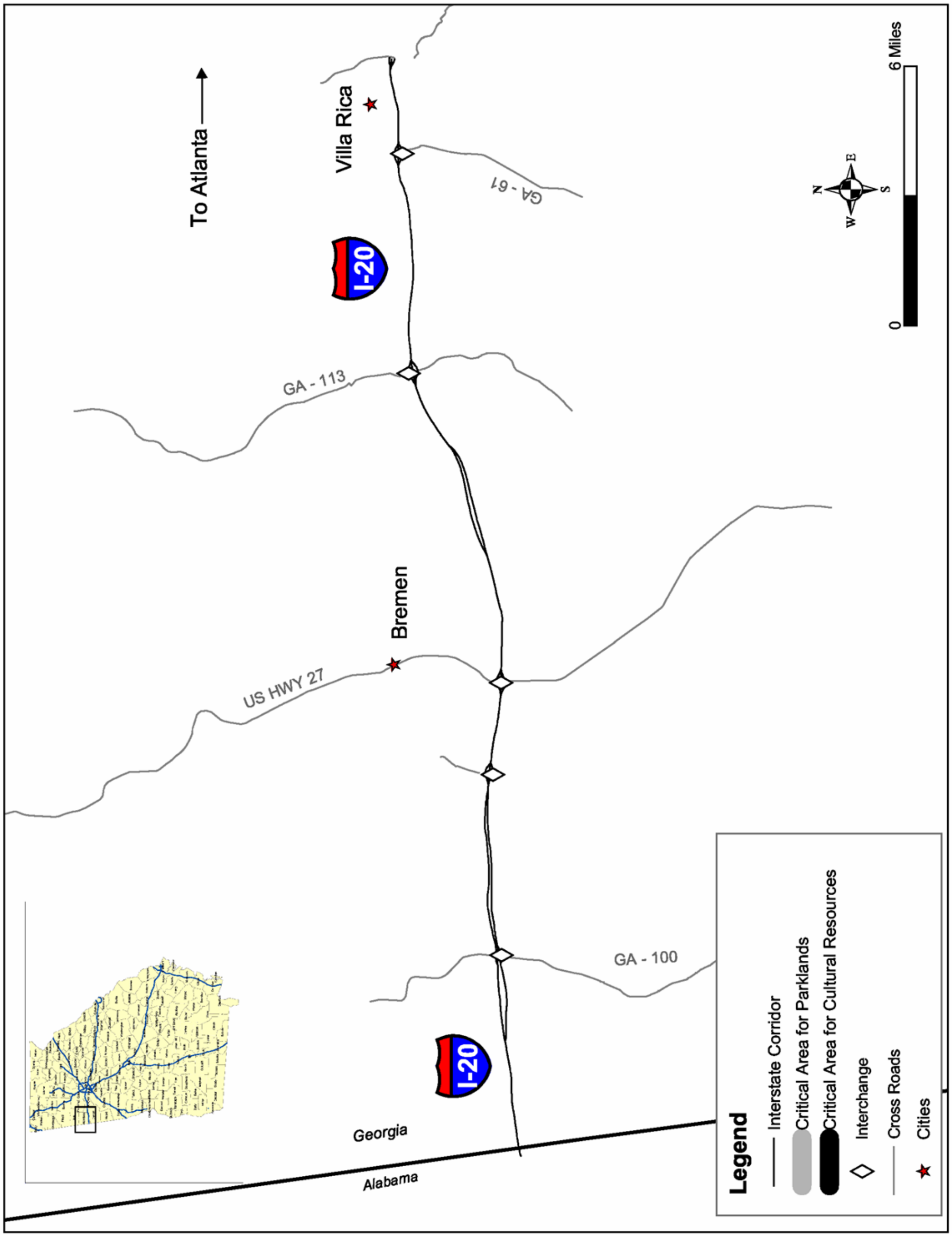


Figure 10.4 Other Environmental Resources

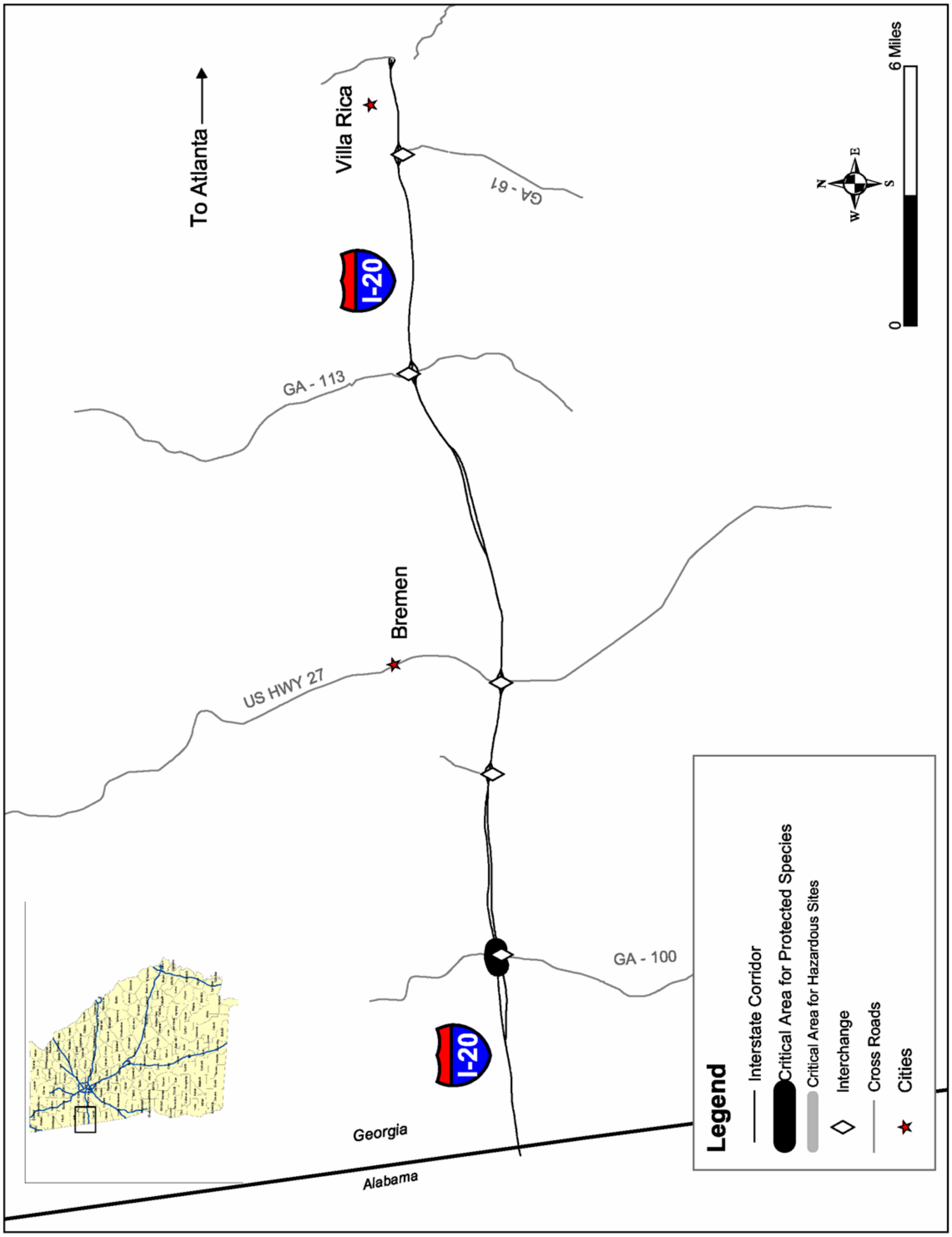


Figure 10.5 Air Quality

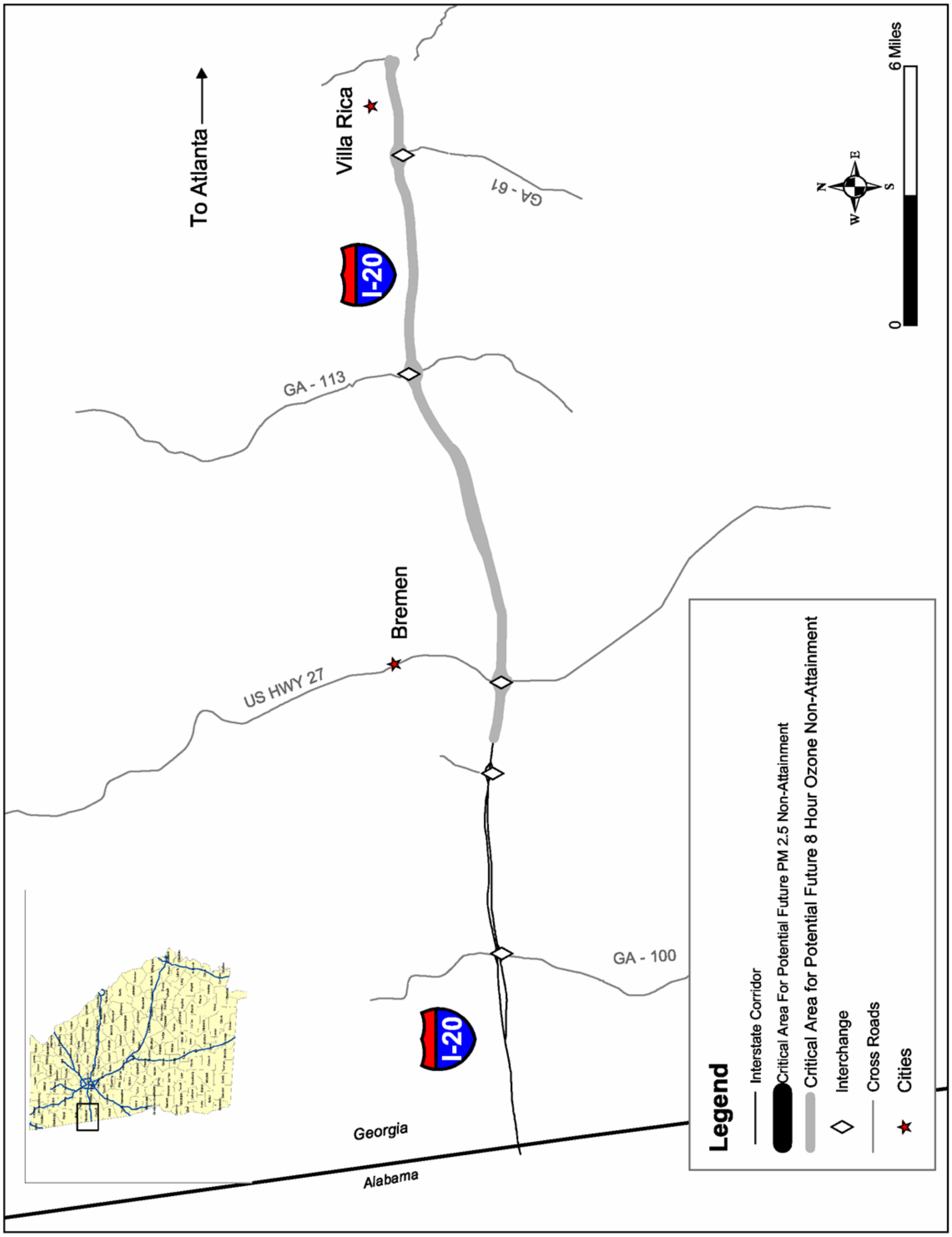


Table 10.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
20				0%	56%	0%
	Chattahoochee-Flint			0%	100%	0%
		Carroll	1	0%	100%	0%
	Coosa Valley			0%	0%	0%
		Haralson	1	0%	0%	0%

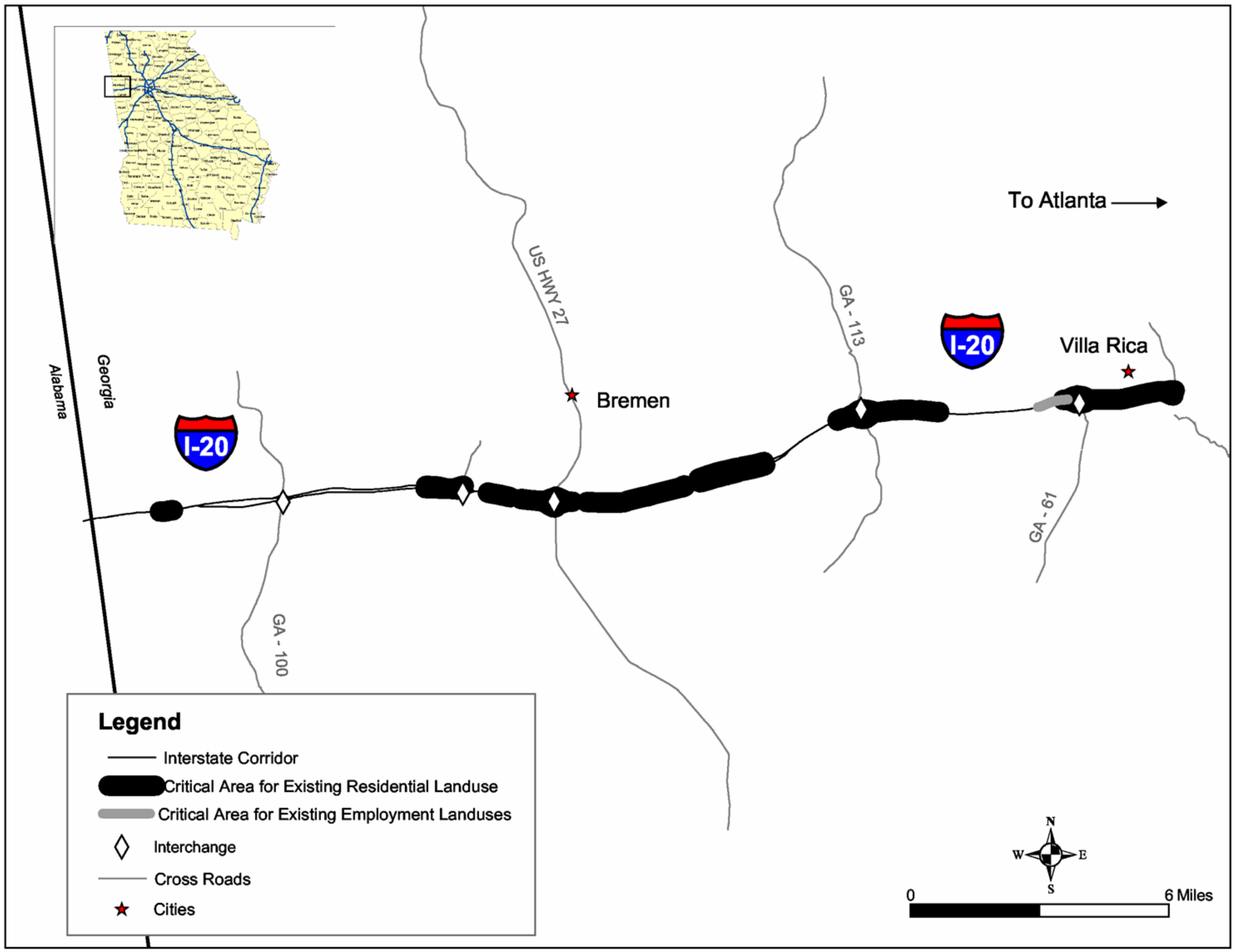
10.2 Land Use and Development

As seen in Figure 10.6, existing development along this corridor is predominantly residential and exists along the majority of its span, though primarily in Carroll County. The small amount of employment land use found along the corridor is found near Villa Rica and is related to public/institutional land uses, as detailed in Table 10.6.

Table 10.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
20				43%	0%	0%	0%	2%	0%
	Chattahoochee-Flint			68%	0%	0%	0%	3%	0%
		Carroll	1	68%	0%	0%	0%	3%	0%
	Coosa Valley			12%	0%	0%	0%	0%	0%
		Haralson	1	12%	0%	0%	0%	0%	0%

Figure 10.6 Existing Land Use



Local land use plans suggest that nearly the entire length of the corridor will have residential development within one-half mile of the interstate centerline. Figure 10.7 further illustrates that under current land use plans, employment land uses are projected to develop predominantly on the west end of the corridor. Providing the breakdown of the land use categories by county, Table 10.7 illustrates how local land use plans seek a diversity of land uses along Interstate 20.

Table 10.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercia l Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
20				97%	20%	24%	10%	0%	0%
	Chattahoochee-Flint			95%	12%	29%	0%	0%	0%
		Carroll	1	95%	12%	29%	0%	0%	0%
	Coosa Valley			99%	29%	17%	23%	0%	0%
		Haralson	1	99%	29%	17%	23%	0%	0%

10.3 Interstate Access

The information in Figure 10.8 and Table 10.6 indicate that under existing conditions, the corridor does not have any accessibility concerns. That is, any *existing activity center of statewide significance* located in this area has ready access to an existing interchange.

While Figure 10.9 and Table 10.7 show that there are no similar accessibility concerns for the *future activity centers of statewide significance,* there are nonetheless three interchanges that could be subject to significant travel demand increases if these future activity centers are developed to the extent envisioned in the local land use plans.

Figure 10.10 illustrates interchanges that are likely to experience high levels of truck traffic due to proximity of existing and potential future activity centers that are industrial, intermodal, military or aviation in nature. Two interchanges, U.S. Highway 27 and GA-113, may experience heavy-truck traffic.

Figure 10.7 Future Land Use

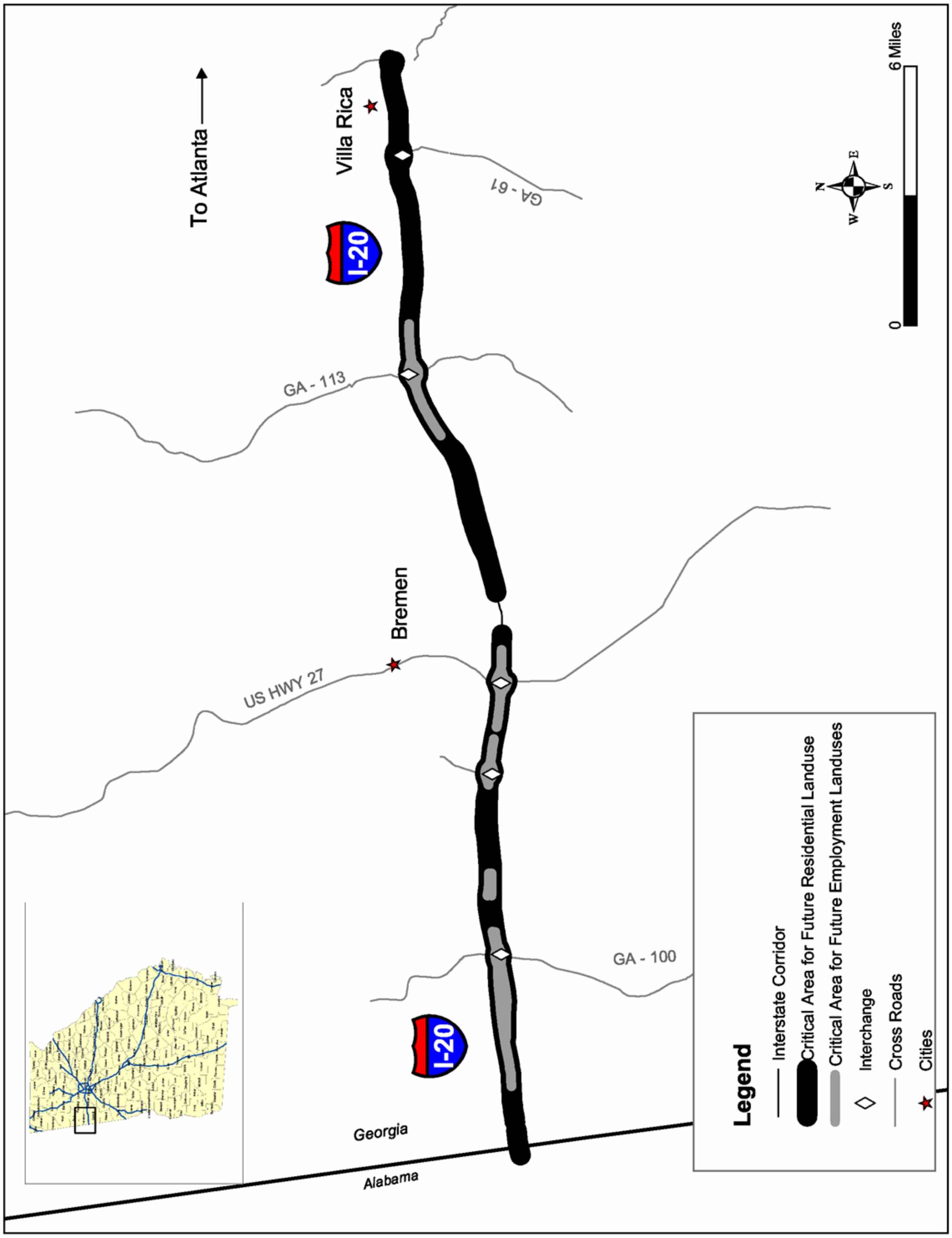


Figure 10.8 Existing Accessibility Needs

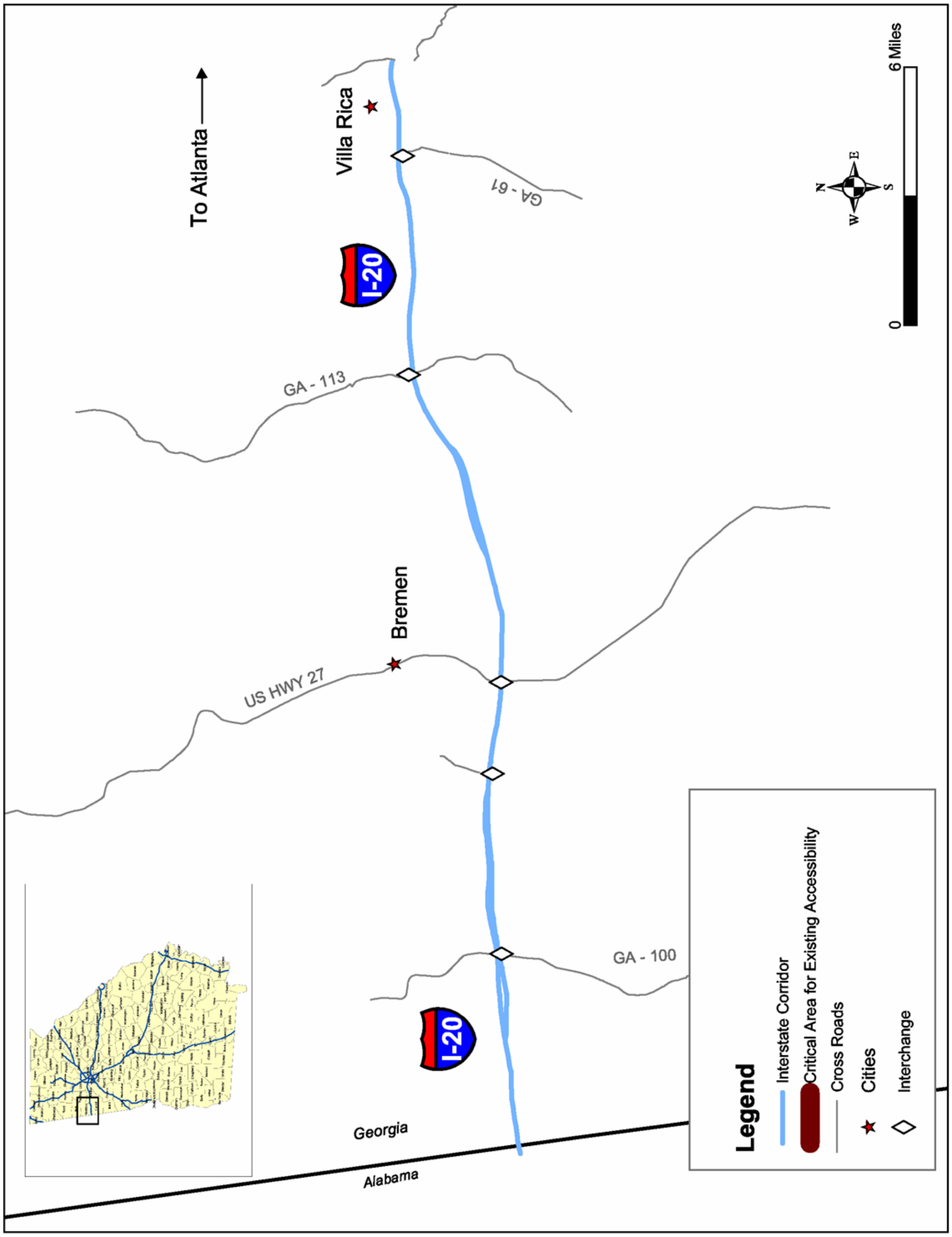


Figure 10.9 Future Accessibility Needs

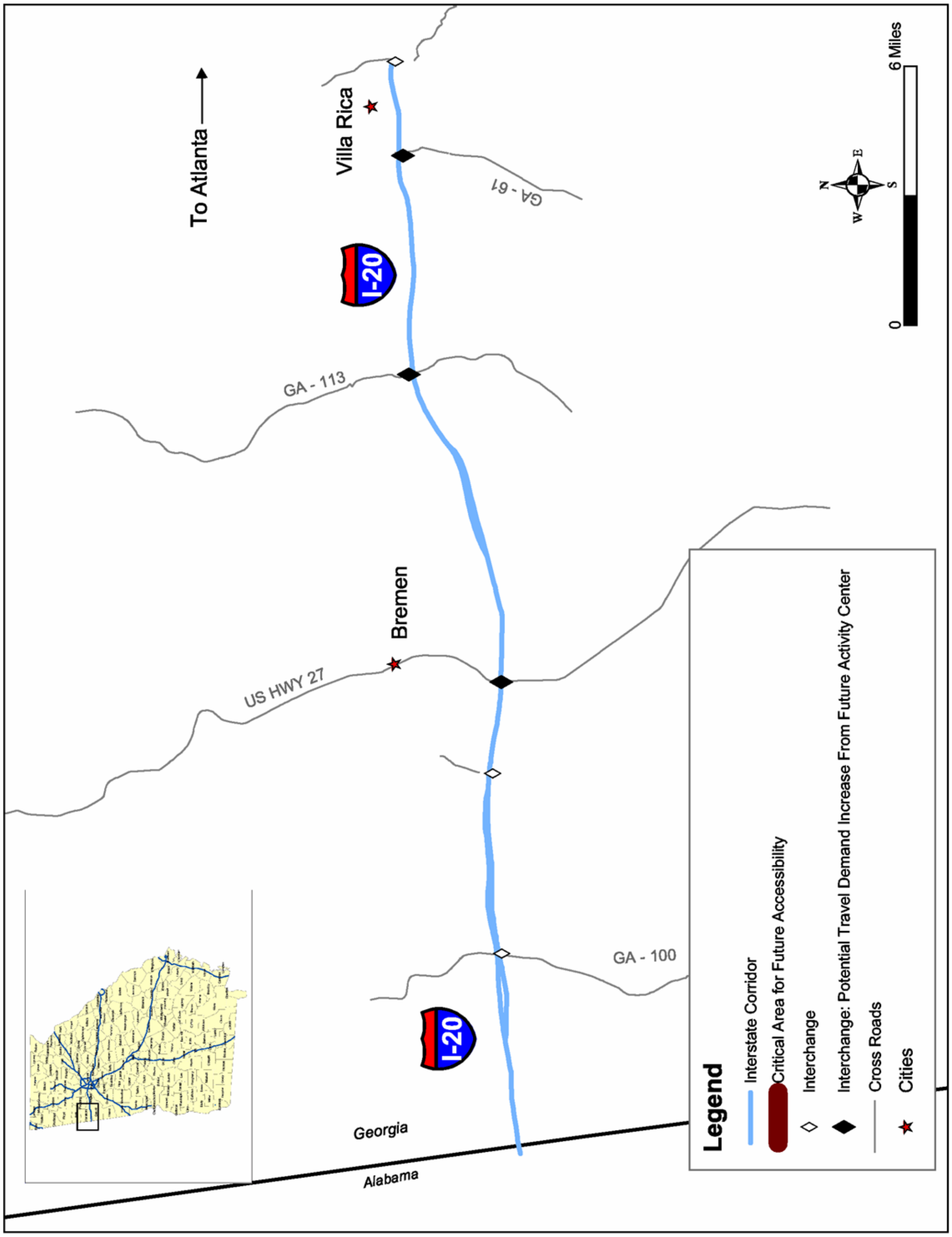
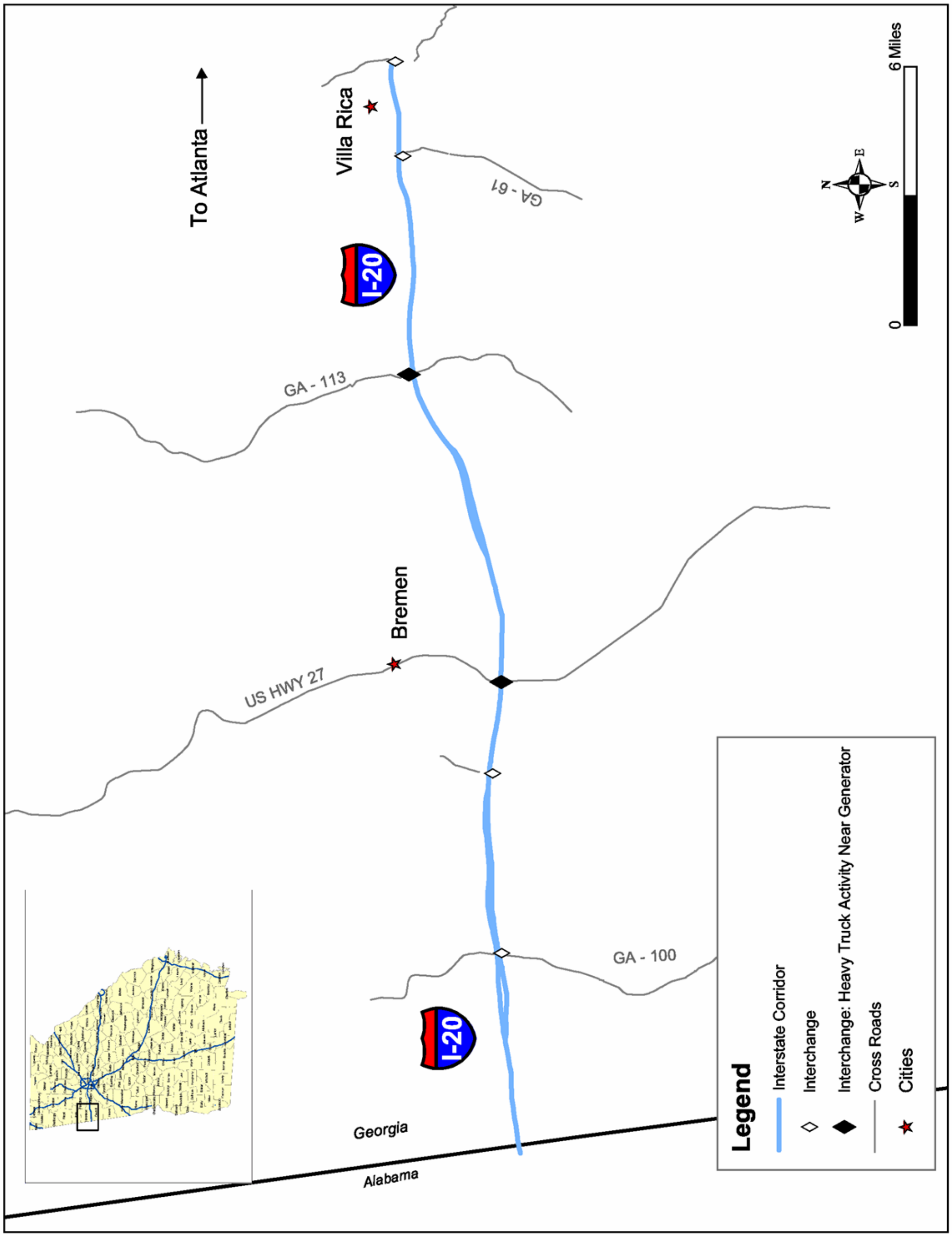


Figure 10.10 Key Access Points for Heavy-Truck Traffic



11.0 Northwest Georgia Corridor

The Northwest Georgia corridor, as shown in Figure 11.1, encompasses primarily Interstate 75 and small sections of Interstates 24 and 59. In this corridor, Interstate 75 passes through Bartow, Gordon, Catoosa, and Whitfield Counties. The small sections of Interstate 24 and 59 run through Dade County. Major communities in or near the corridor include Dalton, Calhoun, Cartersville, and Trenton. Most of the corridor is located within the Coosa Valley RDC, with a small portion of Interstate 75 in the North Georgia RDC. Georgia DOT District 6 provides local oversight and a variety of support activity for portions of the corridor.

A summary of the characteristics of Interstates 75, 59 and 24 within this corridor is provided in Table 11.1. According to centerline miles, the Northwest Georgia Corridor represents the fifth largest corridor within this study. The corridor contains a total of 136 centerline miles, 103 of which are attributed to Interstate 75, 25 miles to Interstate 59 and eight miles to Interstate 24. Along Interstate 75, there are 21 interchanges, approximating to more than three miles for every interchange. Interstate 59 approximates more than six miles to an interchange, while Interstate 24 contains only one interchange within the eight miles of its entire span within the corridor. The majority of the interstate mileage and interchanges falls within the Coosa Valley RDC. Bartow County has the most centerline mileage, lane mileage and the greatest number of interchanges.

Figure 11.1 General Corridor Limits

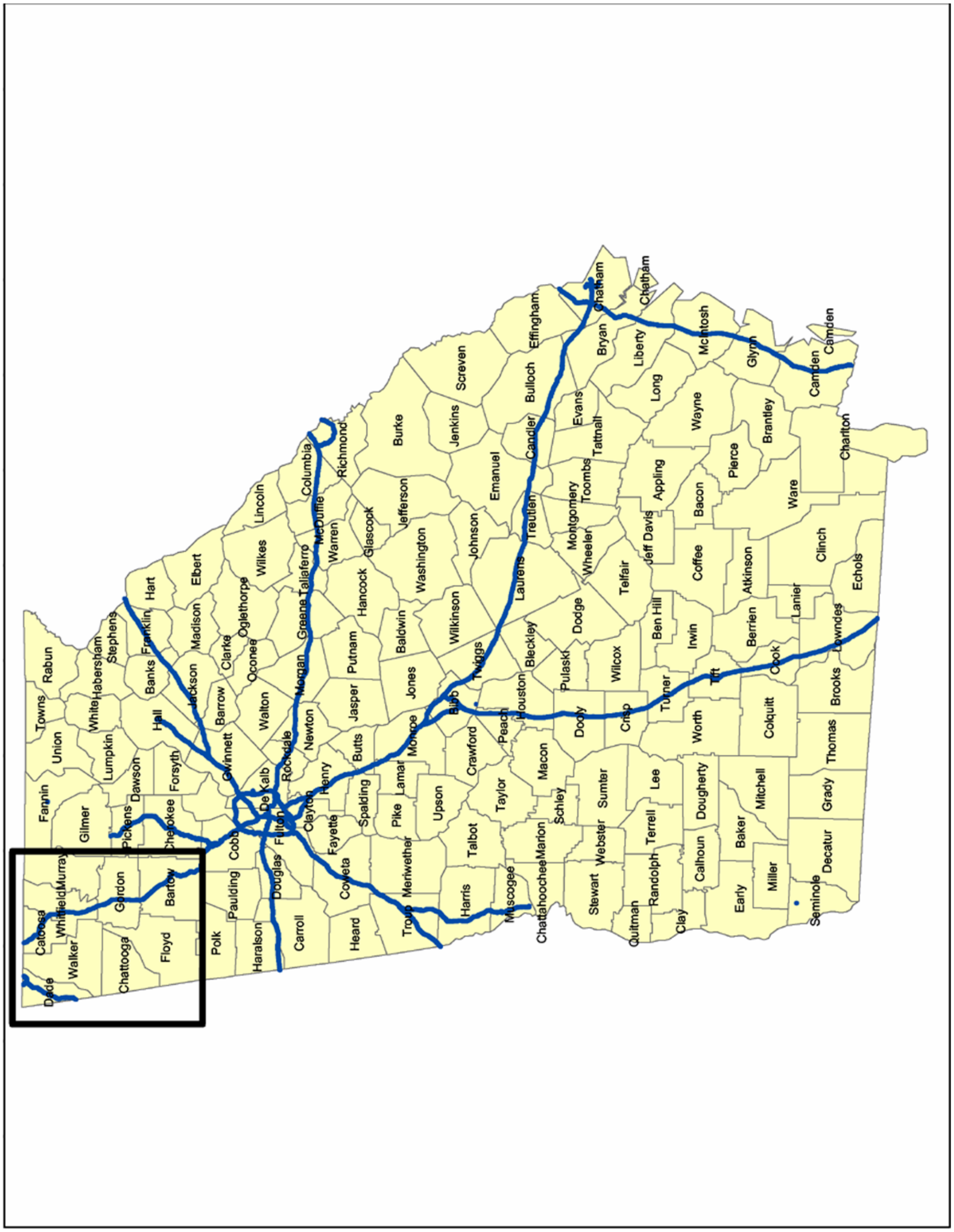


Table 11.1 Interstate Facilities in Corridor

Interstate	RDC	County	GDOT District	Centerline Miles	Lane Miles	Interchanges
75				103	521	21
	North Georgia			22	114	4
		Whitfield	6	22	114	4
	Coosa Valley			81	406	17
		Catoosa	6	22	110	5
		Gordon	6	21	104	5
		Bartow	6	38	193	7
59				25	93	4
	Coosa Valley			25	93	4
		Dade	6	25	93	4
24				8	32	1
	Coosa Valley			8	32	1
		Dade	6	8	32	1

11.1 Environmental Resources

Figure 11.2 identifies the sections of interstate highway that have major water resources within one mile of either side of the centerline. The figure illustrates that wetlands are within this buffer distance almost continuously through Interstate 75, while there is no such concern along Interstates 24 and 59. Hydrologic features (i.e., streams, rivers, lakes, etc.) are quite common along all interstates in the corridor. Though flood data was unavailable for areas adjacent to Interstates 24 and 59, available data indicates that flood-plains tend to be present near Interstate 75 for nearly its entire length. Table 11.2 presents a more detailed breakout of these water resources by county.

Figure 11.2 Water Resources

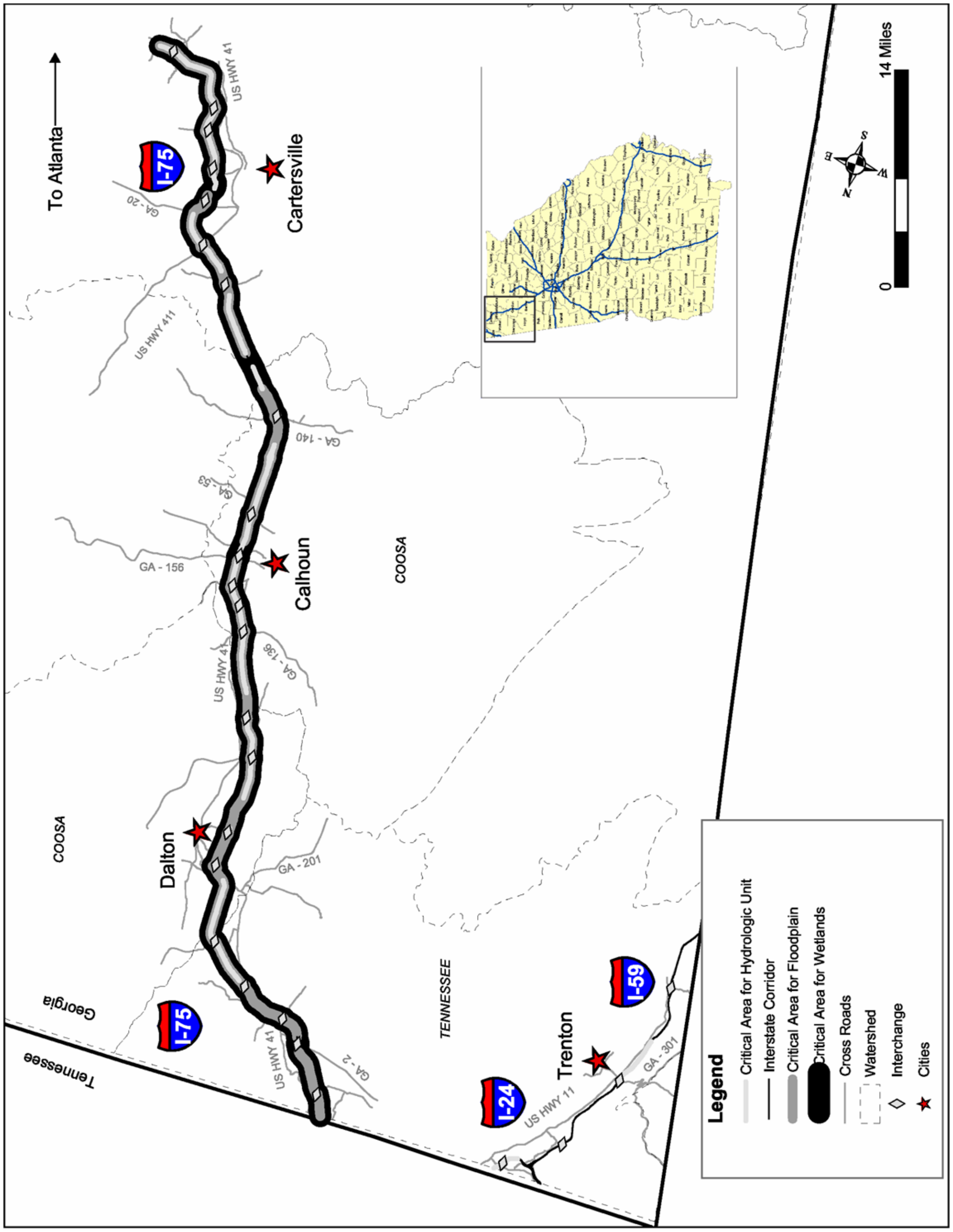


Table 11.2 Percent of Centerline Miles with Nearby Water Resources

Interstate	RDC	County	GDOT District	Wetlands	Floodplains	Other Hydrologic Features
75				100%	92%	63%
	North Georgia			100%	99%	54%
		Whitfield	6	100%	99%	54%
	Coosa Valley			100%	90%	66%
		Catoosa	6	100%	92%	29%
		Gordon	6	100%	90%	99%
		Bartow	6	100%	88%	68%
59				0%	N/A	12%
	Coosa Valley			0%	N/A	12%
		Dade	6	0%	*	12%
24				0%	N/A	36%
	Coosa Valley			0%	N/A	36%
		Dade	6	0%	*	36%

Note: * Indicates that data are not available for this county.
N/A indicates that corridor-wide value cannot be estimated due to lack of data in one or more counties.

Figure 11.3 illustrates that Interstate 75, near Calhoun, has parklands and cultural resources within one mile of the interstate centerline. Interstates 24 and 59 appear to have no critical areas for parklands and cultural resources. The light shaded line in Figure 11.4 illustrates that hazardous sites (e.g., landfills or waste sites) are adjacent to Interstate 75, near the U.S. Highway 41 interchange in Whitfield County and near the GA-140 interchange in Bartow County. Hazardous sites are also found along Interstates 24 and 59 just south of Trenton. Further detail on these resources is displayed in Table 11.3.

Figure 11.3 Parklands and Cultural Resources

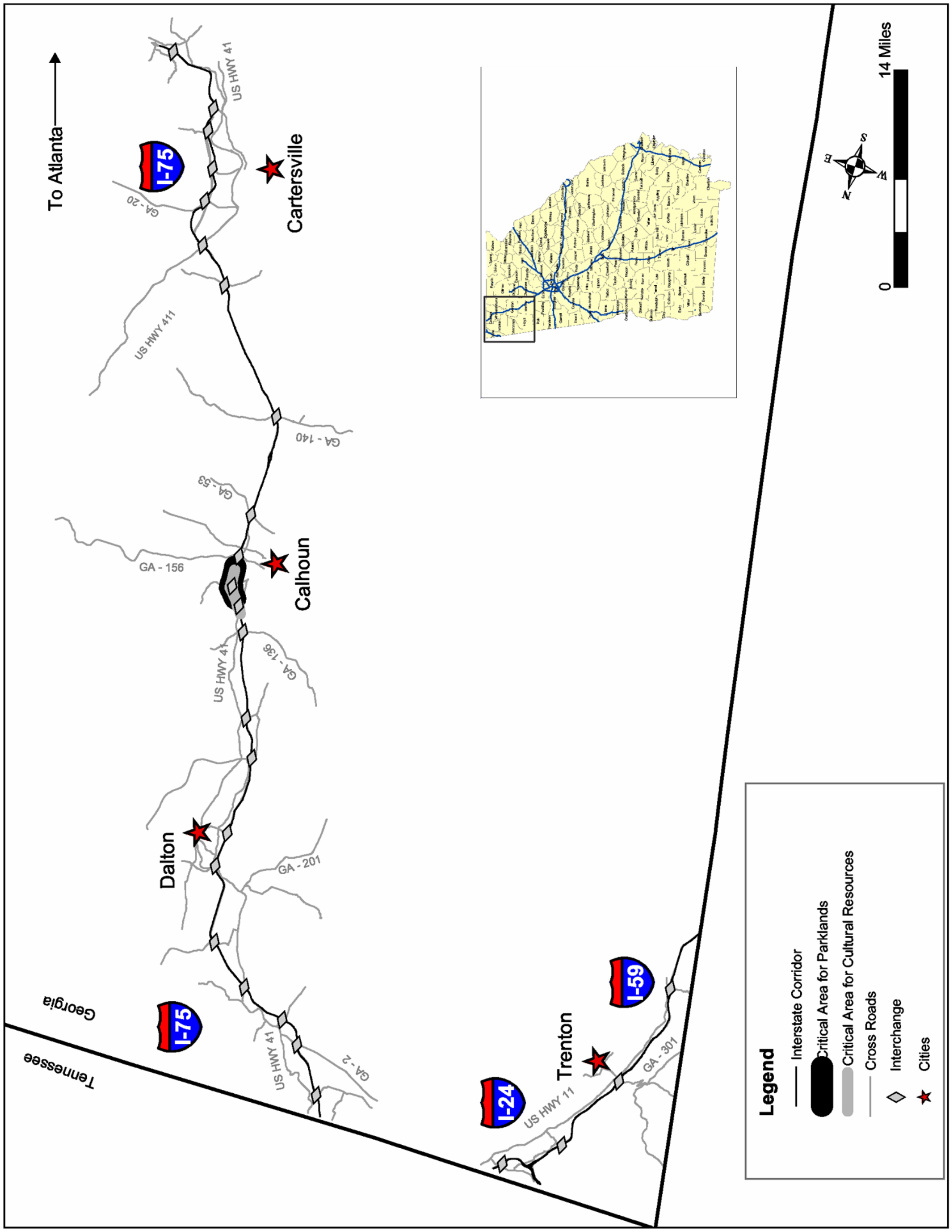


Figure 11.4 Other Environmental Resources

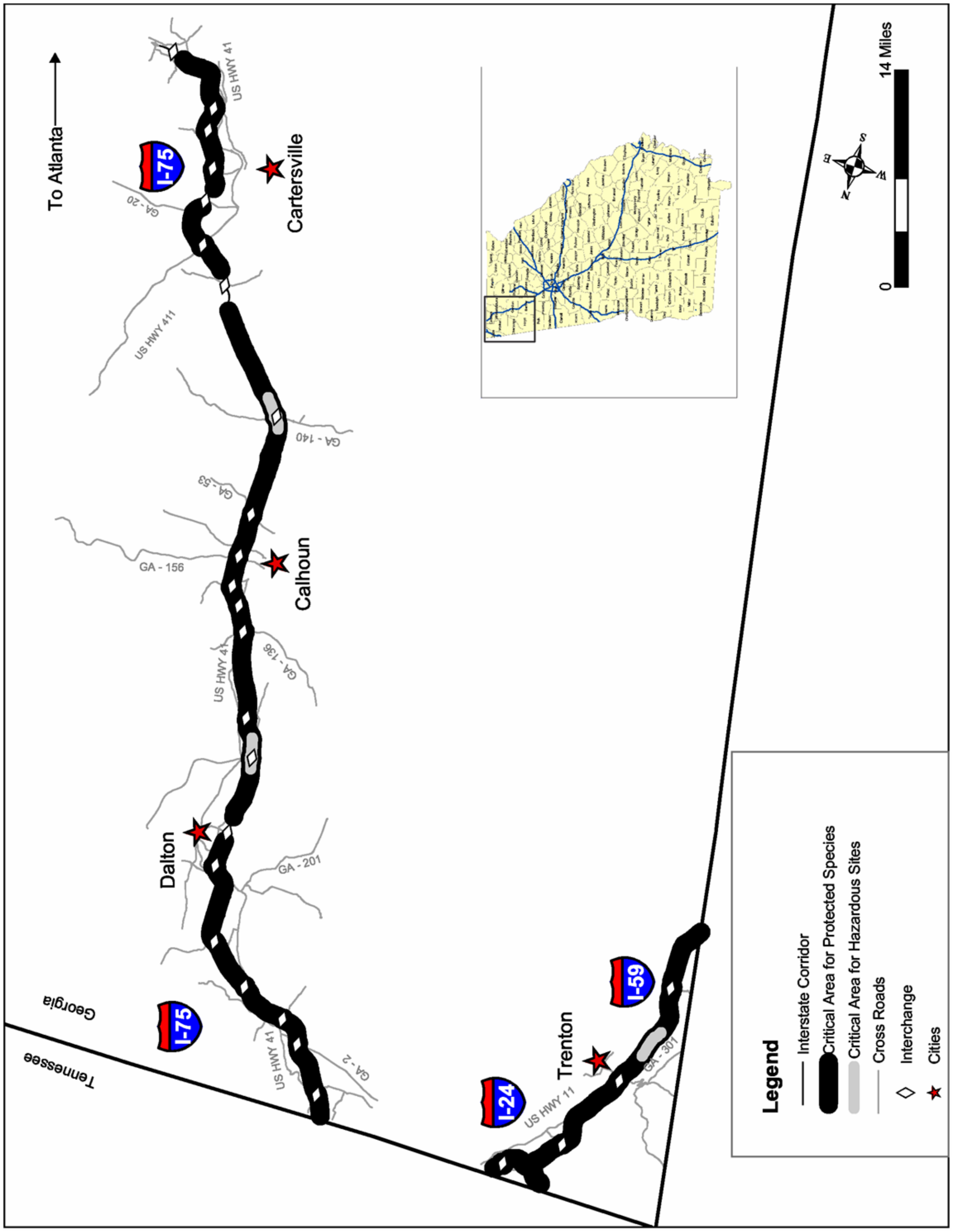


Table 11.3 Percent of Centerline Miles with Other Nearby Environmental Resources

Interstate	RDC	County	GDOT District	Cultural Resources	Hazardous Sites	Wildlife Management Area	Wildlife Refuge	Conservation Easement	State Park
75				5%	6%	3%	0%	0%	0%
	North Georgia			0%	13%	0%	0%	0%	0%
		Whitfield	6	0%	13%	0%	0%	0%	0%
	Coosa Valley			6%	4%	4%	0%	0%	0%
		Catoosa	6	0%	0%	0%	0%	0%	0%
		Gordon	6	23%	0%	15%	0%	0%	0%
		Bartow	6	0%	9%	0%	0%	0%	0%
59				0%	8%	0%	0%	0%	0%
	Coosa Valley			0%	8%	0%	0%	0%	0%
		Dade	6	0%	8%	0%	0%	0%	0%
24				0%	0%	0%	0%	0%	0%
	Coosa Valley			0%	0%	0%	0%	0%	0%
		Dade	6	0%	0%	0%	0%	0%	0%

Figure 11.4 also illustrates that most sections of this corridor have some form of protected species within one mile of the centerline. Table 11.4 indicates that flowering plants and trees, grasses, orchids and lilies, fish and mollusks tend to be the most common categories of protected species found along Interstate 75. Other than mollusk, Interstates 24 and 59 share the same categories of protected species as Interstate 75 with additional categories including amphibian and mammal. Table 11.4 illustrates how these categories are broken down by county and RDC.

Figure 11.5 and Table 8.5 indicate that Bartow County could potentially be classified as a non-attainment area under the eight-hour Ozone standard at some point in the future. This would affect the southern one-third portion of Interstate 75 in this corridor.

Table 11.4 Percent of Centerline Miles with Nearby Protected Species

Interstate	RDC	County	GDOT District	Evergreen Trees & Shrubs	Flowering Trees & Plants	Grasses, Orchids & Lilies	Ferns	Amphibians	Birds	Fish	Mollusk	Reptile	Insect	Mammal	Other
75				0%	61%	50%	19%	4%	10%	64%	57%	16%	0%	0%	0%
	North Georgia			0%	49%	38%	0%	0%	0%	92%	52%	25%	0%	0%	0%
		Whitfield	6	0%	49%	38%	0%	0%	0%	92%	52%	25%	0%	0%	0%
	Coosa Valley			0%	65%	54%	25%	5%	12%	57%	58%	14%	0%	0%	0%
		Catoosa	6	0%	70%	51%	37%	19%	0%	98%	87%	0%	0%	0%	0%
		Gordon	6	0%	82%	49%	3%	0%	47%	47%	100%	54%	0%	0%	0%
		Bartow	6	0%	52%	58%	30%	0%	0%	39%	19%	0%	0%	0%	0%
59				0%	66%	70%	7%	58%	0%	100%	0%	41%	0%	51%	24%
	Coosa Valley			0%	66%	70%	7%	58%	0%	100%	0%	41%	0%	51%	24%
		Dade	6	0%	66%	70%	7%	58%	0%	100%	0%	41%	0%	51%	24%
24				0%	100%	10%	0%	0%	0%	96%	0%	0%	0%	0%	0%
	Coosa Valley			0%	100%	10%	0%	0%	0%	96%	0%	0%	0%	0%	0%
		Dade	6	0%	100%	10%	0%	0%	0%	96%	0%	0%	0%	0%	0%

Figure 11.5 Air Quality

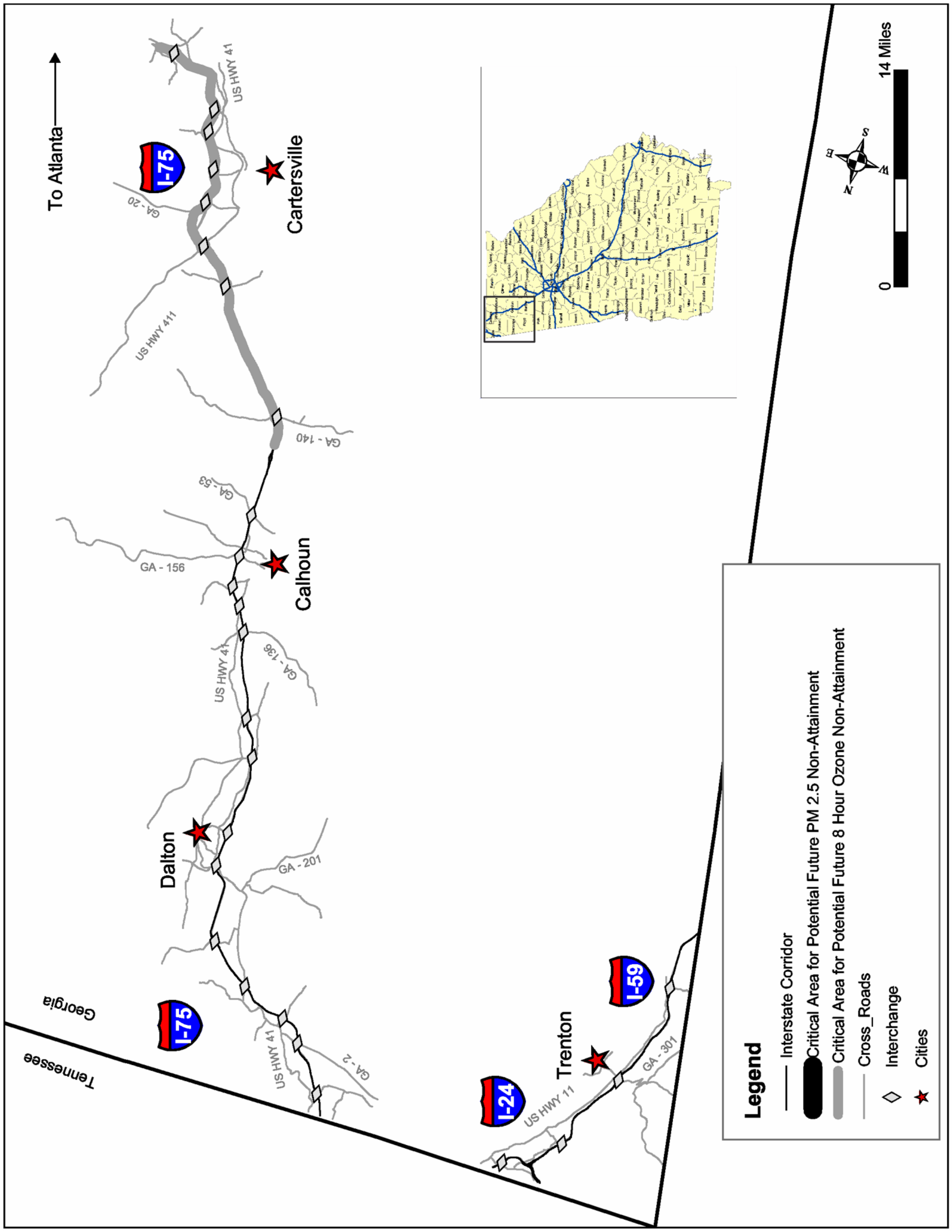


Table 11.5 Percent of Centerline Miles in Air Quality Non-Attainment Area

Interstate	RDC	County	GDOT District	Existing 1-Hour Ozone	Potential 8-Hour Ozone	Potential PM-2.5
75				0%	37%	0%
	North Georgia			0%	0%	0%
		Whitfield	6	0%	0%	0%
	Coosa Valley			0%	47%	0%
		Catoosa	6	0%	0%	0%
		Gordon	6	0%	0%	0%
		Bartow	6	0%	100%	0%
59				0%	0%	0%
	Coosa Valley			0%	0%	0%
		Dade	6	0%	0%	0%
24				0%	0%	0%
	Coosa Valley			0%	0%	0%
		Dade	6	0%	0%	0%

11.2 Land Use and Development

As seen in Figure 11.6, existing residential development is sparse along Interstate 75, while the majority of the corridor's span of Interstates 24 and 59 contain adjacent residential development. Most of the existing employment land uses are concentrated in Whitfield County along Interstate 75. Outside of Whitfield, adjacent employment land use is minimal. As indicated by the data provided in Table 11.6, Interstates 24 and 59 have commercial land uses along approximately 10 percent of their combined span. Along Interstate 75, most of the employment related land uses appear to be commercial and TCU land uses.

Figure 11.6 Existing Land Use

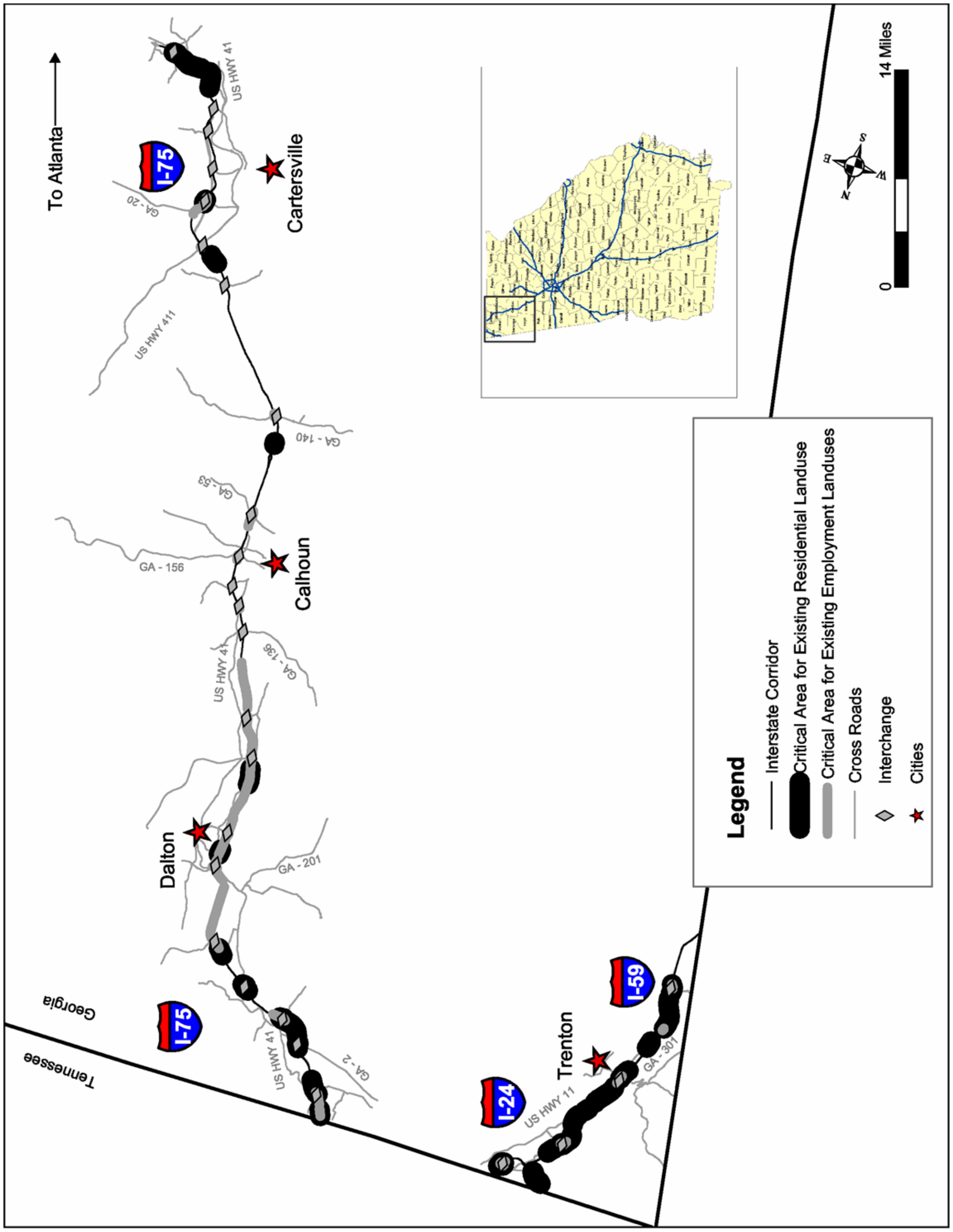


Table 11.6 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Existing Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Existing Accessibility Concern
75				11%	12%	2%	21%	0%	0%
	North Georgia			6%	25%	8%	82%	1%	0%
		Whitfield	6	6%	25%	8%	82%	1%	0%
	Coosa Valley			13%	9%	0%	5%	0%	0%
		Catoosa	6	31%	16%	0%	16%	0%	0%
		Gordon	6	1%	8%	0%	2%	0%	0%
		Bartow	6	9%	5%	0%	0%	0%	0%
59				34%	1%	1%	0%	5%	0%
	Coosa Valley			34%	1%	1%	0%	5%	0%
		Dade	6	34%	1%	1%	0%	5%	0%
24				41%	10%	0%	0%	0%	0%
	Coosa Valley			41%	10%	0%	0%	0%	0%
		Dade	6	41%	10%	0%	0%	0%	0%

Local land use plans suggest a much different development picture for future years. Figure 11.7 illustrates that under current land use plans, employment and residential land uses are projected to be within ½ mile of the interstate centerline along most of each span of interstate. According to Table 11.7, residential and commercial land uses will be the predominant land use categories within this corridor, though significant industrial development is being planned as well.

Figure 11.7 Future Land Use

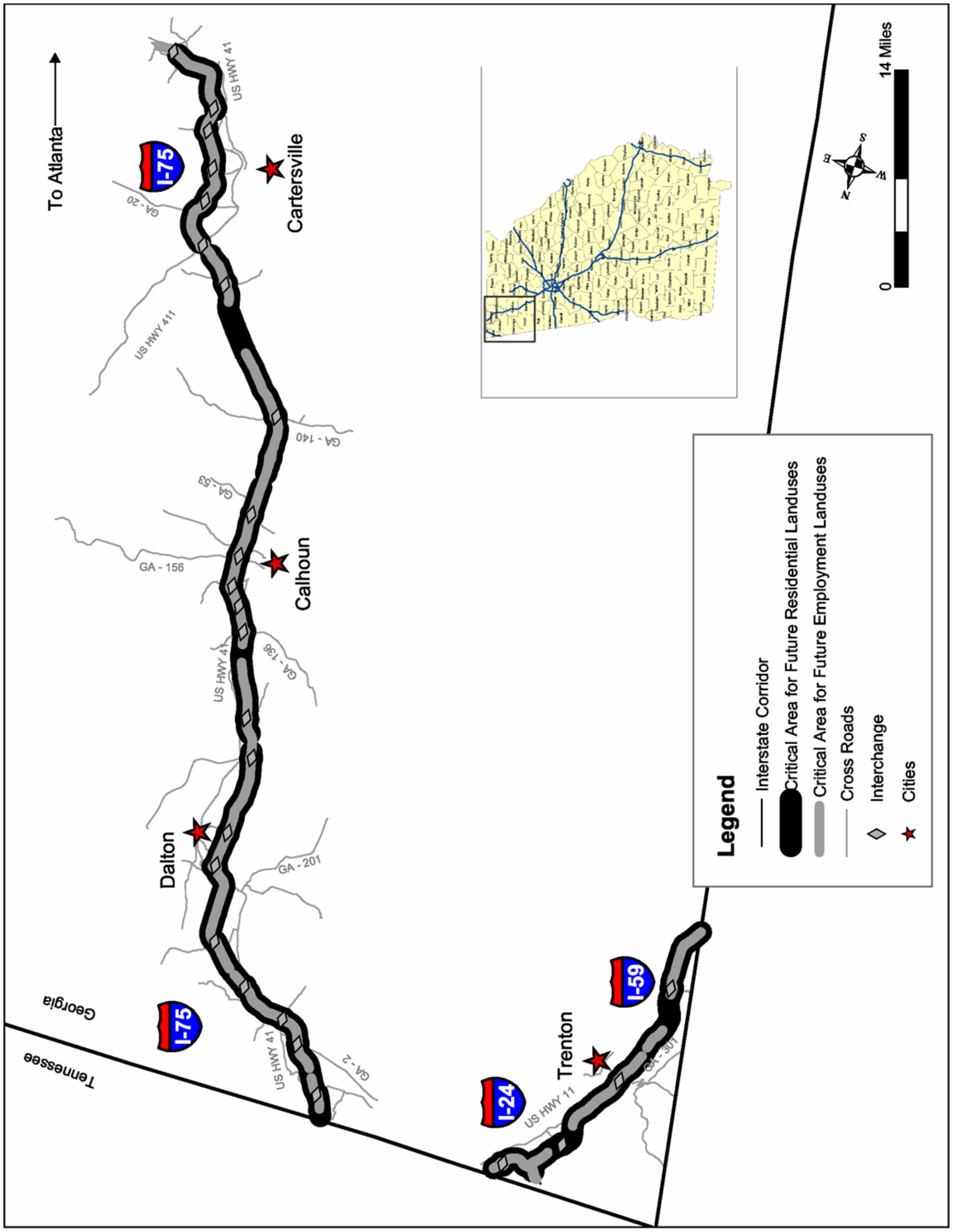


Table 11.7 Percent of Centerline Miles with Adjacent Land Use or Accessibility Concerns
Future Conditions

Interstate	RDC	County	GDOT District	Residential Land Use	Commercial Land Use	Industrial Land Use	TCU Land Use	Public or Institutional Land Use	Future Accessibility Concern
75				92%	77%	64%	30%	0%	0%
	North Georgia			94%	69%	51%	100%	0%	0%
		Whitfield	6	94%	69%	51%	100%	0%	0%
	Coosa Valley			91%	79%	67%	11%	0%	0%
		Catoosa	6	100%	83%	43%	35%	0%	0%
		Gordon	6	96%	73%	62%	8%	0%	0%
		Bartow	6	84%	81%	83%	0%	0%	0%
59				100%	72%	27%	11%	0%	0%
	Coosa Valley			100%	72%	27%	11%	0%	0%
		Dade	6	100%	72%	27%	11%	0%	0%
24				76%	90%	0%	0%	0%	0%
	Coosa Valley			76%	90%	0%	0%	0%	0%
		Dade	6	76%	90%	0%	0%	0%	0%

11.3 Interstate Access

The information in Figure 11.8 and Table 11.6 indicate that there are no existing accessibility concerns along any of the spans of interstate in this corridor. That is, there is no *existing activity center of statewide significance* is located in this area that does not have ready access to an existing interchange.

While Figure 11.9 and Table 11.7 show that there are no similar accessibility concerns for the *future activity center of statewide significance,* there are nonetheless eight interchanges along Interstate 75 that could be subject to significant travel demand increases if these future activity centers are developed to the extent envisioned in the local land use plans. These eight interchanges are located throughout the length of Interstate 75 in this corridor. There are no such concerns for interchanges along Interstates 24 and 59

Figure 11.10 illustrates interchanges that are likely to experience high levels of truck traffic due to proximity of existing and potential future activity centers that are industrial, intermodal, military or aviation in nature. A total of 11 interchanges may experience heavy-truck traffic, with four of the 11 interchanges serving areas near Cartersville.

Figure 11.8 Existing Accessibility Needs

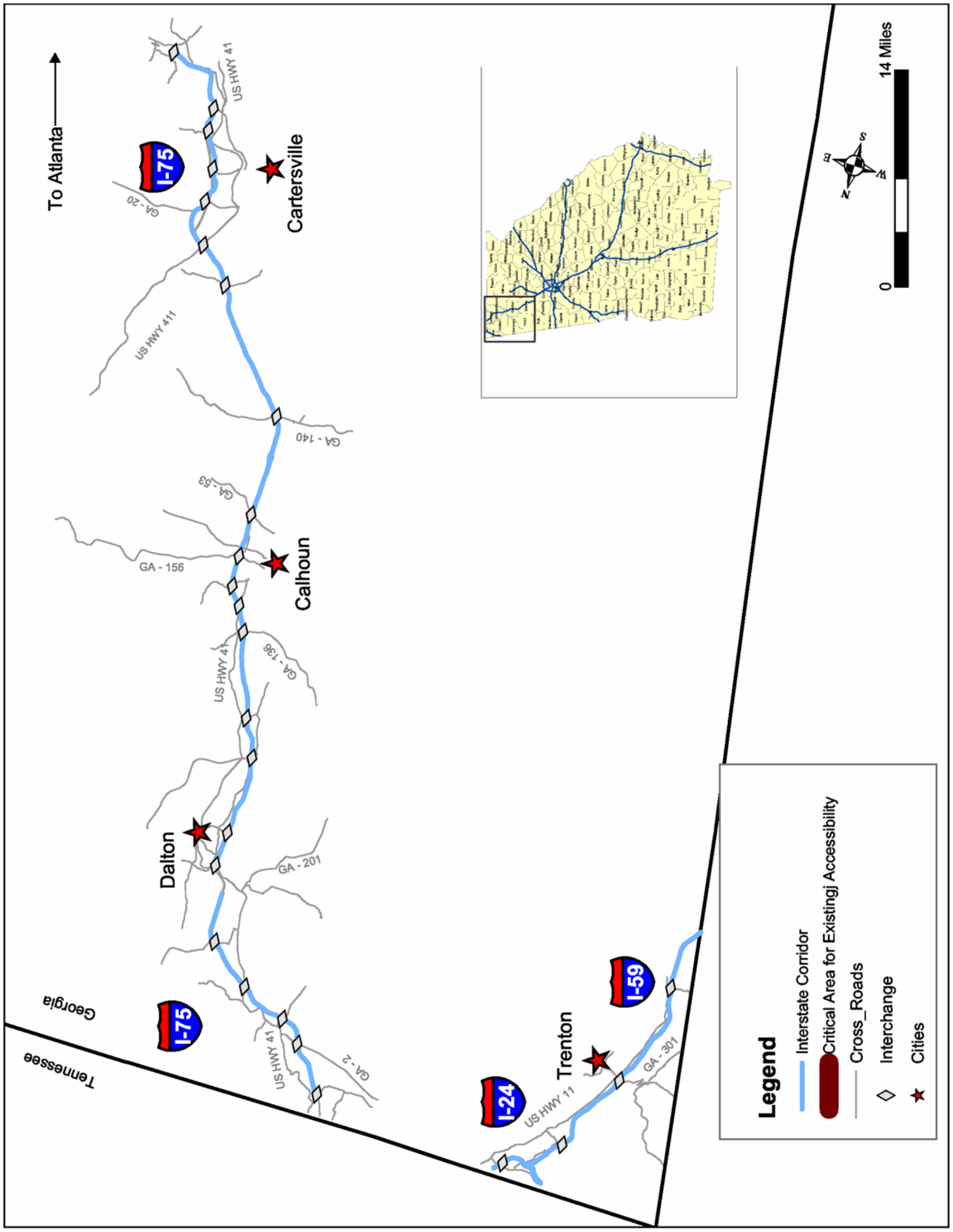


Figure 11.9 Future Accessibility Needs

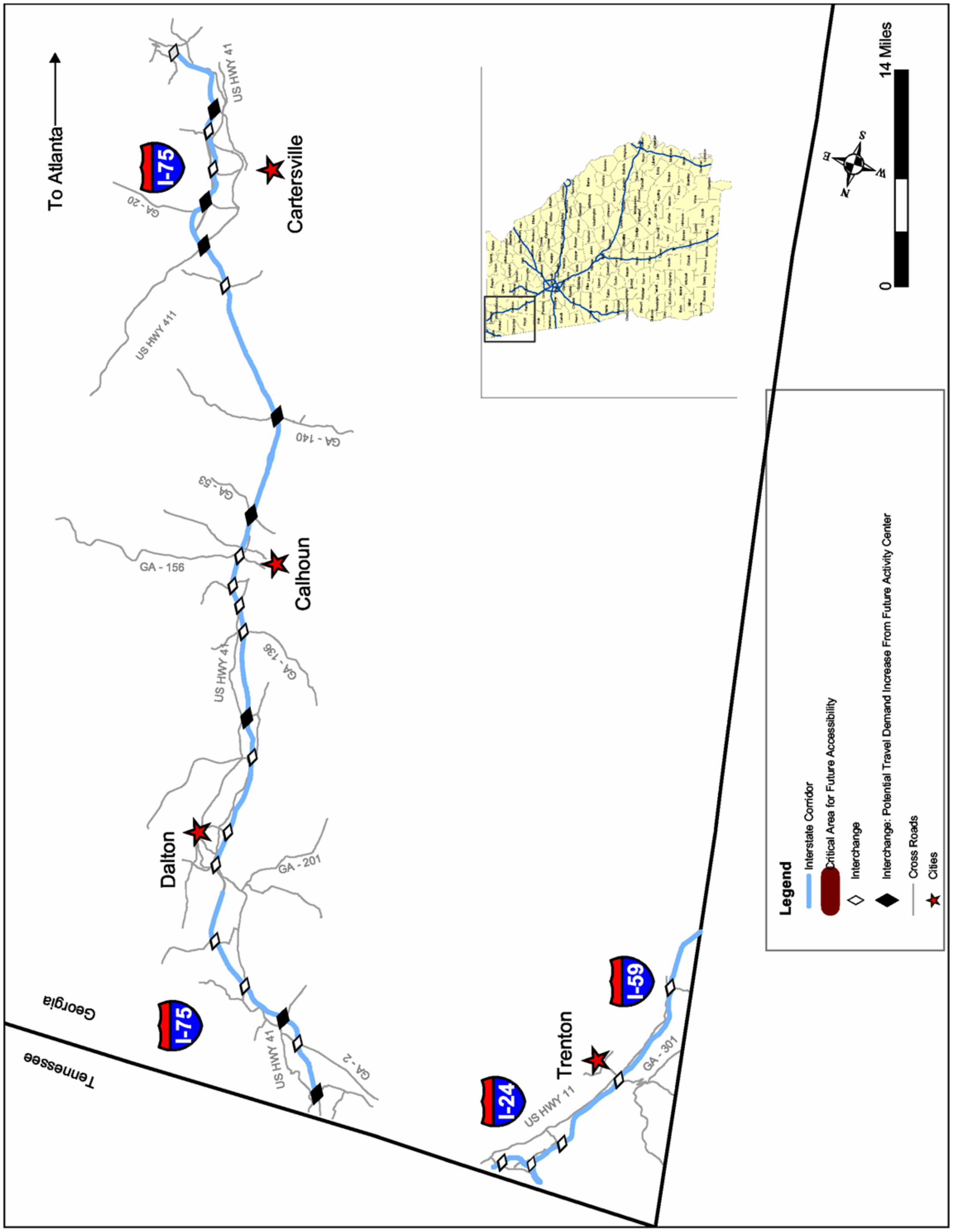
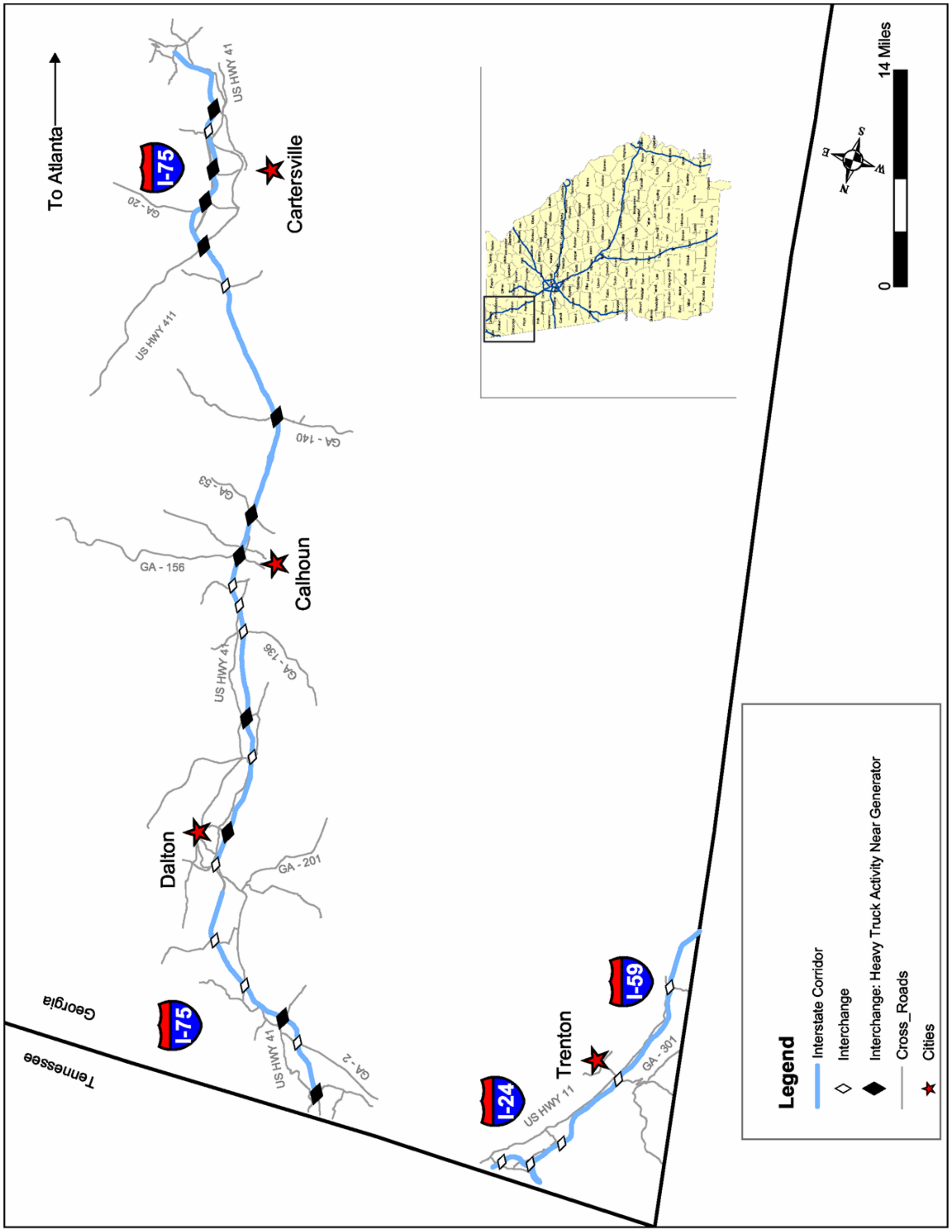


Figure 11.10 Key Access Points for Heavy-Truck Traffic



Appendix A

Analysis Plan for Land Use and Environmental Data

Analysis Plan for Land Use and Environmental Data

This section documents the data, methods, and procedures that were used in the Georgia ISP Land Use and Environmental Data Analysis. This includes discussion of how the Georgia ISP GIS Layers were developed as well as how the developed GIS layers were used to perform the various land use and interstate deficiency analyses.

Data Sources and Assembly

The project team has assembled data within five broad topic areas: land use, cultural resources, natural resources, demographics, and other. Table 1 summarizes the data sources within each topic area, including the coverage and original provider of each source.

Table 1. Data Sources

Data Item	Geographic Coverage	Description	Data Provider
	Land Use Data		
Existing land use	Statewide	Polygon	Dept of Community Affairs
Future land use	Statewide	Polygon	Dept of Community Affairs
Aerial photography	Five-mile buffer along interstate corridors	Digital Images	Georgia GIS Clearinghouse
Land Coverage	Statewide	Polygon	Georgia GIS Clearinghouse
Current Industrial Sites	Statewide	Points	Georgia Power
Georgia Manufacturing Directory	Statewide	Points	Dept of Industry, Trade, & Tourism
	Cultural Resources		
National Historic Sites	Statewide	Polygon	Georgia GIS Clearinghouse
National Monuments	Statewide	Polygon	Georgia GIS Clearinghouse
State Historic Parks	Statewide	Polygon	Georgia GIS Clearinghouse
State Historic Sites	Statewide	Polygon	Georgia GIS Clearinghouse

Table 1. Data Sources (continued)

Data Item	Geographic Coverage	Description	Data Provider
Natural Resources			
Protected Species	Five-mile buffer along interstate corridors	Polygon	Dept of Natural Resources
Wetlands	Statewide	Polygon	Georgia GIS Clearinghouse
Floodplains	~ One-third of state	Polygon	Georgia GIS Clearinghouse
Hydrology	Statewide	Polygon	Georgia GIS Clearinghouse
Wildlife Refuges	Statewide	Polygon	Georgia GIS Clearinghouse
State Wildlife Management Areas	Statewide	Polygon	Georgia GIS Clearinghouse
Conservation Easements	Statewide	Polygon	Georgia GIS Clearinghouse
State Parks	Statewide	Polygon	Georgia GIS Clearinghouse
Demographics			
Existing Population	Statewide	Tabular (Block Group)	U.S. Census Bureau
Existing Employment	Statewide	Tabular (ZIP code)	County Business Patterns
Future Population & Employment	Statewide	Tabular (county)	Woods and Poole
Other			
Landfills	Statewide	Point	Dept of Natural Resources
Hazardous Waste Sites	Statewide	Point	Dept of Natural Resources
Non-Attainment Areas	Statewide	Polygon	Dept of Transportation
Airports and seaports	Statewide	Point	Dept of Transportation
Intermodal and Freight Terminals	Statewide	Point	BTS

Initial Geoprocessing

For each data topic area outlined above, geoprocessing will be performed to prepare the data for analysis. All data will be processed in a GIS system. The data collection effort for this task was very successful and the project team collected over 50 data layers from many different sources. Each layer has to be reviewed, assessed and processed before analysis can begin. These activities will entail:

- All GIS data will be reprojected, if needed, so that all layers may be viewed in a consistent coordinate system. The projection chosen for this project is a Universal Transverse Mercator projection with a 1983 datum (UTM, NAD 1983, Zone 17).

- Tabular data will be geocoded or joined to GIS boundaries, lines or points so that it may be viewed as a GIS layer with the other data.

- Themes that were delivered either separated or broken into geographic areas will be mosaiced into consistent statewide themes.

- Data will be organized into a database schema, stored and cataloged so that it can be easily accessed.

- Existing metadata will be reviewed and stored so that information about data accuracy, precision, currency, methodology, and attribute information etc. can be easily retrieved.

Synthesis of Individual Data Sources into "GA ISP GIS Layers"

Once the initial geoprocessing is completed, individual data layers will be combined into 12 different topic areas. The resulting "Georgia ISP GIS Layers" will form the core of the land use and environmental data within the "System of Tools" deliverable for this project. These layers will also be used to perform the subsequent analysis and mapping exercises in order to achieve the objectives identified at the beginning of this Analysis Plan.

Year 2000 Population and Employment Estimates

This GIS layer will show county boundaries, and will include detail estimates of year 2000 demographics (by census tract or by census blockgroups) and employment (by county), and more generalized forecasts of county-level year 2025 demographics and employment for the entire state.

Data Sources

- 2000 Census data tables (block group and tract levels) for total population, ethnicity, and poverty status.

- County Business Pattern employment data at Zip Code level.

- Census tract and block group boundaries.

- Zip Code and county boundaries

Synthesis Steps

1. Download 2000 SF1 and SF3 data from the Census for Georgia.

2. Extract data on population, population by race, income, and employment at the blockgroup, census tract and county geographical levels. Join to boundary files.

3. Calculate the percentage of population in each block group, census tract and county that is a racial or ethnic minority; stratify into black, Hispanic and other categories. Calculate the percentage of population below the poverty level.

4. Extract employment data and combine into categories of "natural resources" (SIC codes 01 to 14), "industrial and wholesale" (SIC codes 14 to 51), "retail" (SIC codes 52 to 59), and "commercial" (SIC codes 60 to 99). Join data to ZIP Code boundary.

Year 2025 Population and Employment Projections

This GIS layer will show county boundaries, and will include county-level forecasts of year 2025 and employment for the entire state.

Data Sources

- Year 2025 county-level population (by place of residence) and employment (by place of work) forecasts from Woods and Poole
- Georgia County Boundary Layers

Synthesis Steps

1. Assemble Woods and Poole data by county and join to county boundary file.

Existing Land Uses Near Interstate System

This GIS layer will consist of polygons that represent current generalized land use within a two and one-half-mile band to either side of existing interstate corridors.

Data Sources

- Existing land use GIS layer from DCA
- Digital Environmental Atlas (DEAG) Land Coverage Layers
- Year 2000 Population and Employment
- Georgia Interstate System GIS layer

Synthesis Steps

1. Overlay the DCA GIS layer and the DEAG land coverage layers with the interstate system layer, and create new GIS layers that includes all land uses within two and one-half miles on either side of the interstate corridors. Review all data layers in informal maps.

2. Overlay the GIS layers created in Step 1. Write, test and run a polygon correspondence program that will identify which of the land uses in the DCA GIS layer (a.k.a. "foundation layer") are inconsistent with the land uses designations in the other layers.

3. Adjust the foundation layer as needed to arrive at a layer the project team will assume is the base year land use.

Future Land Uses Near Interstate System

This GIS layer will consist of polygons that represent potential future generalized land use within a two and one-half-mile band to either side of existing interstate corridors.

Data Sources

- Future land use GIS layer from DCA
- Layer produced in the analysis of Future Activity Centers
- Georgia Interstate System GIS layer

Synthesis Steps

1. Overlay the DCA GIS layer with the interstate system layer, and create a new GIS layer that includes all land uses within two and one-half miles on either side of the interstate corridors.

2. Overlay the GIS layer from Step 1 with the layer produced in the analysis of Future Activity Centers; identify and add areas of future economic development that may not have been included the DCA GIS layer.

Current Activity Centers of Statewide Significance

This GIS layer will consist of points that indicate major activity centers that currently exist throughout the State. Each point will be coded to indicate the type of activity center.

Data Sources

- GIS layer with *Year 2000 Census Population and 1997 ZIP Code Business Patterns*
- Existing Land Use Layer
- Current industrial sites from Georgia Power
- Georgia Manufacturing Directory from ITT
- General aviation and commercial airports
- GIS layer of state parks

- GIS layer of military bases
- Intermodal sites and freight facilities in metro Atlanta area (to be provided by ARC through DWA)

Synthesis Steps

1. Point coverage of Tier 1, Tier 2 and commercial airports, state parks, military bases, seaports and intermodal sites were merged and classified respectively. This provides the majority of the state's existing activity centers. The remaining steps were taken to identify the major economic activity centers in Georgia.

2. Use the Business ZIP code data to provide estimates of the number of retail and non-retail establishments in each ZIP code by range of employment size. Estimate the total employment in each ZIP code by weighting the number of establishments in each range of employment size with the least number of employees for that range.

3. Using the Existing Land Use layer, calculate the percent of land attributed to retail, commercial, industrial, wholesale and other similar land uses within each ZIP code.

4. Develop an estimate of each ZIP code's trip attractiveness by developing a composite measure for each ZIP code. Do this by summing five times the number of estimated retail employees (reflective of recommended ITE trip generation rates) with the number of estimated non-retail employees. Multiply this sum was by the land use percentage that was determined in Step 3.

5. Select ZIP codes having a composite figure larger than the statewide average for further examination.

6. Using the ZIP codes selected in Step 5, the industrial sites point file from Georgia Power and the ITT Manufacturing Sites Directory point file, determine where economic activities are clustered within each ZIP code. Append new points representing these clusters or "economic activity centers" to the shapefile developed in Step 1. In ZIP codes where there is no evident clustering of activity based on the Georgia Power and ITT shapefiles, use aerials to determine locations of significant clustering of commercial development.

Future Activity Centers of Statewide Significance

This GIS layer will consist of points that indicate future activity center areas throughout the State. Due to limitations in information and data, the only forecastable future activity centers are economic activity centers.

Data Sources

- GIS layer of *Existing Activity Centers of Statewide Significance*
- Future Land Use Layer
- Information about new industrial developments from Georgia Department of Industry Trade and Tourism (GDITT), such as the Chrysler Plant in Savannah

Synthesis Steps

1. Select polygons from the Future Land Use Layer that fall under the classification of Commercial or Industrial.
2. Overlay the Commercial and Industrial polygons with the Existing Activity Centers point layer. Delete any future commercial or industrial polygons that fall within a two-mile buffer of an existing activity center that is classified as Economic Activity Center.
3. Also, from the Commercial and Industrial polygons, delete any polygons that are smaller than 500 acres in area and any polygons that fall within the metropolitan Atlanta region.
4. Convert the remaining polygons from Step 3 into points, placing points at the centroid of each polygon. This provides a general idea of where economic activity is likely to occur. In cases where polygons are separate, but adjacent, the resulting attributed points are deleted and a new point is placed between where the two previous points were located.
5. All new points were classified as Economic Activity Centers.

Existing Cultural Resources Near the Interstate System

These GIS layers will consist of polygons that indicate locations where certain categories of cultural resources currently exist near the current interstate system. Due to data availability limitations, information on archaeological resources will not be included.

Data Sources

- National Historic Sites from DEA Conservation layer
- National Monuments from DEA Conservation layer
- State Historic Parks from DEA Conservation layer
- State Historic Sites from DEA Conservation layer
- Georgia Interstate System GIS layer

Synthesis Steps

1. Review National Historic Sites, National Monuments, State Historic Parks and State Historic Site layers to assure that all four can be overlaid.

Review database with GIS layers and, if necessary, add designations for each of the four types of cultural resources. Merging of individual layers will not be performed for the cultural resources.

Existing Natural Resources Near the Interstate System

These GIS layers will consist of polygons that indicate locations where certain categories of natural resources currently exist near the current interstate system.

Data Sources

- National Wildlife Refuges from DEA Conservation layer
- State Wildlife Management Areas from DEA Conservation layer
- Conservation Easements from DEA Conservation layer
- State Parks from DEA Conservation layer
- Protected Species Layer

Synthesis Steps

1. Review the National Wildlife Refuge, State Wildlife Management Area, Conservation Easement and State Park layers to assure that all four can be overlaid and jointly analyzed with the interstate system layer. Review database with GIS layers and, if necessary, add designations for each of the four types of major parklands. Merging of individual layers will not be performed for the major parklands.

2. Review the protected species layer to assure that it can be overlaid and jointly analyzed with the interstate system layer. Review underlying database and, if necessary, add designations for the type of protected species in each feature.

Existing Water Resources Near the Interstate System

These GIS layers will consist of polygons that indicate locations where certain categories of natural resources currently exist near the current interstate system.

Data Sources

- Wetlands layer from GIS Clearinghouse
- Hydrology layer from GIS Clearinghouse
- Floodplain layer from GIS Clearinghouse
- Watershed (HUC 250) layer from Georgia's Digital Environmental Atlas

Synthesis Steps

1. Merge all the wetlands sections into one GIS layer and merge all of the floodplain sections into one GIS layer.

2. Classify each wetland polygon as either in or out of a wetland. Classify each floodplain polygon as being in or out of a floodplain.

3. Review the Wetlands, Hydrology, Floodplain, and Watershed layers to assure that all four can be overlaid and jointly analyzed with the interstate system layer. Review database with GIS layers and, if necessary, add designations for each of the four types of water resources. Merging of individual layers will not be performed for the water resources.

Other Key Environmental Areas Near the Interstate System

These GIS layers will consist of polygons that indicate locations where certain categories of hazardous materials currently exist or may be stored near the current interstate system.

Data Sources

- Hazardous Site Inventory (HSI) layer

- Landfill layer

Synthesis Steps

1. Review the HSI and landfill layers to assure that they can be overlaid and jointly analyzed with the interstate system layer. Review database with GIS layers and, if necessary, add designations for each type of hazardous site. Merging of individual layers will not be performed for the hazardous sites.

Existing Jurisdictional Boundaries

Data Sources

- County Boundary layer from U.S. Census Bureau
- RDC Boundary layer from Georgia DCA
- GDOT District Boundary layer from Georgia DOT
- Congressional Districts Boundary layer

Synthesis Steps

No analysis to be undertaken. Jurisdictional layers to be kept separate.

Existing and Potential Future Air Quality Non-Attainment Areas

This GIS layer will consist of polygons (contiguous with county boundaries) that show non-attainment status for all criteria pollutants.

Data Sources

- County boundary layer
- List of existing non-attainment status by county and pollutant
- List of potential changes to non-attainment status for eight-hour ozone and particulate matter

Synthesis Steps

1. Create a new GIS layer using geography from the county boundary layer.
2. Add data fields to the GIS layer, and indicate the current non-attainment status for each county under all existing criteria pollutants.
3. Add data fields to the GIS layer, and indicate the potential non-attainment status for each county under the proposed eight-hour ozone and PM 2.5 standards.

Analysis and Mapping for Tech Memo 1

Jurisdictional Boundaries

Create overlay of jurisdictional boundary layers with interstate system layer, and create tabulations of interstate centerline miles, lane miles, and number of interchanges within each municipality, RDC, and county within the State. Prepare a table for inclusion in the Tech Memo that summarizes this information for each interstate corridor. Create Maps 1, 2, and 3 as described below.

Economic Growth Areas and Accessibility Deficiencies

- Create overlay of GA ISP layers *Current Activity Centers of Statewide Significance* with the interstate system GIS layer and county boundary layers. Create Map 4 as described below.
- Overlay the GA ISP layers *Future Activity Centers of Statewide Significance* and *Current Activity Centers of Statewide Significance*, and identify the polygons that only exist in the future (i.e., new activity centers). Overlay the resulting selection set with the interstate system GIS layer and county boundary layers, and create Map 5 as described below.
- Using the interstate system GIS layer, create a two-mile buffer around each interstate interchange as well as a one-mile buffer around any interchange access roads. Overlay the interchange and access road buffers on the GA ISP layer

Future Activity Centers of Statewide Significance. Identify activity centers that are within a five-mile radius of the interstate that also lie outside of the buffers. Identify the sections of interstates that are adjacent to these activity centers that are outside of the interchange and access road buffers. Designate these sections of interstate highway as having an "accessibility deficiency." Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that have accessibility deficiencies.

- Using the *Future Activity Centers of Statewide Significance* and the Interstate Interchange layer, determine the interstate interchange that is closest to each of these new activity centers; the resulting selection set represents interchanges that might be subject to significant travel demand increases due to future development. (Activity centers that are further than five miles to the closest interchange are not included in this analysis.) Create a table for each interstate corridor that summarizes, by jurisdiction, the number of interchanges that might be subject to travel demand increases.

- Create Map 6, as described below, using results from the previous two steps.

- Using the GA ISP layer *Future Activity Centers of Statewide Significance*, remove points that represent "activity centers" for commercial land uses and state parks. Overlay the resulting activity center layer with the interstate layer, and identify the interchange that is closest to each remaining activity center. (Activity centers that are further than five miles to the closest interchange are not included in this analysis.) Create Map 7 as described below to show both the areas with potentially heavy truck activity, and the interchanges that are closest to these activity centers.

Land Use Constraints

- Create overlay of GA ISP layer "existing land uses near interstate system" with interstate system GIS layer and jurisdictional boundary layers.

- Identify sections of interstate highway where, within one-half mile of either side of the interstate centerline, there is land with a current land use designation of *residential, commercial, industrial, public/institutional, or TCU*. Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of these five land use designations.

- Create overlay of GA ISP layer "future land uses near interstate system" with interstate system GIS layer and jurisdictional boundary layers. Identify sections of interstate highway where, within one-half mile of either side of the interstate centerline, there is land with a future land use designation of *residential, commercial, industrial, public/institutional, or TCU*. Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of these five land use designations.

- Create Maps 8 and 9 as described below. The maps will use a coding scheme to differentiate if the potential constraint is related to residential, non-residential, or both types of land use/development.

Environmental Constraints

- Create overlay of the GA ISP layer "existing water resources near interstate system" with interstate system GIS layer and jurisdictional boundary layers.
  - Identify sections of interstate highway where wetlands or floodplains exists within one mile of either side of the interstate centerline. Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of these categories of natural resource.
  - Create a table to summarize the centerline miles of interstate within each major watershed area (cross-classified by interstate corridor).
- Create Map 10 as described below. The map will use a coding scheme to differentiate between wetlands and floodplain. The map will also display the boundaries between watersheds, and show all hydrologic features within one mile of either side of the interstate centerline.
- Create overlay of all elements within "existing cultural resources near interstate system" with interstate system GIS layer and jurisdictional boundary layers. Identify sections of interstate highway where one or more of the four types of cultural resource exists within one mile of either side of the interstate centerline. Create a table that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of these four categories of cultural resource.
- Create overlay of the GA ISP layer "existing natural resources near interstate system" with interstate system GIS layer and jurisdictional boundary layers. Identify sections of interstate highway where one or more of the major parklands or protected species exist within one mile of either side of the interstate centerline. Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of these categories of natural resource.
- Create overlay of GA ISP layer "other key environmental areas near interstate system" with interstate system GIS layer and jurisdictional boundary layers. Identify sections of interstate highway where one or both of the hazardous site features exists within one mile of either side of the interstate centerline. Create a table for each interstate corridor that summarizes, by jurisdiction, the centerline miles of interstate that are adjacent to land of each of type of hazardous site.
- Create Map 11 as described below. The map will use a coding scheme to differentiate if the potential constraint is related to cultural, natural or other environmental resource, or some combination of the three.
- Create overlay of GA ISP layer "existing and potential future air quality non-attainment areas" with interstate system GIS layer and jurisdictional boundary layers. Identify sections of interstate highway that are within one or more of the non-attainment areas. Create a table that summarizes, by RDC and statewide, the centerline miles of interstate that are within the non-attainment area for each pollutant.

- Create Map 12 as described below.

- Create overlay of GA ISP layer "Year 2000 Population and Employment Estimates" with interstate system GIS layer and jurisdictional boundary layers.

Maps to be Created

1. RDC, GDOT and County Boundaries – Maps will be developed for each interstate corridor that show county boundaries along with coding scheme for groupings of counties by RDC and GDOT District.

2. Congressional District Boundaries – Maps will be developed for each interstate corridor that show Congressional District boundaries along with coding scheme for groupings of counties by RDC and GDOT District.

3. Existing Activity Centers of Statewide Significance – Maps of North, Central and South Georgia will show all major centers throughout the State.

4. Future Activity Centers of Statewide Significance – Maps of North, Central and South Georgia will show all new major centers throughout the State. This map will represent areas of future economic growth outside of metro Atlanta.

5. Areas with Potential Interstate Accessibility Concerns – Maps will be developed for each interstate corridor that show sections of interstate that have poor accessibility (based on activity center location) or where interchange upgrades might be needed due to increased travel demand from projected development.

6. Areas with Potentially Extensive Heavy Truck Activity – Maps will be developed for each interstate corridor that show current and future activity centers that may have heavy truck activity, and highlight the existing interchanges that are closest to these activity centers.

7. Areas with Potential Existing or Future Land Use Designation Conflicts – Maps will be developed for each interstate corridor that show areas where current or future land use designation might allow development to occur within one-half mile of interstate centerline.

8. Key Hydrologic Resources Along the Interstate System – Maps will be developed for each interstate corridor that shows hydrologic features and watersheds along the corridor, and potential areas with wetlands and floodplains within one mile of the interstate centerline.

9. Other Key Environmental Resources and Potential Constraints Adjacent to the Interstate System – Maps will be developed for each interstate corridor that show locations where parklands, cultural resources, protected species and hazardous sites exist within one mile of interstate centerline.

10. Areas with Potential Air Quality Constraints – One or more statewide maps will be developed to show counties that are currently or potentially in the future designated as non-attainment for one or more criteria pollutants.

For maps that will be created on a "corridor" basis, the following corridors are suggested:

- NW of Atlanta – I-59, I-24, I-75 (Bartow County and North);
- NE of Atlanta – I-985 (Hall County), I-85 (Jackson County and north);
- E of Atlanta – I-20 (Newton County and east);
- W & SW of Atlanta – I-185, I-85 (Coweta County and south);
- W & SW I-20 (Haralson County);
- Atlanta to Macon – I-75 (Spalding County to Bibb County); I-475;
- South of Macon – I-75 (South of Bibb County);
- Macon to Savannah – I-16, I-516; and
- Coastal – I-95.

(Note – I-575 and I-285 are totally within the ARC region.)