

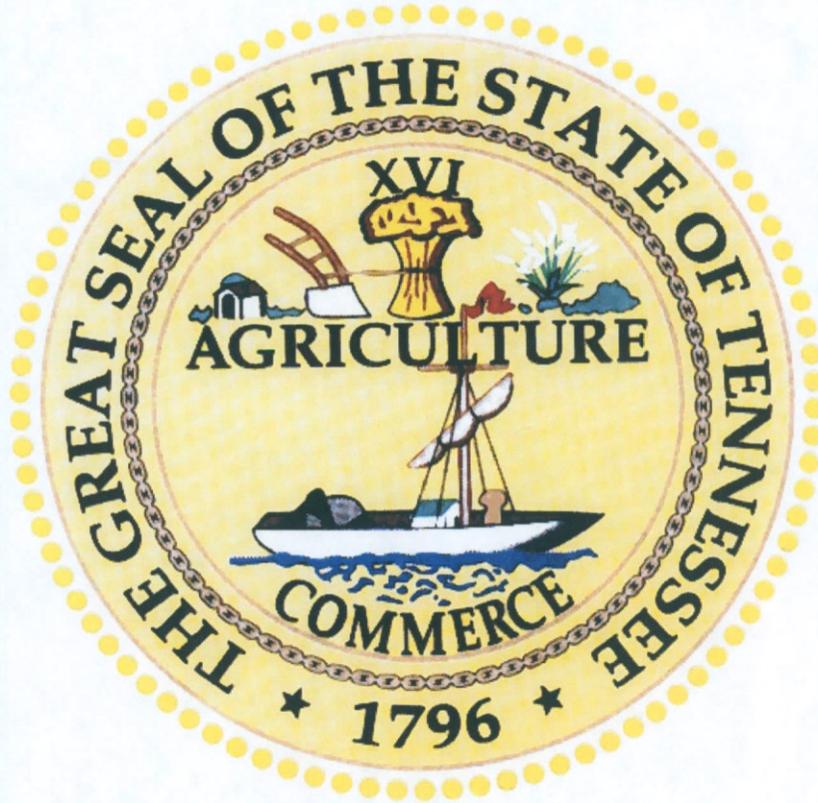
TRANSPORTATION PLANNING REPORT

ATHENS BYPASS

FROM I-75 TO SR-30

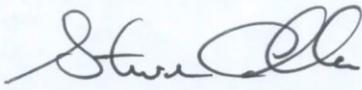
MC MINN COUNTY

PIN 107336.00



PREPARED BY
FLORENCE & HUTCHESON, INC.

For the
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Recommended by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		5/15/09
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		5-15-09
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		5/13/09

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

Table of Contents

1.0 Background Information	5
1.1 Project History	5
1.2 Project Study Area.....	8
1.3 Community Description.....	15
2.0 Existing Transportation Conditions.....	19
2.1 Regional Highway Network Discussion	19
2.2 Planned and Recent Improvements	21
2.3 SR-30 Existing Geometric Conditions & Deficiencies.....	21
2.4 Safety	25
2.5 Alternative Transportation Modes in Study Area	27
3.0 Purpose and Need	30
3.1 Purpose and Need of a Bypass	30
3.2 Purpose and Need Requirements	30
4.0 Measures of Effectiveness	33
4.1 Level of Service	33
4.2 Volume to Capacity Ratio & Congestion Reduction	33
4.3 Average Travel Speed	33
4.4 Travel Time.....	33
5.0 Proposed Improvements	35
5.1 Design Criteria	35
5.1.1 Cross Section Design.....	35
5.1.2 Roadside Design.....	35
5.1.3 Access Control.....	35
5.1.4 Design Speed.....	36
5.1.5 Pedestrian and Bicycle Accommodations	36
5.1.6 Disposition of Existing Route	37
5.2 Corridor Options	37
5.2.1 No Build Option.....	39
5.2.2 South Bypass Options.....	44
5.2.3 North Bypass Option	56
6.0 Assessment of Options	64
6.1 TDOT’s Seven Guiding Principles	64
6.1.1 Guiding Principle 1: Preserve and Manage the Existing Transportation System	64
6.1.2 Guiding Principle 2: Move a Growing, Diverse, and Active Population.....	64
6.1.3 Guiding Principle 3: Support the State’s Economy	64
6.1.4 Guiding Principle 4: Maximize Safety and Security.....	64
6.1.5 Guiding Principle 5: Build Partnerships for Livable Communities	65
6.1.6 Guiding Principle 6: Promote Stewardship of the Environment	65
6.1.7 Guiding Principle 7: Promote Financial Responsibility.....	71
6.2 Summary of Options.....	72

Table of Exhibits

Exhibit 1.1 Project History	6
Exhibit 1.1 Project History (Continued)	7
Exhibit 1.1 Project History (Continued)	8
Exhibit 1.2.1 Area Vicinity Map.....	9
Exhibit 1.2.2 Project Location Map (Legend)	10
Exhibit 1.2.2 Project Location Map (1)	11
Exhibit 1.2.2 Project Location Map (2)	12
Exhibit 1.2.2 Project Location Map (3)	13
Exhibit 1.2.2 Project Location Map (4)	14
Exhibit 1.3.1 Major Industries	16
Exhibit 1.3.2 Major Industries Map	17
Exhibit 1.3.3 Utility Service Providers.....	18
Exhibit 2.1 Regional Map	20
Exhibit 2.3.1 Existing Conditions	22
Exhibit 2.3.2 SR-30 4-Lane Divided Section (Photo)	23
Exhibit 2.3.3 SR-30 5-Lane Section (Photo)	23
Exhibit 2.3.4 SR-30 4-Lane Section (Photo)	24
Exhibit 2.3.5 SR-30 2-Lane Section (Photo)	24
Exhibit 2.4.1 SR-30 Crash Data for 2003-2005.....	25
Exhibit 2.4.1 SR-30 Crash Data for 2003-2005 (Continued).....	26
Exhibit 2.4.1 SR-30 Crash Data for 2003-2005 (Continued).....	26
Exhibit 2.5.1 Rail Freight Map	28
Exhibit 2.5.2 Inland Waterway System.....	29
Exhibit 4.1 LOS Table	34
Exhibit 5.2.1 I-75 Exits.....	39
Exhibit 5.2.1.1 No Build Option 2013 LOS	41
Exhibit 5.2.1.2 No Build Option 2033 LOS	41
Exhibit 5.2.1.3 No Build Option LOS Table	42
Exhibit 5.2.1.4 SR-30 Travel Time Runs Table.....	43
Exhibit 5.2.1.5 SR-30 Travel Time Runs Chart.....	43
Exhibit 5.2.2.1 South Bypass Option A 2013 LOS - 2-Lane Bypass	47
Exhibit 5.2.2.2 South Bypass Option A 2013 LOS - 4-Lane Bypass	47
Exhibit 5.2.2.3 South Bypass Option A 2033 LOS - 2-Lane Bypass	48
Exhibit 5.2.2.4 South Bypass Option A 2033 LOS - 4-Lane Bypass	48
Exhibit 5.2.2.5 South Bypass Option B 2013 LOS - 2-Lane Bypass	49
Exhibit 5.2.2.6 South Bypass Option B 2013 LOS - 4-Lane Bypass	49
Exhibit 5.2.2.7 South bypass Option B 2033 LOS - 2-Lane Bypass	50
Exhibit 5.2.2.8 South bypass Option B 2033 LOS - 4-Lane Bypass	50
Exhibit 5.2.2.9 South Bypass Options LOS Table – SR-30.....	51
Exhibit 5.2.2.10 South Bypass Options LOS Table –2-Lane South Bypass Option A	52
Exhibit 5.2.2.11 South Bypass Options LOS Table – 4-Lane South Bypass Option A	53
Exhibit 5.2.2.12 South Bypass Options LOS Table – 2-Lane South Bypass Option B	54
Exhibit 5.2.2.13 South Bypass Options LOS Table – 4-Lane South Bypass Option B	55
Exhibit 5.2.3.1 North Bypass Option 2013 LOS – 2-Lane Bypass	59
Exhibit 5.2.3.2 North Bypass Option 2013 LOS – 4-Lane Bypass	59
Exhibit 5.2.3.3 North Bypass Option 2033 LOS – 2-Lane Bypass	60
Exhibit 5.2.3.4 North Bypass Option 2033 LOS – 4-Lane Bypass	60
Exhibit 5.2.3.5 North Bypass Options LOS Table – SR-30	61
Exhibit 5.2.3.6 North Bypass Option LOS Table – 2-Lane North Bypass	62

ATHENS BYPASS TPR
McMinn County, TN

Exhibit 5.2.3.7 North Bypass Option LOS Table – 4-Lane North Bypass 63
Exhibit 6.1.6.1 Environmental and Community Resources 66
Exhibit 6.1.6.1 Environmental and Community Resources (Cont.) 67
Exhibit 6.1.6.1 Environmental and Community Resources (Cont.) 68
Exhibit 6.1.6.1 Environmental and Community Resources (Cont.) 69
Exhibit 6.1.6.2 Environmental and Community Resources Map 70
Exhibit 6.2.1 Summary of Options Chart 73
Exhibit 6.2.1 Summary of Options Chart (Continued) 74
Exhibit 6.2.1 Summary of Options Chart (Continued) 75
Checklist of Determinants for Location Study 76
Traffic Schematic: No Build Option 77
Traffic Schematic: South Bypass Options 78
Traffic Schematic: North Bypass Option 79
Design Criteria for Location and Design Phase 80
Design Criteria for Location and Design Phase 81

Corridor Sheets (on aerial photography)

Appendix

- Cost Estimates
- Mayfield Dairy Farm Article
- Correspondence
- Level of Service Analysis

1.0 BACKGROUND INFORMATION

1.1 PROJECT HISTORY

This Transportation Planning Report (TPR) examines a No Build Option, two South Bypass Options, and a North Bypass Option around Athens, Tennessee. The TPR was initiated by an earmark in SAFETEA-LU to “construct a new exit on I-75 and connect US-11, US-411, and SR-30.” The options can be summarized as follows:

No Build Option: The No Build Option provides no improvements and serves as a baseline option against which all other options are compared.

South Bypass Options: The two South Bypass Options will originate at a new interchange along I-75 to be constructed as part of these Options between the I-75 Rest Area to the south and the SR-30 Interchange (Exit 49) to the north. The South Options will connect to SR-30 east of Athens. Major roads the South Options will cross include US-11, Cedar Springs Road, and Piney Grove Road. The two options are separated by a knob in the Red Hills Mountain Range.

North Bypass Option: The North Bypass Option will originate at a new interchange along I-75 to be constructed as part of this Option between the SR-305 Interchange (Exit 52) to the south and the SR-309 Interchange (Exit 56) to the north. The North Option will proceed east and connect to SR-30. Major roads the North Option will cross include US-11, Old Niota Road, SR-307, and SR-39.

Within the study corridors of the South and North Bypass Options, multiple alignment and cross section options are possible. Corridors (minimum of 2000' wide) are provided to allow flexibility for locating alignments among the rugged terrain surrounding Athens. These study corridors evaluate opportunities for meeting the mobility, safety, and economic development needs of Southeast Tennessee, including the City of Athens and McMinn County.

This report is a continuation of several previous studies and meetings, including an Interchange Justification Study (IJS) being performed concurrently with this TPR. The IJS is being performed for both the South and North Bypass Options. Final approval of a Bypass Option will be dependent upon approval of the IJS by the Federal Highway Administration. A summary of previous activity concerning this project is provided in **Exhibit 1.1**. Correspondence concerning this project, including minutes from the previous meetings, is provided in the **Appendix**.

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 1.1 PROJECT HISTORY

Date	Activity
December, 2001	<p>TDOT prepared an Advance Planning Report (APR) investigating a southern bypass around Athens. The alignments discussed would be a four-lane divided cross section, partial-access controlled facility, and begin either at a new interchange along I-75 or at SR-30 west of Athens and extend east to SR-39.</p>
February, 2003	<p>McMinn County Highway Department issued a memo supporting a northern bypass that would utilize the existing SR-305 Interchange. The focus of the memo was improving industrial access (truck traffic).</p>
June, 2004	<p>TDOT Feasibility Study for a Northern Bypass connecting to the existing SR-305 Interchange with I-75 is conducted.</p>
September, 2004	<p>McMinn County Highway Department issued a memo supporting a full-access controlled northern bypass that would utilize the existing SR-305 Interchange.</p>
October, 2004	<p>Athens Bypass Project Workgroup Session occurred at the McMinn County Courthouse. Representatives from the McMinn County Commission, Athens City Council, Southeast Tennessee Development District (RPO), and the McMinn County Highway Department attended. History of the bypass project and the need for the county and city to come to an agreement concerning either a northern or southern alignment option were discussed. No consensus on the alignment is provided in the meeting minutes.</p> <p>The northern alignment discussed was full-access controlled and extended from the existing SR-305 interchange with I-75 in the northwest to County Road 659 near SR-39 in the south.</p> <p>The southern alignment discussed as a partial-access controlled facility. It began at a new interchange along I-75 in the southwest and extended to SR-39 to the east. Eventually this route may be extended west from I-75 to connect with SR-30 to form a “true” bypass.</p>

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 1.1 PROJECT HISTORY (CONTINUED)

Date	Activity
July, 2005	The City of Athens and McMinn County issued a joint resolution (Nos. 05-088 and 2005-27) supporting either a SR-305 (northern) connector or a SR-30 (southern) Bypass Option to improve mobility in the region and reduce traffic congestion in Athens. The resolution notes the city and county agree to work with the Tennessee Department of Transportation (TDOT) under the provisions of the Rural Planning Process to devise the most effective (cost and property impact) and best route to safely move traffic around the City of Athens.
January, 2006	TDOT Needs Assessment is completed.
July, 2007	The City of Athens, Department of Public Works, prepared a report titled <i>S.R. 30 Connector Justification</i> . This report endorses the southern bypass alignment proposed in the TDOT APR, 2001. Justification for the southern bypass included in the report includes recent economic growth, congestion along SR-30, freight movement, accessibility and mobility, infrastructure development, and safety.
July, 2007	Florence & Hutcheson, Inc. was hired by TDOT's Project Planning Division to produce a Transportation Planning Report (TPR) and Interchange Justification Study (IJS) to examine a bypass around Athens, TN.
August, 2007	McMinn County Highway Department issued a letter to the Southeast Tennessee Development District Rural Planning Organization (RPO) noting that TVA's board of directors has voted to finish a second nuclear reactor at the Watts Bar Nuclear Plant. The letter notes that the second reactor will add an additional 2,000 to 3,000 employees further adding to congestion in the City of Athens. The letter notes that the proposed relocation of State Route 305 (North Bypass Option) should proceed in conjunction with the Watts Bar project to help reduce congestion and improve the evacuation route. No mention of a southern bypass option is made in the letter.

EXHIBIT 1.1 PROJECT HISTORY (CONTINUED)

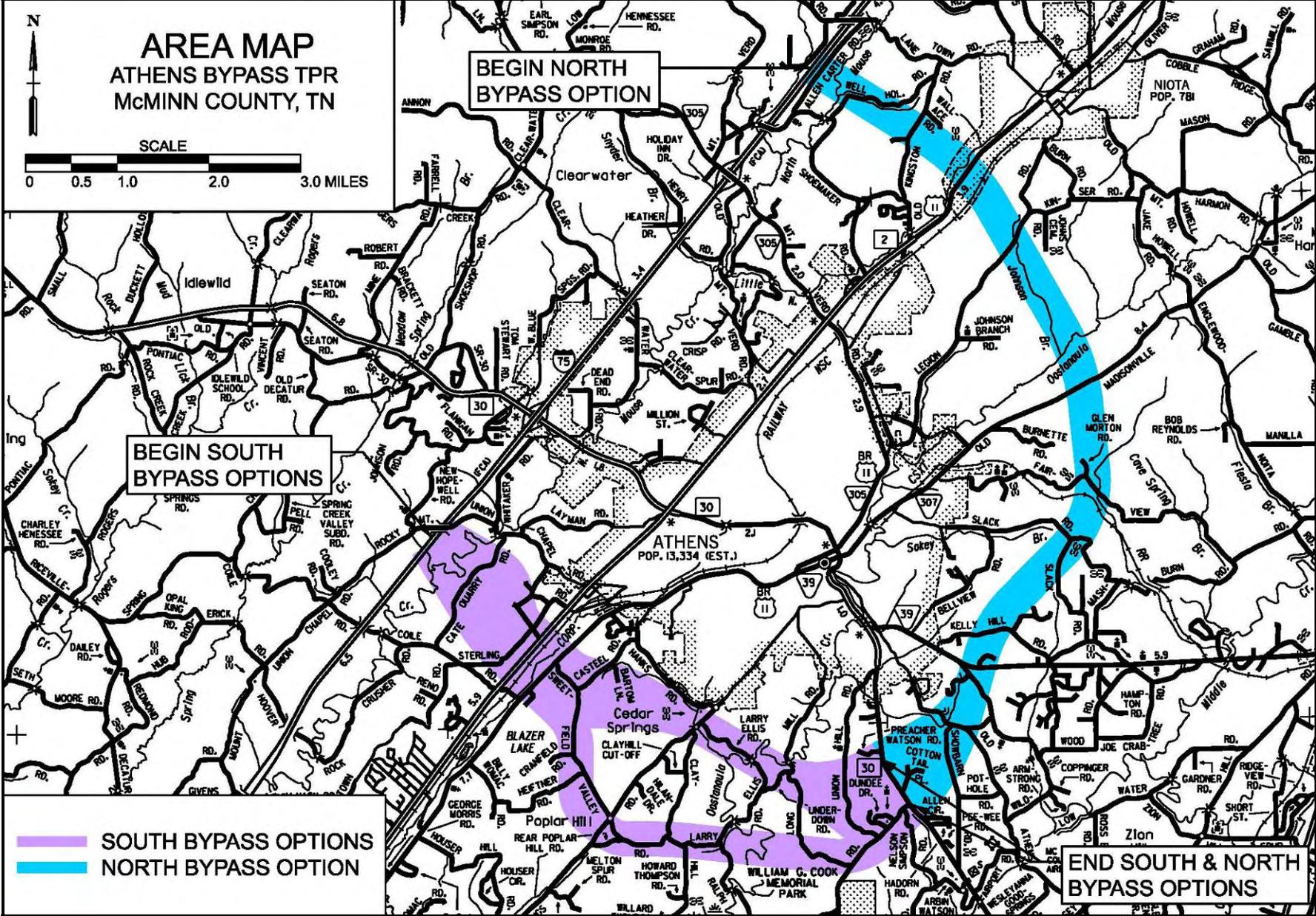
February, 2008	A Stakeholder’s Meeting was held with 21 people in attendance. Those present included representatives from the City of Athens, McMinn County, the RPO, utility providers, TDOT, and Florence & Hutcheson. No support was expressed by local officials at the meeting for the North Bypass Option as shown in this TPR. The McMinn County Highway Department expressed support for a North Bypass Option that would connect to the existing SR-305 Interchange with I-75, but not for a bypass that connects to a new interchange north of SR-305. The requirement of the earmark funding this study specifying the inclusion of options that connect to I-75 was discussed. All other stakeholders present either expressed support for a southern bypass option, or did not express an opinion.
----------------	--

1.2 PROJECT STUDY AREA

The City of Athens is located just east of I-75, approximately 55 miles north of Chattanooga and 60 miles south of Knoxville, in Southeast Tennessee. This report studies bypass options around both the north and south of Athens. The study area encompasses the area between I-75 to the west, SR-309 to the north, the I-75/ Athens Rest Area to the south, and SR-30 to the east. The study area is approximately 55 square miles and includes all of Athens’s City Limits and a large portion of its Urban Growth Boundary. Please refer to **Exhibit 1.2.1 Area Vicinity Map**, **Exhibit 1.2.2 Project Location Map**, or the **Corridor Sheets** for visual representations of the study area.

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 1.2.1 AREA VICINITY MAP



ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 1.2.2 PROJECT LOCATION MAP (LEGEND)

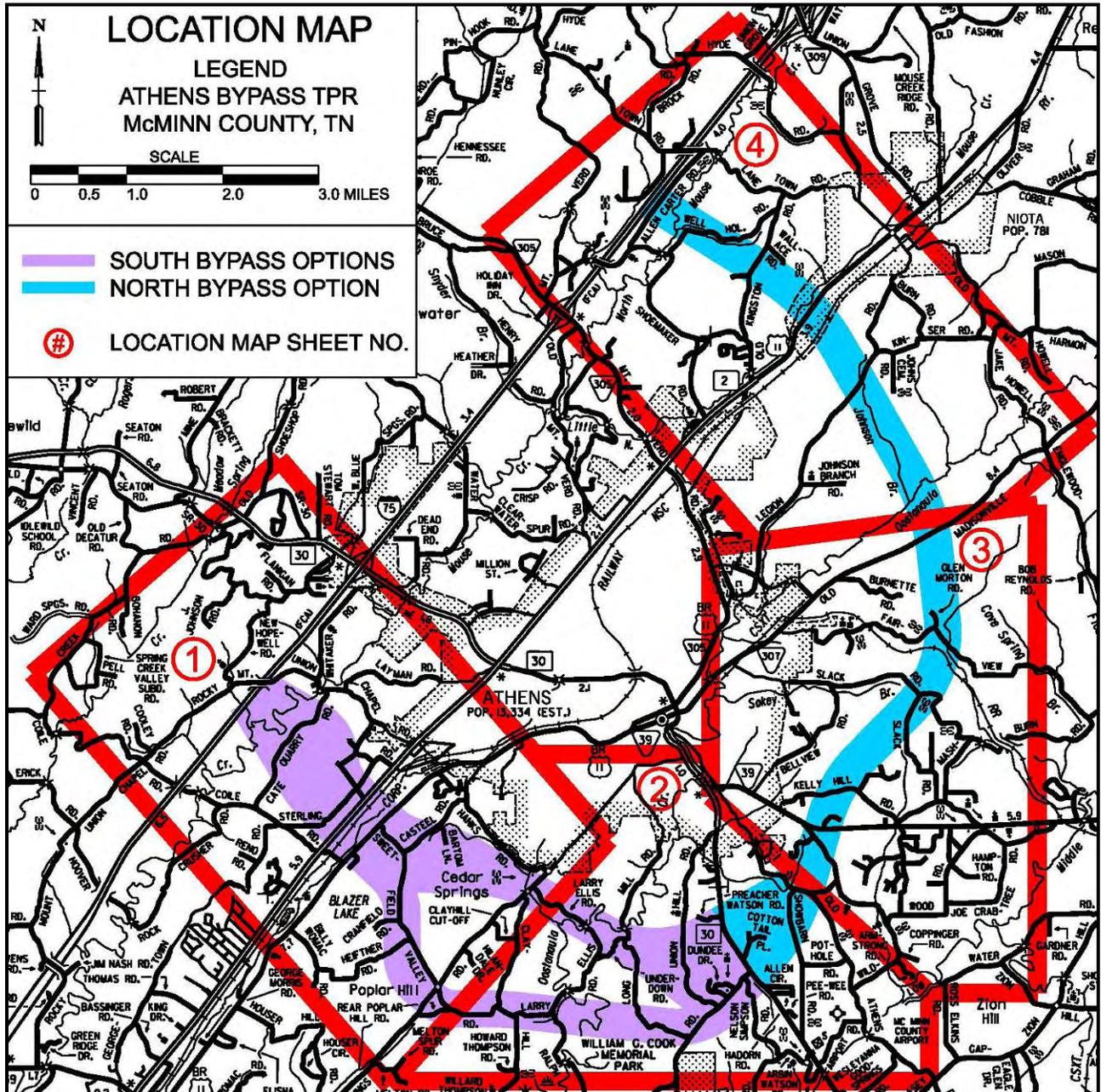


EXHIBIT 1.2.2 PROJECT LOCATION MAP (1)

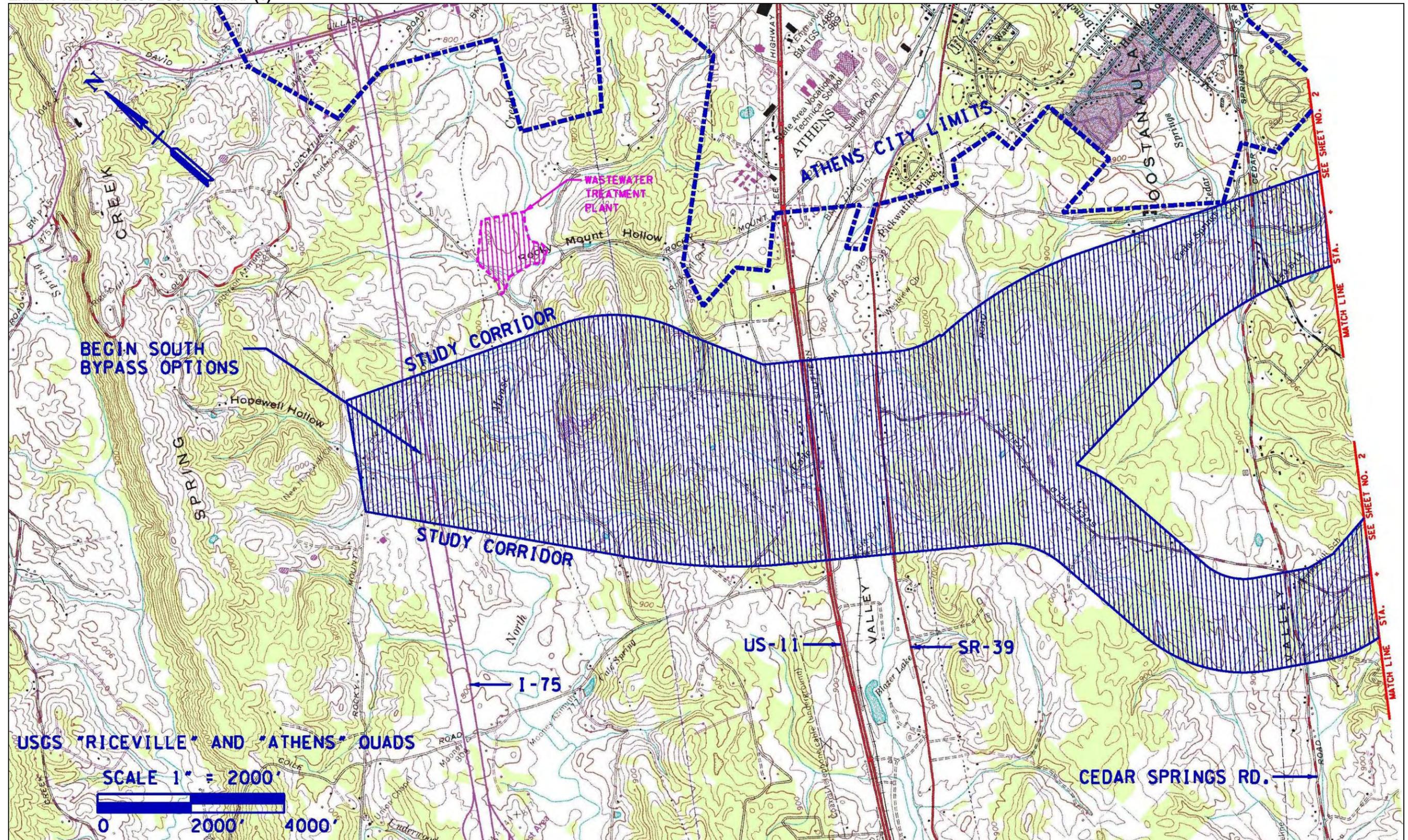


EXHIBIT 1.2.2 PROJECT LOCATION MAP (2)

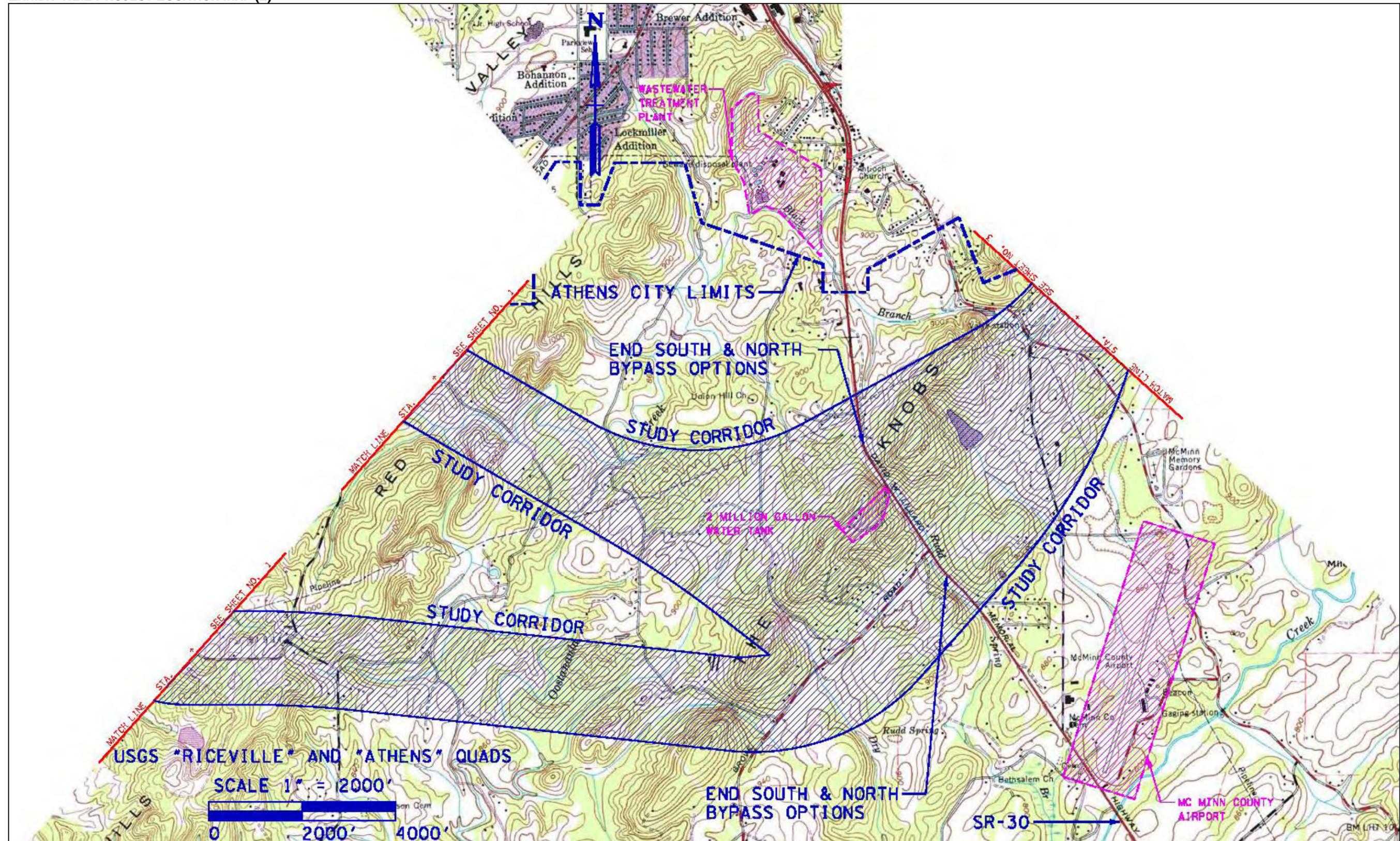


EXHIBIT 1.2.2 PROJECT LOCATION MAP (3)

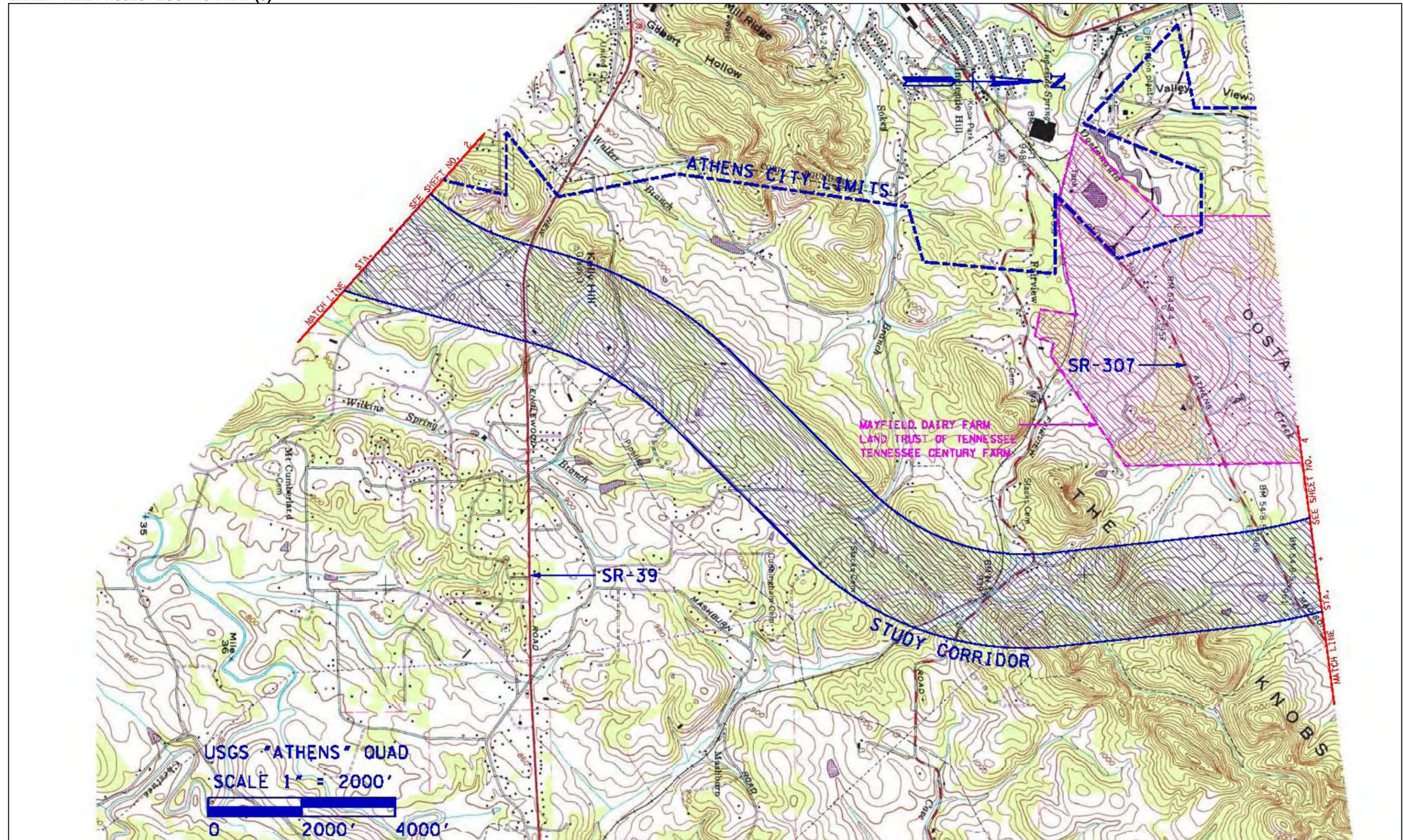
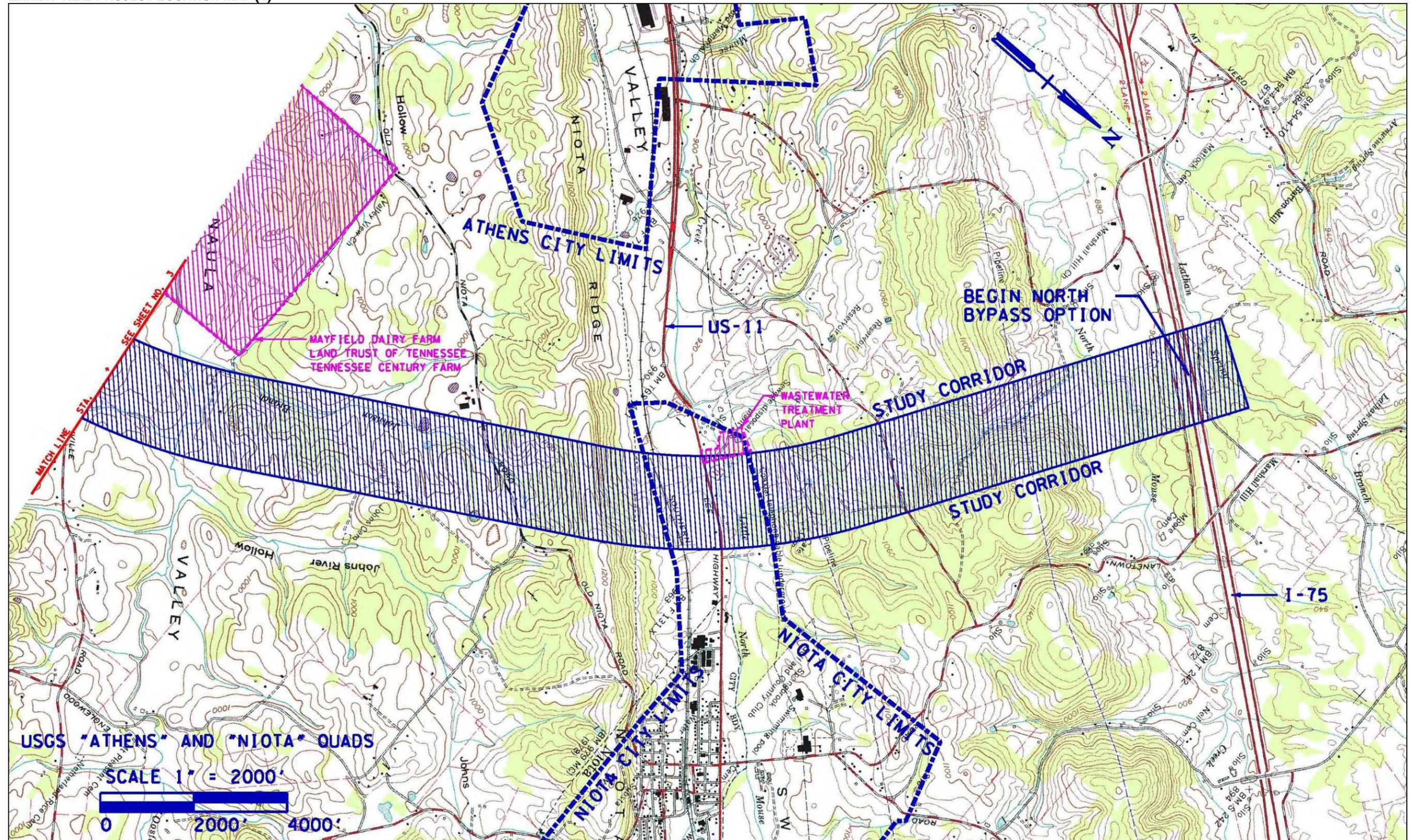


EXHIBIT 1.2.2 PROJECT LOCATION MAP (4)



1.3 COMMUNITY DESCRIPTION

McMinn County is part of the Southeast Tennessee Development District Rural Planning Organization. The Rural Planning Organizations (RPOs) were created through a partnership between the Tennessee Department of Transportation (TDOT) and the Tennessee Development Districts to provide input concerning transportation needs from rural local officials and interested stakeholders. The RPOs provide for continuing, comprehensive, coordinated transportation planning and programming in the non-metropolitan areas of the state.

There are 95 counties in Tennessee. McMinn County is the 53rd largest County by land area in Tennessee with an area of 430 square miles. McMinn County is the 26th most populous county in Tennessee with 50,632 residents (2003 U.S. Census estimate). The population of McMinn County grew 15.6% from 1990 to 2000. The 2004 unemployment rate of McMinn County was 7.3%, which is higher than the 2004 unemployment rate for Tennessee of 5.4%. The 2002 median household income in McMinn County was \$32,658, which was below the 2002 median household income for Tennessee of \$37,129.

The city of Athens is the McMinn County Seat and the county's most populous city with a population of 13,220 (2000 U.S. Census). Athens is located in the Oostanaula Valley. The Rogers Creek, Spring Creek, and Mouse Creek Ridges are located west of Athens. The Red Hills and The Knobs Mountain Ranges are located to the east of Athens. The terrain within the Oostanaula Valley is rolling with the surrounding area being mountainous.

Within Athens' city limits, the land use is varied and includes commercial, industrial, and residential development. Outside of Athens' city limits, the land use is mostly residential, forested, or farmland, with many portions lightly developed due to mountainous terrain. McMinn County is one of the leading dairy regions in the state.

Several major industries and three industrial parks are located within or near the study limits of this TPR. Industries with 50 or more employees in McMinn County are listed in **Exhibit 1.3.1**. The industries and industrial parks that are located within the study area are mapped in **Exhibit 1.3.2** and in the **Corridor Sheets**.

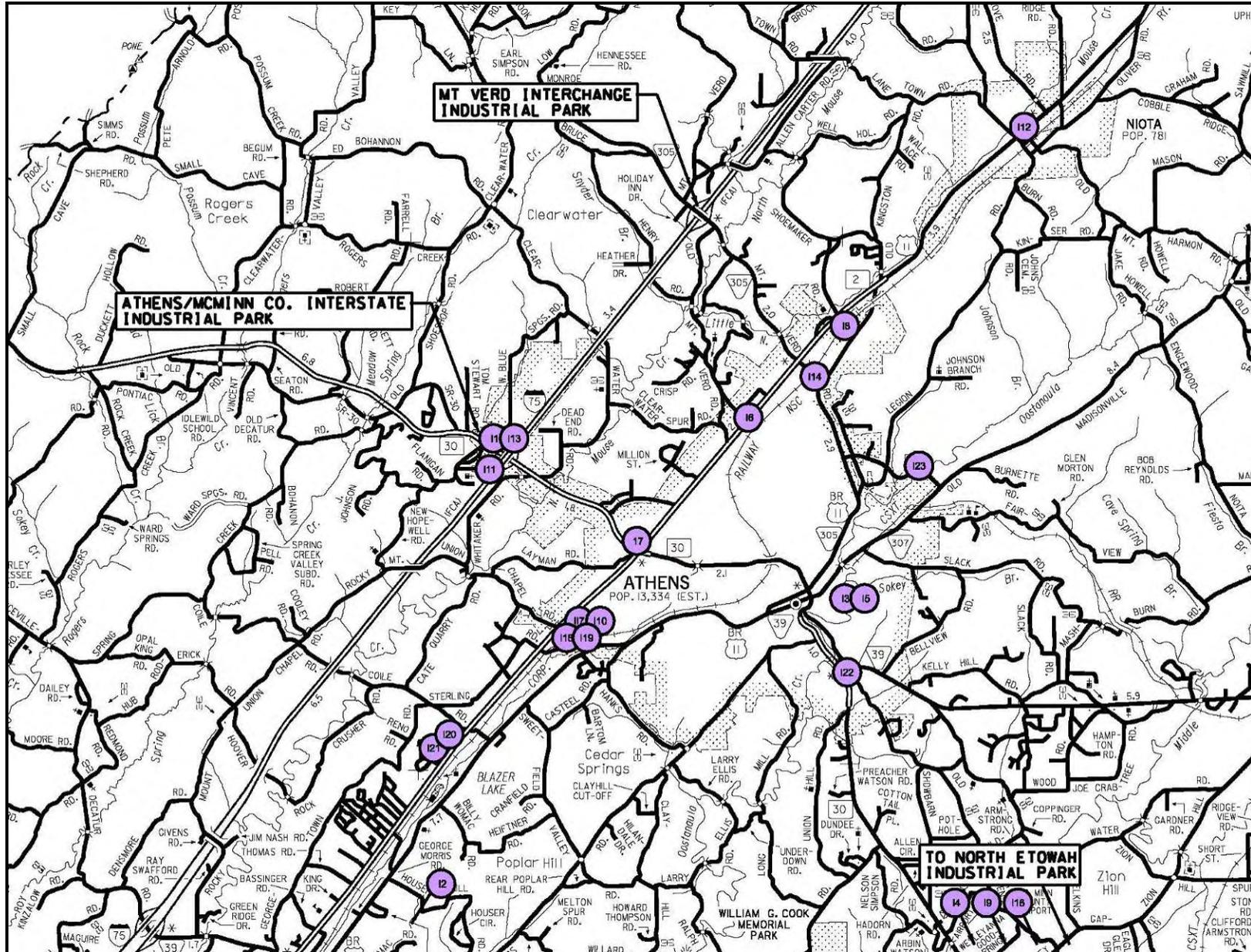
ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 1.3.1 MAJOR INDUSTRIES

ID	Name	Product	Number of Employees
I1	Denso Manufacturing	Auto components	1100
I2	AbitibiBowater, Inc.	Newsprint	910
I3	Johnson Controls	Auto seats	650
I4	Waupaca Foundry	Grey iron castings	570
I5	Mayfield Dairy Farms	Dairy products	550
I6	Collins & Aikman	Auto interiors	500
I7	Thomas & Betts	Switch boxes, outlets	412
I8	Heil Trailer International	Alum. tanker trailers	350
I9	Johns Manville	Mat fiber reinforcement	260
I10	Plastic Industries	Plastic furniture	245
I11	Dynasty Spas	Hot tubs	240
I12	Crescent Hosiery Mills	Hosiery	200
I13	Texas Hydraulics	Hydraulics	198
I14	Mills Products	Appliance trim parts	165
I15	PFC, Inc.	Furniture	150
I16	J.M. Huber Corporation	Silica	130
I17	United Grocery	Distribution Center	85
I18	Seal Tech-Division of PI	Plastics	80
I19	Taylor Pittsburgh	Farm Implements	70
I20	Southern Hydraulic Cylinder	Hydraulic cylinders	65
I21	Trueform Manufacturing	Injection molded products	57
I22	The Daily Post-Athenian	Newspaper & printing	55
I23	E&E Manufacturing	Metal stampings & fasteners	50

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 1.3.2 MAJOR INDUSTRIES MAP



ATHENS BYPASS TPR
McMinn County, TN

The McMinn County Airport/Athens General Aviation Airport is located southeast of Athens near SR-30. The asphalt runway is 5500' long by 100' wide. No commercial service is provided at this airport. The nearest commercial airline and airfreight services are less than an hour drive from Athens in either direction along I-75. Lovell Field in Chattanooga and McGhee Tyson Airport in Knoxville are both approximately 50 miles from Athens.

A minimum of fourteen trucking companies serve the McMinn County area, with both national freight and parcel shipping available. Two of the carriers have terminals in McMinn County.

Tennessee Wesleyan College is located along SR-30 within Athens' city limits. The college was founded in 1857 and currently enrolls over 800 students on its 40 acre campus.

An I-75 Interstate Rest Area is located between Exit 42 (SR-39) and Exit 49 (SR-30). This rest area is currently closed for renovations.

The McMinn County landfill is located southeast of Athens near Piney Grove Road. The landfill will be avoided by all improvement options.

Several Utilities are located within the study area. The utility service providers are listed in **Exhibit 1.3.3**.

EXHIBIT 1.3.3 UTILITY SERVICE PROVIDERS

Name	Utility Service	Source Company
Athens Utility Board	Electricity	TVA
Athens Utility Board	Natural Gas	East Tennessee Natural Gas Company
Athens Utility Board	Water	Creeks, Springs, Hiwassee River
Athens Utility Board	Sewer	N/A
AT&T	Telephone	N/A
Comcast	Cable	N/A

2.0 EXISTING TRANSPORTATION CONDITIONS

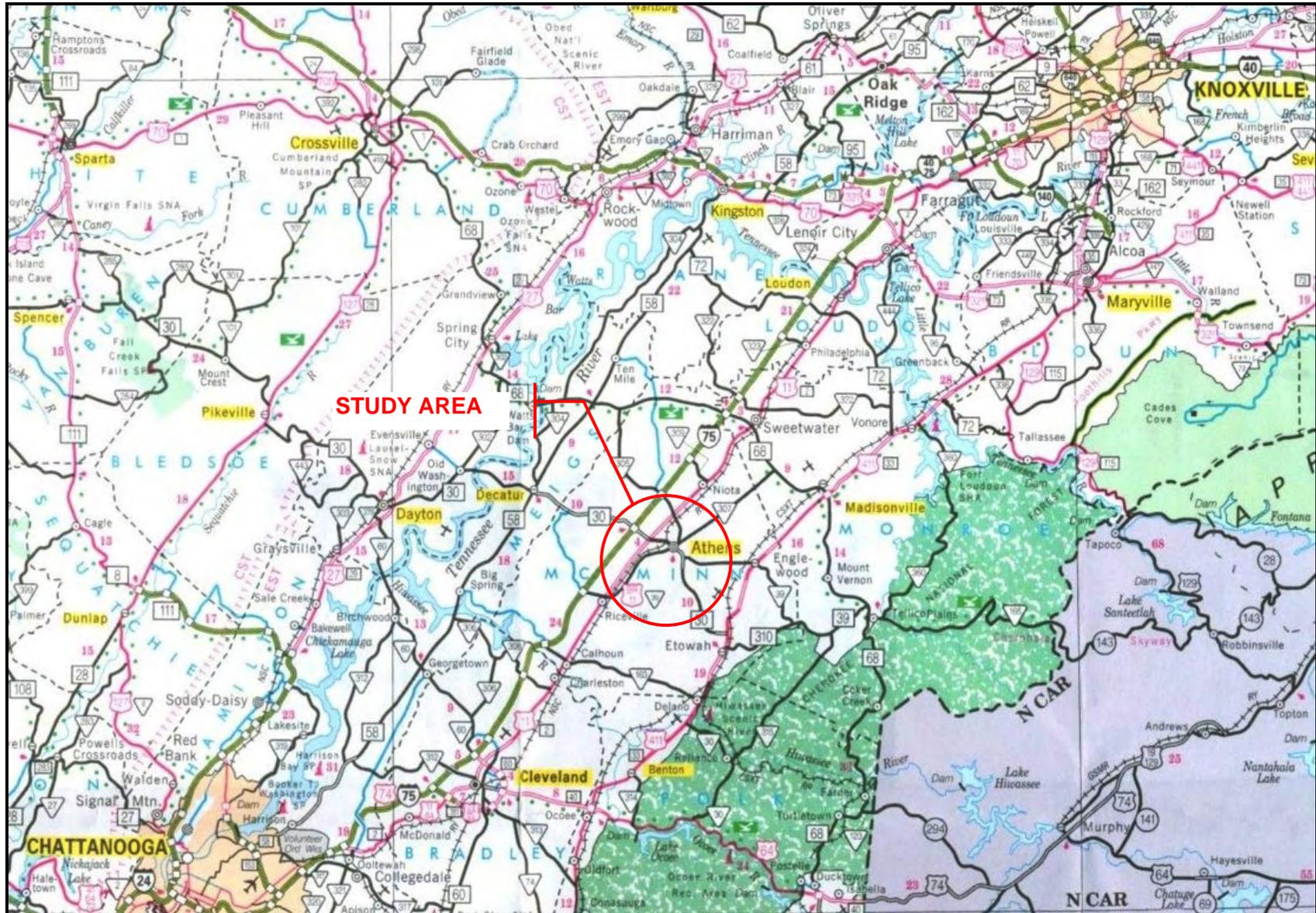
2.1 REGIONAL HIGHWAY NETWORK DISCUSSION

There are several high quality north-south routes in Southeast Tennessee, including US-27, I-75, US-11, and US-411. Due largely to the topography surrounding the confluences of the Tennessee River, there are few high quality east-west highways to connect these north-south routes. SR-30 is the primary east-west route for travel between the cities of Dayton, Athens, and Etowah; and for travel between I-75 and US-411. Freight from Athens' factories is shipped along SR-30 to access I-75. Slow travel speeds along SR-30 within Athens' city limits reduces regional mobility. A highway map of Southeast Tennessee is provided in **Exhibit 2.1**.

Watts Bar Dam and Nuclear Power Plant is located northwest of the study area. Sequoyah Nuclear Power Plant is located southwest of the study area near Chattanooga. SR-30 is designated as the eastern evacuation route for both plants.

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 2.1 REGIONAL MAP



2.2 PLANNED AND RECENT IMPROVEMENTS

SR-30 has been improved, or is planned to be improved, along the 40-mile corridor between the Cities of Etowah and Dayton. Athens is located along SR-30 west of Etowah. Just west of the study area, from US-11 to SR-58 (approximately 10 miles), SR-30 has recently been widened to a four-lane divided highway. SR-30 crosses I-75 in this segment.

Further west, improvements to SR-30 are currently under design by TDOT between SR-58 and the Tennessee River Bridge in Meigs County. This design project is approximately five miles long. The designed cross section consists of two 12-foot wide lanes (one for each direction of travel) with 10-foot paved shoulders (12-foot total shoulder width). The design speed for the improvements is 60 miles per hour. The proposed right-of-way (R.O.W.) for the improvements is 150 feet wide (minimum). Additional R.O.W. will be purchased where necessary for miscellaneous design elements, including slopes and drainage. Additional R.O.W. is not being purchased for future widening of the roadway, however.

Improvements to SR-30 between the Tennessee River Bridge and the City of Dayton are currently being investigated in a separate Transportation Planning Report. This planning project is approximately eight miles long.

SR-30 from Athens' City Limits east to Etowah is currently under design to be improved from two travel lanes to four travel lanes. This distance is approximately 10 miles.

The planned and recent improvements will provide improved mobility along SR-30 between US-27 in Dayton to the west and US-411 in Etowah to the east. The seven-mile segment of SR-30 through Athens will restrict mobility along this 40-mile route. The existing geometric conditions and deficiencies of SR-30 within the study area are discussed in Section 2.3.

2.3 SR-30 EXISTING GEOMETRIC CONDITIONS & DEFICIENCIES

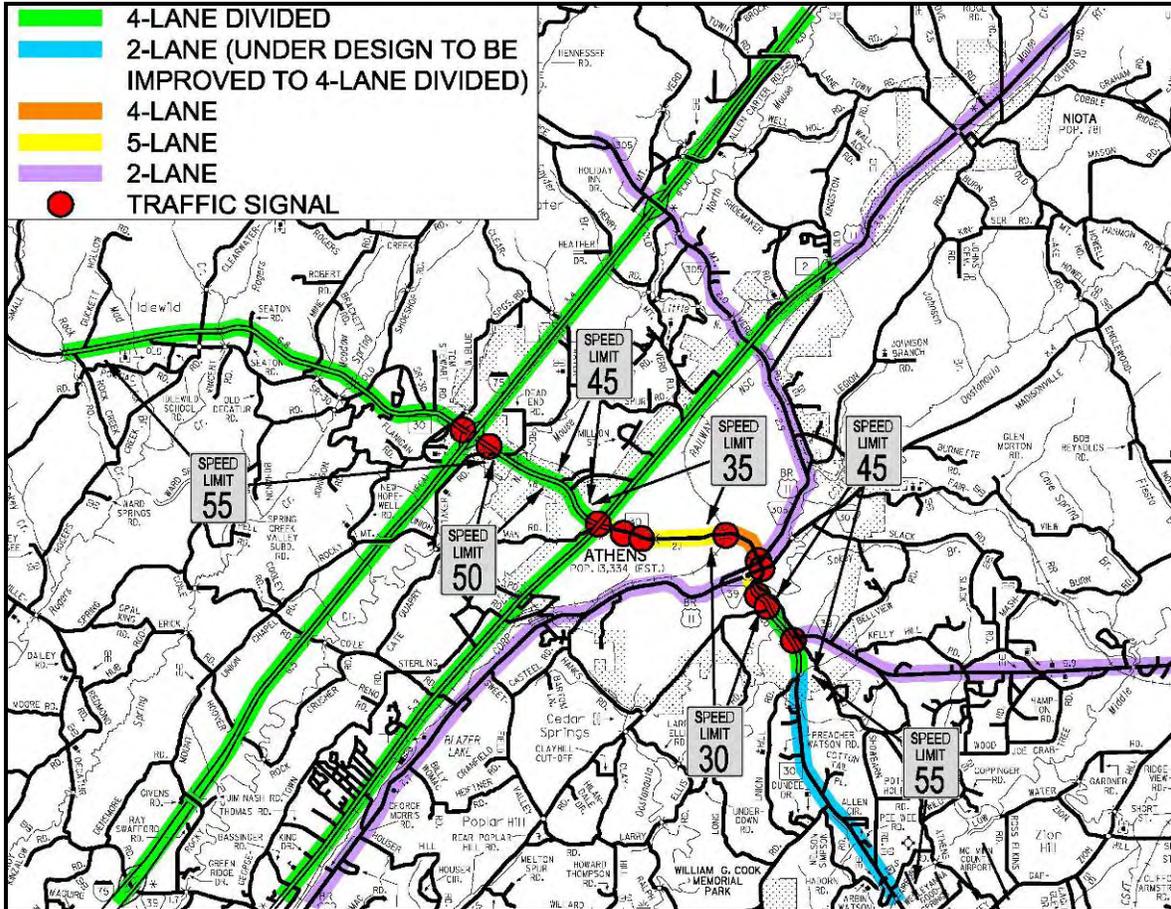
SR-30 is the primary east-west route through the City of Athens. SR-30 is heavily developed and includes Athens' central business district (CBD) and the Tennessee Wesleyan College campus. The typical section generally consists of 2 @ 24' through lanes; with either a 13' continuous left turn lane or a median between 18' and 40' in width. In some segments, no median or turn lane is present. The existing right-of-way ranges from 52' (includes 2 @ 22' through lanes with no median or turn lane) to 190' in width. Curb, gutter, and sidewalks are present along the majority of the route. One portion of SR-30 within the CBD is bounded by retaining walls on both sides of the roadway.

Within the study limits, the speed limit along the 7.2-mile long segment of SR-30 ranges from 30 to 55 mph. Eleven traffic signals are located along the route. Considerably steep grades, horizontal curvature, and dense development result in restricted traffic flow along the existing route. Local officials have complained of high traffic volumes and low travel speeds along SR-30 throughout the city limits, especially in the congested central business district. The existing geometrics and development make improvements to SR-30 impractical. A map of the study area is provided in **Exhibit 2.3.1**, which notes the traffic signals and posted speed limit along SR-30, along with the number of travel lanes

ATHENS BYPASS TPR
McMinn County, TN

on major roadways in the area. Representative photos of SR-30 are provided in Exhibits 2.3.2 through 2.3.5.

EXHIBIT 2.3.1 EXISTING CONDITIONS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 2.3.2 SR-30 4-LANE DIVIDED SECTION (PHOTO)



EXHIBIT 2.3.3 SR-30 5-LANE SECTION (PHOTO)



ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 2.3.4 SR-30 4-LANE SECTION (PHOTO)



EXHIBIT 2.3.5 SR-30 2-LANE SECTION (PHOTO)



2.4 SAFETY

SR-30 crash rates were provided by TDOT from crash data for the years 2003 through 2005. **Exhibit 2.4.1** summarizes the crash data. SR-30 is classified as a Rural Minor Arterial and an Urban Other Principal Arterial within the study area. The crash data is summarized based upon the roadway classification and cross section characteristics, and compared to the statewide crash rates for similar roadway segments. As can be seen in **Exhibit 2.4.1**, the actual crash rates along SR-30 are higher than the statewide crash rates, indicating a safety concern. The four-lane undivided section of SR-30 between Railroad Avenue and White Street within Athens' CBD has a particularly high crash frequency. Pavement conditions do not appear to have a significant impact on crashes, as 84% of the crashes occurred in fair weather conditions. The types of crashes occurring are nearly evenly split between rear end, head-on and angle crashes. Therefore, no significant crash patterns were observed.

Based on this crash analysis, it appears that the geometry of the four-lane undivided section of SR-30 within Athens' CBD contributes to a high crash rate. High traffic volumes mixed with considerable adjacent development likely contributes to the higher than average crash rate along the remainder of SR-30.

EXHIBIT 2.4.1 SR-30 CRASH DATA FOR 2003-2005

ID	Location/ Description	Roadway Classification	State-Wide Crash Rate	Actual Crash Rate
1	From Old SR-30 to Athens City Limit/ Four Lane Median	Rural Minor Arterial	0.801	3.835
2	From Athens City Limit to Congress Pkwy. (SR-2)/ Four Lane Median	Urban Other Principal Arterial	1.854	3.315
3	From Congress Pkwy. (SR-2) to Railroad Ave./ Four Lane Turn Lane	Urban Other Principal Arterial	2.648	5.968
4	From Railroad Ave. to White St./ Four Lane Undivided	Urban Other Principal Arterial	3.266	10.395
5	From White St. to Knight Rd./ Four Lane Medial	Urban Other Principal Arterial	1.854	3.632
6	From Knight Rd. to Athens Urban Bounday/ Urban Two Lane	Urban Other Principal Arterial	2.341	2.496
7	From Athens Urban Boundary to Outside of the Study Area/ Rural Two Lane	Rural Minor Arterial	1.701	1.823

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 2.4.1 SR-30 CRASH DATA FOR 2003-2005 (CONTINUED)

ID	Location/ Description	Length of Segment	Total Crashes	Fatal Crashes	Injury Crashes	Property Damage Only Crashes
1	From Old SR-30 to Athens City Limit/ Four Lane Median	0.15	4	0	2	2
2	From Athens City Limit to Congress Pkwy. (SR-2)/ Four Lane Median	2.32	152	1	34	117
3	From Congress Pkwy. (SR-2) to Railroad Ave./ Four Lane Turn Lane	1.37	172	0	52	120
4	From Railroad Ave. to White St./ Four Lane Undivided	0.91	149	0	26	123
5	From White St. to Knight Rd./ Four Lane Medial	1.15	85	0	17	68
6	From Knight Rd. to Athens Urban Boundary/ Urban Two Lane	0.45	16	0	9	7
7	From Athens Urban Boundary to Outside of the Study Area/ Rural Two Lane	6.57	127	1	42	84
Total			705	2	182	521
Percentage				0%	26%	74%

EXHIBIT 2.4.1 SR-30 CRASH DATA FOR 2003-2005 (CONTINUED)

Road Condition	
Dry	84%
Wet	15%
Ice	1%

Type of Crash	
Read End	24%
Head On	32%
Rear-to-Rear	0%
Angle	34%
Sidewsipe	9%

2.5 ALTERNATIVE TRANSPORTATION MODES IN STUDY AREA

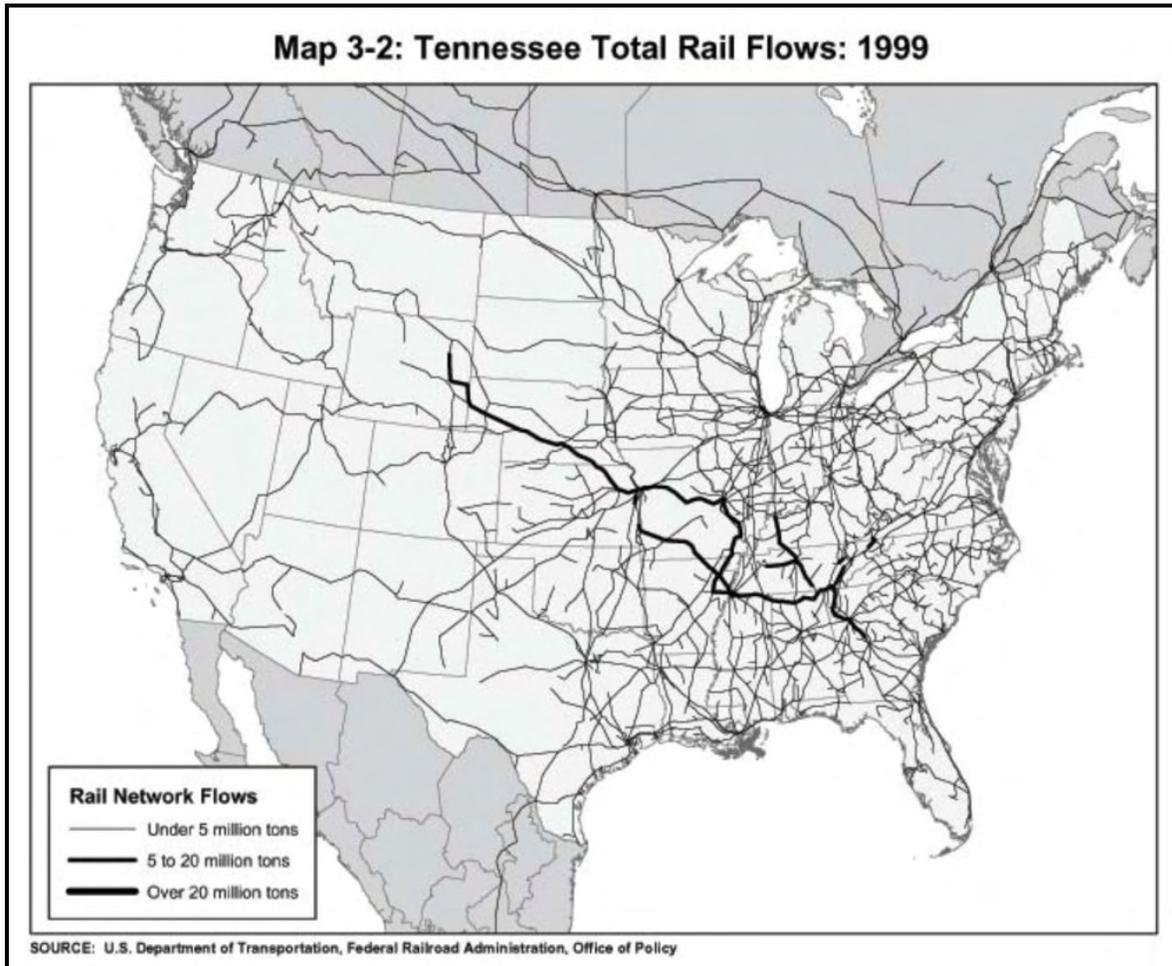
The Southeast TN Human Resource Agency (SETHRA) offers rural public transportation service throughout Southeast Tennessee, including McMinn County. SETHRA operates as a curb-to-curb service and requires reservations. This service is available Monday through Friday from 7:30 am to 4:00 pm. SETHRA public transportation is provided in association with TDOT and the Federal Transit Administration (FTA).

Alternative freight transportation modes are present near the study area. A map of nationwide rail tonnage is provided in **Exhibit 2.5.1**. This map is from the Bureau of Transportation Statistics *2007 Tennessee Transportation Profile* and references the Federal Railroad Administration (FRA). As can be seen in the exhibit, a major north-south rail corridor is located in Southeast Tennessee. Rail service is provided by CSX Transportation and Norfolk-Southern. The two lines provide daily direct freight and intermodal service to the Eastern United States, with connections to other carriers to the Southwest and other areas west of the Mississippi River. "Piggy-back" service is available.

Another alternative freight transportation mode in the area is the year round navigable waterways of the Tennessee and Hiwassee Rivers. Both rivers feature nine-foot minimum depth channels. Freight transportation along the Tennessee River has contributed to the economic and industrial development of the Tennessee Valley. The largest tributary of the Ohio River, the Tennessee River is part of the nation's Inland Waterway System. These interconnected river routes cover 11,000 miles and serve to strategically link geographic areas, major markets, suppliers of raw materials, processors, and consumers. A map of the Inland Waterway System is provided in **Exhibit 2.5.2**. This map is from the Tennessee Valley Authority (TVA).

The Hiwassee River is the natural and political boundary between McMinn and Bradley County to the south and is the location of Calhoun, the nearest navigable port. The Tennessee River is accessed through adjoining Meigs County and is less than a 20-minute drive from many points in McMinn County.

EXHIBIT 2.5.1 RAIL FREIGHT MAP



ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 2.5.2 INLAND WATERWAY SYSTEM



3.0 PURPOSE AND NEED

3.1 PURPOSE AND NEED OF A BYPASS

The purpose of a bypass around the City of Athens is to provide a transportation facility that will improve regional mobility, reduce congestion in Athens' central business district (CBD), support economic development, and improve safety.

As discussed previously, there are several high quality north-south routes in Southeast Tennessee, including US-27, I-75, US-11, and US-411. Due largely to topography, there are few high quality east-west highways to connect these north-south routes. SR-30 provides an east-west connection for all of the high quality north-south routes mentioned above. The 40-mile corridor of SR-30 between the cities of Etowah and Dayton has been improved, or is planned to be improved, except through the City of Athens. Due to rolling topography, existing development (including the campus of Tennessee Wesleyan College), and numerous traffic signals, it is not feasible to improve SR-30 through Athens' CBD to a high-speed route. The segment of SR-30 through Athens will restrict regional mobility along this 40-mile corridor.

The City of Athens has noted a desire to reduce traffic and congestion within the low-speed, heavily developed CBD. A bypass should reduce traffic along SR-30 within the CBD. Pedestrian and bicycle operations may be improved in the CBD with a reduction in vehicular volumes.

Several major industries and three industrial parks are located in or near the study area and rely on Athens' roadway network to move freight. Additionally, the existing SR-30 corridor is nearly fully developed. Local officials have expressed a desire for a bypass to serve as a new corridor for development. Furthermore, there is potential for SR-30 (including a SR-30 Bypass) to become an east-west regional economic corridor in Southeast Tennessee.

Existing SR-30 is a low speed route containing considerably steep grades, horizontal curvature, dense development, and numerous signalized intersections. The crash rates along the majority of SR-30 within the study area exceed the statewide average rates for similar roadway segments. SR-30 goes through Tennessee Wesleyan College's campus. Reducing traffic volumes may improve the safety of the existing route. The proposed bypass will be built to geometric standards in a less developed area. This will provide a safer route that is more suited for higher traffic volumes. Finally, SR-30 is designated as the eastern evacuation route from Watts Bar and/or Sequoyah nuclear plants. The evacuation route should be transferred to the higher speed bypass, avoiding the low speed CBD of Athens. This will improve evacuation times.

3.2 PURPOSE AND NEED REQUIREMENTS

The Tennessee Department of Transportation's Tennessee Environmental Procedures Manual outlines several topics that should be discussed in planning reports to reinforce a project's Purpose and Need Statement. These topics include Project Status, System Linkage, Existing and Future Conditions, Transportation Demand, Legislation, Social or

ATHENS BYPASS TPR
McMinn County, TN

Economic Conditions, Land Use, Modal Relationships, Safety, and Roadway Deficiencies. A discussion of how these topics were addressed is provided in the following text.

Project Status: Provide a brief project history, including all actions taken, other state and federal agencies involved, and project schedule. Discuss the history of transportation planning in the area. Describe the actions taken and the governmental units or agencies involved. Discuss any existing transportation plans or other relevant studies.

Project status is discussed in Section **1.1 Project History**.

System Linkage: Is the project a needed connecting link in a transportation system? How does the project fit into the system-existing and future? If the project is a needed link in a roadway network, describe the existing lack of connectivity. Explain how the proposed improvement would address the needs of the community and the roadway system. Even if system linkage is not a primary justification, it may still be beneficial to provide an overview of the overall roadway network and the function the subject road serves within the system.

If applicable, discuss the relationship of the subject roadway to any other designated systems such as the National Highway System, Strategic Highway Network (STRAHNET), National Truck Network, and emergency evacuation roads (e.g., for roadways near nuclear facilities).

System linkage is discussed in Section **2.1 Regional Highway Network Discussion**.

Existing and Future Conditions: Identify TDOT's roadway classification. What roadway capacity is needed, existing and future? What is the level of service for the existing and future facility? Give data for existing and future (projected) annual average daily traffic (AADT), peak hour characteristics and truck percentages and capacity and level of service (LOS). Include a brief explanation of LOS ratings, as described in the Highway Capacity Manual.

Existing and future conditions are discussed in Sections **4.0 Measures of Effectiveness** and **5.0 Proposed Improvements**.

Transportation Demand: Discuss relationship to the state's transportation plan or plans adopted by the MPO; include traffic forecasts generated by the state or MPOs.

The study area is not within a MPO's boundaries. The Southeast Tennessee Development District RPO has been involved in the development of this project. Their involvement is documented in Section **1.1 Project History**. TDOT provided traffic projections for each alignment option. The traffic projections are included, following the *Checklist of Determinants for Location Study*.

Social or Economic Conditions: Identify whether the subject facility may significantly impact any identified groups. Explain how the benefits and adverse impacts to these groups were considered during the planning process. Is the new or upgraded facility needed to serve a new school, a new factory, etc.? Is unemployment high in the area and is the road needed to promote economic development and provide jobs?

ATHENS BYPASS TPR
McMinn County, TN

No identified groups were observed during the environmental scan of the study area discussed in Section **6.1.6 Guiding Principle 6: Promote Stewardship of the Environment**. Prior to any right-of-way acquisition or construction, an appropriate environmental document will be prepared in accordance with the provisions outlined by the National Environmental Protection Act (NEPA).

Unemployment and economic development is discussed in Section **1.3 Community Description**.

Land Use: If applicable, describe projected changes in land use that spur the need for improving the area's highway capacity. Reference the local area's land use plan and describe how it was considered in the transportation planning process. Explain how the project may impact major existing or planned development.

The bypass corridors are primarily located in areas that are rural, mountainous and outside of Athens's city limits, but within the urban growth boundary. McMinn County does not have land use plans outside of incorporated cities/towns. Therefore, land use plans were not consulted as part of this study. Industries in the area are discussed in Section **1.3 Community Description**.

Modal Relationships: Describe relationships to other transportation modes such as airports, rail and port facilities and how the project may affect other transportation modes. Is the road needed or is an upgrade warranted to get traffic to an airport. To get trucks to a port or rail terminal?

Modal relationships are discussed in Section **2.5 Alternative Transportation Modes in Study Area**.

Safety: Is the project needed to correct an existing safety hazard? For areas with high crash rates, provide data on the frequency, type, conditions, cause and increase or decrease over time in rate of crashes in comparison to the critical crash rates. Discuss any other type of safety hazard, such as substandard design or geometric deficiencies. Describe any design deficiencies, such as substandard cross section or horizontal or vertical alignment.

Safety is discussed in Section **2.4 Safety**. Crash Data was analyzed for the years 2003-2005. No increase or decrease over this time period was observed. As discussed in Section **3.1 Purpose and Need of a Bypass**, reducing traffic along SR-30 by means of a bypass may improve the safety of the existing route.

Roadway Deficiencies: Are improvements necessary to correct existing roadway deficiencies, for example, substandard geometry or lane width? How will the project correct these deficiencies? Describe any design deficiencies, such as substandard cross section or horizontal or vertical alignment.

The primary purpose of a bypass is to provide an alternate, higher speed, route to I-75. SR-30, which traverses Athens' CBD, currently serves as the primary route. SR-30's existing roadway conditions and deficiencies are discussed in Section **2.3 SR-30 Existing Geometric Conditions and Deficiencies**. How the options will operate and improve the existing roadway network is discussed in Sections **5.0 Proposed Improvements** and **6.0 Assessment of Options**.

4.0 MEASURES OF EFFECTIVENESS

Several measures of effectiveness are utilized in this TPR to assess the operational conditions of each of the improvement options. These measures of effectiveness are level of service, volume to capacity ratio, average travel speed, and travel time. A definition of these measures is provided in the following text. The value associated with each of these measures for each alignment option and SR-30 is provided in Section **5.0 Proposed Improvements**.

4.1 LEVEL OF SERVICE

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

The quality of service of SR-30 was assessed utilizing the methodology outlined in the *Highway Capacity Manual 2000* (HCM) *Urban Streets* Chapter. The quality of service of the proposed bypass options was assessed utilizing the methodology outlined in the *Two-Lane* and *Multilane Highways* Chapters.

The Level-of-Service (LOS) Calculations were performed with the Highway Capacity Software (HCS+ Version 5.21). HCS+ is developed and maintained as an implementation of the HCM procedures. HCS+ calculations assign a LOS along route segments with similar geometric and traffic characteristics.

4.2 VOLUME TO CAPACITY RATIO & CONGESTION REDUCTION

Unlike LOS, which is a qualitative measure, the volume to capacity ratio (v/c) is a quantitative measure. The v/c ratio is reported to demonstrate the magnitude of congestion for the various options included in this TPR. Furthermore, traffic along SR-30 through Athens will be reduced due to vehicles utilizing a proposed bypass. Therefore, the percentage reduction of the v/c along SR-30 is given for each option.

4.3 AVERAGE TRAVEL SPEED

Average travel speed is calculated in the LOS analysis. Speed, or its reciprocal of travel time, is an important measure of the quality of the traffic service provided to the motorist.

4.4 TRAVEL TIME

The travel time along a route can be calculated by dividing the distance of the route by the average travel speed. As discussed above, travel time is an important measure of the quality of the traffic service provided to the motorist. In addition to the travel speed improvements associated with reduced congestion, travel time demonstrates the time savings of shorter route options.

EXHIBIT 4.1 LOS TABLE

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

5.0 PROPOSED IMPROVEMENTS

5.1 DESIGN CRITERIA

Design criteria that should be applied consistently with all improvement options include the cross section design, roadside design, access control, design speed, pedestrian and bicycle accommodations, and the disposition of the existing route. With this criteria consistently applied, the difference between the improvement options can be condensed to selecting a corridor option and the number of travel lanes. The North and South Corridor Options are discussed in Section **5.2 Corridor Options**.

5.1.1 Cross Section Design

The need of the bypass to improve mobility by providing a high-speed route around Athens supports a rural cross-section with paved shoulders and roadside ditches. An urban cross-section with curb and gutter and enclosed drainage would limit the maximum recommended speed limit of the bypass to 45 mph due to design standards and safety concerns. Because the speed limit of SR-30 west and east of the proposed bypass' termini is 55 mph, it is recommended to use a rural cross section design that can also have a 55 mph speed limit. Local officials have expressed support for the bypass to be a high-speed route with a rural cross-section.

5.1.2 Roadside Design

The need of the bypass to improve safety will be implemented in its roadside design. A roadside environment free of fixed objects, with stable flattened slopes, enhances the opportunity for reducing lane departure crash severity and should be incorporated into any improvement option chosen. An adequate clearzone allows for errant vehicles leaving the roadway and supports a roadside design where the serious consequences of such an incident are reduced. Where roadside obstacles exist, design options include (in order of preference):

1. Remove the obstacle.
2. Redesign the obstacle so it can be safely transversed.
3. Relocate the obstacle to a point where it is less likely to be struck.
4. Reduce impact severity by using an appropriate breakaway device.
5. Shield the obstacle with a longitudinal traffic barrier designed for redirection or use a crash cushion.
6. Delineate the obstacle if the above alternatives are not appropriate.

The roadside design concepts outlined in the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide should be incorporated into any SR-30 improvement option that is chosen.

5.1.3 Access Control

The need of the bypass to improve mobility by providing a high-speed route around Athens should be balanced with the need to support economic development. To achieve

ATHENS BYPASS TPR
McMinn County, TN

both of these goals it is recommended, at a minimum, to implement partial access control at all but major intersections of the bypass. This could be performed with adequate land-use planning, frontage roads, and/or control-of-access fence. Access to the bypass would be allowed only at major intersections. Development could occur along the roadways intersecting the bypass, but not along the bypass. The bypass would then operate efficiently, with limited intersections and no direct access to private development.

The traffic volumes estimated for the bypass do not indicate a need for interchanges at major crossroads. Therefore, a full access-controlled (freeway) facility is not necessary for adequate traffic operations along the majority of the route. However, a full access-controlled facility generally provides improved traffic operations and lower crash rates (improved safety) compared to partial access controlled facilities.

All local officials contacted indicated a desire for some level of access control. Some local officials have indicated an interest in either a partial access-controlled facility or a full access-controlled facility. The discussion concerning the extent of the access control measures to implement in the design of the facility will continue throughout the public involvement process mandated by the provisions of the National Environmental Policy Act (NEPA).

Regardless of the access control measures implemented along the majority of the bypass, interchanges will be necessary along the bypass at I-75 and US-11 (SR-2). Interchanges will be necessary at US-11 due to the railroad tracks that run parallel with US-11. It is recommended that the bypass and railroad have grade separation to improve safety and operations. Ramps to and from the bypass will be necessary to access US-11. Due to the close proximity of I-75 and US-11, it is recommended to provide full access control between the functional area of these two interchanges along the bypass at the west end of the project.

5.1.4 Design Speed

The design speed for the bypass options should be 60 mph (minimum) to meet the need to improve mobility by providing a high-speed route around Athens. A 60 mph design speed will enable the bypass to have a posted speed limit of 55 mph. As discussed previously, there are several high quality north-south routes in Southeast Tennessee. Due largely to topography, there are few high quality east-west highways to connect these north-south routes. SR-30 provides this connection. SR-30 east and west of the proposed bypass termini has a posted speed limit of 55 mph. The bypass should be designed to accommodate a 55 mph speed limit. This will allow the 40-mile segment of SR-30 from Dayton to Etowah to be posted at 55 mph, improving regional mobility.

5.1.5 Pedestrian and Bicycle Accommodations

Any selected cross-section for a bypass will meet AASHTO design standards. The minimum paved shoulder recommended is 10 feet. If a full access-controlled facility is constructed, pedestrian and bicycle use should be prohibited.

If partial access control is implemented, the paved shoulder, in combination with the recommended twelve-foot wide travel lanes, will accommodate pedestrian and bicycle use. Sidewalks are not necessary along the majority of the project due to the rural nature

of the surrounding area and lack of foot travel destinations. Except at major intersections, access control measures should be considered to maintain adequate travel speeds along the bypass. This would further negate the need for sidewalks.

Within Athens's CBD, pedestrian and bicycle operations may be improved due to the reduction in vehicular volumes projected to occur with the construction of a bypass. Dense development is located in the CBD, including Tennessee Wesleyan College, which generates noteworthy pedestrian activity.

5.1.6 Disposition of Existing Route

None of the proposed options will relocate or dispose any section of existing SR-30. The existing portions of any side roads that must be relocated will either be scarified and obliterated, or remain the responsibility of local government. Existing SR-30 will remain on the State Highway System.

5.2 CORRIDOR OPTIONS

This Transportation Planning Report (TPR) examines a No Build Option, two South Bypass Options, and a North Bypass Option around Athens, Tennessee. The TPR was initiated by an earmark in SAFETEA-LU to "construct a new exit on I-75 and connect US-11, US-411, and SR-30." The options can be summarized as follows:

No Build Option: The No Build option provides no improvements and serves as a baseline option against which all other options are compared.

South Bypass Options: The two South Bypass Options will originate at a new interchange along I-75 to be constructed as part of these Options between the I-75 Rest Area to the south and the SR-30 Interchange (Exit 49) to the north. The South Options will connect to SR-30 east of Athens. Major roads the South Options will cross include US-11, Cedar Springs Road, and Piney Grove Road. The two options are separated by a knob in the Red Hills Mountain Range.

North Bypass Option: The North Bypass Option will originate at a new interchange along I-75 to be constructed as part of this Option between the SR-305 Interchange (Exit 52) to the south and the SR-309 Interchange (Exit 56) to the north. The North Option will proceed east and connect to SR-30. Major roads the North Option will cross include US-11, Old Niota Road, SR-307, and SR-39.

Within the study corridors of the South and North Bypass Options, multiple alignment and cross section options are possible. Corridors (minimum of 2000' wide) are provided to allow flexibility for locating alignments among the rugged terrain surrounding Athens. These study corridors evaluate opportunities for meeting the mobility, safety, and economic development needs of Southeast Tennessee, including the City of Athens and McMinn County.

The study corridors were selected to mitigate conflicts with topography, existing development, community resources, and environmentally sensitive areas. Please refer to

Exhibit 1.2.1 Area Vicinity Map, Exhibit 1.2.2 Project Location Map, or the Corridor Sheets for visual representations of the study area.

An additional constraint limiting the location of the alignment options includes logical interchange access to I-75. This TPR was initiated by an earmark in SAFETEA-LU to “construct a new exit on I-75 and connect US-11, US-411, and SR-30.” Therefore, each option connects to I-75 at a new exit location.

AASHTO’s “*A Policy on Geometric Design of Highways and Streets*” (2004) recommends a minimum interchange spacing of two miles in rural areas and one mile in urban areas. Please refer to **Exhibit 5.2.1 I-75 Exits** for a visual representation of the existing exit locations. Acceptable locations for a future exit are shown. These locations are based upon an acceptable interchange spacing of one mile. With the addition of a new exit along I-75 within the study area, two mile interchange spacing will not be achievable.

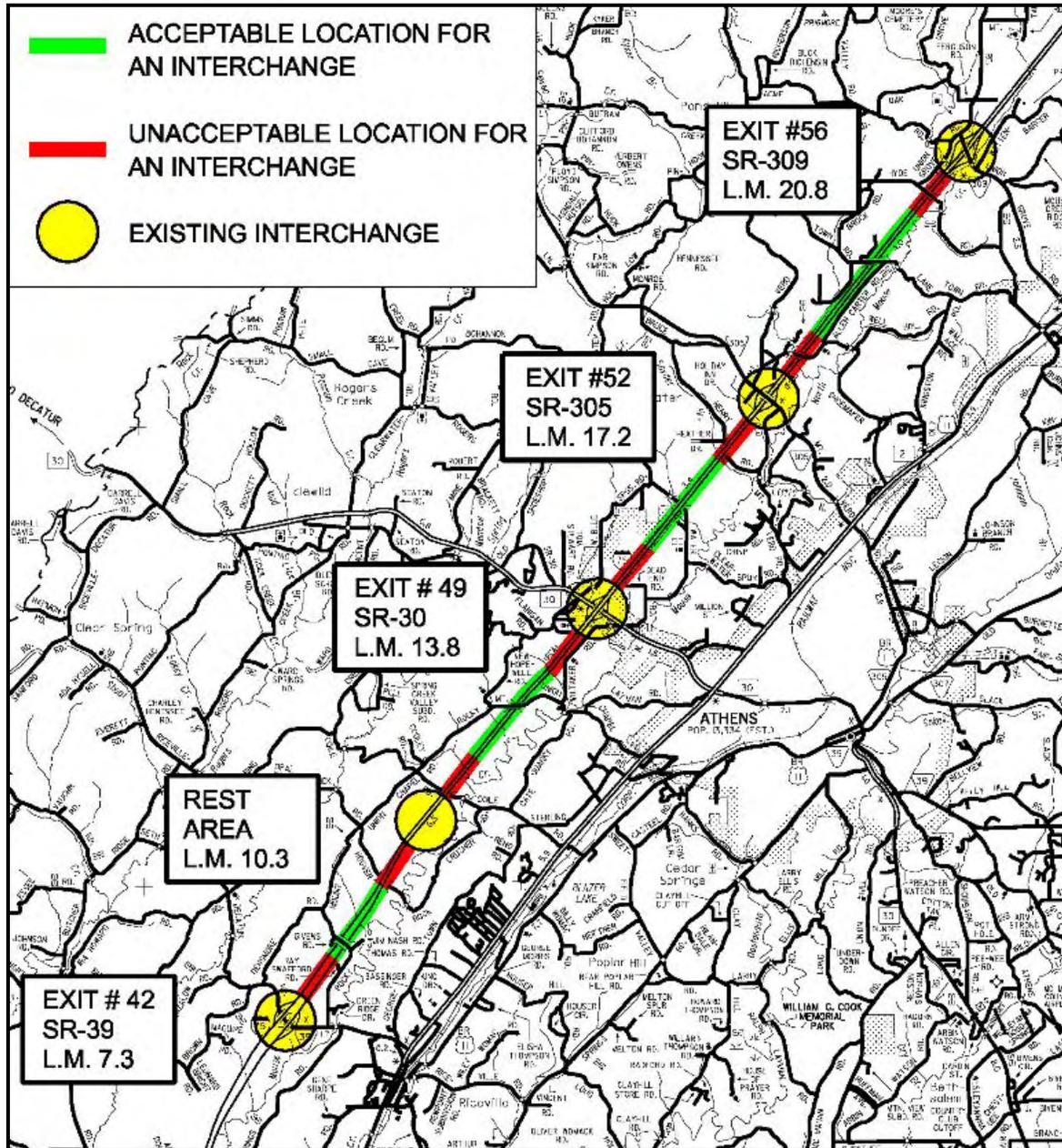
The proposed interchange locations will intersect I-75 as close to SR-30 as feasible. Locating a proposed bypass exit far from the existing SR-30 Interchange (Exit 49) would harm route continuity with SR-30 and could therefore limit the effectiveness of the bypass. The South Bypass Options are proposed to connect between the SR-30 Interchange to the north and the I-75 Rest Area to the south.

The North Bypass Options must be located farther from the SR-30 Interchange. Interchange spacing would allow a new exit between the SR-30 Interchange to the south and the SR-305 Interchange (Exit 52) to the north, but existing development does not make this a feasible location. There is no reasonable route option for a north bypass that has an interchange along I-75 between the SR-30 and SR-305 Interchanges. In this vicinity (east of US-11), there is heavy development and an established roadway network. The bypass would have no reasonable eastward alignment option. Therefore, the North Bypass Options are proposed to be located between the SR-305 Interchange and the SR-309 Interchange (Exit 56).

Multiple travel lane options are presented in this report for the North and South Bypass Options. The travel lane options include a two-lane option, a two-lane option within four-lane R.O.W., and a four-lane option. If a two-lane option is utilized for the majority of the bypass, it is still recommended to provide a four-lane cross section within the functional area of the proposed interchange with I-75. The four-lane cross section is recommended because areas adjacent to interchanges generally have high turning movement volumes and are susceptible to high levels of development.

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 5.2.1 I-75 EXITS



5.2.1 No Build Option

The No Build Option provides no improvements and serves as a baseline option against which all other options are compared. For a description of the geometric conditions associated with the No Build Option, please refer to Section 2.3 **SR-30 Existing Geometric Conditions & Deficiencies**. Because improvements are not being constructed, there is no cost associated with the No Build Option.

For the No Build Option, the HCS's analysis calculates LOS ranging from B to F along SR-30 through the year 2033. A summary of the LOS calculations for the No Build Option

ATHENS BYPASS TPR
McMinn County, TN

is provided in schematic form in **Exhibits 5.2.1.1** and **5.2.1.2** and in table form in **Exhibit 5.2.1.3**. The LOS are reported for the years 2013 and 2033.

For the No Build Option in the year 2013, the volume to capacity ratio (v/c) of SR-30 is calculated to range from 0.27 to 0.90, with a weighted average of 0.48. In 2033, the v/c ranges from 0.35 to 1.01 with a weighted average of 0.60. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicate that the existing two travel lanes in each direction are generally adequate for the projected volumes, but other features of the roadway including numerous traffic signals and dense adjacent development limit the levels of service and travel speeds. A summary of the v/c calculations for the No Build Option is provided in table form in **Exhibit 5.2.1.3**. The v/c are reported for the years 2013 and 2033.

The posted speed limit ranges from 30 to 55 mph along SR-30 within the study area. For the No Build Option in the year 2013, travel speeds along the route are calculated by the HCS to range from 7.5 mph to 58.0 mph, with a weighted average of 28.9 mph. In 2033, the travel speed ranges from 6.7 to 58.0 mph with a weighted average of 26.6 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for the No Build Option is provided in table form in **Exhibit 5.2.1.3**. The travel speeds are reported for the years 2013 and 2033.

The existing SR-30 Corridor (No Build Option) between I-75 to the west and Piney Grove Road to the east is 7.2 miles in length. For the No Build Option in the year 2013, the travel time along SR-30 is calculated to be 15.5 minutes. In 2033, the travel time is calculated to be 16.3 minutes.

Travel time measurements were performed to help define the magnitude of existing congestion along the 7.2-mile section of SR-30 under analysis and to serve as a comparison to the HCS+ calculated travel times. Travel time data was collected on Thursday, September 12, 2007 between 4:02 and 4:48 PM. The travel time data is provided in table form in **Exhibit 5.2.1.4** and in graphical form in **Exhibit 5.2.1.5**. The travel time in the eastbound direction was 14 minutes and 52 seconds (14.9 minutes). This equates to a running speed of 29.2 mph for the 7.2-mile section. The travel time in the westbound direction was 15 minutes and 38 seconds (15.6 minutes). This equates to a running speed of 27.7 mph for the 7.2-mile section. The travel time runs were performed at the beginning of the evening rush hour. The travel times and running speeds observed in the field are similar to those calculated with the HCS+ software. Therefore, the HCS+ software appears to provide valid data. The field collected data and HCS+ calculated data are summarized below

Run	2013 HCS+ Calculated	2008 Field Data	
		Eastbound	Westbound
Travel Time (min.)	15.5	14.9	15.6
Travel Speed (mph)	27.9	29.2	27.7

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.1.1 NO BUILD OPTION 2013 LOS

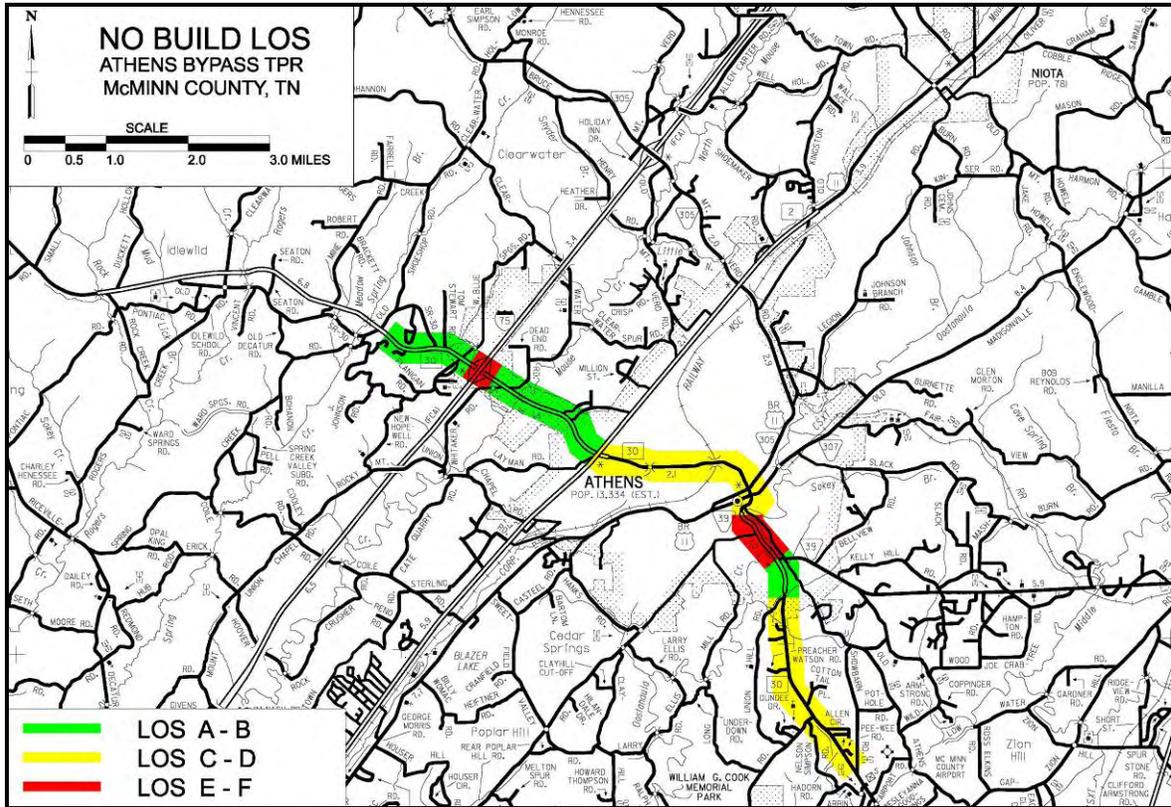
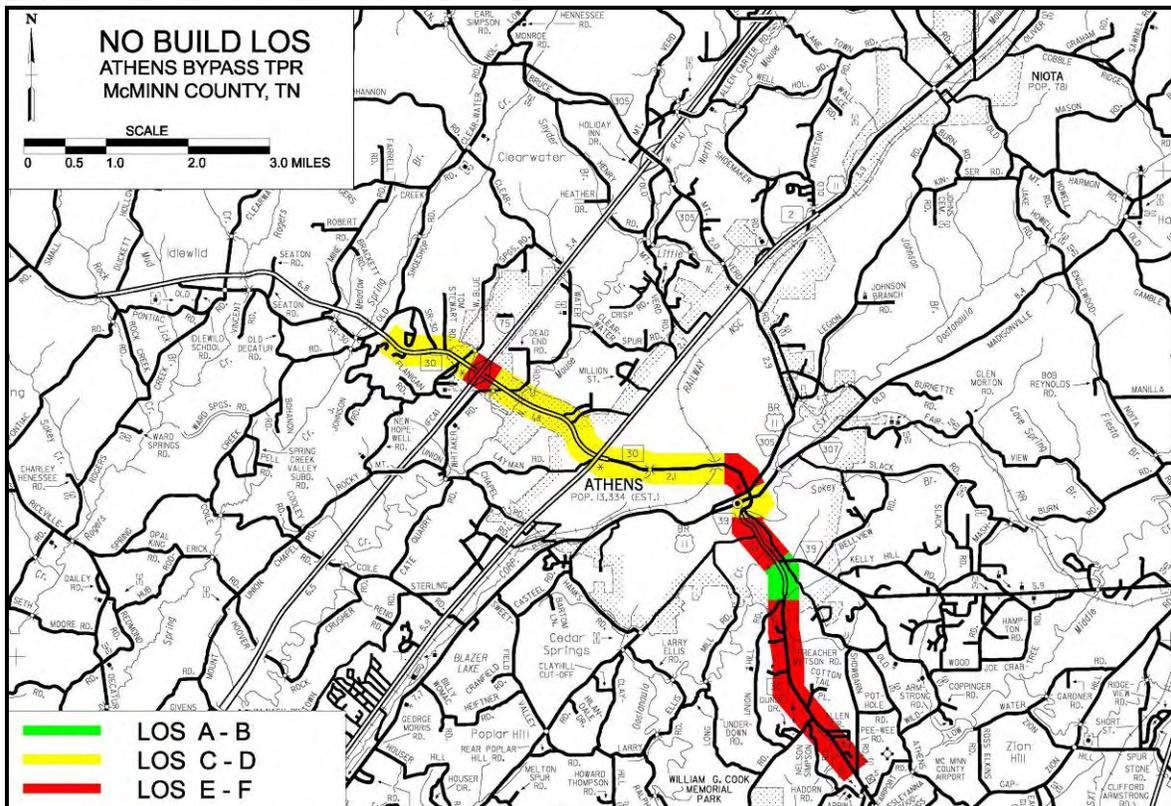


EXHIBIT 5.2.1.2 NO BUILD OPTION 2033 LOS



ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 5.2.1.3 NO BUILD OPTION LOS TABLE

Athens Bypass TPR No Build LOS - SR-30 Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033								
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)				
A	6.57	West of I-75	6.85	I-75	0.28	55	0	4-Lane Divided	18,370	B	0.34	58.0	0.3	26,190	C	0.49	58.0	0.3				
B	6.85	I-75	7.00	Holiday Dr.	0.15	55	2	4-Lane Divided	23,080	F	0.52	7.5	1.2	32,900	F	0.74	6.7	1.3				
C	7.00	Holiday Dr.	8.00	Sullins Rd.	1.00	50	0	4-Lane Divided	23,080	B	0.39	51.0	1.2	32,900	C	0.55	51.0	1.2				
D	8.00	Sullins Rd.	8.65	Congress Pkwy. (US-11, SR-2)	0.65	45	0	4-Lane Divided	23,080	B	0.41	46.0	0.8	32,900	C	0.58	46.0	0.8				
E	8.65	Congress Pkwy. (US-11, SR-2)	8.99	Dupitt St.	0.34	35	3	4-Lane Divided	21,140	C	0.48	24.0	0.9	23,230	C	0.52	23.8	0.9				
F	8.99	Dupitt St.	10.00	Ohio Ave	1.01	35		5-Lane	21,140	C	0.48	24.0	2.5	23,230	C	0.52	23.8	2.5				
G	10.00	Ohio Ave	10.18	N. Jackson St.	0.18	30	6	5-Lane	21,140	C	0.48	18.5	0.6	23,230	C	0.52	18.2	0.6				
H	10.18	N. Jackson St.	10.73	Washington Ave. (SR-305)	0.55	30		4-Lane	15,890	D	0.90	15.9	2.1	17,980	E	1.01	13.9	2.4				
I	10.73	Washington Ave. (SR-305)	10.78	Madison Ave. (SR-307)	0.05	30		5-Lane	20,370	C	0.46	18.6	0.2	26,170	D	0.59	17.9	0.2				
J	10.78	Madison Ave. (SR-307)	10.96	S. Jackson St.	0.18	30		5-Lane	19,100	C	0.43	18.7	0.6	24,900	C	0.56	18.1	0.6				
K	10.96	S. Jackson St.	11.28	Elizabeth St.	0.32	30		4-Lane Divided	19,100	C	0.43	18.7	1.0	24,900	C	0.56	18.1	1.1				
L	11.28	Elizabeth St.	11.80	Alford St. (SR-39)	0.52	45		4-Lane Divided	25,840	E	0.58	19.6	1.6	31,810	E	0.72	18.8	1.7				
M	11.80	Alford St. (SR-39)	12.29	Union Hill Rd.	0.49	45	0	4-Lane Divided	15,260	B	0.27	48.0	0.6	19,820	B	0.35	48.0	0.6				
N	12.29	Union Hill Rd.	13.80	Piney Grove Rd.	1.51	55	0	2-Lane	15,260	D	0.49	44.8	2.0	19,820	E	0.64	41.3	2.2				
Σ =					7.23				Avg= 0.48					Σ =	15.5	Avg= 0.60					Σ =	16.3

Average Speed: 27.91

Average Speed: 26.58

ATHENS BYPASS TPR
McMinn County, TN

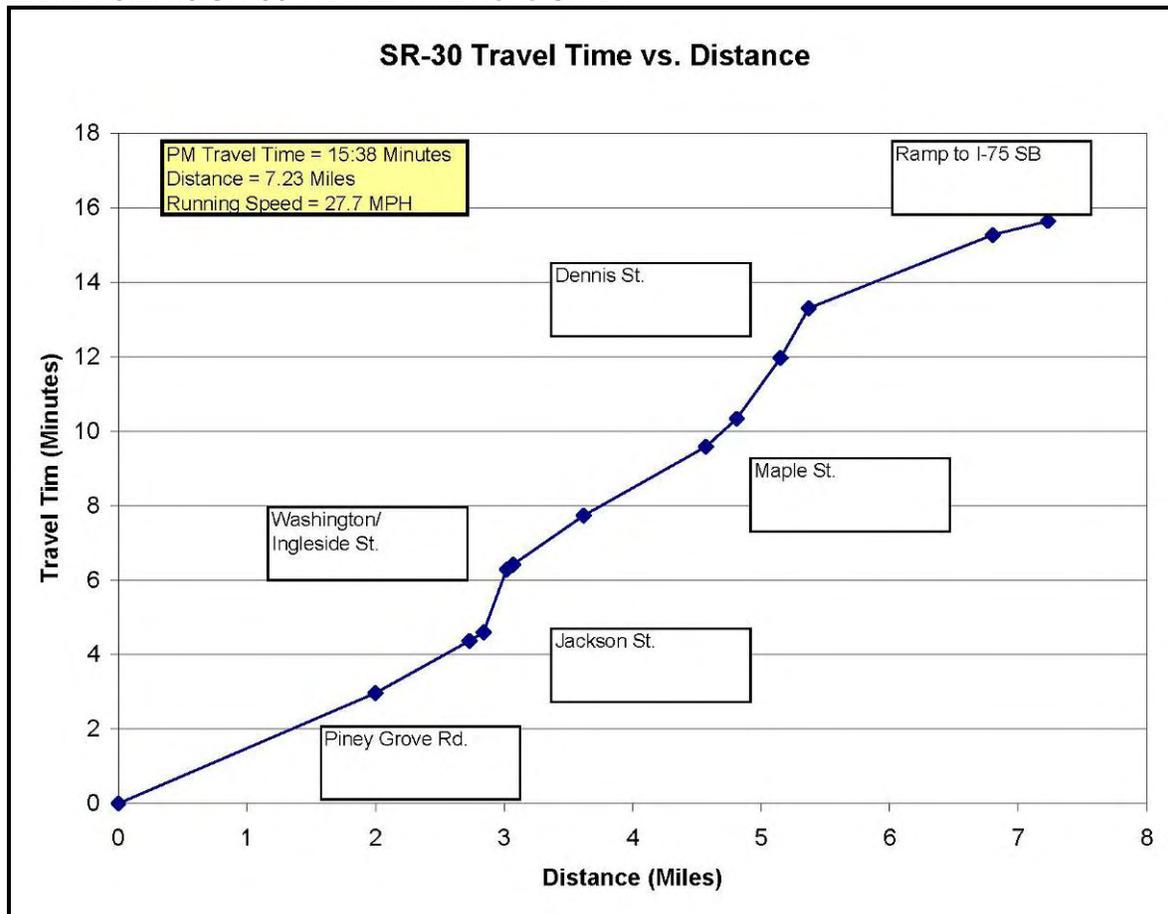
EXHIBIT 5.2.1.4 SR-30 TRAVEL TIME RUNS TABLE

SR-30 TPR

Travel Time Runs for SR-30 from I-75 to Piney Grove Road - Thursday, September 12, 2007

From/To	PM Travel Time Run #1									
	Eastbound					Westbound				
	L.M.	Δ L.M.	Time	Δ	Running Speed (mph)	L.M.	Δ L.M.	Time	Δ	Running Speed (mph)
Ramp to I-75 SB (un-signalized)	6.57		4:02:37 PM			6.57	0.43	4:47:58 PM	0:00:22	70.4
Holiday Dr. (signal)	7.00	0.43	4:03:16 PM	0:00:39	39.7	7.00	1.43	4:47:36 PM	0:01:58	43.6
Dennis St. (signal)	8.43	1.43	4:06:06 PM	0:02:50	30.3	8.43	0.22	4:45:38 PM	0:01:20	9.9
Congress Pkwy (SR-2) (signal)	8.65	0.22	4:07:59 PM	0:01:53	7.0	8.65	0.34	4:44:18 PM	0:01:38	12.5
Dupitt St. (signal)	8.99	0.34	4:08:45 PM	0:00:46	26.6	8.99	0.24	4:42:40 PM	0:00:45	19.2
Maple St. (signal)	9.23	0.24	4:09:30 PM	0:00:45	19.2	9.23	0.95	4:41:55 PM	0:01:51	30.8
Jackson St. (signal)	10.18	0.95	4:11:17 PM	0:01:47	32.0	10.18	0.55	4:40:04 PM	0:01:19	25.1
Washington Ave./Ingleside Ave. (sig)	10.73	0.55	4:12:53 PM	0:01:36	20.6	10.73	0.05	4:38:45 PM	0:00:08	22.5
Madison Ave. (signal)	10.78	0.05	4:13:04 PM	0:00:11	16.4	10.78	0.18	4:38:37 PM	0:01:41	6.4
Jackson St. (signal)	10.96	0.18	4:13:25 PM	0:00:21	30.9	10.96	0.11	4:36:56 PM	0:00:14	28.3
Park St. (signal)	11.07	0.11	4:13:45 PM	0:00:20	19.8	11.07	0.73	4:36:42 PM	0:01:24	31.3
Alford St. (signal)	11.80	0.73	4:14:55 PM	0:01:10	37.5	11.80	2.00	4:35:18 PM	0:02:58	40.4
Piney Grove Rd. (End)	13.80	2.00	4:17:29 PM	0:02:34	46.8	13.80		4:32:20 PM		
Running Speed for 7.23 Mile Study Area:		7.23		0:14:52	29.2		7.23		0:15:38	27.7

EXHIBIT 5.2.1.5 SR-30 TRAVEL TIME RUNS CHART



5.2.2 South Bypass Options

The South Bypass Options will originate at a new interchange along I-75 to be constructed as part of these Options between the I-75 Rest Area to the south and the SR-30 Interchange (Exit 49) to the north. The South Options will proceed east and connect to SR-39 east of the City of Athens. One of the south options (Option A) is located closer to Athens' City Limits than the other (Option B). The two options are separated by a knob in the Red Hills Mountain Range. For maps of the South Bypass Options, please refer to **Exhibits 5.2.2.1 through 5.2.2.4.**

This TPR was initiated by an earmark in SAFETEA-LU to “construct a new exit on I-75 and connect US-11, US-411, and SR-30.” The South Bypass Options will provide an alternate east-west route to I-75 around Athens.

The proposed western terminus of the South Bypass Options at I-75 is approximately 1.8 miles south of the SR-30 interchange. This location will provide optimal route continuity with SR-30 west of I-75. While future extension of the bypass to connect to SR-30 west of I-75 is possible, it will be difficult due to the topography associated with the Spring Creek Ridge.

The South Bypass Options were created to minimize conflicts with environmentally sensitive areas and existing development. Corridors (minimum of 2000') are provided to allow flexibility for locating alignments among the rugged terrain surrounding Athens. Locations to avoid are listed in Section **6.1.6 Guiding Principle 6: Promote Stewardship of the Environment**, and mapped in **Exhibit 6.1.6.1 Environmental and Community Resources** and the **Corridor Sheets**.

Local officials indicated a desire for phased construction of a southern bypass to speed construction. It is desired for phased construction to begin at I-75 and proceed to US-11. The next phase would be between US-11 and SR-30.

Local officials have expressed a desire for a bypass to serve as a new corridor for development. Sewer can be made available to both Southern Bypass Options by connecting to newly constructed sewer collector lines. These lines are serviced by the Mouse Creek Wastewater Treatment Plant (from *Minutes of the Athens Bypass Project Workgroup Session & associated Fact Sheet*, 10/4/04). Available sewer service will help spur development in the vicinity of the bypass.

The South Bypass Options connect to SR-30 at the same location as the North Option. This location minimizes conflicts with environmentally sensitive areas and existing development. Connecting to SR-30 at the same location will provide future flexibility if expansion of the bypass is ever warranted.

Local officials from the City of Athens have expressed strong support for the South Bypass Options. Benefits cited by the officials for a Southern Option compared to a Northern Option include the availability of improved utility infrastructure and potential for future connectivity with SR-30 west of I-75. As stated previously, future extension of the bypass to connect to SR-30 west of I-75 will be difficult due to the topography associated with the Spring Creek Ridge. Despite this, the Southern Bypass Options provide better potential for a future westward extension than a Northern Option. The Spring Creek

ATHENS BYPASS TPR
McMinn County, TN

Ridge runs parallel with I-75 and will not be avoided by either a Southern Option or a Northern Option. The Southern Options are located closer to SR-30 and therefore provide improved future connectivity options. Local officials noted they were part of a regional planning group that included representatives from the Cities of Dayton, Athens, and Decatur that promotes SR-30 as a regional economic corridor. It is likely this group would endorse future connectivity of the bypass with SR-30 west of I-75.

South Bypass Option A is 6.06 miles long, while Option B is 7.52 miles long. Additionally, a 1.75 mile-long segment of I-75 will be utilized in the South Bypass Options to provide route continuity with SR-30. Therefore, the total route length of the South Bypass Options will range between 7.81 and 9.27 miles.

Multiple travel lane options are provided for both of the South Bypass Options. The South Bypass Options are composed of multiple segments, many of which are shared between the two South Bypass Options. Each segment was created to have similar traffic, adjacent development, and adjacent terrain characteristics. Distance and cost data for each of the segments is in table form in **Exhibits 5.2.2.10** through **5.2.2.13**. Additionally, the total cost for each option is summarized below. The estimated costs were calculated to a planning level utilizing cost per mile data and include constructing interchanges at I-75 and US-11. The cost estimate calculations are provided in the **Appendix**.

South Bypass Option A, Two-Lane Option	\$129,010,000
South Bypass Option A, Two-Lane Option within Four-Lane R.O.W.	\$131,090,000
South Bypass Option A, Four-Lane Option	\$180,650,000
South Bypass Option B, Two-Lane Option	\$150,870,000
South Bypass Option B, Two-Lane Option within Four-Lane R.O.W.	\$153,590,000
South Bypass Option B, Four-Lane Option	\$215,100,000

To improve east-west mobility, the design speed for the South Bypass Options should be 60 mph (minimum). This will enable the bypass to have a posted speed limit of 55 mph. For the Two-Lane South Bypass Options, the HCS Analysis calculates LOS ranging from C to D through the year 2033. For the Four-Lane South Bypass Options, the HCS Analysis calculates a LOS of A through the year 2033. The HCS analysis calculates LOS ranging from A to F along SR-30 through the year 2033. A summary of the LOS calculations for the South Bypass Options (and SR-30) is provided in schematic form in **Exhibits 5.2.2.1** through **5.2.2.8** and in table form in **Exhibit 5.2.2.9** (SR-30), **5.2.2.10** and **5.2.2.11** (South Bypass Option A), and **5.2.2.12** and **5.2.2.13** (South Bypass Option B).

For the Two-Lane South Bypass Options through the year 2033, the volume to capacity ratio (v/c) is calculated to range from 0.24 to 0.35, with a weighted average of 0.27. For the Four-Lane South Bypass Options through the year 2033, the volume to capacity ratio (v/c) is calculated to range from 0.09 to 0.15, with a weighted average of 0.11. Along SR-30 (with the construction of a South Bypass), the v/c ranges from 0.24 to 0.80 through the year 2033, with a weighted average of 0.52. The calculated volume to capacity ratios demonstrates that two travel lanes are generally adequate for the bypass for the projected volumes. Due to the relatively minor R.O.W. costs compared to the construction costs, a two-lane within four-lane R.O.W. option is provided. If a two lane bypass option is chosen, this will allow for a more efficient improvement to a four-lane bypass should future traffic conditions warrant. A summary of the v/c calculations for the South Bypass Options

ATHENS BYPASS TPR
McMinn County, TN

is provided in table form in **Exhibits 5.2.2.9** (SR-30), **5.2.2.10** and **5.2.2.11** (South Bypass Option A), and **5.2.2.12** and **5.2.2.13** (South Bypass Option B).

Travel speeds along the Two-Lane South Bypass Options through 2033 are calculated to average approximately 54 mph. Travel speeds along the Four-Lane South Bypass Options through 2033 are calculated to average approximately 60 mph. The posted speed limit ranges from 30 to 55 mph along SR-30 within the study area. For the South Bypass Options in the year 2033, the travel speeds along SR-30 are calculated to average 28 mph. A summary of the travel speed calculations for the South Bypass Options is provided in table form in **Exhibits 5.2.2.9** (SR-30), **5.2.2.10** and **5.2.2.11** (South Bypass Option A), and **5.2.2.12** and **5.2.2.13** (South Bypass Option B).

As discussed previously, South Bypass Option A is 6.06 miles long, while Option B is 7.52 miles long. Additionally, a 1.75-mile long segment of I-75 will be utilized to connect existing SR-30 west of I-75 with the South Bypass Options. For South Bypass Option A in the year 2033, the travel times along the route (including the segment of I-75 utilized) is calculated to be 9.9 and 8.8 minutes for the two travel lane and four travel lane options, respectively. For the South Bypass Option B in the year 2033, the travel times along the route (including the segment of I-75 utilized) is calculated to be 11.6 and 10.3 minutes for the two travel lane and four travel lane options, respectively. SR-30, between I-75 to the west and Piney Grove Road to the east, is 7.23 miles in length. For the South Bypass Options in the year 2033, the travel time along SR-30 is calculated to be 15.7 minutes. A summary of the travel time calculations for the South Bypass Options is provided in table form in **Exhibits 5.2.2.9** (SR-30), **5.2.2.10** and **5.2.2.11** (South Bypass Option A), and **5.2.2.12** and **5.2.2.13** (South Bypass Option B).

It should be noted that the 1.75-mile long segment of I-75 to be utilized to connect existing SR-30 west of I-75 with the South Bypass Options currently operates near capacity. Improving I-75 regionally is needed to achieve adequate traffic operations in the future. It should also be noted that SR-30 from Athens' City Limits east to Etowah is currently under design to be improved from two travel lanes to four travel lanes. Because construction funding has not been programmed for this segment, these improvements are not included in the traffic analysis. The traffic analysis in this report demonstrates the need for these improvements.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.1 SOUTH BYPASS OPTION A 2013 LOS - 2-LANE BYPASS

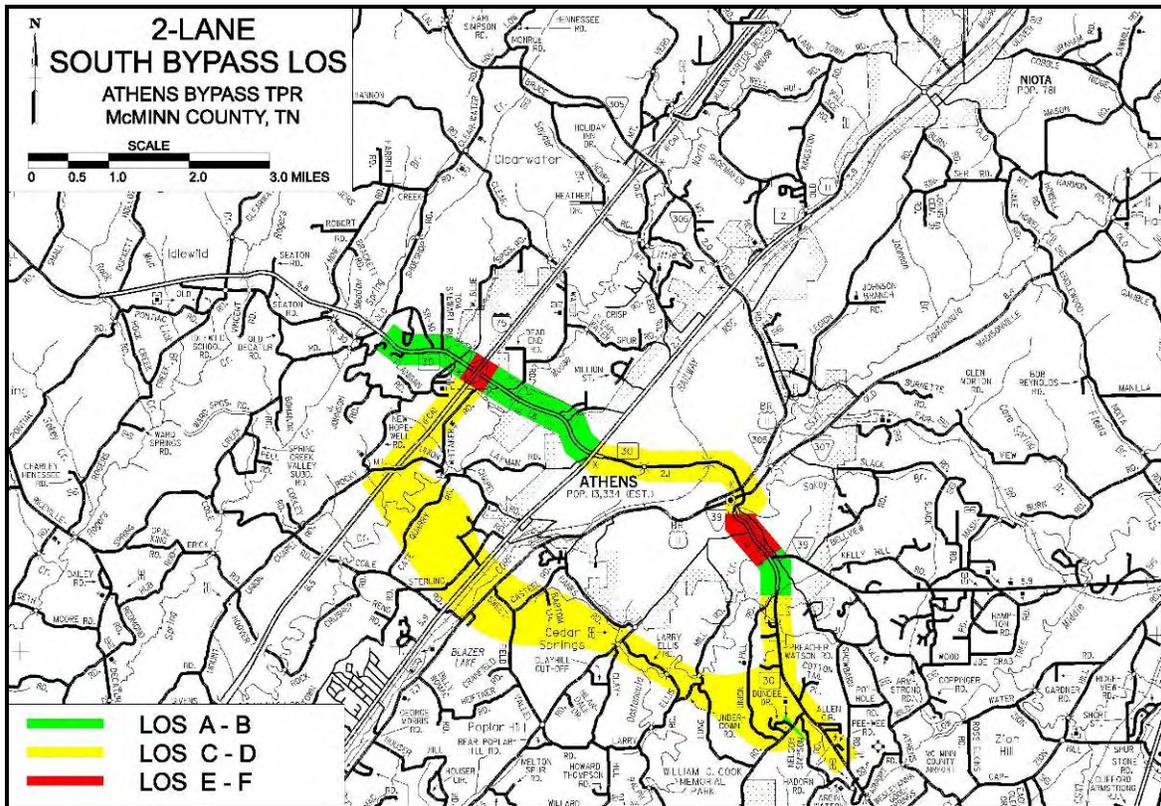
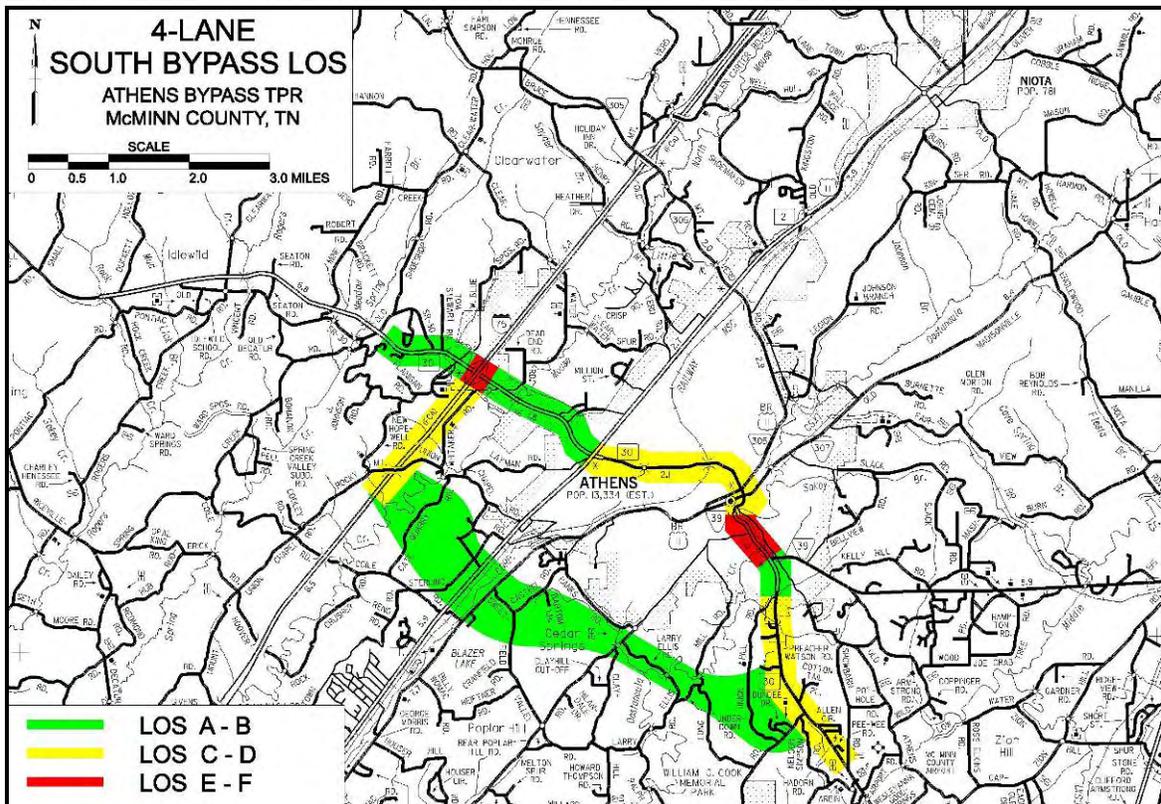


EXHIBIT 5.2.2.2 SOUTH BYPASS OPTION A 2013 LOS - 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.3 SOUTH BYPASS OPTION A 2033 LOS - 2-LANE BYPASS

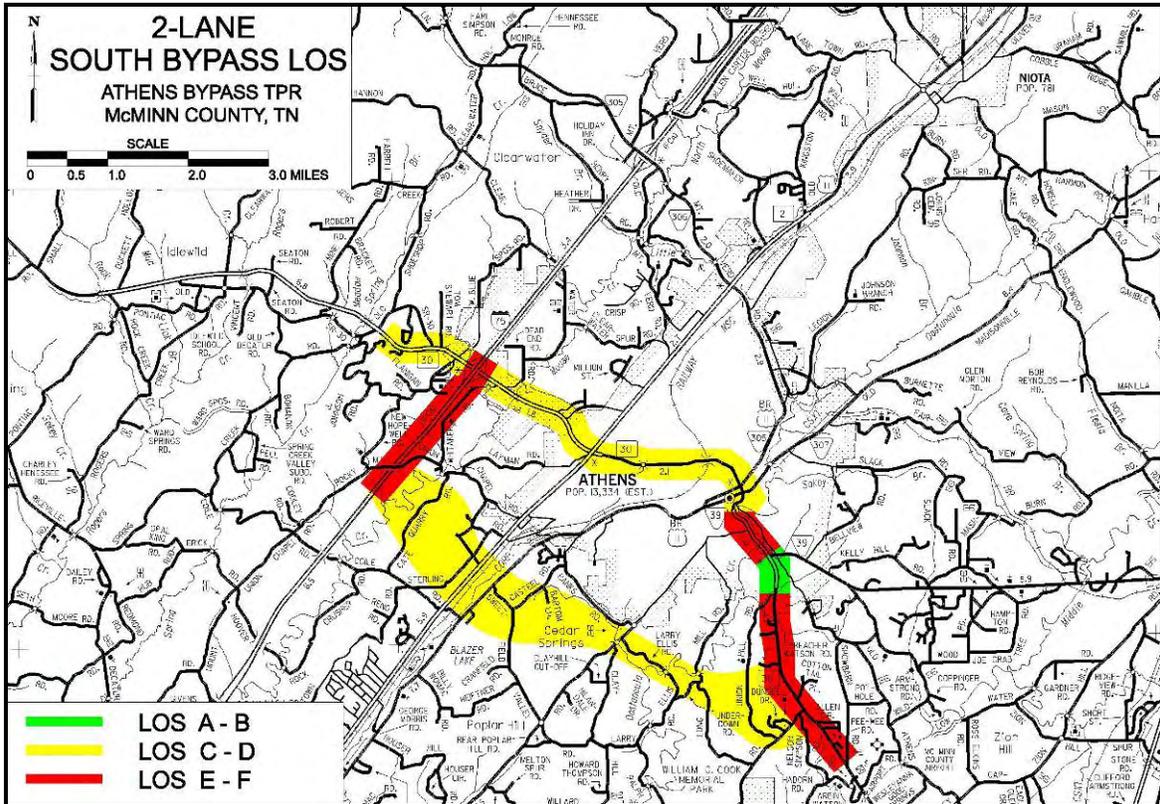
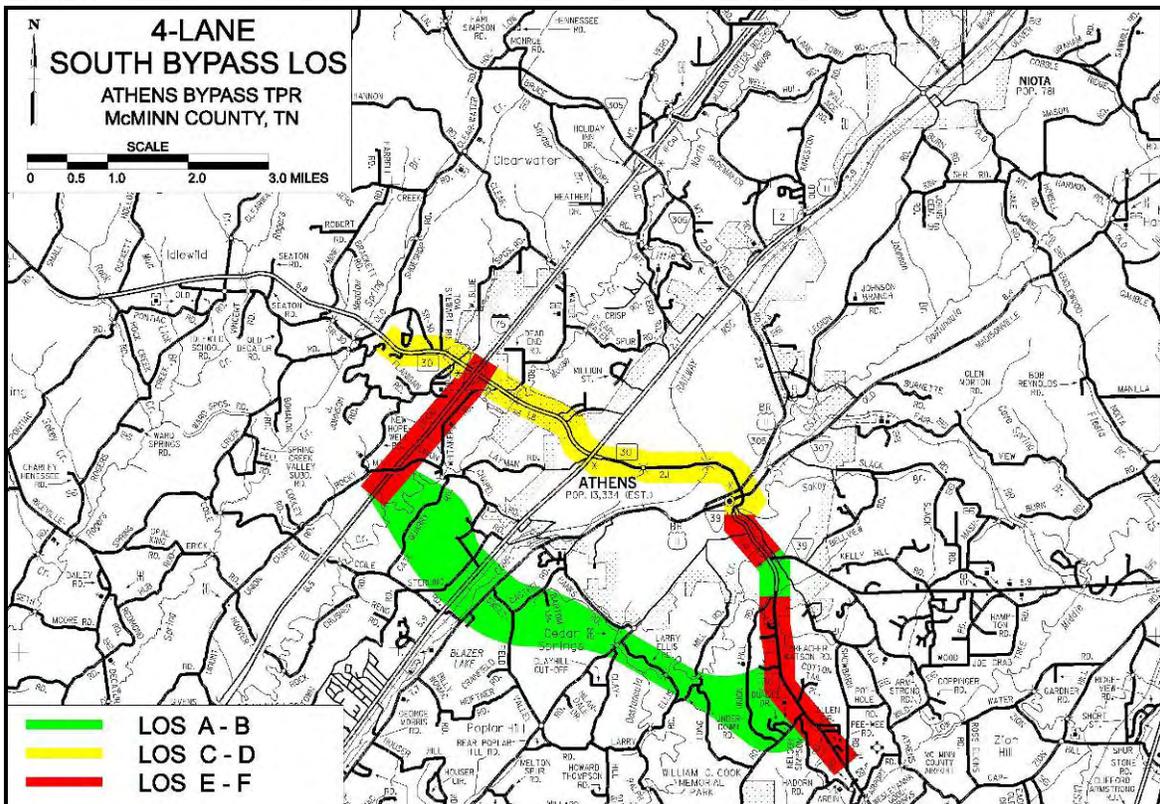


EXHIBIT 5.2.2.4 SOUTH BYPASS OPTION A 2033 LOS - 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.5 SOUTH BYPASS OPTION B 2013 LOS - 2-LANE BYPASS

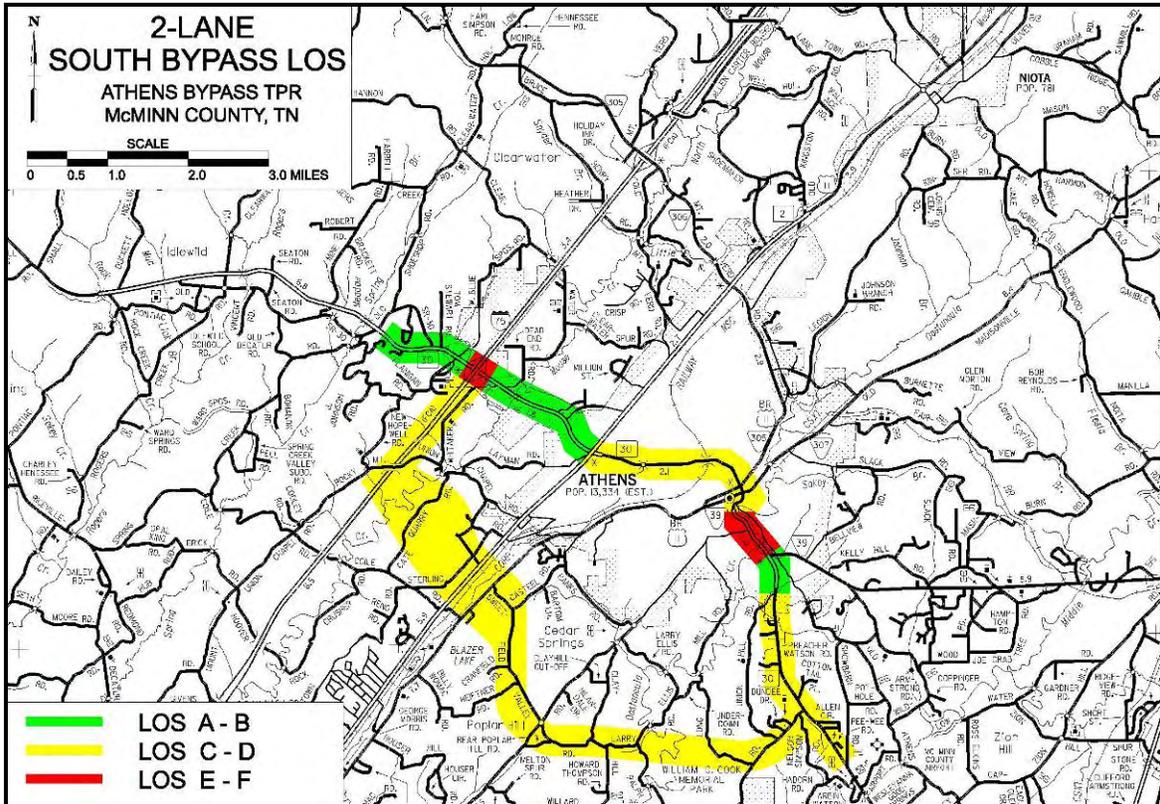
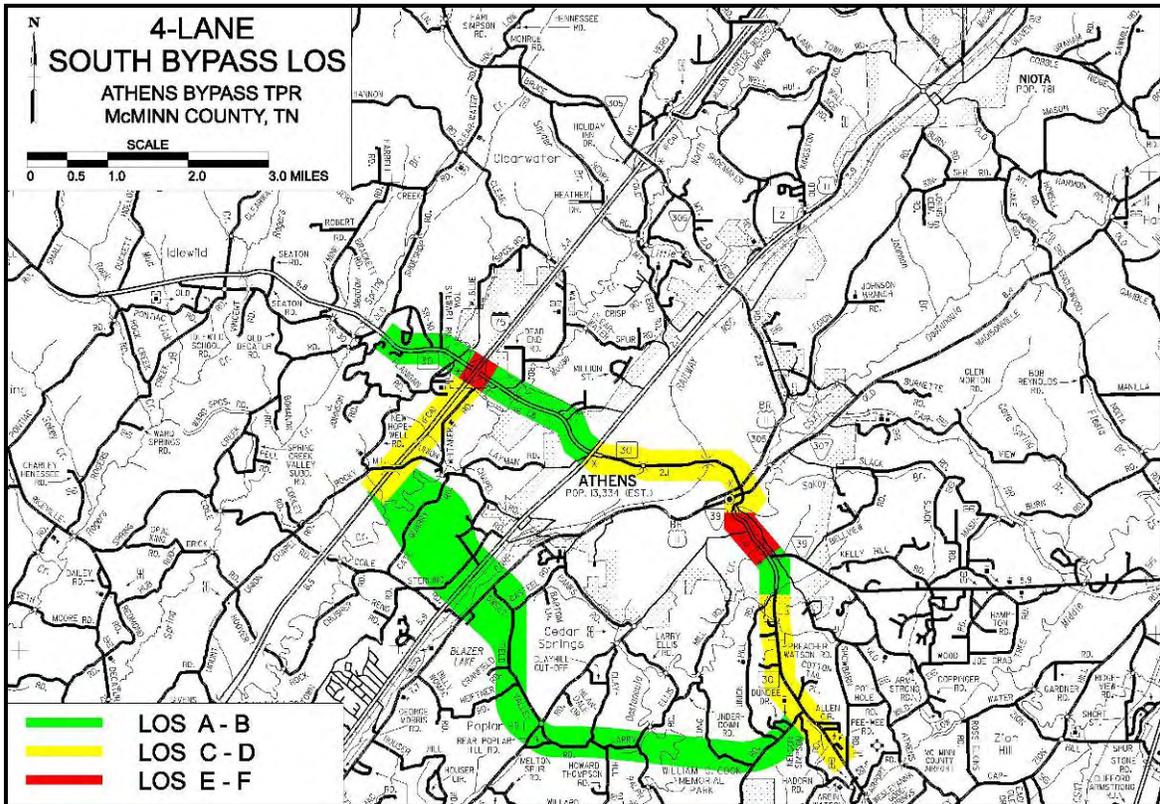


EXHIBIT 5.2.2.6 SOUTH BYPASS OPTION B 2013 LOS - 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.7 SOUTH BYPASS OPTION B 2033 LOS - 2-LANE BYPASS

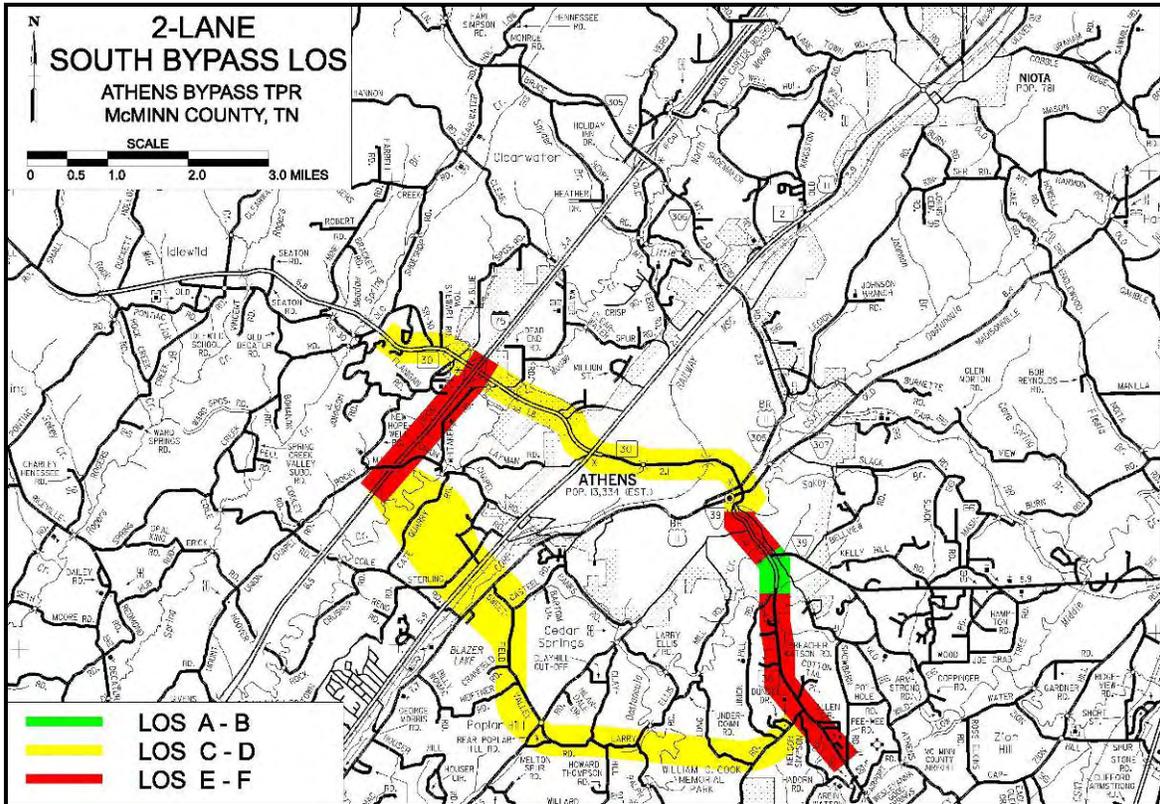
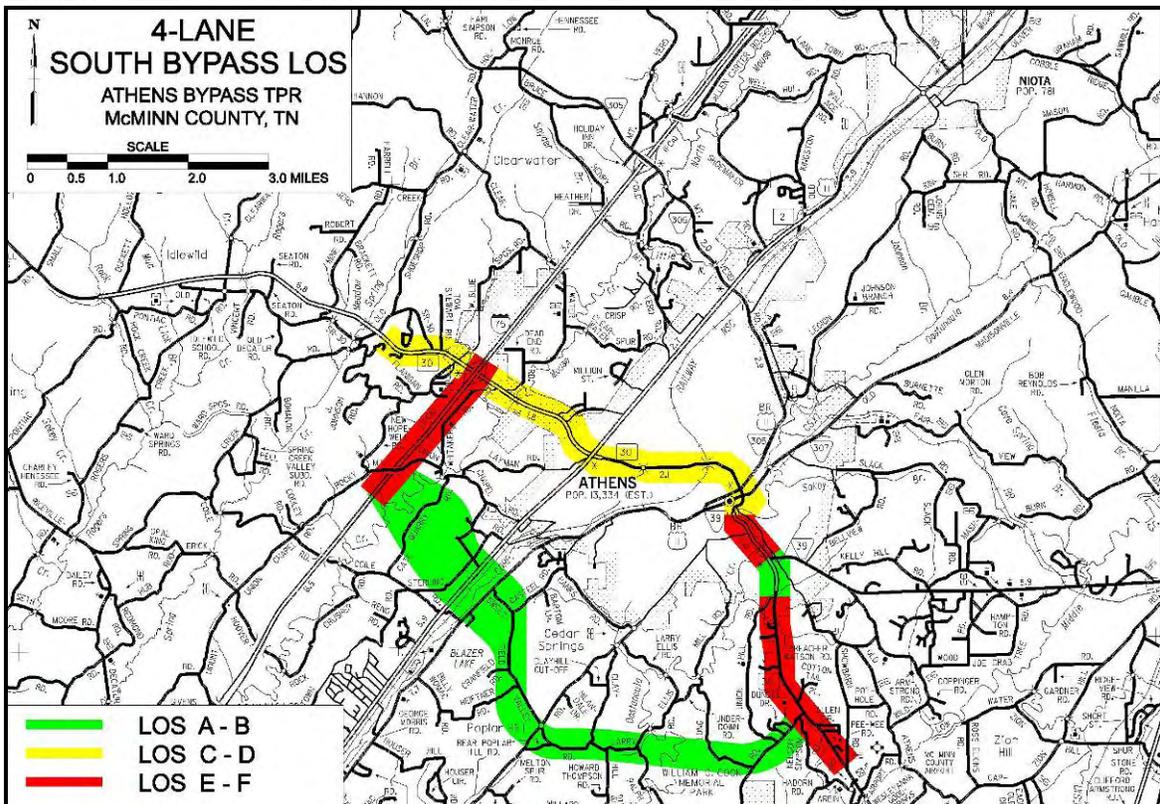


EXHIBIT 5.2.2.8 SOUTH BYPASS OPTION B 2033 LOS - 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.9 SOUTH BYPASS OPTIONS LOS TABLE – SR-30

Athens Bypass TPR South Bypass LOS - SR-30 Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
A	6.57	West of I-75	6.85	I-75	0.28	55	0	4-Lane Divided	18,370	B	0.34	58.0	0.3	26,190	C	0.49	58.0	0.3
B	6.85	I-75	7.00	Holiday Dr.	0.15	55	2	4-Lane Divided	19,890	F	0.45	7.7	1.2	28,350	F	0.64	7.1	1.3
C	7.00	Holiday Dr.	8.00	Sullins Rd.	1.00	50	0	4-Lane Divided	19,890	B	0.33	51.0	1.2	28,350	C	0.47	51.0	1.2
D	8.00	Sullins Rd.	8.65	Congress Pkwy. (US-11, SR-2)	0.65	45	0	4-Lane Divided	19,890	B	0.35	46.0	0.8	28,350	C	0.50	46.0	0.8
E	8.65	Congress Pkwy. (US-11, SR-2)	8.99	Dupitt St.	0.34	35	3	4-Lane Divided	17,750	C	0.40	24.4	0.8	19,520	C	0.44	24.2	0.8
F	8.99	Dupitt St.	10.00	Ohio Ave	1.01	35		5-Lane	17,750	C	0.40	24.4	2.5	19,520	C	0.44	24.2	2.5
G	10.00	Ohio Ave	10.18	N. Jackson St.	0.18	30		5-Lane	17,750	C	0.40	18.8	0.6	19,520	C	0.44	18.6	0.6
H	10.18	N. Jackson St.	10.73	Washington Ave. (SR-305)	0.55	30	6	4-Lane	12,500	D	0.71	17.2	1.9	14,140	D	0.80	16.6	2.0
I	10.73	Washington Ave. (SR-305)	10.78	Madison Ave. (SR-307)	0.05	30		5-Lane	15,940	C	0.36	19.0	0.2	20,620	C	0.46	18.5	0.2
J	10.78	Madison Ave. (SR-307)	10.96	S. Jackson St.	0.18	30		5-Lane	14,620	C	0.33	19.1	0.6	19,290	C	0.43	18.7	0.6
K	10.96	S. Jackson St.	11.28	Elizabeth St.	0.32	30		4-Lane Divided	14,620	C	0.33	19.1	1.0	19,290	C	0.43	18.7	1.0
L	11.28	Elizabeth St.	11.80	Alford St. (SR-39)	0.52	45		4-Lane Divided	21,360	E	0.48	20.2	1.5	26,200	E	0.59	19.6	1.6
M	11.80	Alford St. (SR-39)	12.29	Union Hill Rd.	0.49	45	0	4-Lane Divided	10,120	A	0.18	48.0	0.6	13,470	A	0.24	48.0	0.6
N	12.29	Union Hill Rd.	13.80	Piney Grove Rd.	1.51	55	0	2-Lane	15,260	D	0.49	44.8	2.0	19,820	E	0.64	41.3	2.2
Σ =					7.23				Avg= 0.41			Σ =	15.2	Avg= 0.52			Σ =	15.7

Average Speed: 28.53

Average Speed: 27.7

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.10 SOUTH BYPASS OPTIONS LOS TABLE –2-LANE SOUTH BYPASS OPTION A

Athens Bypass TPR South Bypass LOS - 2-Lane South Bypass Corridor Option A Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				1.75	Rural	Rolling	\$ -	51,110	D	0.8	68.6	1.5	74,010	F	1.2	40	2.6
S1	n/a	I-75	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	1.56	Rural	Rolling	\$ 47,696,000	6,580	C	0.27	50.3	1.9	9,500	D	0.35	48.7	1.9
S2	n/a	Congress Pkwy. (US-11, SR-2)	n/a	SR-39 (includes 1 interchange)	0.28	Rural	Rolling	\$ 23,698,000	6,130	C	0.25	50.7	0.3	8,270	C	0.34	48.9	0.3
S3	n/a	SR-39	n/a	Cedar Springs Rd. (CR-700)	1.76	Rural	Rolling	\$ 19,418,000	4,680	C	0.19	51.6	2.0	5,850	C	0.24	50.8	2.1
S4	n/a	Cedar Springs Rd. (CR-700)	n/a	SR-30	2.46	Rural	Rolling	\$ 40,275,000	4,680	C	0.19	51.6	2.9	5,850	C	0.24	50.8	2.9
Σ =					7.81	\$ 131,090,000			Avg= 0.21		Σ = 8.6		Avg= 0.27		Σ = 9.9			

Bypass Length = 6.06 Miles Average Speed: 54.3 Average Speed: 47.45

Notes: Speed = 55 mph, 2-lane cross section, 40% no passing zone, Class II Hwy. estimated for every bypass section.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars for two-lane roadway on four-lane ROW. Cost on 2-Lane R.O.W. is \$129,010,000.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.11 SOUTH BYPASS OPTIONS LOS TABLE – 4-LANE SOUTH BYPASS OPTION A

Athens Bypass TPR South Bypass LOS - 4-Lane South Bypass Corridor Option A Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				1.75	Rural	Rolling	\$ -	51,110	D	0.8	68.6	1.5	74,010	F	1.2	40	2.6
S1	n/a	I-75	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	1.56	Rural	Rolling	\$ 63,105,000	6,580	A	0.11	58.8	1.6	9,500	A	0.15	58.8	1.6
S2	n/a	Congress Pkwy. (US-11, SR-2)	n/a	SR-39 (includes 1 interchange)	0.28	Rural	Rolling	\$ 25,192,000	6,130	A	0.10	58.8	0.3	8,270	A	0.13	58.8	0.3
S3	n/a	SR-39	n/a	Cedar Springs Rd. (CR-700)	1.76	Rural	Rolling	\$ 29,754,000	4,680	A	0.08	58.8	1.8	5,850	A	0.09	58.8	1.8
S4	n/a	Cedar Springs Rd. (CR-700)	n/a	SR-30	2.46	Rural	Rolling	\$ 62,603,000	4,680	A	0.08	58.8	2.5	5,850	A	0.09	58.8	2.5
Σ =					7.81	\$ 180,650,000			Avg= 0.08			Σ =	7.7	Avg= 0.11			Σ =	8.8

Bypass Length = 6.06 Miles Average Speed: 60.74 Average Speed: 53.2

Notes: Speed = 55 mph & 4-lane divided cross section estimated for every bypass section. L.M. based upon center of study corridor for segment.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.12 SOUTH BYPASS OPTIONS LOS TABLE – 2-LANE SOUTH BYPASS OPTION B

Athens Bypass TPR South Bypass LOS - 2-Lane South Bypass Corridor Option B Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				1.75	Rural	Rolling	\$ -	51,110	D	0.8	68.6	1.5	74,010	F	1.2	40	2.6
S1	n/a	I-75	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	1.56	Rural	Rolling	\$ 47,696,000	6,580	C	0.27	50.3	1.9	9,500	D	0.35	48.7	1.9
S2	n/a	Congress Pkwy. (US-11, SR-2)	n/a	SR-39 (includes 1 interchange)	0.28	Rural	Rolling	\$ 23,698,000	6,130	C	0.25	50.7	0.3	8,270	C	0.34	48.9	0.3
S3	n/a	SR-39	n/a	Cedar Springs Rd. (CR-700)	2.04	Rural	Rolling	\$ 22,507,000	4,680	C	0.19	51.6	2.4	5,850	C	0.24	50.8	2.4
S4A	n/a	Cedar Springs Rd. (CR-700)	n/a	Piney Grove Road (CR-750)	2.81	Rural	Rolling	\$ 49,756,000	4,680	C	0.19	51.6	3.3	5,850	C	0.24	50.8	3.3
S4B	n/a	Piney Grove Road (CR-750)	n/a	SR-30	0.83	Rural	Rolling	\$ 9,932,000	4,680	C	0.19	51.6	1.0	5,850	C	0.24	50.8	1.0
Σ =					9.27	\$ 153,590,000			Avg= 0.21			Σ = 10.3		Avg= 0.27			Σ = 11.6	

Bypass Length = 7.52 Miles Average Speed: 53.86 Average Speed: 47.95

Notes: Speed = 55 mph, 2-lane cross section, 40% no passing zone, Class II Hwy. estimated for every bypass section.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars for two-lane roadway on four-lane ROW. Cost on 2-Lane R.O.W. is \$150,870,000.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.2.13 SOUTH BYPASS OPTIONS LOS TABLE – 4-LANE SOUTH BYPASS OPTION B

Athens Bypass TPR South Bypass LOS - 4-Lane South Bypass Corridor Option B Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				1.75	Rural	Rolling	\$ -	51,110	D	0.8	68.6	1.5	74,010	F	1.2	40	2.6
S1	n/a	I-75	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	1.56	Rural	Rolling	\$ 63,105,000	6,580	A	0.11	58.8	1.6	9,500	A	0.15	58.8	1.6
S2	n/a	Congress Pkwy. (US-11, SR-2)	n/a	SR-39 (includes 1 interchange)	0.28	Rural	Rolling	\$ 25,192,000	6,130	A	0.10	58.8	0.3	8,270	A	0.13	58.8	0.3
S3	n/a	SR-39	n/a	Cedar Springs Rd. (CR-700)	2.04	Rural	Rolling	\$ 34,488,000	4,680	A	0.08	58.8	2.1	5,850	A	0.09	58.8	2.1
S4A	n/a	Cedar Springs Rd. (CR-700)	n/a	Piney Grove Road (CR-750)	2.81	Rural	Rolling	\$ 77,512,000	4,680	A	0.08	58.8	2.9	5,850	A	0.09	58.8	2.9
S4B	n/a	Piney Grove Road (CR-750)	n/a	SR-30	0.83	Rural	Rolling	\$ 14,807,000	4,680	A	0.08	58.8	0.8	5,850	A	0.09	58.8	0.8
Σ =					9.27	\$ 215,100,000			Avg= 0.08		Σ = 9.2		Avg= 0.11		Σ = 10.3			

Bypass Length = 7.52 Miles Average Speed: 60.43 Average Speed: 54.01

Notes: Speed = 55 mph & 4-lane divided cross section estimated for every bypass section. L.M. based upon center of study corridor for segment.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars.

5.2.3 North Bypass Option

There is no known local support for the Northern Bypass Option as shown. However, local officials from the McMinn County Highway Department have expressed strong support for a North Bypass Option that connects to the existing SR-305 Interchange with I-75 (north of Athens). The highway department officials do not see the benefit of a North Bypass Option that connects to I-75 north of SR-305 at a new Interchange. These local officials believe a SR-305 Northern Bypass would better serve freight traffic than a Southern Bypass Option. The McMinn County Highway Department provided several letters from local industries supporting the study of a Northern Bypass that connects to SR-305. Letters furnished by the Highway Department are provided in the **Appendix**. The local officials understand the requirement of this TPR to “construct a new exit on I-75 and connect US-11, US-411, and SR-30”. Therefore, a Bypass Option connecting to the existing SR-305 Interchange with I-75 is not included.

The North Bypass Option presented will originate at a new interchange along I-75 to be constructed as part of this Option between the SR-305 Interchange (Exit 52) to the south and the SR-309 Interchange (Exit 56) to the north. The North Option will proceed east and connect to SR-30 east of the City of Athens. For a map of the North Bypass Option, please refer to **Exhibits 5.2.3.1** and **5.2.3.2**.

This TPR was initiated by an earmark in SAFETEA-LU to “construct a new exit on I-75 and connect US-11, US-411, and SR-30.” The North Bypass Option will provide an alternate east-west route to I-75 around Athens.

The proposed western terminus of the North Bypass Option at I-75 is approximately 4.9 miles north of the SR-30 interchange. This location will provide poorer route continuity with SR-30 west of I-75 than the South Bypass Options. Future extension of the bypass to connect to SR-30 west of I-75 will be difficult due to the topography associated with the Spring Creek Ridge and the large distance required to make the connection.

The North Bypass Option was created to minimize conflicts with environmentally sensitive areas and existing development. A wide corridor (minimum of 2000') is provided to allow flexibility for locating alignments among the rugged terrain surrounding Athens. Locations to avoid are listed in Section **6.1.6 Guiding Principle 6: Promote Stewardship of the Environment**, and mapped in **Exhibit 6.1.6.1 Environmental and Community Resources** and the **Corridor Sheets**. Of particular interest due to its large area is the Mayfield Dairy Farm located along SR-307. Nearly 700 acres of this farm is preserved through a voluntary conservation agreement with The Land Trust of Tennessee. The farm has been in the Mayfield family since 1820 and is designated as a Tennessee Century Farm, a designation by the State Department of Agriculture that recognizes a farm that has been in a family continuously for at least 100 years and continues to produce farm income. A news article (dated February 4, 2008) discussing the conservation agreement is provided in the **Appendix**.

One of the purposes of improvements is to support economic development. Local officials have expressed a desire for a bypass to serve as a new corridor for development. Additional sewer capacity is currently not available for the Northern Bypass Options. The area surrounding the Northern Bypass Option is under a sewer moratorium from the State of Tennessee. (from *Minutes of the Athens Bypass Project Workgroup Session & associated Fact Sheet*, 10/4/04). The Athens Utilities Board is working to address the

ATHENS BYPASS TPR
McMinn County, TN

consent order, but it is not known when service can be expanded to this area. Future sewer service would help spur development in the vicinity of the bypass.

The North Bypass Option connects to SR-30 at the same location as the South Options. This location minimizes conflicts with environmentally sensitive areas and existing development. Connecting to SR-30 at the same location will provide future flexibility if expansion of the bypass is ever warranted.

The North Bypass Option is 9.82 miles long. Additionally, a 4.88 mile-long segment of I-75 will be utilized in the North Bypass Option to provide route continuity with SR-30. Therefore, the total route length of the North Bypass Option is 14.70 miles.

Multiple travel lane options are provided for the North Bypass Option. The North Bypass Option is composed of multiple segments. Each segment has similar traffic, adjacent development, and adjacent terrain characteristics. Distance and cost data for each of the segments is provided in table form in **Exhibits 5.2.3.6** and **5.2.3.7**. Additionally, the total cost for the North Bypass Option is summarized below. The estimated costs were calculated to a planning level utilizing cost per mile data and include constructing interchanges at I-75 and US-11. The cost estimate calculations are provided in the **Appendix**.

North Bypass Option, Two-Lane Option	\$189,390,000
North Bypass Option, Two-Lane Option within Four-Lane R.O.W.	\$192,500,000
North Bypass Option, Four-Lane Option	\$276,420,000

To improve east-west mobility, the design speed for the North Bypass Option should be 60 mph (minimum). This will enable the bypass to have a posted speed limit of 55 mph. For the Two-Lane North Bypass Option, the HCS Analysis calculates LOS ranging from C to D through the year 2033. For the Four-Lane North Bypass Option, the HCS Analysis calculates a LOS of A through the year 2033. The HCS analysis calculates LOS ranging from A to F along SR-30 through the year 2033. A summary of the LOS calculations for the North Bypass Option (and SR-30) is provided in schematic form in **Exhibits 5.2.3.1** through **5.2.3.4** and in table form in **Exhibit 5.2.3.5** (SR-30), and **5.2.3.6** and **5.2.3.7** (North Bypass Option).

For the Two-Lane North Bypass Option through the year 2033, the volume to capacity ratio (v/c) is calculated to range from 0.27 to 0.53, with a weighted average of 0.40. For the Four-Lane North Bypass Option through the year 2033, the volume to capacity ratio (v/c) is calculated to range from 0.11 to 0.23, with a weighted average of 0.11. Along SR-30 (with the construction of a North Bypass), the v/c ranges from 0.23 to 0.91 through the year 2033, with a weighted average of 0.52. The calculated volume to capacity ratios demonstrates that two travel lanes are generally adequate for the bypass for the projected volumes. Due to the relatively minor R.O.W. costs compared to the construction costs, a two-lane within four-lane R.O.W. option is provided. If a two lane bypass option is chosen, this will allow for a more efficient improvement to a four-lane bypass should future traffic conditions warrant. A summary of the v/c calculations for the North Bypass Options is provided in table form in **Exhibit 5.2.3.5** (SR-30), and **5.2.3.6** and **5.2.3.7** (North Bypass Option).

Travel speeds along the Two-Lane North Bypass Option through 2033 are calculated to average approximately 45 mph. Travel speeds along the Four-Lane North Bypass Option

ATHENS BYPASS TPR
McMinn County, TN

through 2033 are calculated to average approximately 51 mph. The posted speed limit ranges from 30 to 55 mph along SR-30 within the study area. For the North Bypass Option in the year 2033, the travel speeds along SR-30 are calculated to average 28 mph. A summary of the travel speed calculations for the North Bypass Option is provided in table form in **Exhibit 5.2.3.5** (SR-30), and **5.2.3.6** and **5.2.3.7** (North Bypass Option).

As discussed previously, the North Bypass Option is 9.82 miles long. Additionally, a 4.88-mile long segment of I-75 will be utilized to connect existing SR-30 west of I-75 with the North Bypass Option. For the North Bypass Option in the year 2033, the travel times along the route (including the segment of I-75 utilized) is calculated to be 19.7 and 17.3 minutes for the two travel lane and four travel lane options, respectively. SR-30, between I-75 to the west and Piney Grove Road to the east, is 7.23 miles in length. For the North Bypass Option in the year 2033, the travel time along SR-30 is calculated to be 15.7 minutes. A summary of the travel time calculations for the North Bypass Options is provided in table form in **Exhibit 5.2.3.5** (SR-30), and **5.2.3.6** and **5.2.3.7** (North Bypass Option).

It should be noted that the 4.9-mile long segment of I-75 to be utilized to connect existing SR-30 west of I-75 with the North Bypass Option currently operates near capacity. Improving I-75 regionally is needed to achieve adequate traffic operations in the future. It should also be noted that SR-30 from Athens' City Limits east to Etowah is currently under design to be improved from two travel lanes to four travel lanes. Because construction funding has not been programmed for this segment, these improvements are not included in the traffic analysis. The traffic analysis in this report demonstrates the need for these improvements.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.3.1 NORTH BYPASS OPTION 2013 LOS – 2-LANE BYPASS

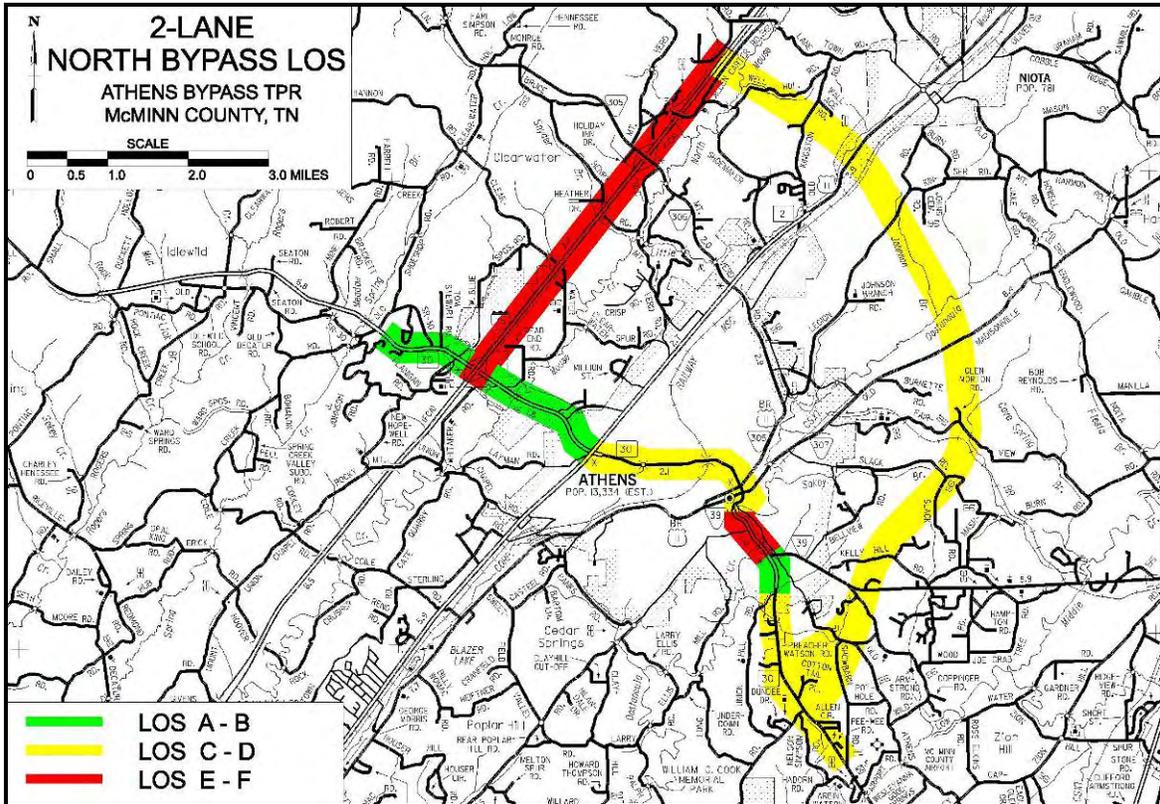
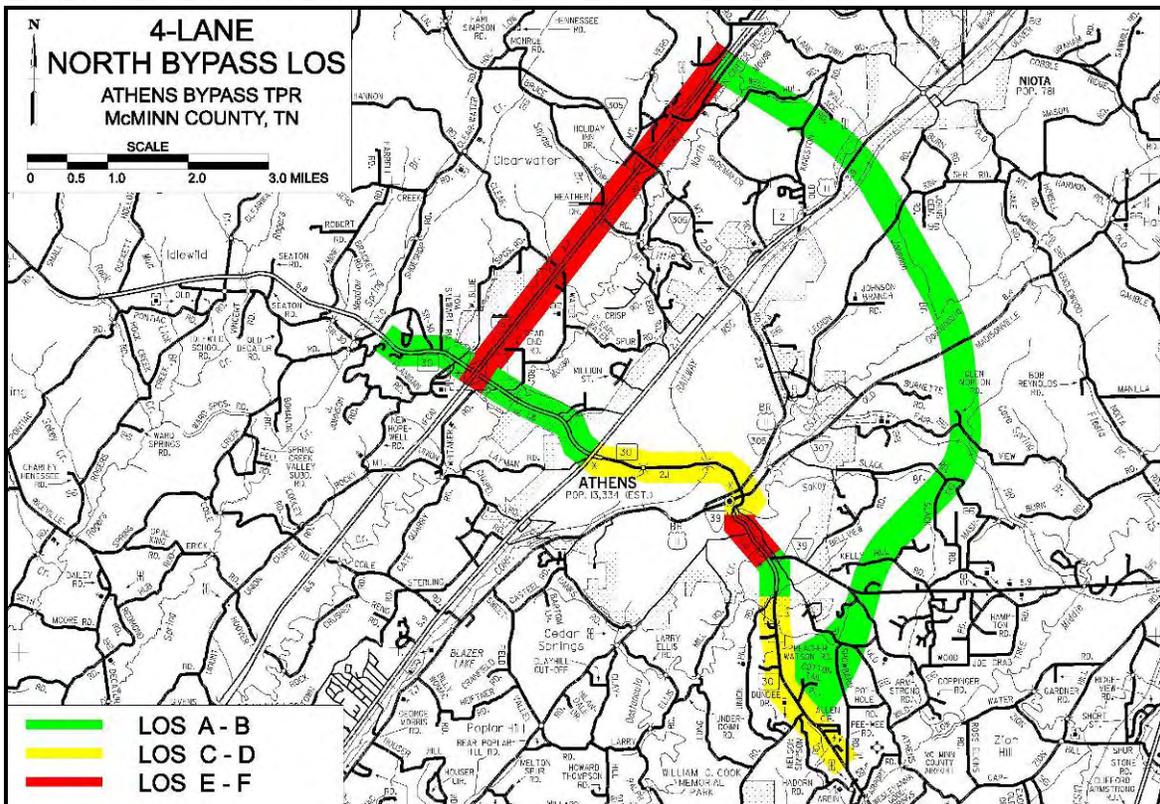


EXHIBIT 5.2.3.2 NORTH BYPASS OPTION 2013 LOS – 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.3.3 NORTH BYPASS OPTION 2033 LOS – 2-LANE BYPASS

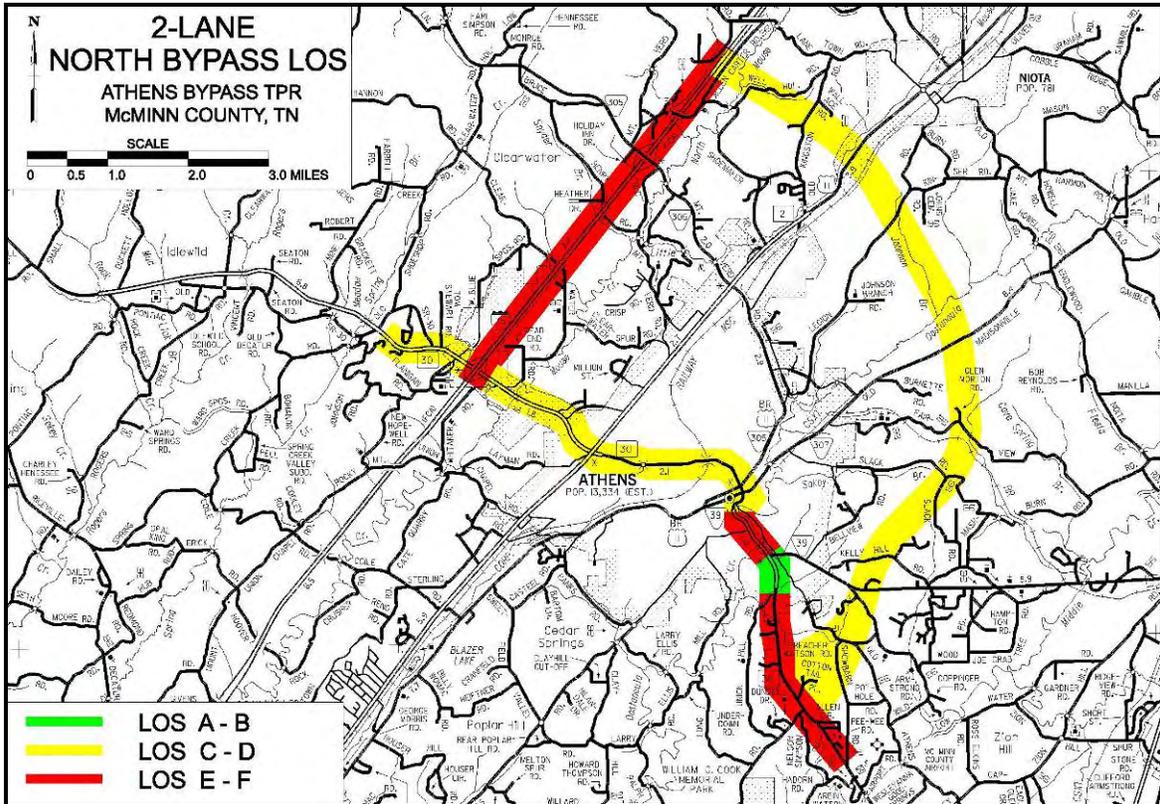
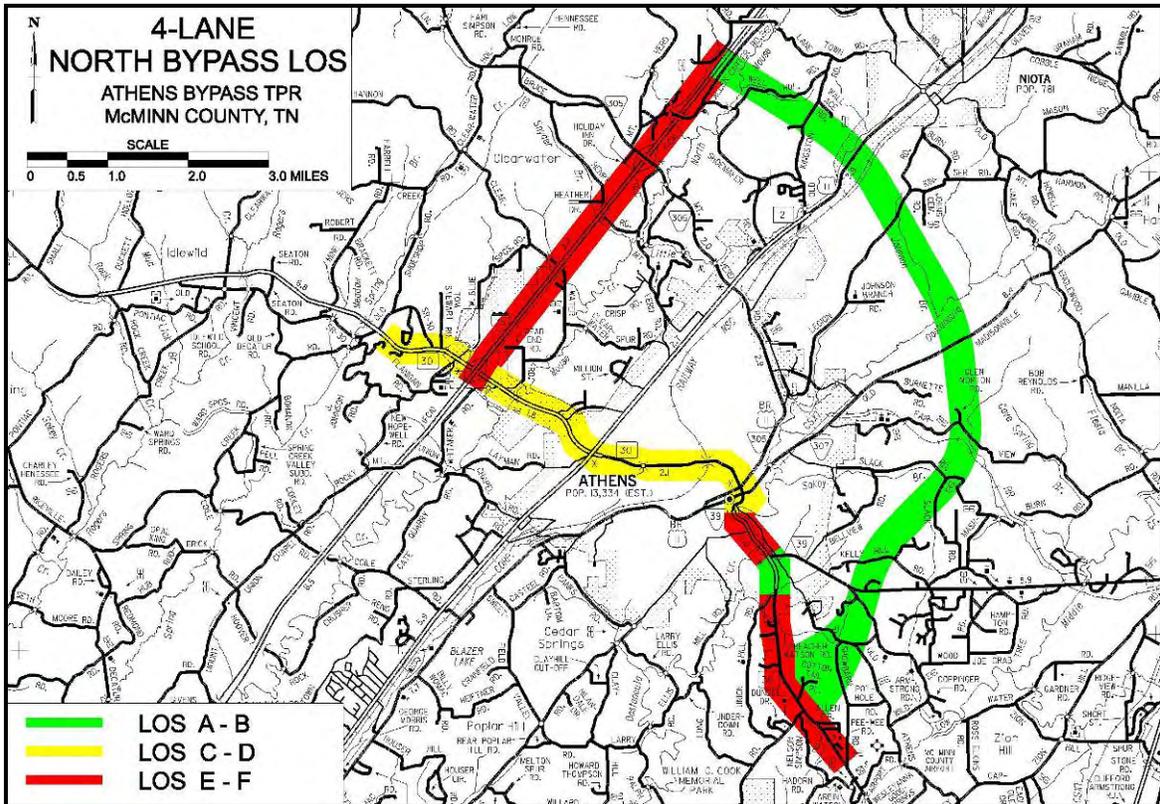


EXHIBIT 5.2.3.4 NORTH BYPASS OPTION 2033 LOS – 4-LANE BYPASS



**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.3.5 NORTH BYPASS OPTIONS LOS TABLE – SR-30

Athens Bypass TPR North Bypass LOS - SR-30 Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
A	6.57	West of I-75	6.85	I-75	0.28	55	0	4-Lane Divided	18,370	B	0.34	58.0	0.3	26,190	C	0.49	58.0	0.3
B	6.85	I-75	7.00	Holiday Dr.	0.15	55	2	4-Lane Divided	21,740	F	0.49	7.6	1.2	30,980	F	0.70	6.8	1.3
C	7.00	Holiday Dr.	8.00	Sullins Rd.	1.00	50	0	4-Lane Divided	21,740	B	0.36	51.0	1.2	30,980	C	0.52	51.0	1.2
D	8.00	Sullins Rd.	8.65	Congress Pkwy. (US-11, SR-2)	0.65	45	0	4-Lane Divided	21,740	B	0.38	46.0	0.8	30,980	C	0.54	46.0	0.8
E	8.65	Congress Pkwy. (US-11, SR-2)	8.99	Dupitt St.	0.34	35	3	4-Lane Divided	19,800	C	0.45	24.2	0.8	21,310	C	0.48	24.0	0.9
F	8.99	Dupitt St.	10.00	Ohio Ave	1.01	35		5-Lane	14,550	C	0.33	24.8	2.4	16,060	C	0.36	24.6	2.5
G	10.00	Ohio Ave	10.18	N. Jackson St.	0.18	30	6	5-Lane	14,550	C	0.33	19.1	0.6	16,060	C	0.36	19.0	0.6
H	10.18	N. Jackson St.	10.73	Washington Ave. (SR-305)	0.55	30		4-Lane	14,550	D	0.82	16.5	2.0	16,060	D	0.91	15.9	2.1
I	10.73	Washington Ave. (SR-305)	10.78	Madison Ave. (SR-307)	0.05	30		5-Lane	12,530	C	0.28	19.3	0.2	16,380	C	0.37	19.0	0.2
J	10.78	Madison Ave. (SR-307)	10.96	S. Jackson St.	0.18	30		5-Lane	11,870	C	0.27	19.4	0.6	15,520	C	0.35	19.0	0.6
K	10.96	S. Jackson St.	11.28	Elizabeth St.	0.32	30		4-Lane Divided	11,870	C	0.27	19.4	1.0	15,520	C	0.35	19.0	1.0
L	11.28	Elizabeth St.	11.80	Alford St. (SR-39)	0.52	45		4-Lane Divided	18,610	E	0.42	20.6	1.5	22,430	E	0.51	20.1	1.6
M	11.80	Alford St. (SR-39)	12.29	Union Hill Rd.	0.49	45	0	4-Lane Divided	9,930	A	0.17	48.0	0.6	13,340	A	0.23	48.0	0.6
N	12.29	Union Hill Rd.	13.80	Piney Grove Rd.	1.51	55	0	2-Lane	15,260	D	0.49	44.8	2.0	19,820	E	0.64	41.3	2.2
Σ =					7.23				Avg= 0.41		Σ = 15.2		Avg= 0.52		Σ = 15.7			

Average Speed: 28.54

Average Speed: 27.65

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 5.2.3.6 NORTH BYPASS OPTION LOS TABLE – 2-LANE NORTH BYPASS

Athens Bypass TPR North Bypass LOS - 2-Lane North Bypass Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				4.88	Rural	Rolling	\$ -	58,450	E	0.92	60.9	4.8	84,920	F	1.34	40	7.3
N1	n/a	I-75	n/a	CR-260 (includes 1 interchange)	1.31	Rural	Rolling	\$ 43,269,000	9,940	D	0.37	48.4	1.6	14,340	D	0.53	44.9	1.8
N2	n/a	CR-260	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	0.73	Rural	Rolling	\$ 28,127,000	9,940	D	0.37	48.4	0.9	14,340	D	0.53	44.9	1.0
N3	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	n/a	Old Niota Road (CR-370)	0.88	Rural	Rolling	\$ 13,501,000	8,320	C	0.34	48.9	1.1	10,730	D	0.40	47.8	1.1
N4	n/a	Old Niota Road (CR-370)	n/a	Old Athens Madisonville Rd. (SR-307)	1.77	Rural	Rolling	\$ 19,528,000	8,320	C	0.34	48.9	2.2	10,730	D	0.40	47.8	2.2
N5	n/a	Old Athens Madisonville Rd. (SR-307)	n/a	Fairview Rd. (CR-439)	1.22	Rural	Rolling	\$ 26,488,000	7,710	C	0.31	49.4	1.5	10,000	D	0.37	48.4	1.5
N6	n/a	Fairview Rd. (CR-439)	n/a	Old Englewood Rd. (SR-39)	2.31	Rural	Rolling	\$ 31,653,000	7,710	C	0.31	49.4	2.8	10,000	D	0.37	48.4	2.9
N7	n/a	Old Englewood Rd. (SR-39)	n/a	Old Athens Etowah Rd. (CR-561)	0.68	Rural	Rolling	\$ 7,502,000	5,510	C	0.22	51.1	0.8	6,700	C	0.27	50.2	0.8
N8	n/a	Old Athens Etowah Rd. (CR-561)	n/a	SR-30	0.92	Rural	Rolling	\$ 22,430,000	5,510	C	0.22	51.1	1.1	6,700	C	0.27	50.2	1.1
Σ =					14.70	\$ 192,500,000			Avg= 0.32		Σ = 16.8		Avg= 0.40		Σ = 19.7			

Bypass Length = 9.82 Miles Average Speed: 52.64 Average Speed: 44.86

Notes: Speed = 55 mph, 2-lane cross section, 40% no passing zone, Class II Hwy. estimated for every bypass section.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars for two-lane roadway on four-lane ROW. Cost on 2-Lane R.O.W. is \$189,390,000.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 5.2.3.7 NORTH BYPASS OPTION LOS TABLE – 4-LANE NORTH BYPASS

Athens Bypass TPR North Bypass LOS - 4-Lane North Bypass Data

ID	From		To		Dist. (mi)	Roadway Data			2013					2033				
	L.M.	Description	L.M.	Description		Area	Terrain	Cost	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Along I-75 from Existing SR-30 to the Bypass				4.88	Rural	Rolling	\$ -	58,450	E	0.92	60.9	4.8	84,920	F	1.34	40	7.3
N1	n/a	I-75	n/a	CR-260 (includes 1 interchange)	1.31	Rural	Rolling	\$ 56,209,000	9,940	A	0.16	59.7	1.3	14,340	A	0.23	58.8	1.3
N2	n/a	CR-260	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	0.73	Rural	Rolling	\$ 32,415,000	9,940	A	0.16	59.7	0.7	14,340	A	0.23	58.8	0.7
N3	n/a	Congress Pkwy. (US-11, SR-2) (includes 1 interchange)	n/a	Old Niota Road (CR-370)	0.88	Rural	Rolling	\$ 20,788,000	8,320	A	0.13	59.7	0.9	10,730	A	0.17	58.8	0.9
N4	n/a	Old Niota Road (CR-370)	n/a	Old Athens Madisonville Rd. (SR-307)	1.77	Rural	Rolling	\$ 29,924,000	8,320	A	0.13	59.7	1.8	10,730	A	0.17	58.8	1.8
N5	n/a	Old Athens Madisonville Rd. (SR-307)	n/a	Fairview Rd. (CR-439)	1.22	Rural	Rolling	\$ 41,469,000	7,710	A	0.12	59.7	1.2	10,000	A	0.16	58.8	1.2
N6	n/a	Fairview Rd. (CR-439)	n/a	Old Englewood Rd. (SR-39)	2.31	Rural	Rolling	\$ 48,919,000	7,710	A	0.12	59.7	2.3	10,000	A	0.16	58.8	2.4
N7	n/a	Old Englewood Rd. (SR-39)	n/a	Old Athens Etowah Rd. (CR-561)	0.68	Rural	Rolling	\$ 11,496,000	5,510	A	0.09	58.8	0.7	6,700	A	0.11	58.8	0.7
N8	n/a	Old Athens Etowah Rd. (CR-561)	n/a	SR-30	0.92	Rural	Rolling	\$ 35,201,000	5,510	A	0.09	58.8	0.9	6,700	A	0.11	58.8	0.9
Σ =					14.70	\$ 276,420,000			Avg= 0.13		Σ = 14.7		Avg= 0.17		Σ = 17.3			

Bypass Length = 9.82 Miles Average Speed: 59.99 Average Speed: 50.86

Notes: Speed = 55 mph & 4-lane divided cross section estimated for every bypass section. L.M. based upon center of study corridor for segment.

Year 2033 speed along I-75 estimated as placeholder. Calculations do not calculate speed for LOS F.

Costs expressed in year 2013 dollars.

6.0 ASSESSMENT OF OPTIONS

6.1 TDOT'S SEVEN GUIDING PRINCIPLES

The Tennessee Department of Transportation (TDOT) has adopted seven guiding principles against which all transportation projects are to be evaluated. These guiding principles address concerns for system management, mobility, economic growth, safety, community, environmental stewardship, and fiscal responsibility. These guiding principles are discussed in the following paragraphs as they relate to the options discussed in this report.

6.1.1 Guiding Principle 1: Preserve and Manage the Existing Transportation System

If a bypass is constructed, traffic should be reduced in the city of Athens' central business district (CBD). By diverting traffic from SR-30 within the CBD, the bypass options have an indirect positive influence on peak traffic density and flow rate on this existing primary route. Therefore, the bypass options indirectly help to preserve the existing transportation system. Furthermore, the bypass options, in addition to improvements to SR-30 currently constructed or under design outside the study area, will improve the integration of the highway network in Southeast Tennessee by connecting several high quality north-south routes including SR-29, I-75, US-11, and US-411.

6.1.2 Guiding Principle 2: Move a Growing, Diverse, and Active Population

The improvement options discussed in this report will reduce congestion in Athens' CBD, optimize service and operational efficiency, and benefit east-west regional freight and commuter mobility in Southeast Tennessee. Bicycle and Pedestrian operations should be improved in Athens' CBD due to the reduced traffic volumes (especially truck traffic) along SR-30.

6.1.3 Guiding Principle 3: Support the State's Economy

There are several high quality north-south routes in Southeast Tennessee, including US-27, I-75, US-11, and US-411. Due largely to the topography surrounding the confluences of the Tennessee River, there are few high quality east-west highways to connect these north-south routes. SR-30 is the primary east-west route for travel between the cities of Dayton, Athens, and Etowah; and for travel between I-75 and US-411. Freight from Athens' and Etowah's factories is shipped along SR-30 to access I-75. Slow travel speeds along SR-30 within Athens' city limits affects regional mobility. Local officials have expressed a desire for an improved SR-30 to become an east-west regional economic corridor.

6.1.4 Guiding Principle 4: Maximize Safety and Security

Existing SR-30 is a low speed route containing considerably steep grades, horizontal curvature, dense development, and numerous signalized intersections. The crash rates along the majority of SR-30 within the study area exceed the statewide rates for similar roadway segments. SR-30 goes through Tennessee Wesleyan College's campus.

ATHENS BYPASS TPR
McMinn County, TN

Reducing traffic, especially truck traffic, through these conditions should improve the safety of the existing route for vehicles, pedestrians and bicyclists.

The proposed bypass will be built to geometric standards in a less developed area. This will provide a safer route that is more suited for higher traffic volumes, including trucks. Finally, SR-30 is designated as the eastern evacuation route from Watts Bar and/or Sequoyah nuclear power plants. The evacuation route should be transferred to the higher speed bypass, avoiding the low speed CBD of Athens. This will improve evacuation times.

6.1.5 Guiding Principle 5: Build Partnerships for Livable Communities

Throughout the development of this Transportation Planning Report, TDOT staff has coordinated with local leaders and the Southeast Tennessee Development District Rural Planning Organization (RPO) to identify their concerns and objectives. The RPOs were created through a partnership between the Tennessee Department of Transportation (TDOT) and the Tennessee Development Districts to provide input concerning transportation needs from rural local officials and interested stakeholders. The RPOs provide for continuing, comprehensive, coordinated transportation planning and programming in the non-metropolitan areas of the state. The public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

6.1.6 Guiding Principle 6: Promote Stewardship of the Environment

Several environmentally sensitive locations and community resources within the study area should be avoided, if possible. Those that cannot be avoided should have their impact mitigated. These areas include communities, churches, cemeteries, environmental sites (including landfills), historic places, parks, schools, springs, major streams, utilities (including wastewater treatment plants), quarries, railroads, and the McMinn County Airport. The locations are listed in **Exhibit 6.1.6.1** and mapped in **Exhibit 6.1.6.2** and the **Corridor Sheets**.

Sources utilized in the provided environmental/community resources scan include the following:

EPA Envirofacts	Tennessee Department of Environment & Conservation
USGS Topographic Mapping	Athens City Government
Aerial Photography	Athens Chamber of Commerce
Delorme Mapping	Athens Phone Directory
National Register of Historic Places	McMinn County Government
Tennessee Historical Commission	

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 6.1.6.1 ENVIRONMENTAL AND COMMUNITY RESOURCES

Suburban Communities	
Name	Location
C1 Cedar Springs	Cedar Springs Road
C2 Fairview	Fairview Road
C3 Marshall Hill	I-75
C4 Barton Mill	I-75
C5 SR 30/SR 39	SE of Athens
C6 Piney Grove	Piney Grove Road
C7 Mashburn	Mashburn Road
C8 Cole	Lee Highway

Churches	
Name	Location
CH1 New Hopewell Chapel	CR 121
CH2 Westview Church	Hwy 11B
CH3 Unnamed Church	Cedar Springs Rd./CR 703
CH4 Union Hill Church	CR 659
CH5 Bethsalem Church	CR 602
CH6 Antioch Church	CR 561
CH7 Unnamed Church	David W. Lillard Memorial Hwy
CH8 United Church	New Englewood Road
CH9 Unnamed Church	CR 443
CH10 Slacks Church	CR 437
CH11 Valley View Church	CR 375
CH12 Marshall Hill Church	CR 255
CH13 Unity Baptist Church	CR 750
CH14 Fairview Baptist Church	Fairview Road
CH15 North Athens Baptist Church	402 Tellico Avenue E
CH16 Athens United Pentecostal Church	2820 Hwy 11 S
CH17 Jehovah's Witness	2816 Hwy 11 S
CH18 Seventh Day Adventist Church	230 New Englewood Road
CH19 Better Living Center	407 New Englewood Road
CH20 Lane's Chapel AME Zion Church	CR 264
CH21 Central Church of Christ	1062 Hwy 39 E
CH22 St. Mark AME Zion Methodist	707 S. Jackson Street
CH23 Rocky Mt. Church	Rocky Mount Road

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 6.1.6.1 ENVIRONMENTAL AND COMMUNITY RESOURCES (CONT.)

Cemeteries	
Name	Location
CM1 Unnamed Cemetery	Cedar Springs Rd./CR 703
CM2 Bethsalem Cemetery	CR 602
CM3 McMinn County Cemetery	David W. Lillard Memorial Hwy
CM4 McMinn Memory Gardens	CR 561
CM5 Cunningham Cemetery	CR 437
CM6 Slacks Cemetery 1	CR 437
CM7 Slacks Cemetery 2	Fairview Road
CM8 Unnamed Cemetery	Fairview Road
CM9 Matlock Cemetery	CR 209
CM10 Moore Cemetery	CR 264
CM11 Unnamed Cemetery	I-75
CM12 Cate Cemetery	CR 262
CM13 Johns Cemetery	CR 371
CM14 Thompson Cemetery	CR 669

Environmental Sites	
Name	Location
E1 Athens Utilities Board (Air Emissions)	200 Alford Street
E2 Athens Utilities Board (Haz. Waste)	100 New Englewood Road
E3 Clifford Hampton Construction (Water)	1009 County Road
E4 McMinn Co. Landfill	Piney Grove Road
E5 McMinn Co. Landfill	Piney Grove Road
E6 Wetland	Old Athens-Etowah Road
E7 Scrap Metal Yard	US-11

Historic Places	
Name	Location
HP1 Bethsalem Presbyterian Church	CR 602
HP2 Mayfield Family Farm	SR-307

Hospitals	
Name	Location
H1 Athens Regional Medical Center	114 West Madison Avenue

Parks & Recreation	
Name	Location
P1 Springbrook Golf & Country Club	123 Country Club Road (Niota)
P2 Heritage Park	Old Englewood Road

ATHENS BYPASS TPR
McMinn County, TN

EXHIBIT 6.1.6.1 ENVIRONMENTAL AND COMMUNITY RESOURCES (CONT.)

Schools	
Name	Location
SC1 Poplar Hill School	Cedar Springs Road
SC2 Fairview Christian Academy	Fairview Road
SC3 Tennessee Wesleyan College (900 Students)	SR-30
SC4 North City School (240 Students)	1601 Palos Street
SC5 Ingleside Elementary (399 Students)	200 Guille Street
SC6 City Park Elementary School (370 Students)	203 Keith Lane
SC7 Athens Junior High (430 Students)	200 Keith Lane
SC8 Westside School (270 Students)	700 Westside Street
SC9 McMinn County High School (1,430 Students)	2103 Congress Parkway
SC10 Tennessee Technology Center (200 Students)	1635 Vo-Tech Drive

Springs	
Name	Location
SP1 Cate Spring	CR 114
SP2 Blazer Lake	Lee Highway South
SP3 Cedar Springs	Cedar Springs Road
SP4 Rudd Spring	CR 601
SP5 Arnwine Spring	Mt. Verd Road
SP6 Lathan Spring	Lanetown Road

Major Streams	
Name	Location
ST1 North Mouse Creek & tributaries	Parallels I-75 to the east
ST2 Oostanaula Creek & tributaries	CR 658 & Old Athens/Madisonville Road

ATHENS BYPASS TPR
McMinn County, TN

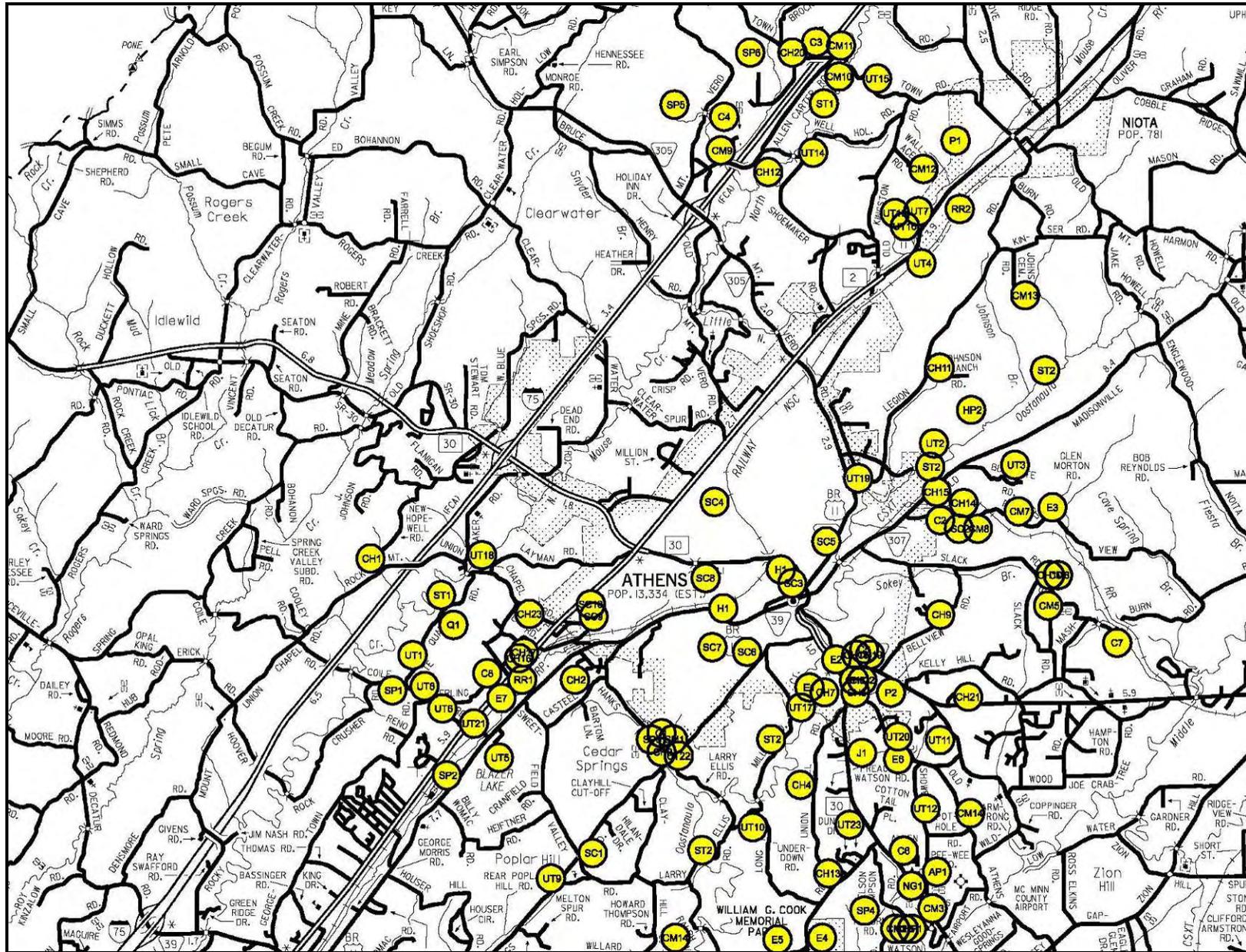
EXHIBIT 6.1.6.1 ENVIRONMENTAL AND COMMUNITY RESOURCES (CONT.)

Utilities	
Name	Location
UT1 Aboveground Power	Cate Springs
UT2 Aboveground Power	Old Athens/Madisonville Road
UT3 Aboveground Power	Old Athens/Madisonville Road
UT4 Aboveground Power	Niota Ridge
UT5 Aboveground Power	Dry Valley
UT6 Buried Coaxial Telephone	CR 114
UT7 Buried Coaxial Telephone	Lee Highway
UT8 Buried Pipeline	Cate Springs
UT9 Buried Pipeline	Cedar Springs Road
UT10 Buried Pipeline	CR 658
UT11 Buried Pipeline	CR 561
UT12 Buried Pipeline	CR 557
UT13 Buried Pipeline	Lee Highway
UT14 Buried Pipeline	CR 263
UT15 Buried Pipeline	Lanetown Road
UT16 Niota Wastewater Treatment Plant	Highway 11 South
UT17 Oostanaula (Athens) Wastewater Treatment Plant	220 Alford Street
UT18 North Mouse Creek Wastewater Treatment Plant	100 New Englewood Road
UT19 Vernon Wade Filter Plant	
UT20 Valve Station	Old Athens-Etowah Road
UT 21 Pump Station	Coile Road at US-11
UT 22 Pump Station	Larry Ellis Road at Cedar Springs Road
UT 23 2 Million Gallon Water Tank	Near SR-30, north of Piney Grove Road

Miscellaneous	
Name	Location
AP1 McMinn County Airport	David W. Lillard Memorial Hwy
J1 McMinn County Justice Center	SR-30
NG1 National Guard Armory	SR-30
Q1 Quarry	CR 131
RR1 Norfolk-Southern Railroad	Dry Valley
RR2 Norfolk-Southern Railroad	Niota Ridge

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 6.1.6.2 ENVIRONMENTAL AND COMMUNITY RESOURCES MAP



6.1.7 Guiding Principle 7: Promote Financial Responsibility

The need for a SR-30 bypass around Athens was determined through Tennessee's statewide long-range multi-modal transportation planning process. This process includes extensive interaction with citizens, local government officials, and the Metropolitan Planning Organizations and the Rural Planning Organizations.

Preliminary construction cost estimates were prepared for each option considered. The costs are discussed in Sections **5.2 Alignment Options** and **6.2 Summary of Options**.

6.2 SUMMARY OF OPTIONS

Criteria for choosing an improvement option should incorporate the purpose and need discussed in Section **3.0 Purpose and Need**. The selected option should also achieve the goals stated in the federal earmark funding this study, and be supported by local officials. A summary of each option is provided in **Exhibit 6.2.1 Summary of Options Chart** below. Key measures of effectiveness (MOE) for each option are listed. The MOE are organized by the purpose and need criteria. For a more detailed discussion of each option, please refer to Section **5.2 Corridor Options** and **6.0 Assessment of Options**.

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 6.2.1 SUMMARY OF OPTIONS CHART

	No Build Option	South Bypass Option A			South Bypass Option B			North Bypass Option		
		2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane
General Information										
Length of construction (miles)	n/a	6.1	6.1	6.1	7.5	7.5	7.5	9.8	9.8	9.8
Length of route (miles - includes segment of I-75 to be utilized, if applicable)	7.2	7.8	7.8	7.8	9.3	9.3	9.3	14.7	14.7	14.7
Estimated R.O.W & construction cost of improvements (millions) - in year 2013 dollars	\$ -	\$ 129.0	\$ 131.1	\$ 180.7	\$ 150.9	\$ 153.6	\$ 215.1	\$ 189.4	\$ 192.5	\$ 276.4
Do improvements meet the requirements of the earmark?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supported by officials from the City of Athens?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Is there any known local support for the corridor as shown in this report?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Does the design allow for efficient future improvements?	No	No	Yes	n/a	No	Yes	n/a	No	Yes	n/a
Purpose and Need: Improve Regional Mobility										
Distance from Existing SR-30 along I-75 (miles)	n/a	1.8	1.8	1.8	1.8	1.8	1.8	4.9	4.9	4.9
Year 2033 Bypass LOS (range if applicable)	n/a	C to D	C to D	A	C to D	C to D	A	C to D	C to D	A
Year 2033 Bypass v/c ratio	n/a	0.27	0.27	0.11	0.27	0.27	0.11	0.40	0.40	0.17
Year 2033 Bypass average travel speed (mph)	n/a	47.5	47.5	53.2	48.0	48.0	54.0	44.9	44.9	50.9
Year 2033 SR-30 travel time (minutes)	16.3	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Year 2033 Bypass travel time (minutes)	n/a	9.9	9.9	8.8	11.6	11.6	10.3	19.7	19.7	17.3
Year 2033 Bypass travel time improvement compared to Year 2033 No Build travel time for SR-30 (%)	n/a	39%	39%	46%	29%	29%	37%	-21%	-21%	-6%

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 6.2.1 SUMMARY OF OPTIONS CHART (CONTINUED)

	No Build Option	South Bypass Option A			South Bypass Option B			North Bypass Option		
		2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane
Purpose and Need: Reduce Congestion in the CBD										
Year 2033 SR-30 LOS (range if applicable)	B to F	A to F	A to F	A to F	A to F	A to F	A to F	A to F	A to F	A to F
Year 2033 SR-30 v/c ratio	0.60	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Year 2033 SR-30 v/c ratio improvement or congestion reduction (%)	n/a	13%	13%	13%	13%	13%	13%	13%	13%	13%
Year 2033 SR-30 average travel speed (mph)	26.58	27.70	27.70	27.70	27.70	27.70	27.70	27.65	27.65	27.65
Year 2033 SR-30 average travel speed improvement (%)	n/a	4%	4%	4%	4%	4%	4%	4%	4%	4%
Purpose and Need: Support Economic Development										
Is developable land plentifully available adjacent to the route?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is sewer currently available from the Athens Utilities Board (to promote development)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Is the Route Option desirable for truck traffic?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the Route Option features consistent with the desire for SR-30 to become an east-west regional economic corridor?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**ATHENS BYPASS TPR
McMinn County, TN**

EXHIBIT 6.2.1 SUMMARY OF OPTIONS CHART (CONTINUED)

	No Build Option	South Bypass Option A			South Bypass Option B			North Bypass Option		
		2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane	2-Lane	2-Lane on 4-Lane R.O.W.	4-Lane
Purpose and Need: Improve Safety										
Do crash rates exceed the statewide average?	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Does/will the route contain undesirable geometric features?	Yes	No	No	No	No	No	No	No	No	No
Will the option reduce vehicular traffic near foot/bike travel destinations (including	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is the Route Option desirable for truck traffic?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Will the Route Option improve nuclear evacuation routes?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Does the Option have local support, meet the requirements of the federal earmark, and meet the Purpose and Need of improvements?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

CHECKLIST OF DETERMINANTS FOR LOCATION STUDY

Location: Athens (SR-30) Bypass, McMinn County from I-75 to SR-39/SR-30

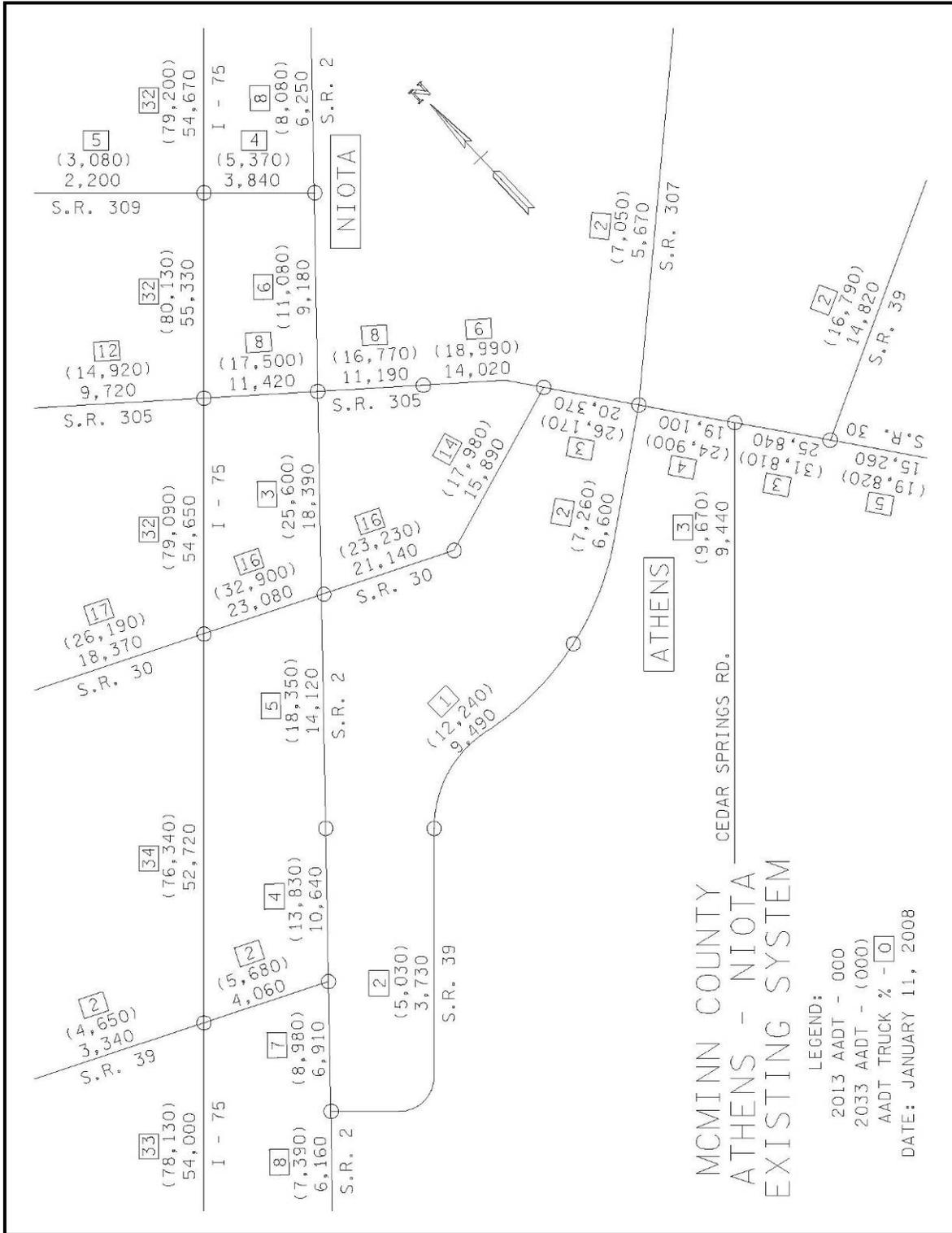
If preliminary field reviews indicate the presence of any of the following facilities or ESE categories, place an "X" in the blank opposite the item. Where more than one alternate is to be considered, place its letter designation in the blank.

Note: "N" = North Bypass Option, "S" = South Bypass Options.

1. Agricultural land usage.....N, S
2. Airport (existing or proposed).....S
3. Commercial area, shopping center.....N, S
4. Floodplains.....
5. Forested Land.....N, S
6. Historical, archaeological, cultural, or natural landmark
or cemeteries.....N, S
7. Industrial park, factory.....
8. Institutional usage's
 - a. School or other educational institution.....S
 - b. Church or other religious institution.....N, S
 - c. Hospital or other medical facility.....
 - d. Public building, e.g., fire station.....
 - e. Defense Installation.....
9. Recreational Usage's
 - a. Park or recreational area, State Natural Area.....
 - b. Wildlife refuge or wildlife management area.....
10. Residential Establishment.....N, S
11. Urban area, town, city or community.....N, S
Title 6, low income/minority community.....N, S
12. Waterway, lake, pond, river, stream, spring, wetland.....N, S
Permit required: Coast Guard.....
Section 404.....N, S
Section 10.....
TVA Section 26a review.....N, S
NPDES.....N, S
Aquatic Resource Alteration Permit.....N, S
Class V Injection Wells.....
13. Location coordinated with local officials.....
14. Railroad Crossings.....N, S
15. Hazardous Material Site.....
Underground Storage Tanks – U.S.T.).....
16. Other.....

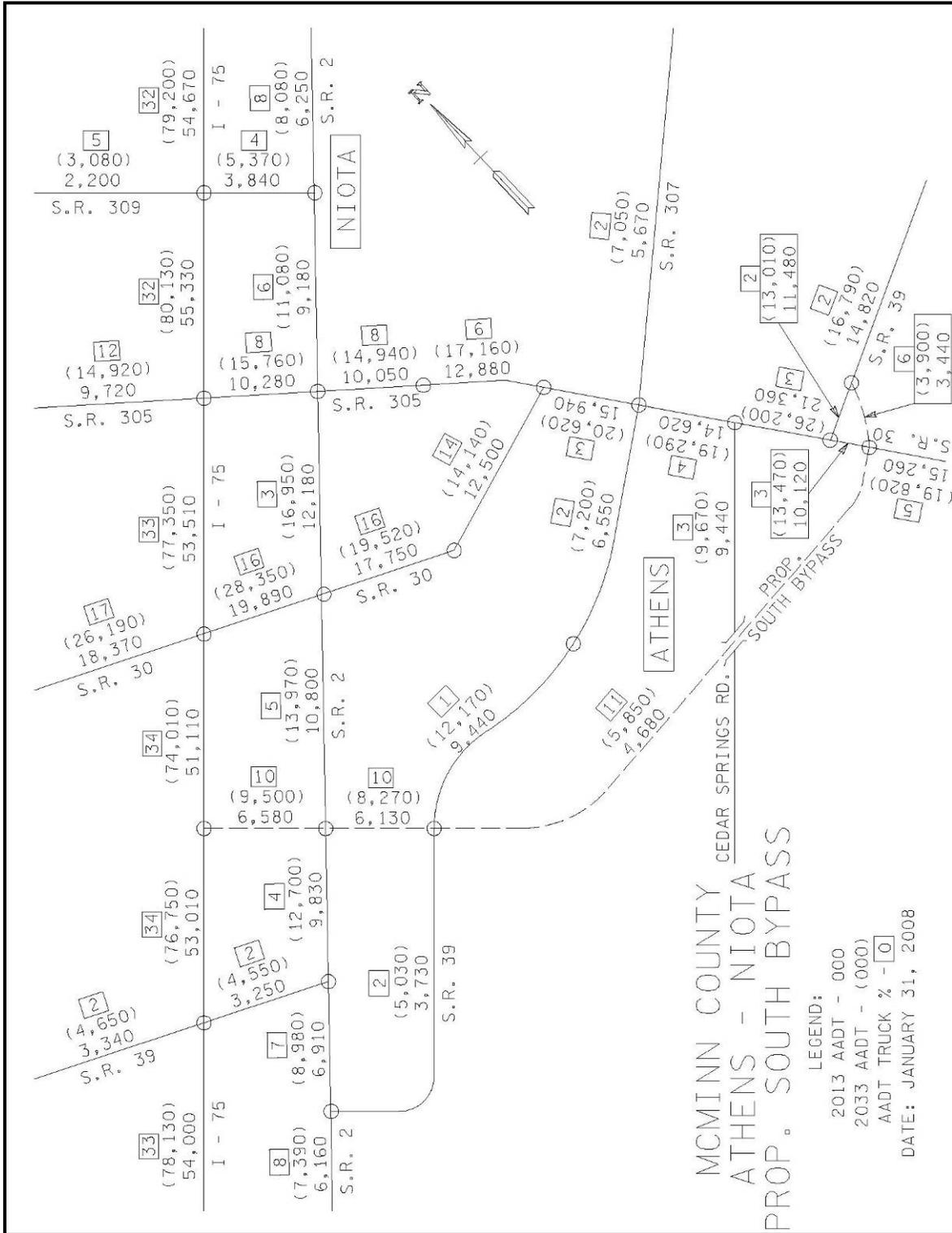
ATHENS BYPASS TPR
McMinn County, TN

TRAFFIC SCHEMATIC: NO BUILD OPTION



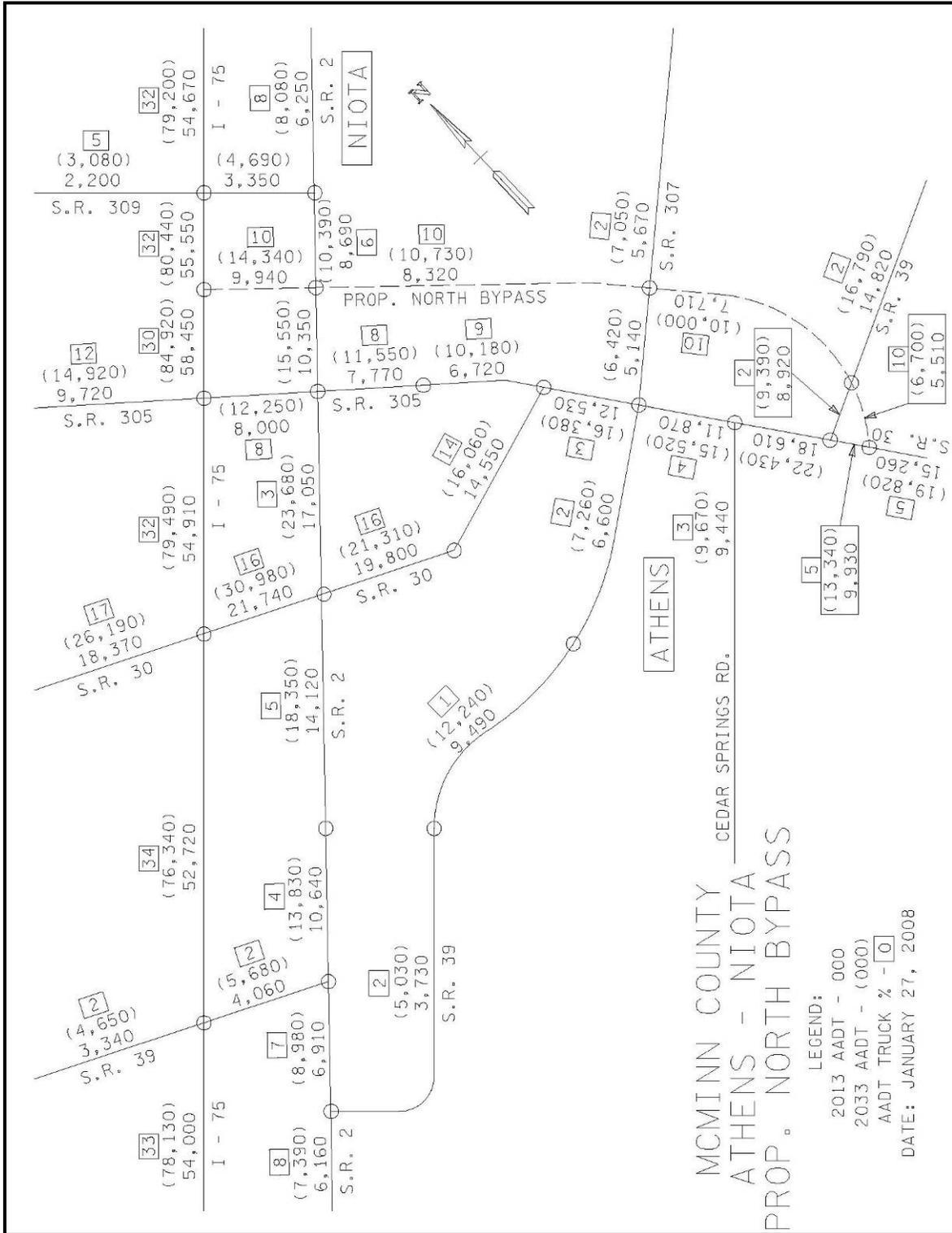
ATHENS BYPASS TPR
McMinn County, TN

TRAFFIC SCHEMATIC: SOUTH BYPASS OPTIONS



ATHENS BYPASS TPR
McMinn County, TN

TRAFFIC SCHEMATIC: NORTH BYPASS OPTION



Tennessee Department of Transportation
DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

Route:	Athens (SR-30) Bypass	Option:	South Routes
Section:	N/A	Region:	2
County:	McMinn	Project #	

Location

From:	I-75
To:	SR-39

Parameter	Criteria
2013 AADT	5,210
2033 AADT	6,880
Percent Trucks (DHV)	7%
DHV (10% AADT 2033)	688
Functional Classification	Rural Major Arterial
Minimum Design Speed	60 mph
Access Control	Partial
Minimum Radius	1205' at 0.08'/ S.E.
Maximum Grade	6%
Minimum Stopping Sight Distance	570'
Surface Width	Varies
Number of Lanes	2-4
Usable Shoulder Width	12' (10' paved)
Median Width	Varies
Minimum R.O.W.	Varies
Signalization	None

Tennessee Department of Transportation
DESIGN CRITERIA FOR LOCATION AND DESIGN PHASE

Route:	Athens (SR-30) Bypass	Option:	North Route
Section:	N/A	Region:	2
County:	McMinn	Project #	

Location

From:	I-75
To:	SR-30

Parameter	Criteria
2013 AADT	7,870
2033 AADT	10,440
Percent Trucks (DHV)	7%
DHV (10% AADT 2033)	1,044
Functional Classification	Rural Major Arterial
Minimum Design Speed	60 mph
Access Control	Partial
Minimum Radius	1205' at 0.08'/ S.E.
Maximum Grade	6%
Minimum Stopping Sight Distance	570'
Surface Width	Varies
Number of Lanes	2-4
Usable Shoulder Width	12' (10' paved)
Median Width	Varies
Minimum R.O.W.	Varies
Signalization	None